

DIGITAL MultiSwitch Fast Ethernet Hub 924TX

Installation and Configuration

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This manual describes how to install, cable, and configure the DIGITAL MultiSwitch Fast Ethernet Hub 924TX when residing in a DIGITAL MultiSwitch 900 (formerly the DEChub 900 MultiSwitch), DIGITAL MultiSwitch 900-4, a DEChub ONE docking station, or a DEChub ONE-MX docking station.

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Contents

Preface

Overview	ix
About this Manual	ix
Intended Audience	ix
Organization	x
Conventions	xi

Safety

Overview	xiii
----------------	------

1 Product Description

Overview	1-1
Introduction	1-1
In This Chapter	1-1
What Is the DIGITAL MultiSwitch Fast Ethernet Hub 924TX?	1-3
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Features	1-4
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Management	1-5
Port Group Switching	1-5
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Port Configuration	1-5
MIB Support	1-6
Remote Monitoring (RMON)	1-6
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Front Panel	1-7
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Back Panel	1-9
Network Topologies for Class II Hubs	1-10
100BufFX Uplink Configuration	1-11
User Support in a Class II Environment	1-12
Maximum Number of Users	1-12
What is the DIGITAL MultiSwitch 900?	1-13
Network Management Architecture	1-13

DIGITAL MultiSwitch 900 Features	1-13
Management Features	1-14
What is the DIGITAL MultiSwitch 900-4?	1-16
DIGITAL MultiSwitch 900-4 Features	1-16
The Management Agent Module	1-17
What are Docking Stations?	1-18
DEChub ONE and DEChub ONE-MX Docking Stations	1-18
Common Features	1-18

2 Installing A Modular Media Interface

Overview	2-1
Introduction	2-1
In This Chapter.	2-1
Installing DIGITAL MultiSwitch Fast Ethernet Hub 924TX Option Cards.	2-2
Required Tools.	2-3
Removing the Dust Cover.	2-4
Installing the MM-100	2-5

3 Module Installation and Setup Port Cabling

Overview	3-1
Introduction	3-1
In This Chapter.	3-1
Installing the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DIGITAL MultiSwitch 900.	3-2
Task 1: Compare the Power Ratings	3-3
Task 2: Seat the Module in the DIGITAL MultiSwitch 900	3-4
Task 3: Verify Initial LED Operation	3-5
Task 4: Connect the Setup Port Cables to the DIGITAL MultiSwitch 900.	3-6
Connecting Cables to the 100BASE-TX Ports on the Module	3-8

4 Configuring the Module in a DIGITAL MultiSwitch 900

Overview	4-1
Introduction	4-1
In This Chapter.	4-1
Configuring the Module in a DIGITAL MultiSwitch 900	4-2
[9] Start Redirect Mode.	4-3
Using the Module's Menus	4-4
[1] Restart with Factory Defaults	4-5

[2] Restart with Current Settings	4-6
[3] Show Current Settings	4-7
[4] Configure IP	4-9
[1] Set SNMP Read/Write Community	4-10
[2] Add SNMP Trap Addresses	4-11
[3] Delete SNMP Trap Addresses	4-12
[4] Set In-Band Interface IP Address	4-13
[5] Enable/Disable BootP	4-14
[5] Dump Error Log	4-15
[6] Downline Upgrade	4-16
Before You Begin	4-16
Assigning an IP Address	4-16
Using the DLU Process	4-17
Initializing the Process	4-18
The DLU Process Stages	4-19
If the Process Does not Complete	4-23
When the DLU Process is Complete	4-24
Verifying the Upgrade	4-24

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

Overview	5-1
Introduction	5-1
In This Chapter	5-1
Configuring the Module	5-2
[1] Restart with Factory Defaults	5-3
[2] Restart with Current Settings	5-4
[3] Show Current Settings	5-5
[4] Configure IP	5-7
[1] Set SNMP Read/Write Community	5-8
[2] Add SNMP Trap Addresses	5-9
[3] Delete SNMP Trap Addresses	5-10
[4] Set In-Band Interface IP Address	5-11
[5] Set Out-of-Band Interface IP Address	5-12
[6] Enable/Disable BootP	5-13
[5] Dump Error Log	5-14
[6] Downline Upgrade	5-15
Before You Begin	5-15
Assigning an IP Address	5-15
Using the DLU Process	5-16
Initializing the Process	5-17
DLU Process Stages	5-18

If the Process Does not Complete	5-20
When the DLU Process is Complete	5-20
Verifying the Upgrade	5-21
[7] Configure Out-of-Band Port	5-22
[1] Set Port Speed	5-23
[2] Enable/Disable RTS	5-24

6 Removing a Module and Option Cards

Overview	6-1
Introduction	6-1
In This Chapter	6-1
Removing Modules from the DIGITAL MultiSwitch 900 (Hot-Swappable)	6-2
Removing Cables from the 100BASE-TX Fixed Ports	6-3
Removing the MM-100	6-4
Replacing the Dust Cover on the DIGITAL MultiSwitch Fast Ethernet Hub 924TX	6-6

