DIGITAL VNswitch 900EF

Installation and Configuration

This manual describes how to install and configure the VNswitch 900EF.

Revision/Update Information: This is a revised document.

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Preface

Overview

Purpose of This Manual

This manual describes how to install and set up the DIGITAL VNswitch 900EF module and install a Fiber Distributed Data Interface (FDDI) Modular Media Interface (Mod-FDDI) card. It also provides problem solving, connector and adapter, and pin assignment information.

Intended Audience

This manual is intended for use by personnel who will install and set up the VNswitch 900EF module.

Organization

This manual is organized as follows:

Section	Description
Chapter 1	Provides an overview of the VNswitch 900EF module and describes its features.
Chapter 2	Provides instructions for installing the FDDI Modular Media Interface cards into the module.
Chapter 3	Provides instructions for installing the VNswitch 900EF module into a DIGITAL MultiSwitch 900 (formerly DEChub 900 MultiSwitch).
Chapter 4	Provides instructions for connecting to the setup port on the DEChub ONE docking station and the DIGITAL MultiSwitch 900.
Chapter 5	Provides information on how to configure the VNswitch 900EF in a DEChub ONE or DEChub One-MX docking station.
Chapter 6	Provides information on how to configure the VNswitch 900EF module in a DIGITAL MultiSwitch 900.
Chapter 7	Provides information on how to remove the module from the DIGITAL MultiSwitch 900.
Appendix A	Provides installation-specific problem solving information using the LEDs.
Appendix B	Provides information about connectors, adapters, and pin assignments for the VNswitch 900EF.
Appendix C	Provides product specifications for the VNswitch 900EF module.

Conventions and Terms

Overview

This manual uses the following conventions:

Convention	Description
NOTE	Contains information of special interest.
Special Type	Indicates system output in examples.
Boldface	Indicates user input in examples.
<Return>	Indicates that you should press the Return key.

Terms Used in This Manual

This manual uses the following terms:

Term	Definition
10BaseT	10 Mb/s 802.3 Ethernet over standard unshielded twisted-pair cable.
Ethernet	The DIGITAL term for its product compatibility with ISO 8802-3/ANSI/IEEE 802.3 standards and the Ethernet standards for CSMA/CD local area networks (LANs).
FDDI	Fiber Distributed Data Interface, a set of industry standards for high-speed, fiber-optic ring, local area networks.
Mod-FDDI	FDDI Modular Media Interface, front-insertable, hot-swappable, single-slot option interface cards.
ModPMD	Modular Physical Media-Dependent interface.
SNMP	Simple Network Management Protocol, an industry-standard protocol for network management.
UTP	Unshielded twisted-pair cable with no metal shielding around the conductors.

Associated Documents

The following documents provide information relating to the module. To order any of the following documents, refer to the directions in How to Order Additional Documentation.

Title and Order Number	Description
DIGITAL MultiSwitch 900 Owner's Manual EK-DH2MS-OM	Provides installation, use, security, and troubleshooting information for the DIGITAL MultiSwitch 900.[1]
DEChub ONE Installation EK-DEHU2-IN	Provides installation and operation guidelines for standalone module configuration in a DEChub ONE docking station, including mounting options and cabling.
DEChub ONE-MX Installation EK-DEF1H-IN	Provides installation and operation guidelines for standalone module configuration a DEChub ONE-MX docking station, including mounting options and cabling.
clearVISN Installation	Provides pre- and post-installation information, as well as actual installation procedures for each application.
clearVISN Overview	Provides an overview of the clearVISN software, an explanation of each application, and descriptions of all concepts necessary to understand and use the application efficiently.
clearVISN User's Guide	Provides information for starting and configuring each application, and general use information.
VNswitch 900 Series Technical Overview	Provides a technical overview of the VNswitch 900 family of high-density switching products.
VNswitch 900 Series Switch Management	Describes how to configure, monitor, and manage a VNswitch 900 series module.

Title and Order Number	Description
OPEN DECconnect Applications Guide EC-G2570-42	Provides information to help plan and install networking systems based on the DIGITAL OPEN DECconnect System and networking products.
Event Logging System Messages Guide	Describes messages logged by the Event Logging System.
Bridge and Extended LAN Reference EK-DEBAM-HR	Describes how bridges are used to create extended local area networks (LANs). The descriptions include the use of bridges in extended LAN configurations, information on LAN interconnections, overall bridge operation, spanning tree, bridge management, and solving bridge-related problems in a network.
FDDI Modular Media Interface Cards Installation EK-FDDIM-IM	Explains how to install and verify the operation of the FDDI modular media interface cards.

1. The title of this manual reflects the product name change from DEChub 900 MultiSwitch to DIGITAL MultiSwitch 900.

Correspondence

Documentation Comments

If you have comments or suggestions about this document, send them to the Network Products Business Organization.

Attn: Documentation Project Manager
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Online Services

To locate product specific information, refer to the Digital Equipment Corporation Network Products Business Home Page on the World Wide Web at the following addresses:

Americas:	http://www.networks.digital.com
Europe:	http://www.networks.europe.digital.com
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To Order:	Contact:
By Telephone	Continental U.S.A.: 1-800-DIGITAL (1-800-344-4825)
	Canada: 1-800-267-6215
	Alaska, New Hampshire, and Hawaii: 1-603-884-6660
Electronically (U.S.A. only)	Dial 1-800-DEC-DEMO (For assistance, call 1-800-DIGITAL)
By Mail (U.S.A. and Puerto Rico)	DIGITAL EQUIPMENT CORPORATION P.O. Box CS2008 Nashua, New Hampshire 03061 (Place prepaid orders from Puerto Rico with the local DIGITAL subsidiary: 809-754-7575)
By Mail (Canada)	DIGITAL EQUIPMENT CORPORATION LTD. 940 Belfast Road Ottawa, Ontario, Canada K1G 4C2 Attn: A&SG Business Manager
Internationally	DIGITAL EQUIPMENT CORPORATION A&SG Business Manager c/o local DIGITAL subsidiary or approved distributor
Internally	U.S. Software Supply Business (SSB) DIGITAL EQUIPMENT CORPORATION 8 Cotton Road Nashua, New Hampshire 03063

Safety

Overview

The cautions that must be observed for the hardware described in this manual are listed in this section in English, German, French, and Spanish. Any warning or caution that appears in this manual is defined as follows:.

WARNING	Contains information to prevent personal injury.
CAUTION	Contains information to prevent damage to equipment.
VORSICHT	Enthält Informationen, die beachtet werden müssen um den Benutzer vor Schaden zu bewahren.
ACHTUNG	Enthält Informationen, die beachtet werden müssen um die Gerate vor Schaden zu bewahren
DANGER	Signale les informations destinées à prévenir les accidents corporels.
ATTENTION	Signale les informations destinées à prévenir la détérioration du matériel.
AVISO	Contiene información para evitar daños personales.
PRECAUCIÓN	Contiene información para evitar daños al equipo.

Precautions

WARNING	Some fiber-optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume the cable is connected to a light source.
VORSICHT	Bestimmte Lichtleitergeräte können für die Augen gefährliches Laser- oder Infrarotlicht abstrahlen. Vermeiden Sie es daher unter allen Umständen, direkt in ein Lichtleiterkabel oder einen Lichtleiteranschluß zu schauen. Gehen Sie immer davon aus, daß Lichtleiterkabel mit einer Lichtquelle verbunden sind.
DANGER	Certains équipements à fibre optique peuvent émettre un rayonnement laser ou infra-rouge pouvant provoquer des troubles oculaires. Ne regardez jamais à l'intérieur d'une fibre optique ou d'un port de connecteur. Considérez que le câble est connecté en permanence à une source lumineuse.
AVISO	Ciertos equipos de fibras ópticas pueden emitir luz lasérica o infrarroja con riesgos de lesiones en los ojos. No se debe nunca mirar en una fibra óptica o una puerta de conexión. Siempre hay que suponer que el cable está conectado a una fuente luminosa.

WARNING	To prevent personal injury or equipment damage, **do not** insert telecommunications cabling into the Optical Bypass Relay connector.
VORSICHT	Um Personen oder Geräteschäden zu vermeiden, dürfen Sie das Telefonkabel **Auf Keinen Fall** am Anschluß des optischen Bypass-Relais anschließen.
DANGER	Pour éviter tout risque d'accident corporel ou de dommage matériel, **Ne Branchez Pas** de câble de télécommunication sur le connecteur de relais sélectif optique.
AVISO	Para evitar daños personales o al equipo, **No** se debe introducir cableado de telecomunicaciones en el conector óptico de relés de derivación.

CAUTION	Static electricity can damage modules and electronic components. DIGITAL recommends using a grounded antistatic wrist strap and a grounded work surface when handling any modules.
ACHTUNG	Module und elektronische Komponenten können durch elektrostatische Entladungen beschädigt werden. Benutzen Sie immer eine antistatische Gelenkmanschette und eine geerdete Arbeitsunterlage, wenn Sie am offenen Gerät arbeiten.
ATTENTION	Les charges excessives d'électricité statique peuvent endommager les modules et les composants électroniques. DIGITAL conseille l'utilisation d'un bracelet de masse et d'un plan de travail mis à la terre lors de la manipulation des modules.
PRECAUCION	La electricidad estática puede dañar los componentes electrónicos y los módulos. DIGITAL recomienda que se utilicen cintas de pasadores y superficies de trabajo conectadas a tierra al trabajar con cualquier módulo.

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CAUTION	This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.
ACHTUNG	Bei diesem Vorgang werden alle Konfigurationseinstellungen gelöscht und die Werkseinstellungen wieder eingesetzt. Alle Konfigurationsdaten gehen verloren.
ATTENTION	Cette action supprime tous les paramètres de configuration et les remplace par des valeurs prédéfinies. Tous les paramètres de configuration seront perdus.
PRECAUCIÓN	Esta intervención borrará todos los parámetros de configuración y los sustituirá por valores por defecto definidos de fábrica. Se perderán todos los parámetros de configuración.

Chapter 1

Product Introduction

Overview

Introduction

This chapter describes the features of the DIGITAL VNswitch 900EF module.

For further technical information on the VNswitch 900EF, refer to *VNswitch 900 Series Technical Overview* and *VNswitch 900 Series Switch Management.*

In This Chapter

This chapter consists of the following topics:

Topic	Page
What Is the DIGITAL VNswitch 900EF?	1-2
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What Is the DIGITAL VNswitch 900EF?

The VNswitch 900EF (also referred to in this manual as the module) is a high-throughput, Simple Network Management Protocol (SNMP) manageable, multiport network switch for linking Ethernet LANs with other Ethernet LANs or a Fiber Distributed Data Interface (FDDI) backbone. It provides switching for up to 12 Ethernet LANs and one high-speed FDDI network.

The module is available in two versions: DVNEF-MM and DVNEF-MX.

- The MM version provides factory-installed ANSI MIC connectors for FDDI over Multimode Fiber (MMF). The MM version also includes an FDDI optical bypass relay (OBR) port to provide temporary optical bypass around the module in the case of a power outage.

- The MX version provides optional modular media interface (Mod-FDDI) cards that offer either MMF on SC-type connectors, Single-Mode Fiber (SMF) on SC-type connectors, or unshielded twisted-pair (UTP) connectors.

Both modules provide 12 10BaseT Ethernet switched ports on the front panel.

The module is auto-configured to connect to the 400 Mb/s VNbus if the DIGITAL MultiSwitch 900 Chassis Manager (formerly DEChub 900 MultiSwitch Hub Manager) has autoconnect enabled. The VNbus provides interoperability across the MultiSwitch 900 backplane with other VNswitch modules while maintaining front panel connectivity. Additionally, each of the module's ports (including the FDDI port) can be individually redirected to a MultiSwitch 900 backplane LAN segment.

The module includes a large address table (approximately 8000 entries) and is fully IEEE 802.1d standards-compliant, ensuring the high performance and packet integrity that are required in large switched networks.

The VNswitch 900EF module also offers nonvolatile flash memory for easy, non-disruptive upgrades of the device firmware using Trivial File Transfer Protocol (TFTP) load protocol. This eliminates the need to replace or upgrade hardware in the future, and avoids the associated costs and disruption to network users.

You can configure the module into the DIGITAL MultiSwitch 900 (also referred to in this manual as the MultiSwitch 900) or as a standalone unit into a DEChub ONE or DEChub ONE-MX docking station (see the *DEChub ONE Installation* or *DEChub ONE-MX Installation* manual). The module is fully interoperable with other modules (including MultiSwitch 900 and DEChub 90 modules) when installed into a MultiSwitch 900.

Throughout this manual, the term DEChub ONE refers to the DEChub ONE or the DEChub ONE-MX docking station unless otherwise specified.

With clearVISN management, the FDDI PHY ports can also be individually switched to a MultiSwitch 900 backplane LAN. Also, Ethernet port 12 can be redirected to the MultiSwitch 900 backplane LAN segment or to other backplane LANs.

When the VNswitch 900EF module is connected to a DEChub ONE docking station, a user can configure either the DEChub ONE AUI port or the module's front panel port 11 as an active Ethernet interface.

Features

The following sections describe the features of the VNswitch 900EF switch. For further information, refer to the *VNswitch 900 Series Technical Overview.*

Hot Swap

The DVNEF-MX module supports the hot-swap feature. With hot-swapping capabilities, you can perform the following functions without turning off the power.

- Install or remove the module from a DIGITAL MultiSwitch 900.

- Install or remove the Mod-FDDI cards.

Configuration and Management

The following configuration and management options are available:

- Auto-configuring at power-up.

- Support for up to 256 internal addresses for management and other purposes.

- Manageable via SNMP or Command Line Interface (CLI) management via Telnet, an attached terminal device, or both.

- Upgradeable device firmware (in nonvolatile flash memory) using TFTP with clearVISN Flash Loader or in the DEChub One docking station through the setup port with any TFTP server.

- Built-in SNMP management agent. It supports a comprehensive graphical user interface (GUI), using the DIGITAL clearVISN MultiChassis Manager, that is identical for both in-band and out-of-band management.

- Support for approximately 8000 network addresses.

- Support for a Load/Dump/Management (LDM) port that allows downline loads and upline dumps of operational images.

- User-configured rate limiting for broadcast and multicast packets by address and specified protocol.

- Supports backplane LANs by allowing all 10BaseT ports and the FDDI port to be individually directed (through management software, such as the clearVISN MultiChasis Manager) to the MultiSwitch 900 backplane.

- May be used with other VNswitch 900 modules to create various configurations involving Ethernet, Fast Ethernet, FDDI, and ATM by connecting over the 400 Mb/s VNbus.

Bridging

The following bridging features and options are available:

- High-speed, local traffic filtering and forwarding

- Full line-rate bridge forwarding – up to 750,000 packets-per-second per module

- Spanning tree loop detection protocol, IEEE 802.1d compliant

- Support for multiple spanning trees with the ability to turn off the spanning tree algorithm on an individual port

FDDI

The following FDDI features are available:

- Full-duplex FDDI.

- Provides translation between FDDI and 802.3 Ethernet frame formats for direct transparent connections, translation of AppleTalk 1 and 2 AARP packets, and handling of Novell IPX raw 802.3 packets.

- Supports operation in either an FDDI tree or dual ring configuration.

  — FDDI port A/M can be switched to emulate an M port of a concentrator. This action causes FDDI port B/S to automatically switch to emulate an S port.

  — Allows attachment to concentrators by allowing both FDDI ports to be directed to the MultiSwitch 900 backplane.

Ethernet

The following Ethernet features are available:

- Twelve 10BaseT Ethernet switched ports on the front panel that can be redirected to a MultiSwitch 900 backplane LAN through clearVISN MultiChassis Manager.

- When the module is installed into a DEChub ONE or DEChub ONE-MX docking station (DEHUA or DEF1H), a user can assign the module's front panel port 11 to the DEChub ONE docking station's AUI port.

- Half- and full-duplex Ethernet operation over all ports.

SNMP

The VNswitch 900EF has a built-in SNMP agent and manageability using any generic SNMP management application that supports the MIBs listed below:

— MIB II (RFC 1213)

— Interfaces Group of MIB II (RFC 1573)

— Bridge MIB (RFC 1493)

— Draft of IETF 802.3 MAU MIB

— DEC VLAN V1 MIB

— DIGITAL/Proteon Comet MIB

— DEChub 900 Public Common MIB

— DEChub Internal Common MIB

— DIGITAL Extended LAN MIB

— Ethernet (RFC 1643)

— FDDI (RFC 1512)

- SNMP support for GETs and for the following standard traps, along with many proprietary traps:

— coldStart

— warmStart

— linkUp

— linkDown

VLAN Secure Domains

The VLAN secure domains (VSD) support has the following features:

- Ability to group ports into VSDs.

- Ability to join VSDs in different VNswitch modules across the VNbus.

- Support of port groups within a MultiSwitch 900 to create larger distributed multicast domains.

- Support as many as 63 port-based VSDs across each VNbus.

- Support for independent spanning trees per module (one spanning tree per VSD).

For further information on VLANs, refer to the *clearVISN User's Guide* and the *clearVISN Overview*.

Chapter 2

Installing Modular Media Interface Cards

Overview

Introduction

This chapter explains how to install FDDI Modular Media Interface (Mod-FDDI) cards into the MX version of the DIGITAL VNswitch 900EF module.

For detailed information on the available cards, refer to the *FDDI Modular Media Interface Cards Installation* manual.

In This Chapter

Topic	Page
Installation Preparation	2-2
Removing the Slot Cover	2-3
Installing the Card	2-4
Removing the Card	2-6

Installation Preparation

To prepare to install the card into the host module, complete the following steps:

Step	Action
1	Remove the contents from the box and be sure to keep all original packing materials. The card comes packed in protective antistatic material. You should not remove the card from the material until you are ready to install the card.
2	Check the shipment for damage and missing parts. In case of damaged or missing parts, contact your delivery agent and your DIGITAL sales representative.
3	Make sure you have the proper Modular Media Interface (MMI) card for your module. ATM modPHY, Fast Ethernet MM-100, and Mod-FDDI cards are not interchangeable.
4	Check the VNswitch 900 Series release notes shipped with the module for important information not included in this manual.

Required Tools

Digital Equipment Corporation recommends the use of, but does not supply, the following tools to install the cards:

- Phillips-head screwdriver
- Antistatic grounding strap and grounded work surface

CAUTION

Static electricity can damage modules and electronic components. DIGITAL recommends using a grounded antistatic wrist strap and a grounded work surface when handling any modules.

Removing the Slot Cover

To remove the slot cover from the module (Figure 2-1), complete the following steps:

Step	Action
1	Use a Phillips-head screwdriver to loosen the two screws that hold the slot cover in place.
2	Save the slot cover for future use.

Figure 2-1: Removing the Slot Cover

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Installing the Card

To install the card into your module (Figure 2-2), complete the following steps:

Step	Action
1	Attach one end of an antistatic wrist strap to your wrist and the other end to a chassis ground. **CAUTION:** Static electricity can damage modules and electronic components. DIGITAL recommends using a grounded antistatic wrist strap and a grounded work surface when handling any modules.
2	Hold the card by the edges of the bezel so that it is parallel with the slot opening.
3	Insert the card into the slot opening by aligning the sides of the card with the slot opening. Note: To prevent the screws from interfering with the card insertion, make sure that the captive screws on the bezel are partially threaded into the bezel threads
4	Firmly fasten the card to the module with the two captive screws.

Figure 2-2: Installing the Card
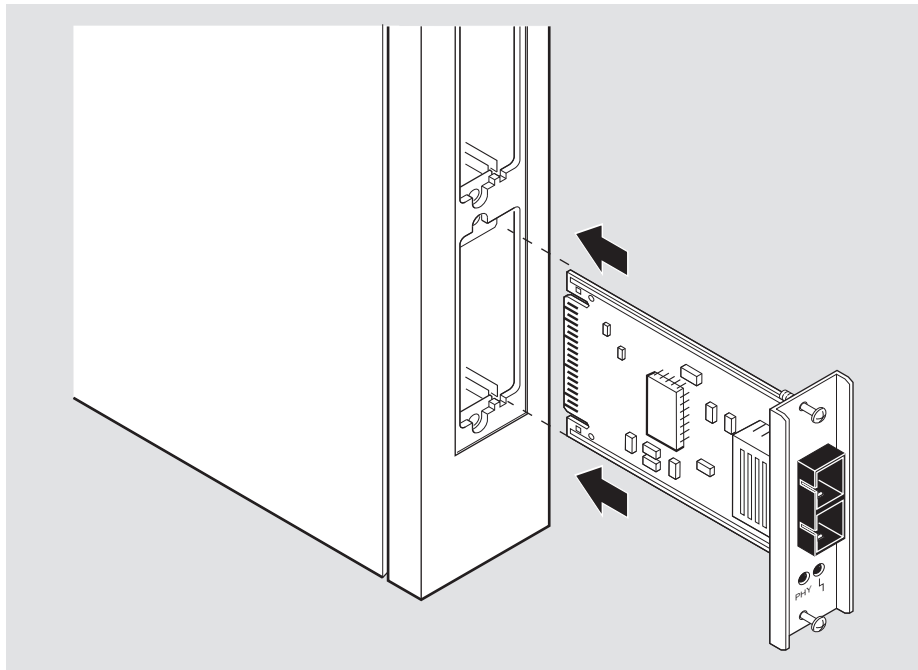
NPB-0703-96F

Depending on the type of connector used on the card, differences exist in the way you attach and remove the cables. For cable connection information for the Mod-FDDI card, refer to the *FDDI Modular Media Interface Cards Installation* manual.

Removing the Card

To remove a card from the host module (Figure 2-3), complete the following steps:

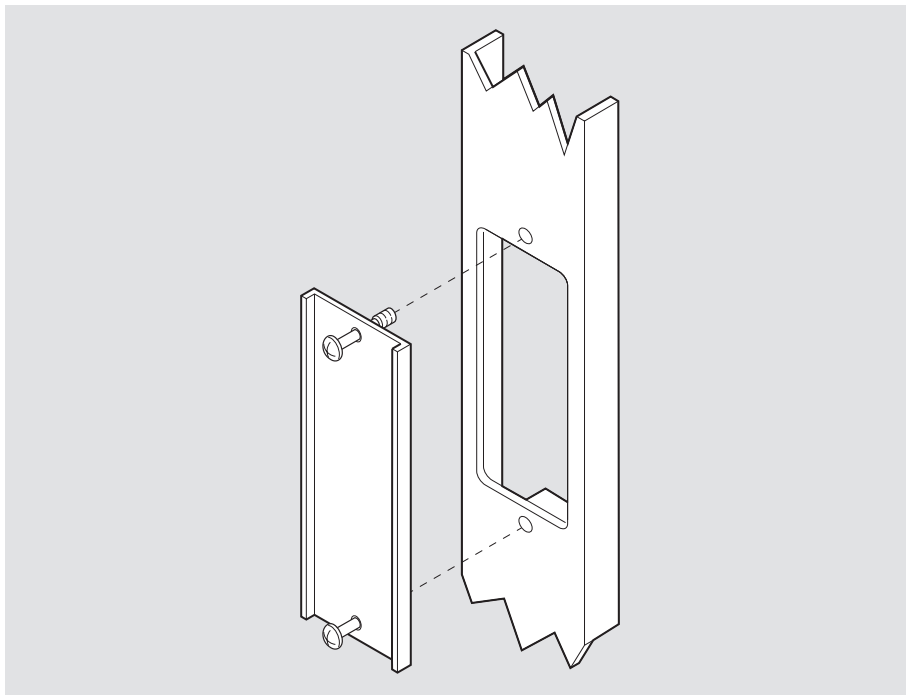| Step	Action
1	Attach one end of an antistatic wrist strap to your wrist and the other end to a chassis ground.
	CAUTION: Static electricity can damage modules and electronic components. DIGITAL recommends using a grounded antistatic wrist strap and a grounded work surface when handling any modules.
2	Disconnect all cables from the card. Refer to Chapter 3 for cable removal information.
3	Use a Phillips-head screwdriver to loosen the two captive screws that hold the card in place. The screws should be loose but still attached to the card.
4	Grasp the captive screws and disconnect the card from the host module by pulling on the screws.
5	Gently slide the card out of the slot.
6	Replace the dust caps on the card, if necessary.
7	Place the card into a static-proof bag.
8	If the slot is to be unused, reinstall the slot cover.

Figure 2-3: Removing the Card
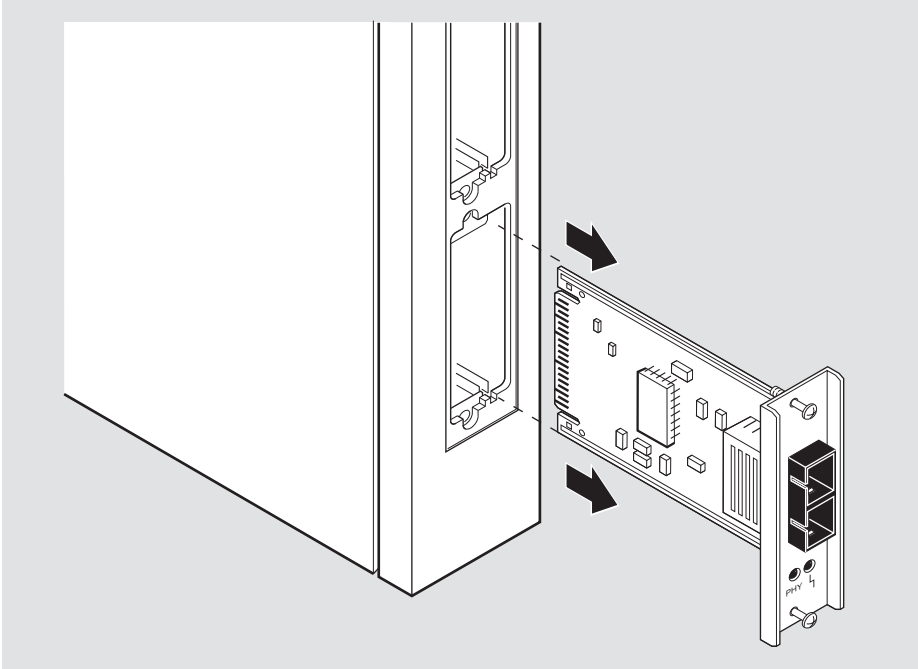
NPB-0704-96F

Chapter 3

Installing the DIGITAL VNswitch 900EF

Overview

Introduction

This chapter describes the front and back panel components of the DIGITAL VNswitch 900EF and provides instructions for installing the module into a DIGITAL MultiSwitch 900.

To install a module into a DEChub ONE or DEChub ONE-MX docking station, refer to *DEChub ONE Installation* or *DEChub ONE-MX Installation*.

In This Chapter

Topic	Page
Module Components	3-2
How to Install the Module	3-9

Module Components

This section describes the front and back panel components of the VNswitch 900EF module.