A Problem Solving

Overview	A-1
Introduction	A-1
In This Appendix	A-1
DIGITAL MultiSwitch Fast Ethernet Hub 924TX LED States	A-2
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Problem Solving Using the LEDs	A-4

B Connectors and Pin Assignments

Overview	B-1
Introduction	B-1
In This Appendix	B-1
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Connectors and Pin Assignments	B-2
100BASE-TX (8-pin MJ) Port Connector	B-2
DIGITAL MultiSwitch 900 Connectors and Pin Assignments	B-3
OBM Port (9-Pin) Connector	B-3
DEChub ONE and DEChub ONE-MX Connectors and Pin Assignments	B-4
10BaseT (8-pin MJ) Port Connector	B-4
AUI (15-pin D-Sub) Port Connector	B-5
OBM Port (9-Pin) Connector	B-6
Adapters	B-7
H8571-J Adapter	B-7
H8575-A Adapter	B-7

Internal and External Crossover Configurations	B-8
--	-----

C Product Specifications

Overview	C-1
Introduction.....	C-1
In This Appendix	C-1
Product Specifications for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX	C-2
Acoustical Specifications.....	C-3

D Ordering Options

Overview	D-1
Introduction.....	D-1
In This Appendix	D-1
Ordering Options	D-2

E Associated Documentation

Overview	E-1
Introduction.....	E-1
In This Appendix	E-1
Documentation.....	E-2
Accessing Online Information	E-4
Documentation Comments	E-4
Online Services.....	E-4

F Accessing and Configuring RMON Groups

Overview	F-1
Introduction.....	F-1
In This Appendix	F-1
What Is RMON?	F-2
Groups Supported	F-3
How to Access RMON Groups	F-4
Accessing Statistics and History.....	F-4
Accessing Alarms and Events.....	F-4
Alarm and Event Table Entries.....	F-5
How Traps Work	F-7

Glossary

Overview	Glossary-1
Introduction	Glossary-1
In This Glossary	Glossary-1
Terms	Glossary-2

Index

Preface

Overview

About this Manual

This manual describes how to install, cable, and configure the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DIGITAL MultiSwitch 900 chassis, a DIGITAL MultiSwitch 900-4, a DEChub ONE docking station or a DEChub ONE-MX docking station.

The DIGITAL MultiSwitch Fast Ethernet Hub 924TX is a 24-port 100 Mb/s Fast Ethernet Hub. The 24 100BASE-TX ports can be separated into two banks of 12 ports each or operate as a single 24-port hub. Each bank can have a separate uplink. The module has 24 8-pin MJ ports for 100BASE-TX connections. The 25th and 26th ports support optional Modular Media Interfaces (MM-100) that are installed in the module's expansion slots. Each MM-100 provides either a 100BASE-FX or a 100BuffX port.

Intended Audience

This manual is intended for use by personnel who will install, set up, cable, and configure the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DIGITAL MultiSwitch 900 chassis, DIGITAL MultiSwitch 900-4, or a DEChub ONE or a DEChub ONE-MX docking station.

Organization

This manual is organized as follows:

Chapter/ Appendix	Description
1	Provides an overview of the DIGITAL MultiSwitch Fast Ethernet Hub 924TX, DIGITAL MultiSwitch 900, DIGITAL MultiSwitch 900-4, DEChub ONE and DEChub ONE-MX. Describes the features and front and back panels of the DIGITAL MultiSwitch Fast Ethernet Hub 924TX module, and lists features of the DIGITAL MultiSwitch 900, DIGITAL MultiSwitch 900-4, DEChub ONE and DEChub ONE-MX.
2	Provides instructions for installing the MM-100 cards.
3	Provides instructions for installing and cabling the DIGITAL MultiSwitch Fast Ethernet Hub 924TX module.
4	Provides instructions for configuring the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DEChub ONE or a DEChub ONE-MX.
5	Provides instructions for configuring the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DIGITAL MultiSwitch 900.
6	Provides instructions for removing the DIGITAL MultiSwitch Fast Ethernet Hub 924TX and its MM-100 optional cards from a DIGITAL MultiSwitch 900.
A	Provides installation-specific troubleshooting information using the LEDs.
B	Provides connector and pin assignment information.
C	Provides product specifications.
D	Lists product ordering options.
E	Lists associated documents and provides ordering information.
F	Provides instructions for configuring four RMON groups.
G	Provides Safety information.
Glossary	Lists and defines terms used in this manual.

Conventions

This book uses the following conventions.

Convention	Description
Bold Type	Indicates user input.
Monospaced Type	Indicates system output.
<Return>	Indicates that you press the Return Key.

Safety

Overview

The cautions that must be observed for the hardware are described in this manual 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 Geräte 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.

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.

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.

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 láserica 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.