Table 3-1 describes the front panel components, including the icons, that are on the module illustrated in Figure 3-1.

Table 3-2 describes the back panel components, illustrated in Figure 3-2.

For more information about the module's LEDs, refer to Appendix A.

For detailed information on the LEDs associated with the Mod-FDDI cards, refer to the *FDDI Modular Media Interface Cards Installation* manual.

Front Panel Features

Table 3-1 describes the VNswitch 900EF front panel features shown in Figure 3-1.

Table 3-1: Front Panel LEDs and Connectors

Item	Icon	Name	Description
1		Power LED	Lights when the module has power.
2		Module OK LED	Lights when the module passes self-test.
3		VNbus Status LED	Shows whether the module is properly connected to a VNbus backplane.[1]
4		VNbus Activity LED	Indicates network traffic.
5		Load/Dump/ Management (LDM) Port Status LED	Indicates the link status of the Load/ Dump/Management port.
6		LDM Activity LED	Indicates when the LDM port is transmitting or receiving packets.
7		LDM Port	Dedicated 10BaseT Ethernet port. Supports loads and upline dumps of an operational image. This port is wired with a straight-through connector.

(continued on next page)

[1]The VNbus Status and Activity LEDs have different indications during a load state. Refer to the VNswitch 900 Series release notes for current descriptions.

Item	Icon	Name	Description
8		Reset/Dump Button	Used to either reset the module or cause an upline dump of the operational image, followed by a reset. If this button is pressed as operational code initializes, the module resets to current settings.
			To reset while turning on power, press and hold the button until the Module OK LED flashes. If the module is in operation mode, hold the button for five seconds. Use a non-conductive device to press the button.
9		Address Label	Contains the lowest of 256 consecutive Media Access Control (MAC) addresses.
10		Port Status LEDs	Show the status of ports 1 to 12.
		Port Activity LEDs	Indicates network traffic level.
11		10BaseT port connectors	8-pin MJ port connectors that support both UTP and ScTP cabling. These ports are wired as crossover connectors.
12		Port Status LED	Shows the status of the modPMD or the Mod FDDI card A/M or B/S ports. Indicates if the port is enabled or disabled and receiving a valid link.
		Port Activity LED	Indicates network traffic level.

Item	Icon	Name	Description
13		Optical bypass relay (OBR) port	Allows the connection of an OBR device to maintain connectivity of the FDDI ring during the absence of power. This port is available only on the MM version.
14		ModPMD slots	ModPMD interfaces. These are factory installed, and are not hot swapable or customer installable. These interfaces are available only on the DVNEF-MM version. The top slot is labeled A/M. The bottom slot is labeled B/S. In a dual ring, the top port is the M port and the bottom port is the S port. In a treed topology, the top port is the M port, and the bottom port is the S port.
15		Mod-FDDI slots	Allow the installation of Mod-FDDI cards. The Mod-FDDI cards are customer installable and hot swapable. These slots are available only on the MX version. The top slot is labeled A/M. The bottom slot is labeled B/S. In a dual ring, the top port is the M port and the bottom port is the S port. In a treed topology, the top port is the M port, and the bottom port is the S port.
16	⌐	FRU Status LED	Indicates the operational status of the ModPMD card.
17		PHY LED	Indicates the connection status of the ModPMD card.

Module Components

Figure 3-1: Front Panel LEDs and Connectors
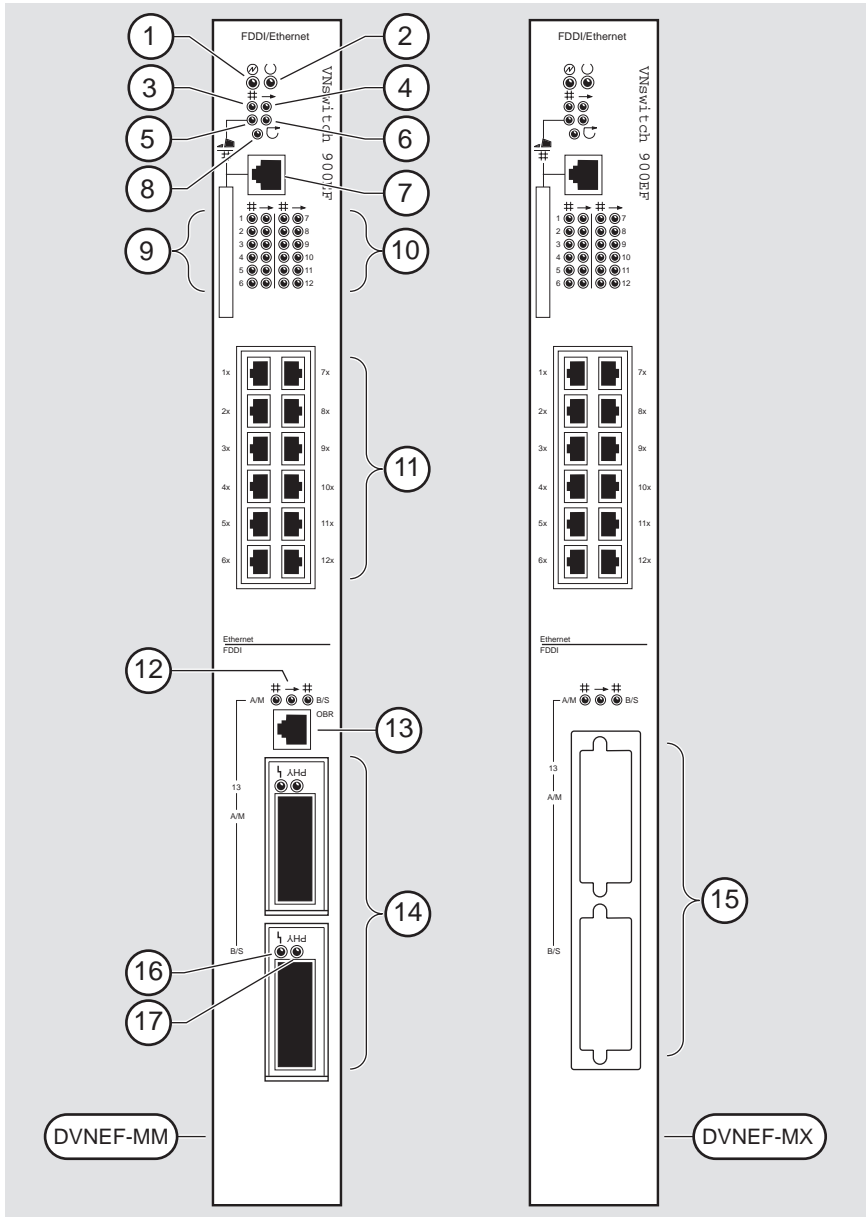
NPB-0450-96F

Back Panel Features

Table 3-2 lists the features on the back panel (Figure 3-2) of the VNswitch 900EF.

Table 3-2: Back Panel Feature Descriptions

Item	Name	Description
1	Locking tab	Locks the module into a MultiSwitch 900 backplane or into a DEChub ONE docking station. Contains the hot-swap switch lever.
2	48-pin connector	Provides network and power connections to the module when the module is installed into a MultiSwitch 900 or DEChub ONE docking station.
3	Grounding bolt	Provides a chassis grounding connection between the module and the MultiSwitch 900 or the DEChub ONE docking station.
4	Manufacturing label	Lists the module's part number, serial number, revision level, and power requirements.
5	160-pin connector	Provides network and power connections to the module when the module is installed into a MultiSwitch 900 or a DEChub ONE docking station.
6	Mounting tab	Secures the module when it is installed into a MultiSwitch 900 or a DEChub ONE docking station.
7	Grounding fingers	Provide additional chassis grounding between the module and a MultiSwitch 900 or a DEChub ONE docking station.

Module Components

Figure 3-2: Back Panel Layout
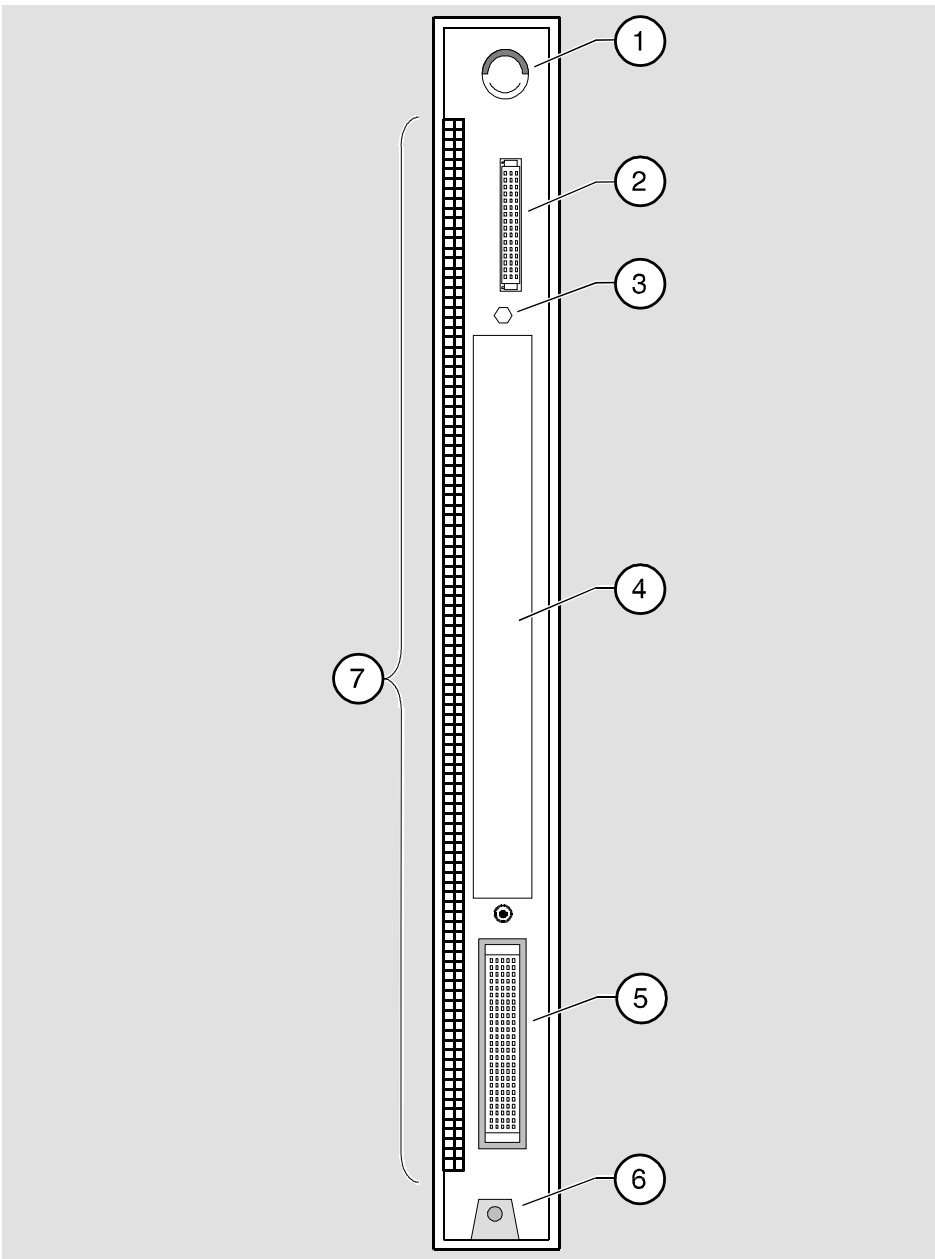
NPG-9723-95F

How to Install the Module

The hot-swap feature allows you to install the module into the DIGITAL MultiSwitch 900 without turning off power. Seating the module initiates the power-up sequence.

To install the module, complete the following tasks.

Task 1: Compare the Power Ratings

Compare the module's power requirements (**1**) with the values shown in the Chassis Manager (**2**) status display (Figure 3-3).

If any of the module's power requirements exceed the values shown in the status display, add another power supply (see the *DIGITAL MultiSwitch 900 Owner's Manual*, formerly the *DEChub 900 MultiSwitch Owner's Manual*).

Figure 3-3: Sample Power Ratings
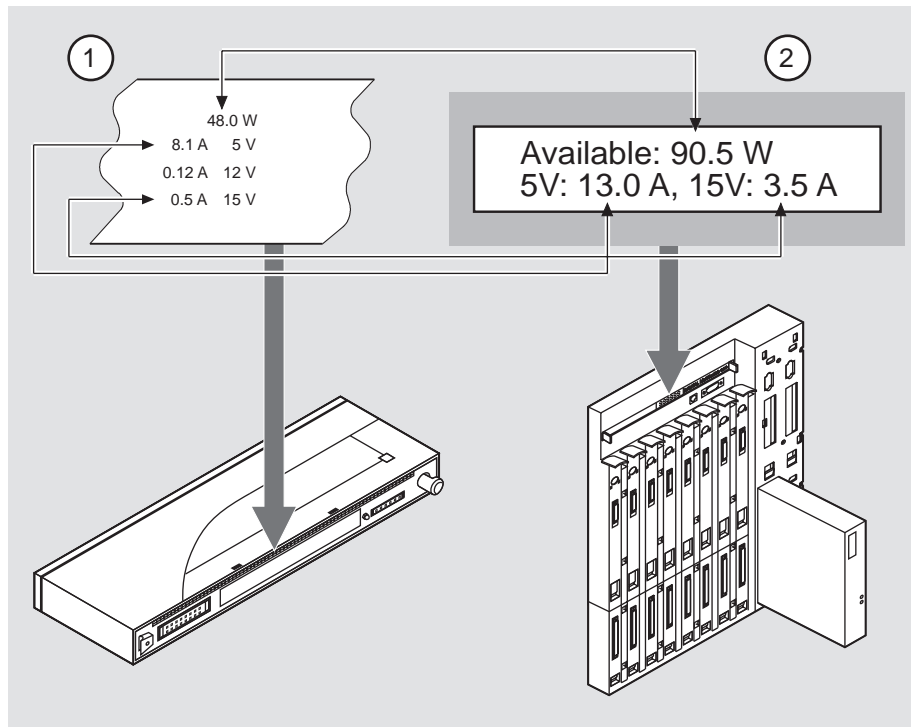
NPB-0717-96F

Task 2: Seat the Module

To seat the module into the DIGITAL MultiSwitch 900 (Figure 3-4), complete the following steps:

Step	Action
1	Place the module's mounting tab **(1)** into a mounting slot on the DIGITAL MultiSwitch 900.
2	Pull up on the release lever **(2)** to its unlocked position.
3	Pivot the module on the mounting tab, align the connectors, and firmly push the module onto the backplane connectors.
4	Press down on the release lever **(3)** to ensure that it is locked.