CAUTION	If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.
ACHTUNG	Solite während der Phase 3 des DLU-Prozesses eine Unterbrechung der Stromversorgung eintreten, kann das Firmwareprogramm zerstört werden. Aus diesem Grunde wird dringend empfohlen, Vorkehrungen zu treffen, daß während der Durchführung dieser Phase 3 die Systemeinheit weder ausgeschaltet noch die Stromversorgung unterbrochen werden kann.
ATTENTION	L'image du microprogramme risque d'être corrompue, en cas de coupure de courant au cours de l'étape 3 du processus DLU. Ne mettez pas l'unité hors tension et n'exécutez aucune action risquant d'entraîner une coupure d'alimentation au cours de cette étape.
PRECAUCIÓN	Si se interrumpe el suministro eléctrico durante la Etapa 3 del proceso DLU, puede dañarse la imagen del firmware. No se debe apagar la unidad ni realizar ninguna operación que pueda causar una interrupción del suministro de la unidad durante la Etapa 3 del mencionado proceso.

CAUTION	Static electricity can damage modules and electronic components. Cabletron Systems 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. Cabletron Systems 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. Cabletron Systems recomienda que se utilicen cintas de pasadores y superficies de trabajo conectadas a tierra al trabajar con cualquier módulo.

Chapter 1

Product Description

Overview

Introduction

This chapter describes the DIGITAL MultiSwitch Fast Ethernet Hub 924TX (also referred to in this manual as the module). It also provides a brief description of the DIGITAL MultiSwitch 900 chassis, the DIGITAL MultiSwitch 900-4, the DEChub ONE docking station and the DEChub ONE-MX docking station.

In This Chapter

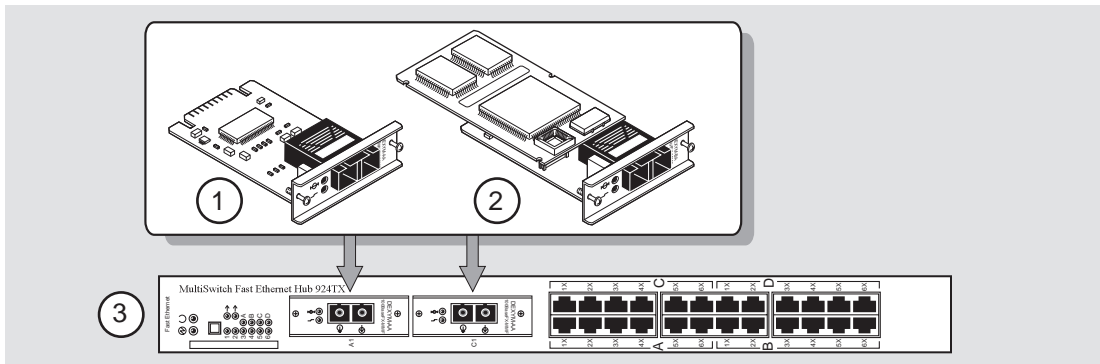
Topic	Page
What Is the DIGITAL MultiSwitch Fast Ethernet Hub 924TX?	1-3
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Features	1-5
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Management	1-5
Port Group Switching	1-5
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Port Configuration	1-5
MIB Support	1-6
Remote Monitoring (RMON)	1-6
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Front Panel	1-7
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Back Panel	1-9
Network Topologies for Class II Hubs	1-10
What is the DIGITAL MultiSwitch 900?	1-13
Network Management Architecture	1-13
DIGITAL MultiSwitch 900 Features	1-13

Topic	Page
Management Features	1-14
What is the DIGITAL MultiSwitch 900-4?	1-16
DIGITAL MultiSwitch 900-4 Features	1-16
The Management Agent Module	1-17
What are Docking Stations?	1-18
DEChub ONE and DEChub ONE-MX Docking Stations	1-18
Common Features	1-18

What Is the DIGITAL MultiSwitch Fast Ethernet Hub 924TX?

The DIGITAL MultiSwitch Fast Ethernet Hub 924TX (also referred to in this document as the module) provides high-density shared Fast Ethernet capability to DIGITAL MultiSwitch 900 users. This manageable Fast Ethernet hub features 24 100BASE-TX ports plus two 100M/b Fast Ethernet expansion slots (**Figure 1-1**). Using the port group switching feature the 24 100BASE-TX fixed ports can be separated into two groups of 12 ports each or operate as a single 24-port hub. This capability allows network managers to segment networks and efficiently allocate bandwidth (see section titled Port Group Switching). In addition, each group can have a separate uplink, using optional MM-100 option cards.

Figure 1-1: DIGITAL MultiSwitch Fast Ethernet Hub 924TX and Optional MM-100s



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Item	Description
1	100BASE-FX MM-100
2	100BufFX MM-100
3	DIGITAL MultiSwitch Fast Ethernet Hub 924TX

The DIGITAL MultiSwitch Fast Ethernet Hub 924TX module can be installed in a DIGITAL MultiSwitch 900, a DIGITAL MultiSwitch 900-4 (Refer to the The Management Agent Module), a DEChub ONE or a DEChub ONE-MX docking station, all of which supply power and mechanical support to the module.