Figure 3-4: Seating the Module
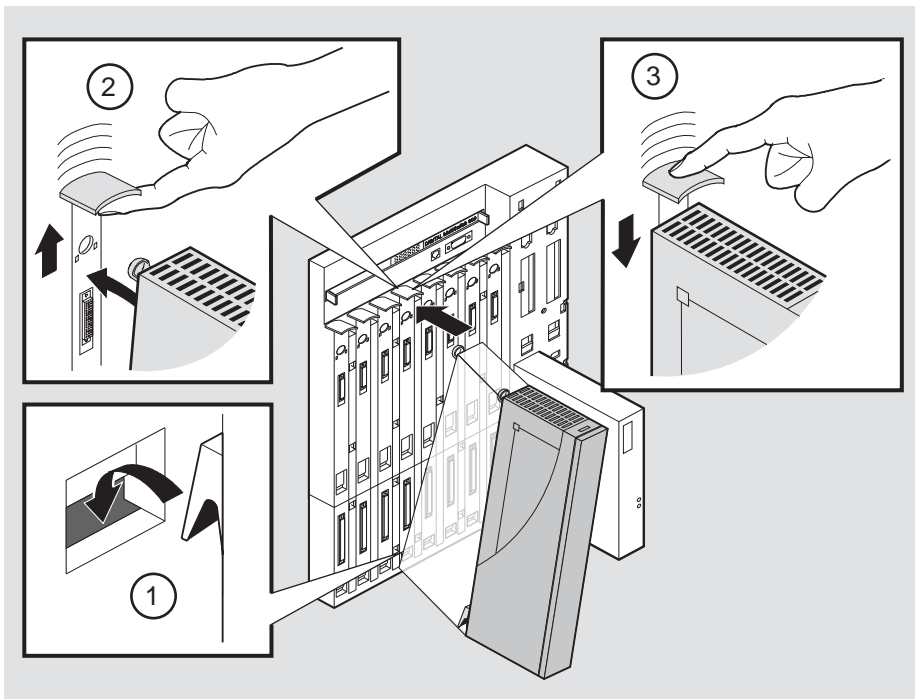
NPB-0004-95F

Task 3: Verify Initial LED Operation

If…	Then…
This is a new installation	Turn on the power to the DIGITAL MultiSwitch 900.
The module is installed while the DIGITAL MultiSwitch 900 is powered up	Seating the module initiates the module's power-up sequence.
	If the LEDs do not operate as described, refer to Appendix A, Problem Solving.
	For locations of the module's LEDs, refer to Figure 3-1.

To verify LED operation, check the following stages:.

Stage	Description
1	When the module receives power, the module's Power LED lights and remains lit.
2	The module runs a self-test.
	Note: The self-test takes 30 to 60 seconds to complete.
3	After the module completes self-test, the Module OK LED lights and remains lit.
4	The Chassis Manager status display shows VNswitch 900EF.

Task 4: Connect the UTP/ScTP Cable

The VNswitch 900EF uses crossover, 10BaseT, 8-pin MJ port connectors for Ethernet. Before connecting the cables to the module, note the following rules

If the device you are connecting to the module uses…	Then use…
Crossover connectors[1]	Crossover cables
Straight-through connectors[2]	Straight-through cables

[1]The sum of crossovers must always equal an odd number.

[2]DIGITAL marks straight-through cables with the symbol (=) and crossover cables with the symbol (x).

To connect the UTP/ScTP cable (Figure 3-5), complete the following steps:

Step	Action
1	Align the release tab on the cable plug (**1**), with the keyway on the module's 10BaseT port connector.
2	Insert the plug into the connector, ensuring that the release tab snaps into the locked position.

Figure 3-5: UTP/ScTP Cable Connection
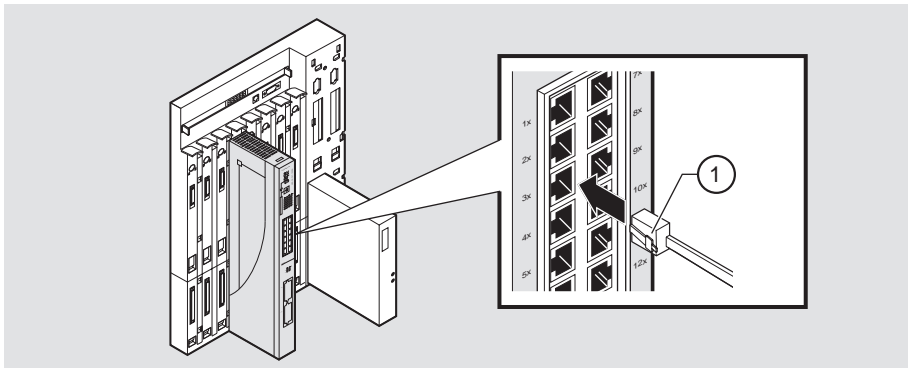
NPB-0463-96F

Task 5: Connect the LDM Port Cable

To perform a remote load/dump, the LDM cable must be connected to the LDM port.

The LDM port uses straight-through 10BaseT, 8-pin MJ port connectors for Ethernet.

To connect the LDM cable to the LDM port (Figure 3-6), complete the following steps:

Step	Action
1	Align the release tab on the cable plug **(1)**, with the keyway on the module's 10BaseT port connector.
2	Insert the plug into the connector, ensuring that the release tab snaps into the locked position.

Figure 3-6: LDM Port Cable Connection
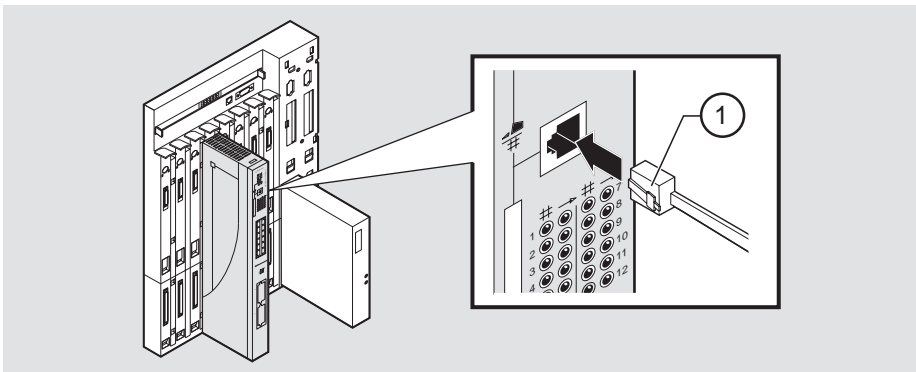
NPB-0484-96F

Task 6: Connecting the ANSI Multimode Fiber-Optic Cables (DVNEF-MM Only)

WARNING

Some fiber-optic equipment can emit laser or infrared light that can injure your eyes. Never look into and optical fiber or connector port. Always assume the cable is connected to a light source.

To install the ANSI multimode fiber-optic cables (Figure 3-7) , complete the following steps:

Step	Action
1	Align the keyway on the cable plug (**1**) with the key on the module's port connector.
2	Insert the connectors.

NOTE

Make sure that the bend radius of any fiber-optic cable is 2.5 cm (1 inch) or greater. To avoid optical power loss, do not touch the fiber ends.

Figure 3-7: Connecting the ANSI Multimode Fiber-Optic Cables
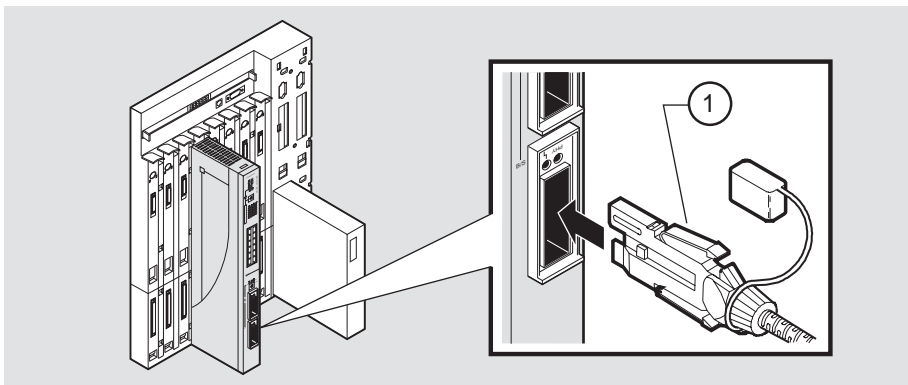
NPB-0721-96F

Task 7: Connect the OBR Cable (DVNEF-MM Only)

For OBR cable installation instructions, refer to the documentation included with the OBR.

Chapter 4

Installing the Setup Port Cable

Overview

Introduction

The setup port on the DIGITAL MultiSwitch 900 or the DEChub ONE docking station allows you to access and set DIGITAL VNswitch 900EF parameters. This chapter describes how to access the module from either port and how to set those parameters.

In This Chapter

Topic	Page
Setup Port Setup Port Signaling Standards	4-2
Setup Port Device Cabling	4-3
Connecting to the Setup Port	4-4

Setup Port Signaling Standards

Signals from the MultiSwitch 900 Chassis Manager setup port and from the DEChub ONE docking station setup port conform to the EIA-232D signaling standard at 9600 baud. To the user, the port appears as a data terminal equipment (DTE) device.

The MultiSwitch 900 Chassis Manager setup port is compatible with devices that use the EIA-423 signaling standard.

Setup Port Device Cabling

The setup port (Figure 4-1) on the DIGITAL MultiSwitch 900, the DEChub ONE, or DEChub ONE-MX docking station can be connected to a setup port device (a terminal or personal computer) by using the following cables and adapters:

If the setup port device is…	Use this cable…	With this adapter…
PC with a 9-pin D-sub communications port	BN24H-xx[1]	H8571-J
Terminal with a 25-pin D-sub connector	BN24H-xx[1]	H8575-A
Terminal with a 6-pin MMJ connector	BN24H-xx[1]	Not required

[1]xx indicates cable length in meters

Connecting to the Setup Port

To connect to the setup port on the module, complete the following steps:

Step	Action
1	Ensure that the transmit and receive baud rates on the setup port device are set to 9600 baud.
2	Connect the setup port device to the setup port connector on either the DIGITAL MultiSwitch 900 or the DEChub ONE docking station (Figure 4-1).

The following legend identifies the setup port cabling in Figure 4-1:

Item	Description
1	Out-of-Band Management (OBM) Port
2	Setup Port
3	Setup Port Device

Figure 4-1: Setup Port Cabling Components
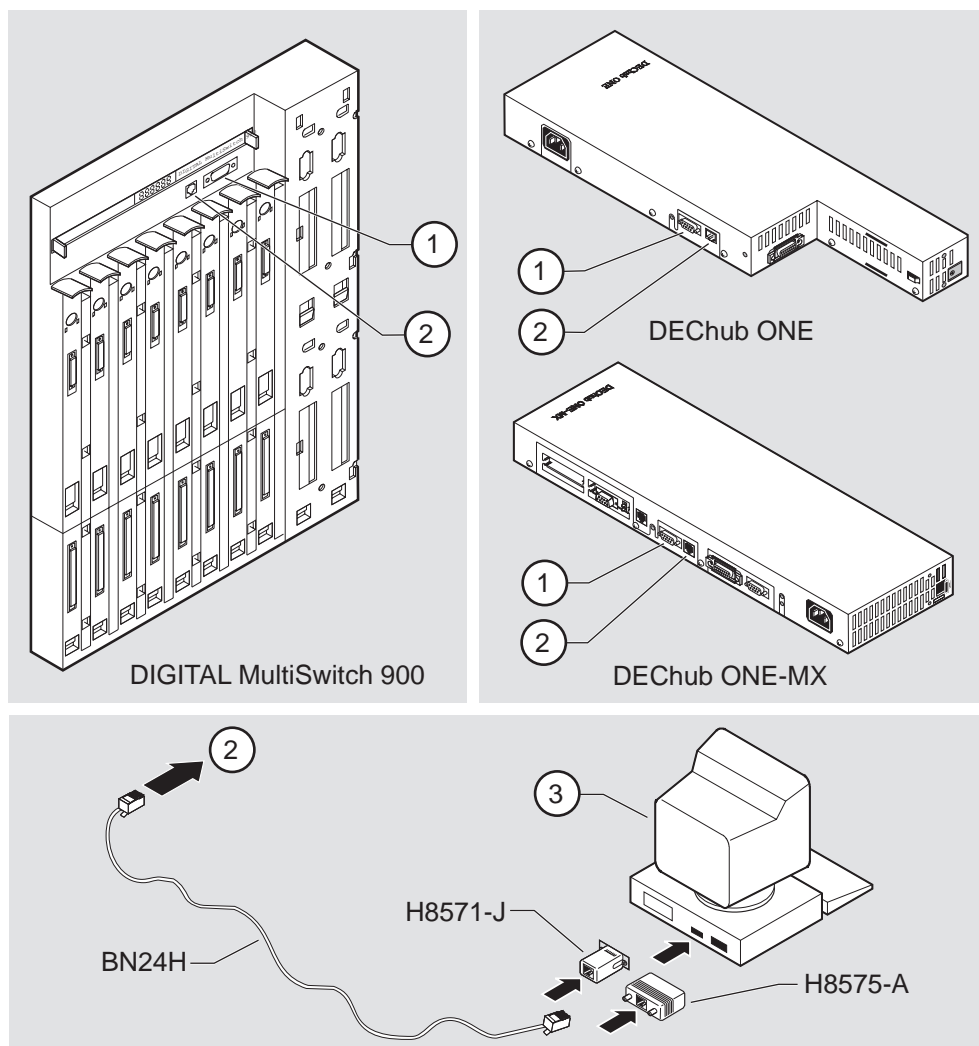
NPG-0020-95F

After all cables are connected, go to one of the following chapters:

To	Go to
Configure the module in a DEChub ONE	Chapter 5
Configure the module in a DIGITAL MultiSwitch 900	Chapter 6

Chapter 5

Configuring the Module in a DEChub ONE or DEChub ONE-MX

Overview

Introduction

This chapter describes how to configure your DIGITAL VNswitch 900EF when it is installed in a DEChub ONE docking station.

Throughout this chapter, the term DEChub ONE refers to the DEChub ONE or the DEChub ONE-MX docking station unless otherwise specified.

For further configuration information, refer to *VNswitch 900 Series Switch Management.*

In This Chapter

Assigning an IP Address

After installing the module in a DEChub ONE docking station, connecting the cables, and assigning an IP address, you need to configure the module. Do this using one of the following methods:

- A Telnet session to access the command line interface

- Through the command line interface, which is accessed through a terminal connected to the setup port on the DEChub ONE docking station

- Through clearVISN MultiChassis Manager

The setup port provides menus that allow you to access the VNswitch 900EF module. These menus allow you to set up the module for basic connectivity. After setup, you can configure the module's software using commands. You can access these commands remotely via TCP/IP Telnet, or locally through the setup port on a DEChub ONE docking station.

To perform a Telnet session, you must assign an IP address. To do this, complete the following steps:

Step	Action
1	Install the module into the DEChub ONE docking station.
2	Select the IP Configuration option from the menu.
3	Set the in-band IP address.
4	Set the default gateway, if necessary.
5	Return to the `VNswitch 900EF INSTALLATION MENU` and select `[2] Restart with Current Settings`.
6	Open a Telnet session into the module from the management station for further configuration.
	To access the configuration menus, press Return on the setup port device until the `VNswitch 900EF INSTALLATION MENU` appears.
	For further configuration information, refer to *VNswitch 900 Series Switch Management.*

Using Menus to Configure the Module

This section describes the options that are available from the `VNswitch 900EF INSTALLATION MENU` when the module is installed in the DEChub ONE docking station. Depending on the configuration state of the module, some options may vary.

To modify the configuration, select `[5] Go to Local Console`.

The following example shows the dialog associated with this option:

```
   VNswitch 900EF
  ===============================================================

             VNswitch 900EF INSTALLATION MENU

          [1]  Reset with Factory Defaults
          [2]  Reset with Current Settings
          [3]  Show Current Settings
          [4]  Configure IP
          [5]  Go to Local Console

   ===============================================================

  Enter selection:  5  <Return>
```

[1] Reset with Factory Defaults

This option initializes the module's configuration to factory default values by resetting the module's nonvolatile configuration storage parameters and restarting the module. To restart the module without losing the settings, use option [2] Restart with Current Settings.

CAUTION

This action deletes all configured settings and replaces them with factory default values. All configuration settings are lost.

The following example shows the dialog associated with this option:

```
VNswitch 900EF
=============================================================

              RESET WITH FACTORY DEFAULTS


 * * * * * * * * * * * * * * * * * * * * * * * *  *
 *         IMPORTANT!    IMPORTANT!    IMPORTANT!   *
 * * * * * * * * * * * * * * * * * * * * * * * *  * *
  This selection will delete the current configuration
  settings and reset the system with the factory default
  settings. All configuration settings will be lost.
  * * * * * * * * * * * * * * * * * * * * * * * * * *
=============================================================
     Press Y to confirm [N]:  <Return>
     Press Return for Main Menu...
```

[2] Reset with Current Settings

This option resets the module but leaves the module's configured nonvolatile configuration storage parameters at their current values. Allow approximately one minute for the module to restart.

The following example shows the dialog associated with this option:

```
VNswitch 900EF
=============================================================
              RESET WITH CURRENT SETTINGS

   This selection will reset your system with the current
    configuration settings.
=============================================================
Press Y to confirm [N] :   <Return>
Press Return for Main Menu...
```

[3] Show Current Settings

This option shows the module's current settings. If the module is being configured for the first time, some fields are blank.

The following example shows the dialog associated with this option:

```
VNswitch 900EF

==================================================================
VNswitch 900EF, 12 enet, 1 FDDI, #1083,SW=v 1.0
SysUpTime                                : 6 days 00:03:18 28 resets
SNMP Read/Write Community            : public
 Default Gateway                         : Not configured


Interface      IP Address      Subnet Mask       Other Info

In-Band        16.20.216.91    255.255.255.0     08-00-2B-A6-0E-05
OBM Port       16.20.66.156    255.255.255.0     Speed 9600 bps
==================================================================

            Press Return for Main Menu...
```

[4] Configure IP

This option provides you with IP configuration selections.

NOTE

For any of the IP Configuration menu options to take effect, the module needs to
be reset. Use [2] Reset with Current Settings from the VNswitch
900EF INSTALLATION MENU. Allow approximately one minute for the
module to restart and complete self test.

The following example shows the dialog associated with this option:

```
VNswitch 900EF
===========================================================

                    IP CONFIGURATION

   * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

   Configuration will not take effect until module is
   restarted
   * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

       [1]  Set SNMP Read/Write Community

       [2]  Set In-Band Interface IP Address

       [3]  Set Out-of-Band Interface IP Address

       [4]  Set Default Gateway

       [5]  Return to Main Menu

===========================================================

   Enter selection number : 1   <Return>
```

The following pages describe the IP Configuration options:

Topic	Page
[1] Set SNMP Read/Write Community	5-8
[2] Set In-Band Interface IP Address	5-9
[3] Set Out-of-Band Interface IP Address	5-10
[4] Set Default Gateway	5-11

[4] Configure IP

[1] Set SNMP Read/Write Community

This option prompts you to enter the module's read/write community name. The
community name can be used for read/write access control. The read/write community
name is case sensitive. The default is public.

The following example shows the dialog associated with this option:

```
   VNswitch 900EF
=================================================================
                    SET SNMP READ/WRITE COMMUNITY

Format:  The format for a community name is a string,
           consisting of 4 to 31 printable ASCII characters, that
           describes the relationship between an SNMP agent and
           one or more SNMP managers. The string defines the
           authentication mechanism that is employed to validate
           the use of the community by the sending SNMP entity.
=================================================================
   Enter the community string [public] : <Return>

   SNMP Read/Write community string set.

     Press Return for IP Configuration Menu...
```

[2] Set In-Band Interface IP Address

This option prompts you to change or enter the module's in-band IP address, subnet mask, and default gateway for the in-band interface. If an IP address was previously configured, the screen displays an in-band IP address.

You do not need to configure the module with a subnet mask for SNMP communications with management stations located on the same subnet as the module.

The factory default setting is no in-band address.

The following example shows the dialog associated with this option:

```
 VNswitch 900EF
 ================================================================

             IN-BAND INTERFACE IP ADDRESS CONFIGURATION

 Format: The standard 4 octet dotted decimal notation in which
          each octet of the address is represented as a decimal
 .        value, separated by a '.' character.

                       example: 16.20.40.156

 To delete the IP address, enter 0 in the appropriate address
 field.

 Interface      IP Address      Subnet Mask       Other Info

  In-Band       16.20.216.91    255.255.255.0     08-00-2B-A3-CD-08
  OBM Port      16.20.66.156    255.255.255.0     Speed 9600 bps

 ================================================================

 Enter the IP address [16.20.126.24] : 16.20.54.156 <Return>

 Enter the Subnet Mask [255.0.0.0] : 255.255.0 0 : <Return>

          Press Return for IP Configuration Menu.....
```

[3] Set Out-of-Band Interface IP Address

This option prompts you to change or enter the IP address and subnet mask for the out-of-band interface.The module does not need to be configured with a subnet mask for SNMP communications when management stations are on the same subnet as the module.

The format for these values is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.).

See *DEChub ONE Installation* or *DEChub ONE-MX Installation* for OBM port cabling information.

The following example shows the dialog associated with this option:

```
VNswitch 900EF
===========================================================

          OUT-OF-BAND INTERFACE IP ADDRESS CONFIGURATION

Format: The standard 4 octet dotted decimal notation in which
each octet of the address is represented as a decimal value,
separated by a '.' character.

                    example: 16.20.40.156
 .

To delete the address, enter 0 in the appropriate address field.
===========================================================
Interface   IP Address     Subnet Mask        Other Info
In-band     16.20.216.91   255.255.255.0      08-00-2B-A3-CD-08
OBM Port    16.20.66.156   255.255.255.0       Speed 9600 bps
===========================================================
Enter the IP address [16.20.66.156] : 16.20.54.155 <Return>
Enter the Subnet Mask [255.255.255.0] : 255 225 192 0 <Return>
Press Return for IP Configuration Menu ...
```

[4] Set Default Gateway

This option allows you to set the default gateway for the in-band interface. This is the address of a router that the module uses when communicating with a remote host. The default gateway address must be an address in the same subnet as your in-band address.

The following example shows the dialog associated with this option:

```
VNswitch 900EF
============================================================
        SET IN-BAND INTERFACE DEFAULT GATEWAY ADDRESS


Format: The standard 4 octet dotted decimal notation in which
         each octet of the address is represented as a decimal
         value, separated by a '.' character.

                    example: 16.20.40.156


   To delete the address, enter 0 in the appropriate
   address field.
 ============================================================
    Default Gateway [] : 16.126.16.254 <Return>

    Default Gateway Address Set.

        Press Return for IP Configuration Menu . . .
```

[5] Go to Local Console

To perform additional configurations on the module, select [5] Go To Local Console from the VNswitch 900EF INSTALLATION MENU.

The system will display the copyright statements and the following prompt:

```
MOS Operator Control

*
```

From the * prompt, you can perform additional configuration. Refer to *VNswitch 900 Series Switch Management* for further configuration information.

Chapter 6

Configuring the Module in a DIGITAL MultiSwitch 900

Overview

Introduction

This chapter describes how to configure your DIGITAL VNswitch 900EF module when it is installed in a DIGITAL MultiSwitch 900.

In This Chapter

Assigning an IP Address

After installing the module in a DIGITAL MultiSwitch 900, connecting the cables, and assigning an IP address, you need to configure the module. Do this through one of the following methods:

- A Telnet session to access the command line interface

- Through the command line interface, which is accessed through a terminal connected to the setup port on the DIGITAL MultiSwitch 900

- Through clearVISN MultiChassis Manager

To perform a Telnet session, you must assign an IP address. To do this, complete the following steps:

Step	Action
1	Install the module into a slot on the DIGITAL MultiSwitch 900.
2	Redirect the DIGITAL MultiSwitch 900 Chassis Manager (formerly Hub Manager) setup port to the VNswitch 900EF slot.
3	Select the IP Configuration option from the menu.
4	Set the in-band IP address.
5	Set the default gateway, if necessary.
6	Return to the `VNswitch 900EF INSTALLATION MENU` and select `[2] Restart with Current Settings`.
7	Open a Telnet session into the module from the management station for further configuration. The system displays copyright statements and the following prompt:

```
MOS Operator Control
*
```

After the system prompt (*) appears, refer to *VNswitch Switch Management* for further configuration information.

DIGITAL MultiSwitch 900 INSTALLATION MENU

The following example shows the DIGITAL MultiSwitch 900 INSTALLATION MENU.

To access the module's setup screen, you must choose option [9] Start Redirect Mode.

```
DIGITAL MultiSwitch 900
============================================================

        DIGITAL MultiSwitch 900 INSTALLATION MENU

           [1]  Reset with Factory Defaults
           [2]  Reset with Current Settings
           [3]  Show Current Settings
           [4]  Configure IP
           [5]  Dump Error Log
           [6]  Downline Upgrade
           [7]  Configure Out-of-Band Port
           [8]  Start Event Display Mode
           [9]  Start Redirect Mode
           [10] Product-Specific Options
================================================================

       Enter selection number: 9 <Return>

            Press Return for Main Menu ...
```

[9] Start Redirect Mode

The Start Redirect Mode option redirects the DIGITAL MultiSwitch 900 Chassis Manager setup port to the setup port of any network module (such as the VNswitch 900EF) that is installed into the MultiSwitch 900. This option allows you to configure or obtain status of an installed network module by accessing the specified network module's installation menu.