The DIGITAL MultiSwitch 900 provides the ability to manage the module using SNMP and clearVISN MultiChassis Manager.

What Is the DIGITAL MultiSwitch Fast Ethernet Hub 924TX?

DIGITAL MultiSwitch Fast Ethernet Hub 924TX Features

The DIGITAL MultiSwitch Fast Ethernet Hub 924TX includes the following features:

- 24-fixed 100BASE-TX 8-pin MJ crossover ports for 100 Mb/s Fast Ethernet connections and two expansion slots.
- Port group switching which allows ports to be grouped into one group of 24 ports or two groups of 12 ports each.
- Support for the following front-insertable 100 Mb/s Fast Ethernet Modular Media Interface cards:
 - 100BASE-FX (multimode fiber-optic cables with SC connectors)
 - 100BufFX (multimode fiber-optic cables with SC connectors which use full-duplex 100BASE-FX technology to extend the cabling distance to 2 kilometers).
- Installs quickly and can be hot-swapped in a DIGITAL MultiSwitch 900.
- Upgradeable device firmware (in nonvolatile flash memory) using Trivial File Transfer Protocol (TFTP) with clearVISN Flash Loader or through the setup port with any TFTP server. An IP address is not necessary for the module to be upgraded.
- Class II hub that allows two hubs to be interconnected in a single collision domain.
- Supports SNMP Management, IP services, and low cost management with *clearVISN*.
- Compliance with the IEEE 802.3u standard.
- Alarms, Events, Statistics, and History RMON group support.
- Port-level statistics for monitoring performance on every port.
- Port State and Module State LEDs for visual monitoring and troubleshooting.
- Support for Out-of-Band Management.
- Advanced graphical user interface (GUI) manageability using the *clearVISN* MultiChassis Manager.

What Is the DIGITAL MultiSwitch Fast Ethernet Hub 924TX?

DIGITAL MultiSwitch Fast Ethernet Hub 924TX Management

The DIGITAL MultiSwitch Fast Ethernet Hub 924TX is managed using clearVISN MultiChassis Manager. For module management procedures, refer to the clearVISN User's Guide.

Port Group Switching

The port group switching feature allows network managers to allocate bandwidth and avoid bottlenecks. The ports on this hub can be configured into two independent groups of 12 ports each, or one group of 24 ports. Port group configurations can be changed using clearVISN MultiChassis Manager.

For example, If you have two groups of users on the network, one group of heavy traffic users, and another group of light network traffic users, you may want to use two groups. The port group switching feature allows you to assign heavy traffic users, who need lots of bandwidth to one group, and place the light network traffic users on the other group. Segmenting this way minimizes the number of collisions for both groups.

Port group configurations can be changed using clearVISN MultiChassis Manager. The clearVISN suite of tools is also accessible through Cabletron's Spectrum Enterprise Manager.

For complete instructions on how to use the port group switching feature, refer to the clearVISN User's Guide also located at the following web site: <http://www.compaq.com>.

DIGITAL MultiSwitch Fast Ethernet Hub 924TX Port Configuration

The DIGITAL MultiSwitch Fast Ethernet Hub 924TX is configured using clearVISN MultiChassis Manager. The following shows the types of port configuration allowed:

- Bank 1 is A-1 through A-6 and B-1 through B-6. Bank 1 is always in Group 1.
- Bank 2 is C-1 through C-6 and D-1 through D-6. Bank 2 can be Group 1 or Group 2.
- Group 1 can be configured as either a single group of 24 ports or one group of 12 ports. When Group 1 is configured for a 12 ports, Group 2 must be configured as a different group of 12 ports.

NOTE

clearVISN refers to Bank 1 as ports 1-13, and Bank 2 as ports 13-24.

What Is the DIGITAL MultiSwitch Fast Ethernet Hub 924TX?

MIB Support

The module provides SNMP agent support for the following management information bases (MIBs) when used in a DIGITAL MultiSwitch 900:

- MIB II (RFC 1213)
- DIGITAL MultiSwitch 900 Public Common MIB
- DIGITAL Extended Repeater MIB
- Internet Engineering Task Force (IETF) Repeater MIB (RFC 1516)
- RMON MIB (alarms, events, statistics, and history)

For information on how to access DIGITAL MIBs, follow the procedures in the Release Notes for this product.

Remote Monitoring (RMON)

The DIGITAL MultiSwitch Fast Ethernet Hub 924TX supports sophisticated Ethernet monitoring with the Remote Network Monitoring Information Base (RMON-MIB). The following RMON features and options are available:

- RMON functions are performed concurrently with the module's hub function.
- RMON within the module is accessible by multiple managers.
- Basic RMON capability at the LAN level for the following groups:
 - *Statistics*. Various statistics measured for the monitored Fast Ethernet channel, including utilization, packet rates, broadcast and multicast rates, and error information.
 - *History*. Capturing of periodic statistical samples for later retrieval and analysis.
 - *Alarms*. Specification of thresholds for various monitored variables in order to generate events.
 - *Events*. Controls the generation and notification of events from the probe.
- Management with clearVISN RMON Manager

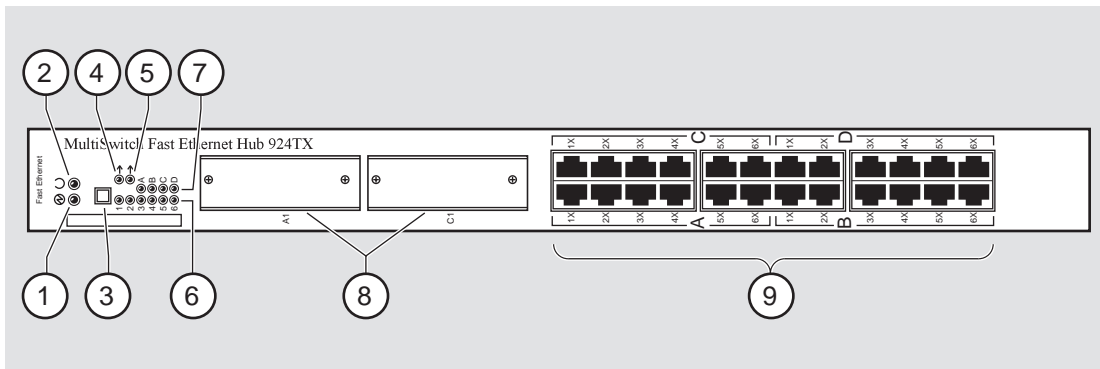
For information on how to access and use the basic RMON features, refer to Appendix F.

What Is the DIGITAL MultiSwitch Fast Ethernet Hub 924TX?

DIGITAL MultiSwitch Fast Ethernet Hub 924TX Front Panel

Figure 1-2 shows the location of the DIGITAL MultiSwitch Fast Ethernet Hub 924TX front panel components and **Table 1-1** describes these components. For detailed information about the LEDs, refer to Appendix A.





Figure 1-2: DIGITAL MultiSwitch Fast Ethernet Hub 924TX Front Panel



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What Is the DIGITAL MultiSwitch Fast Ethernet Hub 924TX?

Table 1-1: DIGITAL MultiSwitch Fast Ethernet Hub 924TX Front Panel Features

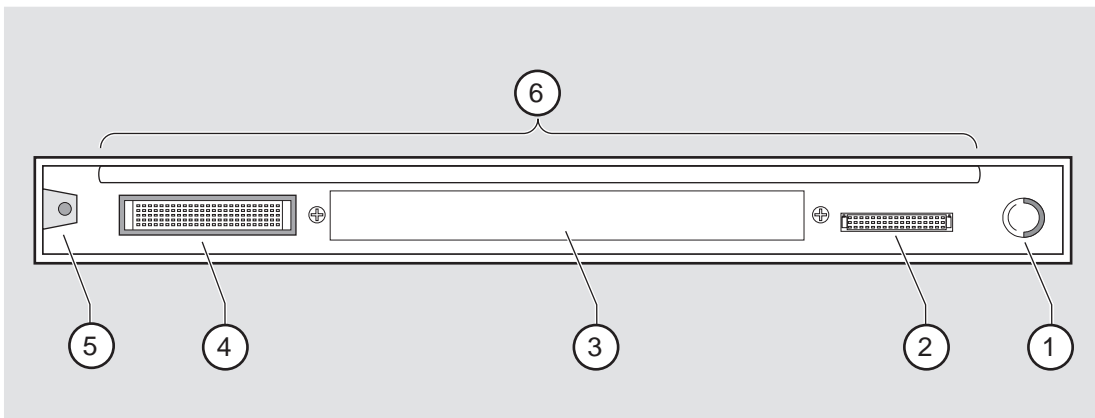
Item	Icon	Name	Description
1		Power OK LED	Indicates that the module has sufficient power.
2		Module OK LED	Indicates that the module passed self-test.
3		Port Group Select Push button	Freezes the scanning of the Port Group Select LEDs. The Port Group Select LEDs briefly light up one at a time, indicating the port group for which the 6 Port Status LEDs are showing status.
4		Network Activity LEDs	Indicates activity across all 24 ports joined together in one bank (A1 through A6, B1 through B6, C1 through C6 and D1 through D6) <i>or</i> activity across A1 through A6 and B1 through B6 in one bank.
5		Network Activity LEDs	Indicates activity across 12 ports in one bank (C1 through C6 and D1 through D6), when configured as two separate banks.
6		Port Status LEDs (1 - 6)	Provide the status of the port connections for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX port group that is indicated by the Port Group Select LEDs.
7		Port Group Select LEDs A, B, C, D Link Present	The port group (A, B, C, or D) for which the Port Status LEDs display status.
8		MM-100 Modular Media Interface card slots	Holds a 100BASE-FX or 100BufFX MM-100, which can connect to end devices such as PCs, workstations, hubs, and switches.
9		24-100BASE-TX, 8-pin MJ crossover connectors	Used to connect end devices such as servers, hubs, and backbone switches.