After you choose the Start Redirect Mode option from the DIGITAL MultiSwitch 900 INSTALLATION MENU, the screen prompts you for a slot number, as shown in the following example. After you enter the number of the slot in which the VNswitch 900EF is installed, the console is redirected to this slot.

NOTE

The slot number may change to reflect the slot number in which your module is installed.

The following example shows you how to select a slot number:

```
Enter selection: 9
=======================================================
Enter the slot number for redirection (1-8):  3 <Return>
Console redirected to 3: VNswitch 900EF
Attempting connection [Ctrl/C to Abort]...
```

If the redirection is successful, after you press Return, the VNswitch 900EF INSTALLATION MENU appears on your screen.

Using Menus to Configure the Module

The following screen shows the options available from the VNswitch 900EF INSTALLATION MENU when the module is operating in a MultiSwitch 900 configuration. Depending on the configuration state of the module, some options may vary.

Note that when your module is installed in the MultiSwitch 900, the slot number where the module is installed appears at the top of the menu.

```
VNswitch 900EF - slot 3
=========================================================
            VNswitch 900EF INSTALLATION MENU


            [1] Reset with Factory Defaults
            [2] Reset with Current Settings
            [3] Show Current Settings
            [4] Configure IP
            [5] Go to Local Console

   [Ctrl/C] Return to Chassis Manager Installation Menu

=========================================================

            Enter selection:  5  <Return>
```

[1] Reset with Factory Defaults

This option reboots the module, causing its configured nonvolatile random access memory (NVRAM) parameters to be initialized to factory default values followed by a module reset. Allow approximately one minute for the module to reboot and complete self-test. To restart the module without losing the settings, use option [2] `Restart with Current Settings`.

CAUTION

This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.

The following example shows the dialog associated with this option:

```
 VNswitch 900EF - slot 3
 ===========================================================

              RESET WITH FACTORY DEFAULTS


  * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
         IMPORTANT!    IMPORTANT!    IMPORTANT!
  * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
     This selection will delete the current configuration
     settings and reset the system with the factory default
     settings. All configuration settings will be lost.
  * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 ===========================================================
      Press Y to confirm [N]:  <Return>

      Press Return for Main Menu...
```

[2] Reset with Current Settings

This option resets the module but leaves the module's configured nonvolatile configuration storage parameters at their current values.

NOTE

Allow approximately one minute for the module to restart.

The following example shows the dialog associated with this option:

```
VNswitch 900EF - slot 3
===============================================================
                RESET WITH CURRENT SETTINGS

   This selection will reset your system with the current
   configuration settings.

===============================================================

Press Y to confirm [N] :   <Return>
Press Return for Main Menu ...
```

[3] Show Current Settings

This option shows the module's current settings. If the module is being configured for the first time, some fields are blank.

The following example shows the display associated with this option:

```
VNswitch 900EF - slot 3
======================================================================
VNswitch 900EF, 12 enet, 1 FDDI, #1083  SW=v1.0
 SysUpTime                              : 6 days 00:03:18    28 resets
SNMP Read/Write Community       : public
Default Gateway                 : Not Configured

Interface     IP Address      Subnet Mask      Other Info

In-Band       16.20.216.91   255.255.255.0   08-00-2B-A6-0E-05
OBM Port      16.20.66.156   255.255.255.0   Speed 9600 bps

======================================================================
        Press Return Key to Continue .
```

[4] Configure IP

This option provides you with IP configuration selections.

NOTE

For any of the IP Configuration menu options to take effect, the module needs to be restarted. Use `[2] Restart with Current Settings` from the `VNswitch 900EF INSTALLATION MENU`. Allow approximately one minute for the module to restart and complete self-test.

The following example shows the dialog associated with this option:

```
VNswitch 900EF - slot 3
============================================================
                   IP CONFIGURATION

[1] Set SNMP Read/Write Community
[2] Set In-Band Interface IP Address
[3] Set Out-of-Band Interface IP Address
[4] Set Default Gateway
[5] Return to Main Menu
============================================================
  Enter selection number : 1   <Return>
```

The following pages describe the IP Configuration options:

Topic	Page
[1] Set SNMP Read/Write Community	6-10
[2] Set In-Band Interface IP Address	6-11
[3] Set Out-of-Band Interface IP Address	6-12
[4] Set Default Gateway	6-13

[4] Configure IP

[1] Set SNMP Read/Write Community

This option prompts you to enter the module's read/write community name. The community name can be used for read/write access control. The read/write community name is case sensitive. The default is `public`.

The following example shows the dialog associated with this option:

```
      VNswitch 900EF - slot 3
  ================================================================
                    SET SNMP READ/WRITE COMMUNITY

 Format:  The format for a community name is a string, consisting
          of four to 31 printable ASCII characters, that
          describes the relationship between an SNMP agent and
          one or more SNMP managers. The string defines the
          authentication mechanism that is employed to validate
          the use of the community by the sending SNMP entity.

  ================================================================
  Enter the community string [public] : public <Return>

  SNMP Read/Write community string set.

  Press Return for IP Configuration Menu ...
```

[2] Set In-Band Interface IP Address

This option prompts you to change or enter the module's in-band IP address, subnet mask, and default gateway for the in-band interface. If an IP address was previously configured, the screen displays an in-band IP address. The factory default setting is no in-band address.

You do not need to configure the module with a subnet mask for SNMP communications with management stations located on the same subnet as the module.

The following example shows the dialog associated with this option:

```
VNswitch 900EF - slot 3
==================================================================

            IN-BAND INTERFACE IP ADDRESS CONFIGURATION

 Format: The standard 4 octet dotted decimal notation in which
          each octet of the address is represented as a decimal
·         value, separated by a '.' character.

                     example: 16.20.40.156

To delete the IP address, enter 0 in the appropriate address
field.

Interface      IP Address      Subnet Mask      Other Info

 In-Band       16.20.216.91    255.255.255.0    08-00-2B-A3-CD-08
 OBM Port      16.20.66.156    255.255.255.0    Speed 9600 bps

==================================================================

Enter the IP address [16.20.126.24] : 16.20.54.156 <Return>

Enter the Subnet Mask [255.0.0.0] : 255.255.0 0 : <Return>

          Press Return for IP Configuration Menu.....
```

[3] Set Out-of-Band Interface IP Address

This option prompts you to change or enter the IP address and subnet mask for the out-of-band interface. The module does not need to be configured with a subnet mask for SNMP communications when management stations are on the same subnet as the module.

The format for these values is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.).

If the module is in a MultiSwitch 900, the OBM feature allows you to manage your module through the OBM port located on the MultiSwitch 900. To enable out-of-band management, you need to assign an OBM IP address.

The following example shows the dialog associated with this option:

```
 VNswitch 900EF - slot 3
 =================================================================

           OUT-OF-BAND INTERFACE IP ADDRESS CONFIGURATION


 Format: The standard 4 octet dotted decimal notation in which
         each octet of the address is represented as a decimal
         value, separated by a '.' character.


                   example: 16.20.40.156
 .

  To delete the address, enter 0 in the appropriate address
  field.

=================================================================
Interface      IP Address      Subnet Mask      Other Info

In-band        16.20.216.91   255.255.255.0    08-00-2B-A3-CD-08

OBM Port       16.20.66.156   255.255.255.0     Speed 9600 bps
=================================================================
 Enter the IP address [16.20.66.156] : 16.20.54.155 <Return>

 Enter the Subnet Mask [255.255.255.0] : 255 255 192 0 <Return>

    Press Return for IP Configuration Menu...
```

[4] Set Default Gateway

This option prompts you to set the default gateway, if necessary. This is the address the module uses when communicating with a remote host. The default gateway address must be in the same subnet as your in-band address.

The following example shows the dialog associated with this option:

```
VNswitch 900EF - slot 3
============================================================
          SET IN-BAND INTERFACE DEFAULT GATEWAY ADDRESS

Format: The standard 4 octet dotted decimal notation in which
          each octet of the address is represented as a decimal
          value, separated by a '.' character.

                      example: 16.20.40.156

   To delete the address, enter 0 in the appropriate
   address field.
 ============================================================
    Default Gateway [] : 16.126.16.254 <Return>

    Default Gateway Address Set.

        Press Return for IP Configuration Menu . . .
```

[5] Go to Local Console

To perform additional configurations on the module, select [5] Go To Local Console from the VNswitch 900EF INSTALLATION MENU.

The system will display the copyright statements and the following prompt:

```
MOS Operator Control
*
```

From the * prompt, you can perform additional configuration. Refer to *VNswitch 900 Series Switch Management* for further configuration information.

[10] Product-Specific Options

This option provides product-specific selections when you are using a DIGITAL MultiSwitch 900. When selected, the option allows you to enable and disable the automatic VNbus connection.

```
DIGITAL MultiSwitch 900
=========================================================

                PRODUCT-SPECIFIC OPTIONS

        [1] Enable/Disable Automatic VNbus Connection
        [2] Return to Main Menu

        Enter selection number : 1  <Return>
```

If you select the option [1] Enable/Disable Automatic VNbus Connection the following menu appears:

```
DIGITAL MultiSwitch 900
======================================================================
         ENABLE / DISABLE AUTOMATIC VNbus CONNECTION

 Enabling Automatic VNbus Connection means that certain
 backplane channels will be reserved for a VNbus. The channels
 will be reserved as soon as this feature is Enabled, and will
 remain reserved until this feature is Disabled. When
 a VNswitch module is inserted into the chassis, it will
 connect automatically to the VNbus. The Enable function
 will return an error if backplane channels cannot be
 reserved due to existing conditions.

 Disabling Automatic VNbus Connection means that no
 backplane channels will be reserved for a VNbus. Inserting
 VNswitch modules will not create connections to a VNbus.
 If any VNswitch modules are connected to a VNbus when the
 Disable mode is selected, the VNbus will remain until the
 last VNswitch module is removed from the chassis.
======================================================================
Automatic VNbus connection is Enable. Would you like to Disable it? [N]

      Press Return for Product-Specific Options Menu ...
```

Chapter 7

Removing the Module

Overview

Introduction

This chapter describes how to remove the DIGITAL VNswitch 900EF module from a DIGITAL MultiSwitch 900.

To remove the VNswitch 900EF from a DEChub ONE docking station, refer to the *DEChub ONE Installation* manual or the *DEChub ONE-MX Installation* manual.

In This Chapter

Topic	Page
Removing the 10BaseT Cables	7-2
Removing the ANSI Multimode Fiber-Optic Cables (DVNEF-MM Only)	7-3
Unseating the Module	7-4

Removing the 10BaseT Cables

Before unseating the module, the UTP/ScTP and LDM cables must be removed. To remove the cables (Figure 7-1 and Figure 7-2), complete the following steps:

Step	Action
1	Press the release tab (**1**) on the side of the connector
2	Pull out the cable.

Figure 7-1: Removing the UTP/ScTP Cables

NPB-0464-96F
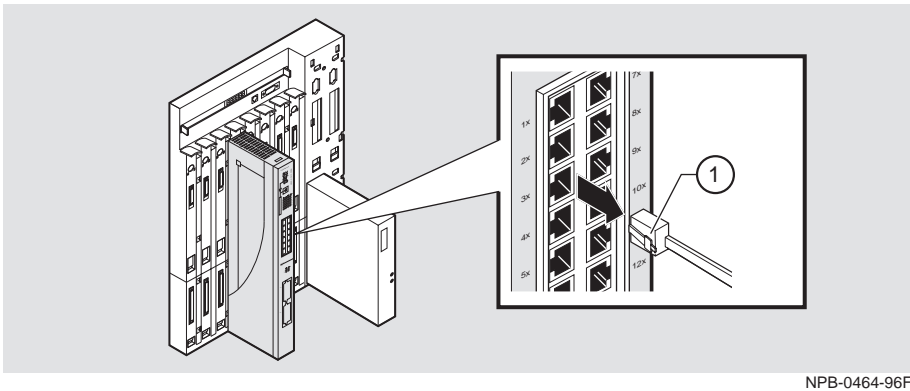
Figure 7-2: Removing the LDM Cable
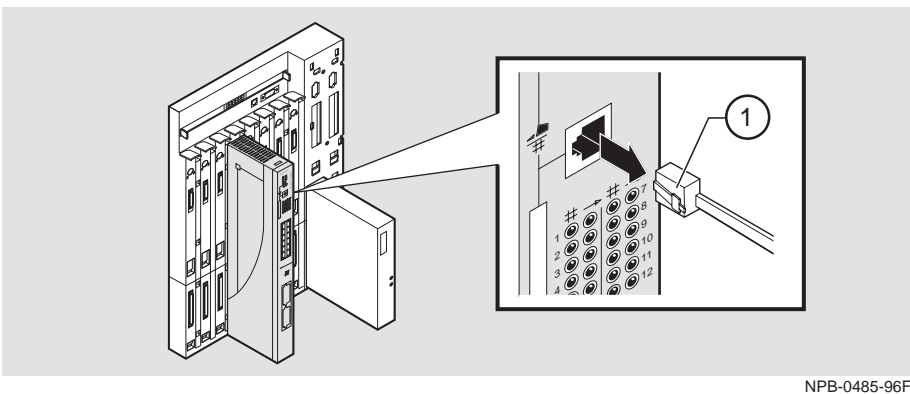
NPB-0485-96F

Removing the ANSI Multimode Fiber-Optic Cables (DVNEF-MM Only)

To remove the ANSI multimode fiber-optic cables (Figure 7-3), complete the following steps:

Step	Action
1	Press the locking clips (**1**) on the cable plug.
2	Disconnect the cable.
3	Replace the dust caps.

Figure 7-3: Removing the ANSI Multimode Fiber-Optic Cables
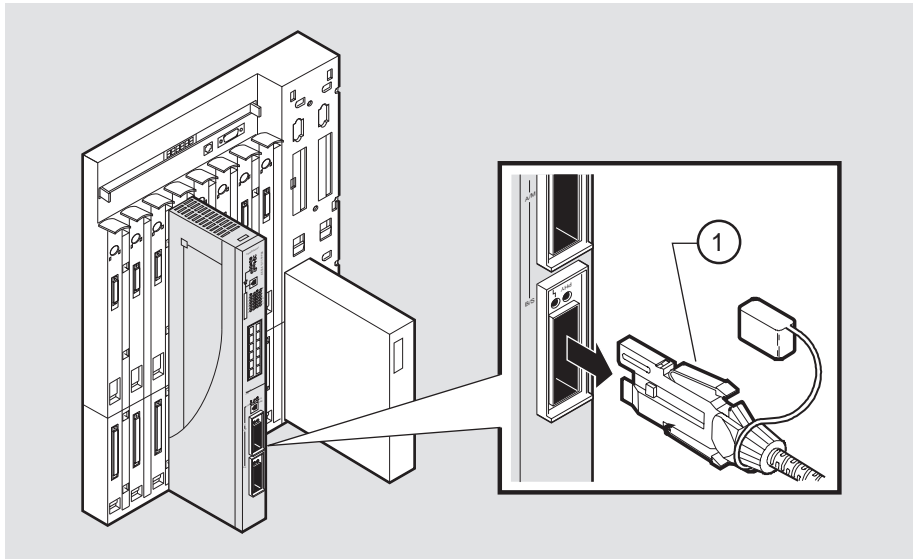
NPB-0722-96F
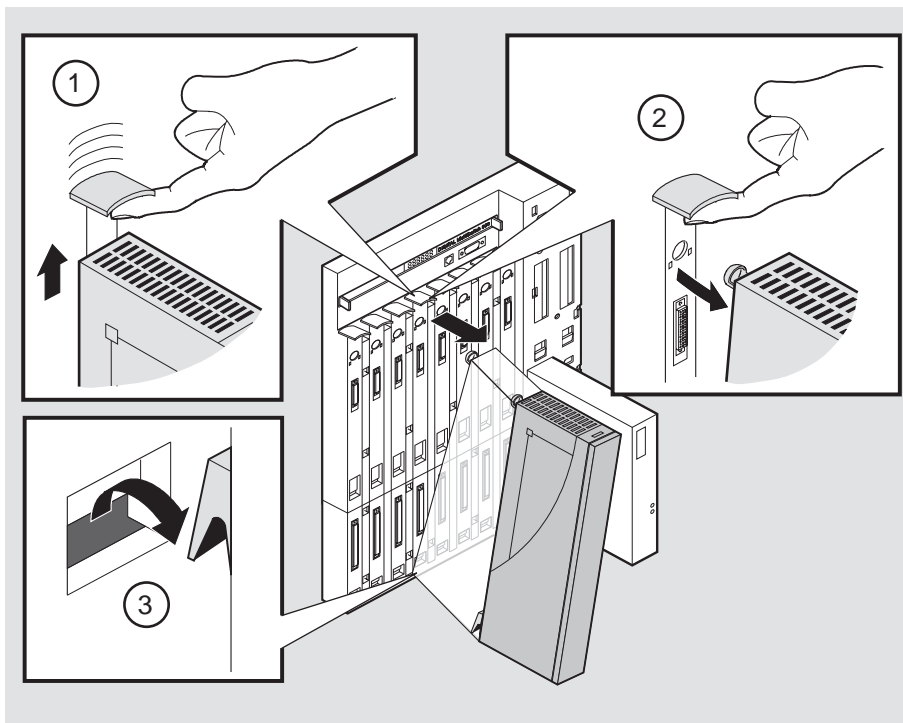
Unseating the Module

To unseat the module from the DIGITAL MultiSwitch 900 (Figure 7-4), complete the following steps:

Step	Action
1	Lift the release lever **(1)** at the top of the DIGITAL MultiSwitch 900 slot.
2	While holding up the release lever **(2)**, pivot the module back on its bottom mounting tab.
3	Lift the module **(3)** from the backplane.

Figure 7-4: Unseating the Module

NPB-0008-95F

Appendix A

Problem Solving

Overview

Introduction

This appendix describes how to diagnose and solve problems with the module using the light-emitting diode (LED) displays.

In This Appendix

Topic	Page
Normal Power-up	A-2
LED Descriptions	A-3
Problem Solving Using LEDs	A-5

Normal Power-up

When the module's power is initially turned on, the following events occur:

Event	Description
1	The module's Power LED lights as soon as power is applied to the unit.
2	The module initiates its built-in self-test. Flashing Port State LEDs and Port Activity LEDs indicate that the module is running various subroutines as part of the self-test.
3	After the successful completion of self-test (within 60 seconds after power is applied), the Module OK LED lights, and remains lit.
4	The remaining LEDs indicate their operational status.

Refer to Table A-1 for a list of states that are possible for each of the module's LEDs.

For descriptions of the Mod-FDDI LEDs, refer to the *FDDI Modular Media Interface Cards Installation* manual.

LED Descriptions

The module's LEDs provide dynamic indications of the status of the module. The LEDs can be in various states (on, off, or flashing), and can change color (green or yellow) depending on the operational status of the module or the level of activity on the network.

Table A-1 shows the states that are possible for each of the module's LEDs.

Table A-1: Module LED States

LED	Off	On (Green)	On (Yellow)	Flashing
Power LED	No power.	Module is receiving power.	N/A	N/A
Module OK LED	Self-test has failed or is in progress.	Module passed self-test.	N/A	Indicates a downline load or a nonfatal failure.
VNbus Status LED	No connection	See release notes.[1]	Module is properly attached to one of the backplane VNbuses.	**(Green)** VNbus is disconnected by management software.
VNbus Activity LED	No traffic.	N/A	Heavy traffic. See release notes.[1]	**(Yellow)** Port is receiving/ transmitting traffic on the backplane.
LDM Port Status LED	No link established.	Proper link established.	N/A	Disabled.
LDM Activity LED	N/A	Indicates high traffic.	N/A	Transmitting or receiving packets.

(continued on next page)

[1]The VNbus Status and Activity LEDs have different indications during a load state. Refer to the release notes for current descriptions.

LED Descriptions

LED	Off	On (Green)	On (Yellow)	Flashing
Port Status LEDs	No valid link is being received on the port. No cable is attached. Port is broken.	Port is enabled onto the front panel and is receiving a valid link.	Port failure.	**(Green)** Port is management disabled for forwarding but is still receiving a valid link.
Port Activity LEDs	No traffic is being received/transmitted to the port.	Port is enabled onto the front panel and is receiving.	Port is enabled onto a backplane channel and is receiving a valid link. (In a DEChub ONE docking station or DIGITAL MultiSwitch 900).	**(Green)** Port is receiving/transmitting traffic on the front panel. **(Yellow)** Port is receiving/transmitting traffic on the backplane channel.
ModPMD Status LED (MM version only)	Tree topology, M-type port.	Tree topology, S-type port.	The diagnostics have detected a fault.	**(Green)** Dual ring, A port or B port.
ModPMD PHY LED (MM version only)	Port is unable to receive, or ready to connect (if no cable is present).	Card is working properly, and there is a link established.	The link error rate limit has been exceeded.	**(Yellow)** There is an illegal connection. **(Alternately green and yellow)** The card is in standby (dual-homing) mode.

Problem Solving Using LEDs

When diagnosing a problem with the module, note that the problem is often indicated by the combined states of the module LEDs. Table A-2 and Table A-3 list the typical combined states of the LEDs for various error conditions that can occur during initial installation of the device, along with probable causes and corrective actions to take.

NOTE

If any of the following problems persist after taking corrective action, either replace the module or contact your DIGITAL service representative.

Table A-2: Problem Solving Using the Module LEDs

Symptom	Probable Cause	Corrective Action
Power LED is off.	The module is not receiving +5 Vdc.	Check the power status on the Chassis Manager (formerly Hub Manager) status display.
		If the Chassis Manager status display indicates that power is available for this module, press the release lever and reseat or remove the module.
		Inspect the module's 48- or 160-pin connector for bent or broken pins. If any are bent or broken, replace the module.
Module OK LED is off.	Self-test failed.	If the LED does not light within 60 seconds, lift and reseat the release lever momentarily to repeat the self-test.

(continued on next page)

Symptom	Probable Cause	Corrective Action
Module OK LED is flashing, but module continues to operate normally.	A nonfatal error occurred.	Contact your service representative.
VNbus Status LED is off.	No connection.	Check that the module is properly attached to one of the backplane VNbuses and that the VNbus is connected by management software.
VNbus Activity LED is off.	There is low traffic activity or no traffic activity.	Ensure that there is traffic activity. If the VNbus Activity LED fails to turn on, then turn the module off momentarily by removing it from the power supply. Check that the VNbus Activity LED blinks momentarily during the LED power-up self-test.
	The module or any other unit in the MultiSwitch 900 may not be connected to an active VNbus channel.	Connect a known active VNbus channel to any unit in the MultiSwitch 900.
	If the module is connected to an active VNbus and the VNbus Activity LED is off, the module is defective.	Replace the module.
LDM Port Status LED is off.	No link established.	Check that a proper link has been established.
Port Status LEDs are off.	No cable attached or port is broken.	Check that the cable type is correct.

Symptom	Probable Cause	Corrective Action
Port Activity LEDs are off.	There is low or no port activity.	Ensure that the port is present. If the Port Activity LED still fails to turn on, then turn the module off momentarily by removing it from the power supply. Check that the Port Activity LEDs blink momentarily during the LED power-up self-test.
	Ensure that the cable has activity on it. If the LED still fails to turn on, the module is defective.	Replace the module.

Table A-3 lists the typical combined states of the ModPMD LEDs for various error conditions that can occur during initial installation of the device, along with probable causes and corrective actions to take.

Table A-3: Problem Solving Using the ModPMD LEDs

Symptom	Probable Cause	Corrective Action
FRU LED is off.	Tree topology, M-type port.	No action necessary.
FRU LED is green.	Tree topology, S-type port.	No action necessary.
FRU LED is yellow.	The diagnostics have detected a fault.	If possible, insert the card into another slot to determine whether the card or the host module contains the fault. If the card contains the fault, replace your card or contact your DIGITAL representative.
FRU LED is blinking green.	Dual ring, A port or B port.	No action necessary.
PHY LED is off.	The port is unable to receive from the neighboring switch or station indicating that there might be a connection problem.	Check your connection

Problem Solving Using LEDs

Symptom	Probable Cause	Corrective Action
PHY LED is green.	The card is working properly and a link is established.	No action necessary.
PHY LED is yellow.	The link error rate limit has been exceeded.	Perform loopback testing to isolate the problem.
PHY LED is blinking green.	The card has been disabled by network management.	Enable the card, if necessary.
PHY LED is blinking yellow.	Illegal connection.	Check the connections.
PHY LED is alternately blinking green and yellow.	The card is in standby (dual-homing) mode.	No action necessary.

Appendix B

Connectors and Adapters

Overview

This appendix provides information on the connectors, their pin assignment, and adapters used on the DIGITAL VNswitch 900EF module.
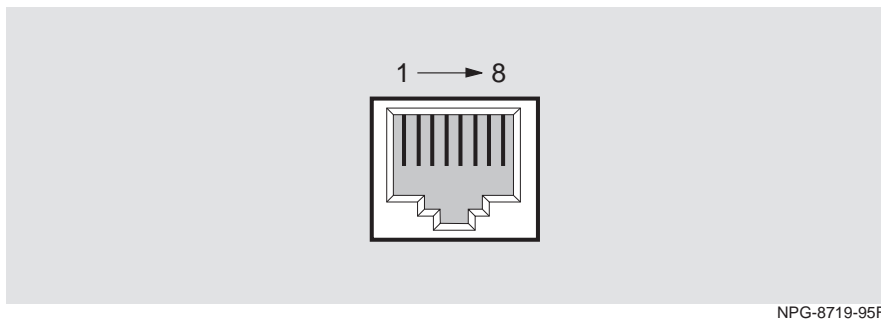
In This Appendix

Connectors and Pin Assignments

10BaseT Port (8-Pin MJ) Crossover Connector

The VNswitch 900EF module uses crossover connectors for its twelve 10BaseT front panel ports. Figure B-1 shows the 8-pin MJ crossover connector and its pin assignments.

Figure B-1: 8-Pin MJ Crossover Connector

NPG-8719-95F

Table B-1 lists the pin assignments for the 8-pin MJ crossover connector.
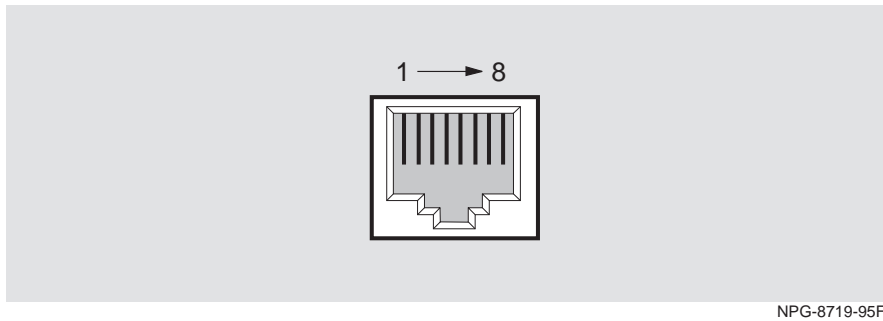
Table B-1: 8-Pin MJ Crossover Pin Assignments

Pin	Assignment	Pin	Assignment
1	RX+	5	Unused
2	RX-	6	TX-
3	TX+	7	Unused
4	Unused	8	Unused

10BaseT Port (8-Pin MJ) Straight-Through Connector

The VNswitch 900EF module uses a straight-through connector for its LDM 10BaseT front panel port. Figure B-2 shows the 8-pin MJ straight-through connector and its pin assignments.