What Is the DIGITAL MultiSwitch Fast Ethernet Hub 924TX?

DIGITAL MultiSwitch Fast Ethernet Hub 924TX Back Panel

Figure 1-3 shows the location of the DIGITAL MultiSwitch Fast Ethernet Hub 924TX back panel components and **Table 1-2** describes these components.

Figure 1-3: DIGITAL MultiSwitch Fast Ethernet Hub 924TX Back Panel



NPB-1068-98F

Table 1-2: DIGITAL MultiSwitch Fast Ethernet Hub 924TX Back Panel Features

Item	Name	Description
1	Locking Tab	Secures the DIGITAL MultiSwitch Fast Ethernet Hub 924TX to a DIGITAL MultiSwitch 900 chassis or a DIGITAL MultiSwitch 900-4.
2	48-pin Connector	Provides network and power connections to the DIGITAL MultiSwitch Fast Ethernet Hub 924TX when it is installed in a DIGITAL MultiSwitch 900 chassis, a DIGITAL MultiSwitch 900-4, DEChub ONE docking station or DEChub ONE-MX docking station.
3	Manufacturing Label	Lists the DIGITAL MultiSwitch Fast Ethernet Hub 924TX module part number, serial number, revision level, and power requirements.
4	160-pin Connector	Provides network and power connections to the DIGITAL MultiSwitch Fast Ethernet Hub 924TX when it is connected to a the DIGITAL MultiSwitch 900 chassis, a DEChub ONE docking stations or DEChub ONE-MX docking stations.
5	Mounting Tab	Attaches the DIGITAL MultiSwitch Fast Ethernet Hub 924TX to a DIGITAL MultiSwitch 900, locking receptacle.
6	Grounding Strip	Provides chassis grounding between the DIGITAL MultiSwitch Fast Ethernet Hub 924TX and the DIGITAL MultiSwitch 900 chassis, or the DEChub ONE or DEChub ONE-MX docking stations.

Network Topologies for Class II Hubs

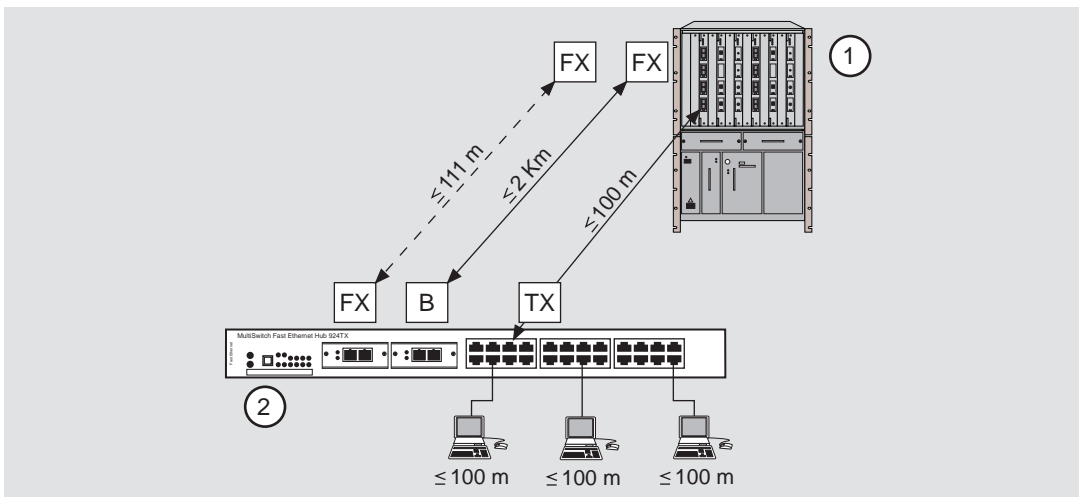
This section illustrates recommended network topologies for Class II hubs. You should use these topologies when configuring your network with 100BASE-FX or 100BufFX Fast Ethernet cards. These 100Mb/s Fast Ethernet Modular Media Interface MM-100 cards can be used in the fast ethernet hub. The 100BufFX fast ethernet card is an option that uses full-duplex 100BASE-FX technology to extend the cabling distance to 2 kilometers.

Figure 1-4 shows a single Class II hub configuration with a switch (1) connected to a DIGITAL MultiSwitch Fast Ethernet Hub 924TX module (2). This connection is made using 100Mb/s Fast Ethernet MM-100 Cards. The combinations for connecting these cards are as follows:

100BASE-FX FX	Connects to another 100BASE-FX port at a distance of up to 111 meters in half-duplex mode
100BufFX B	Connects to a full-duplex 100BASE-FX port on a switch at a distance of up to 2 kilometers in full-duplex mode

The 100BASE-TX port can connect to another 100BASE-TX port on a switch at a distance of up to 100 meters.