Figure B-2: 8-Pin MJ Straight-Through Connector

NPG-8719-95F

Table B-2 lists the pin assignments for the 8-pin MJ straight-through connector.

Table B-2: 8-Pin MJ Straight-Through Pin Assignments

Pin	Assignment	Pin	Assignment
1	TX+	5	Unused
2	TX-	6	RX-
3	RX+	7	Unused
4	Unused	8	Unused

Optical Bypass Relay Port (6-pin MJ) Connector (DVNEF-MM Version Only)

WARNING

To prevent personal injury or equipment damage, do not insert telecommunications cabling into the optical bypass relay connector.

Figure B-3 shows the 6-pin MJ connector and its pin assignments.
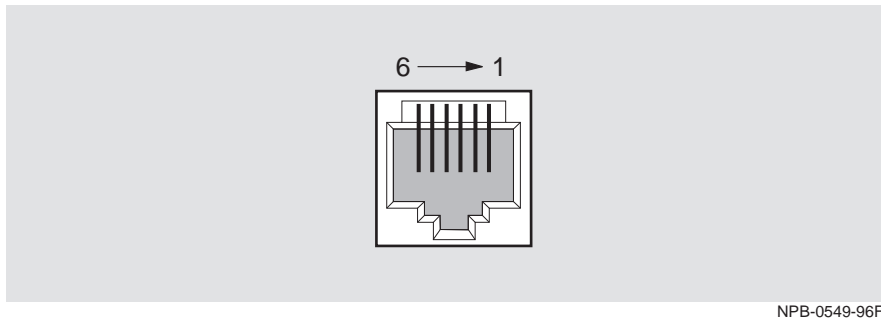
Figure B-3: 6-Pin MJ Connector

NPB-0549-96F

Table B-3 lists the pin assignments for the 6-pin MJ connector.

Table B-3: 6-Pin MJ Pin Assignments

Pin	Assignment
1 and 2	Relay drive: +5 Vdc @ 200 mA (max.)
3, 4, and 6	Return, grounded internally
5	Bypass present, must be externally grounded to pin 3, 4, or 6

ANSI Multimode Fiber-Optic Cable and Connector Information

The following ANSI multimode fiber-optic cables and loopback connectors are available from DIGITAL:

Cable Description	Order Number
FDDI to FDDI	BN24B-xx[1]
FDDI to 2.5 ST-type	BN24D-xx[1]
Loopback connector	12-32005-01

[1] The symbol xx represents the cable length. The available cable lengths are described in the *OPEN DECconnect Applications Guide*.

Figure B-4 and Figure B-5 show the ANSI multimode cable and loopback connector.
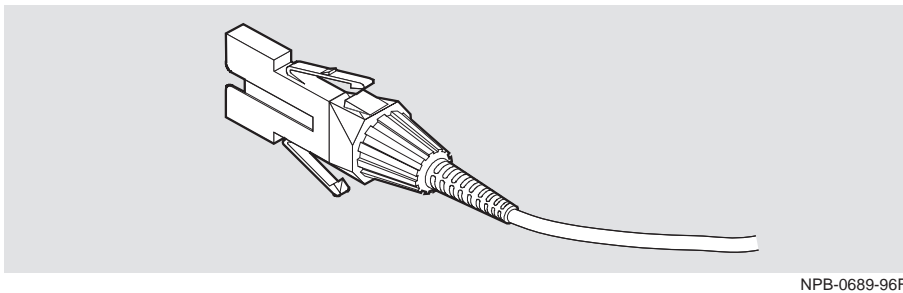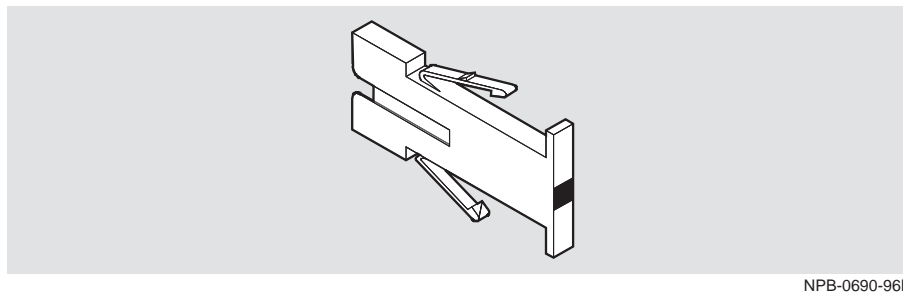
Figure B-4: ANSI Multimode Cable

NPB-0689-96F

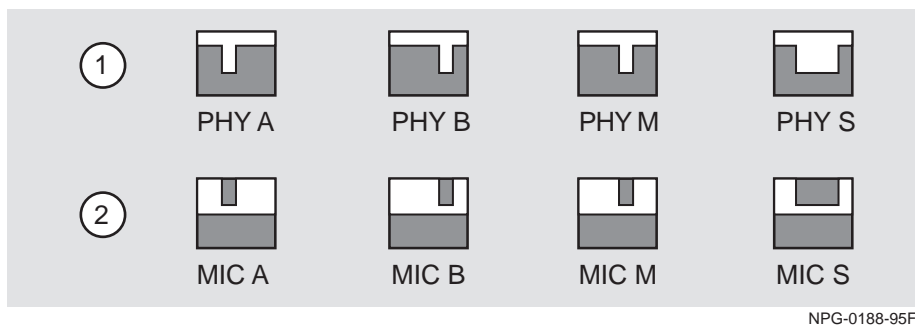**Figure B-5: ANSI Multimode Loopback Connector**

NPB-0690-96F

Port Keying

DIGITAL BN24B and BN24D cables are color-key coded on the top of the duplex connector as follows:

Convention	Description
Red	PHY A ports
Blue	PHY B ports
Green	PHY M ports

Figure B-6 shows the keying for the receptacles and plugs.

Figure B-6: Port Keying

PHY A   PHY B   PHY M   PHY S

MIC A   MIC B   MIC M   MIC S

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Item	Description
1	Receptacles
2	Plugs

Table B-4 lists a description of connector types.

Table B-4: ANSI Multimode Connector Types
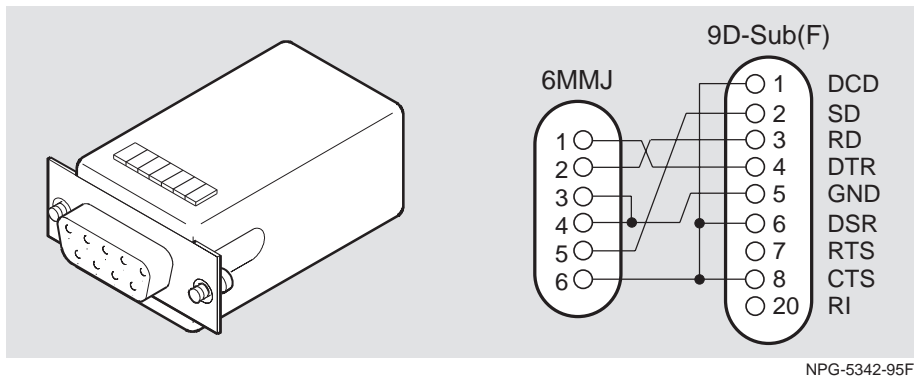
Connector	Description
MIC A	Primary in/secondary out - DAS PHY A port
MIC B	Primary out/secondary in - DAS PHY B port
MIC M	PHY M port
MIC S	SAS PHY S port

Adapters

H8571-J Adapter

Figure B-7 shows the H8571-J adapter (6-pin MMJ connector to 9-pin D-sub connector) and its pin assignments.
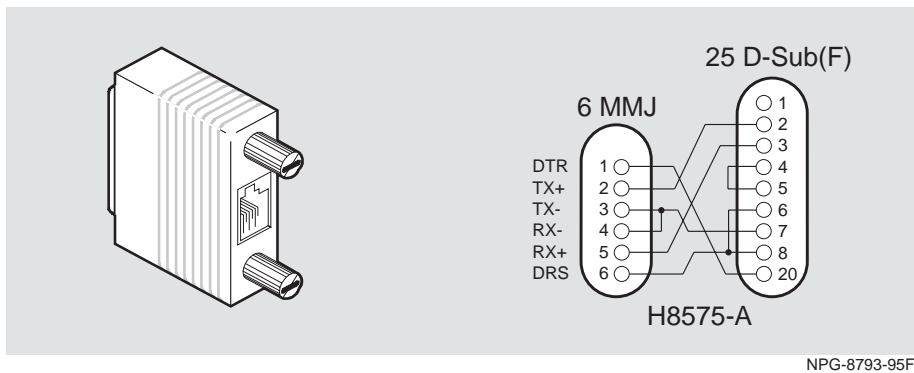
Figure B-7:H8571-J Adapter

NPG-5342-95F

H8575-A Adapter

Figure B-8 shows the H8575-A adapter (6-pin MMJ connector to 25-pin D-sub connector) and its pin assignments.

Figure B-8:H8575-A Adapter

NPG-8793-95F

Appendix C

Product Specifications

Overview

This appendix lists the specifications for the DIGITAL VNswitch 900EF module. It also provides a list of connectors for the VNswitch 900EF module, the DIGITAL MultiSwitch 900, and the DEChub ONE and the DEChub ONE-MX docking stations.

In This Appendix

Topic	Page
Product Specifications	C-2
Acoustical Specifications	C-3
Connectors	C-4

Product Specifications

Table C-1 lists the product specifications for the module.

Table C-1: Product Specifications

Parameter	Specification
Environment	
Operating temperature[1]	5°C to 50°C (41°F to 122°F)
Relative humidity	10% to 95% noncondensing
Altitude	
• Operating	Sea level to 4267 m (14,000 ft)
• Nonoperating	Sea level to 12192 m (40,000 ft)
Power	48.0 W, total power
	8.1 A, 5 Vdc 0.12 A, 12 Vdc 0.5 A, 15 Vdc
Physical	
Height	44.45 cm (17.5 in)
Width	4.45 cm (1.75 in)
Depth	15.25 cm (6 in); 25.40 cm (10.0 in) with a DEChub ONE docking station
Weight	1.94 kg (4.3 lb)
Shock (Class A/B for products weighing under 100 lb)	10 G / 10 ms half sine pulse in three orthogonal axes
Vibration (Class C)	5 to 200 Hz sine sweep @ 0.25 G limited by 0.5mm (0.02 in) displacement DA* 200 to 500 Hz sine sweep @ 0.10 G
Certification	CE, CSA, FCC, TÜV, UL, VCCI, C-TICK

[1]For sites above 2400 m (8,000 ft), decrease the operating temperature specification by 1.8°C for each 1000 m or 3.2°F for each 3200 ft.

Acoustical Specifications

Table C-2 and Table C-3 list the acoustical specifications for the module in English and in German.

Table C-2: Declared Values per ISO 9296 and ISO 7779[1]

Product	Sound Power Level L_{WAd}, B	Sound Pressure Level L_{pAm}, dBA (bystander positions)
	Idle/Operate	Idle/Operate
DVNEF	5.1	37
DVNEF + DEHUA	5.4	40
DVNEF + DEF1H	5.3	40

[1] Current values for specific configurations are available from Digital Equipment Corporation representatives. 1 B = 10 dBA.

Table C-3: Schallemissionswerte Werteangaben nach ISO 9296 und ISO 7779/DIN EN27779[2]

Produkt	Schalleistungspegel L_{WAd}, B	Schalldruckpegel L_{pAm}, dBA (Zuschauerpositionen)
	Leerlauf/Betrieb	Leerlauf/Betrieb
DVNEF	5, 1	37
DVNEF + DEHUA	5, 4	40
DVNEF + DEF1H	5, 3	40

[2] Aktuelle Werte für spezielle Ausrüstungsstufen sind über die Digital Equipment Vertretungen erhältlich. 1 B = 10 dBA.

Connectors

Table C-4 provides a list of connectors for the VNswitch 900EF module, the DIGITAL MultiSwitch 900, and the DEChub ONE and DEChub ONE-MX docking stations.

Table C-4: Connectors

Connectors	Quantity
VNswitch 900EF	
8-pin MJ (10BaseT)	13
6-pin MJ, optical bypass relay (available only on the DVNEF-MM)	1
FDDI multimode ModPMD (available only on the DVNEF-MM)	2
MultiSwitch 900	
8-pin MJ (setup port)	1
DB-9 (OBM)	1
DEChub ONE	
8-pin MJ (setup port)	1
DB-9 (OBM)	1
15-pin D-sub (AUI)	1
DEChub ONE-MX	
8-pin MJ (setup port)	1
6-pin MJ (OBR)	1
DB-9 (OBM)	1
15-pin D-sub (AUI)	1
Redundant power connector (D-sub)	1
ModPMD slots	2

For information on connectors for the card, refer to the *FDDI Modular Media Interface Cards Installation* manual.