Figure 1-4: Single Class II Hub Configuration



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Network Topologies for Class II Hubs

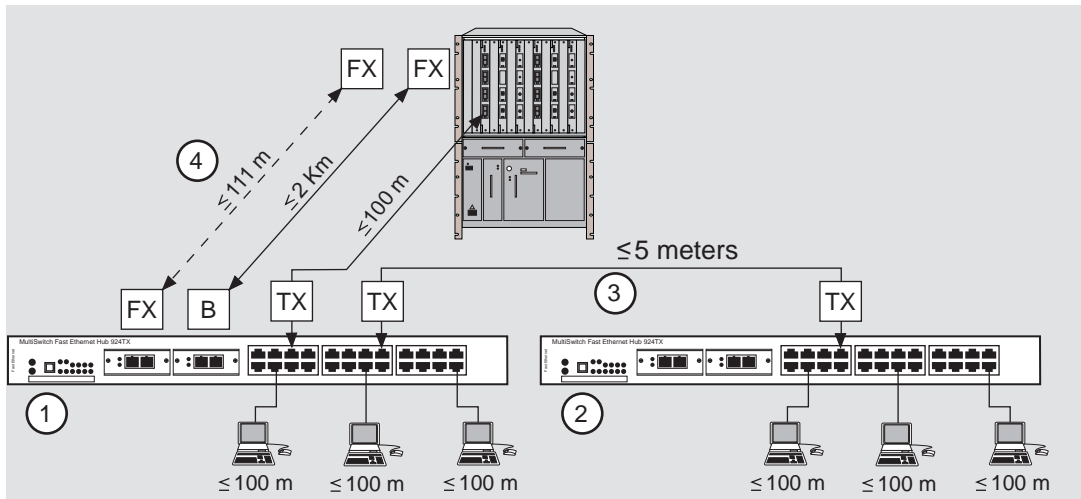
Figure 1-5 shows the configuration of two Class II Hubs (1) and (2) using a 5 meter Inter-Repeater Link (IRL) (3). The hubs are connected to the switch via an uplink (4). The uplink can be of types 100BASE-FX, or 100BufFX. In the following configuration, the 100BASE-FX to 100BASE-FX connection is at a distance of up to 111 meters.

The full-duplex 100BufFX to full-duplex 100BASE-FX connection is up to 2 kilometers.

100BASE-FX FX	Connects to another 100BASE-FX port at a distance of up to 111 meters in half-duplex mode
100BufFX B	Connects to a full-duplex 100BASE-FX port on a switch at a distance of up to 2 kilometers in full-duplex mode

The 100BASE-TX port can connect to another 100BASE-TX port on a switch at a distance of up to 100 meters.

Figure 1-5: Two Class II Hub Configuration



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100BufFX Uplink Configuration

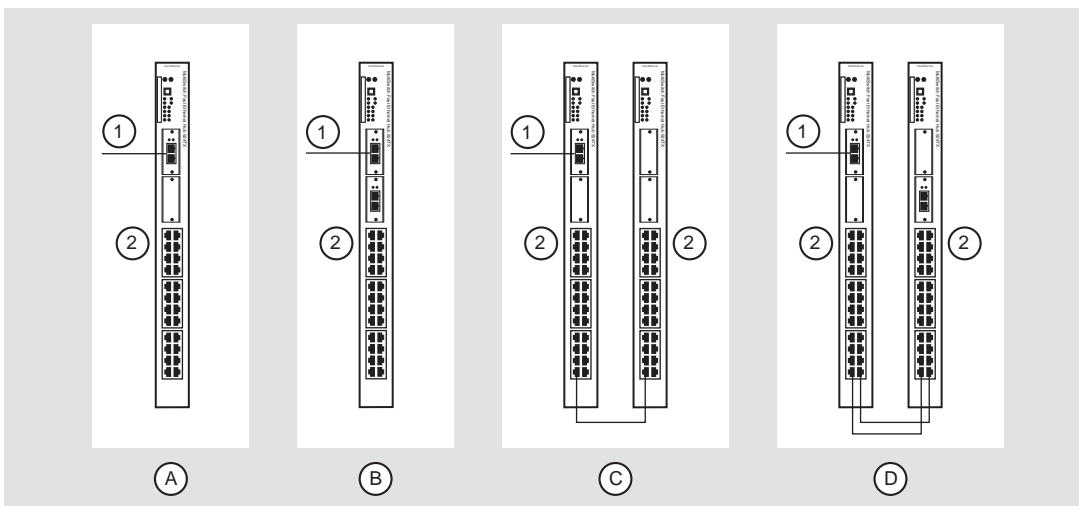
The 100BASE-FX and 100BufFX MMIs are based on the 100BASE-FX standards. When installed in a DIGITAL MultiSwitch Fast Ethernet Hub 924TX, the 100BufFX MM-100 option card will operate in full-duplex mode only. The switch must be manually configured to operate in 100BASE-FX, full-duplex mode.

Network Topologies for Class II Hubs

User Support in a Class II Environment

Figure 1-6 shows user support for four different configurations (A, B, C, D) using uplinks (1) with DIGITAL MultiSwitch Fast Ethernet Hub 924TX modules (2).

Figure 1-6: Various Class II Hub Configurations



NPB-1064-98F

Maximum Number of Users

Table 1-3 describes the number of users supported with each configuration.

Table 1-3: User Support for Various Class II Hub Configurations

Configuration	Module(s)	Collision Domains	Total Uplink(s) per Configuration	Maximum Users
A	1 DIGITAL MultiSwitch Fast Ethernet Hub 924TX	1	1	23
B	1 DIGITAL MultiSwitch Fast Ethernet Hub 924TX	2	2	22
C	2 DIGITAL MultiSwitch Fast Ethernet Hub 924TX	1	1	45
D	2 DIGITAL MultiSwitch Fast Ethernet Hub 924TX	2	2	42

What is the DIGITAL MultiSwitch 900?

The DIGITAL MultiSwitch 900, shown in Figure 3-4, supports multiple network technologies and uses industry standard protocols. It uses advanced technology to provide complete backward compatibility with the DEChub 90 network modules.

The DIGITAL MultiSwitch 900, with a complement of network modules installed, becomes an integral part of any distribution subsystem within a structured wiring environment.

Network Management Architecture

For network management, the DIGITAL MultiSwitch 900 uses industry-standard Simple Network Management Protocol (SNMP) and a network management station (NMS) with native SNMP, and in-band and out-of-band support.

DIGITAL MultiSwitch 900 Features

The DIGITAL MultiSwitch 900 chassis supports up to eight DIGITAL MultiSwitch 900, DIGITAL MultiSwitch 600, or DEChub 90 modules. These modules can be installed, in any combination, in slots 1 to 8. It has the following advanced hardware features.

Feature	Description
90 Series Compatibility	The DIGITAL MultiSwitch 900 supports all the DEChub 90 series network modules.
600 Series Compatibility	The DIGITAL MultiSwitch 900 supports all the DIGITAL MultiSwitch 600 series network modules.
Hot Swap Capability	The network modules and power supply modules can be installed or swapped with the power on. This is referred to as a hot swap. Hot swapping allows for upgrades, modifications, or replacement of modules without interruption to other users or the DIGITAL MultiSwitch 900.
Incremental Power System	The DIGITAL MultiSwitch 900 power system is designed to allow for the installation of incremental power supply modules for system expansion. Up to four power supply modules can be installed into the DIGITAL MultiSwitch 900. All power supply modules share power delivery to the chassis and to the network modules on a common bus.

What is the DIGITAL MultiSwitch 900?

Feature	Description
Redundant Power	If a single power supply module provides enough power for the DIGITAL MultiSwitch 900, and you add a second power supply module, then the DIGITAL MultiSwitch 900 has redundant (N+1) power. If either of the power supply modules fail, the DIGITAL MultiSwitch 900 continues to operate without interruption.

Management Features

The DIGITAL MultiSwitch 900 has many advanced management features.

Chassis Manager

The built-in DIGITAL MultiSwitch 900 management agent, the Chassis Manager, provides the following services:

- Module management via IP services
- Configuration and control of the DIGITAL MultiSwitch 900 chassis and the modules installed in it.
- Chassis setup port
- Chassis out-of-band management (OBM) port
- Chassis in-band management
- Remote Monitor (RMON) Alarms and Events support
- Chassis Status Display
- Chassis Management Information Base (MIB)
- Simple Network Management Protocol (SNMP) integrated into the chassis's Chassis Manager

Power Management

The Chassis Manager monitors the power system and displays power system messages in the Chassis Status Display. The messages provide you with information about the power system status and the amount of power available in the DIGITAL MultiSwitch 900. This information, in addition to the power needs of a network module (from the module label), lets you determine whether enough power is available to install a network module in the DIGITAL MultiSwitch 900.

The Chassis Manager performs the following power-related functions:

- Powers a fully configured DIGITAL MultiSwitch 900 with power redundancy
- Monitors the power system

What is the DIGITAL MultiSwitch 900?

- Calculates the power available to network modules
- Displays the power status and available power to its LCD display
- Allocates power to network modules
- Deallocates power from network modules when there is a power system failure in a non-redundant power configuration

For additional information about the DIGITAL MultiSwitch 900, refer to the *DIGITAL MultiSwitch 900 Owner's Manual*.

What is the DIGITAL MultiSwitch 900-4?

What is the DIGITAL MultiSwitch 900-4?

The MultiSwitch 900-4 is a versatile four-slot chassis that provides multitechnology integration. It supports Ethernet, Fast Ethernet, FDDI, ATM, and VNbus technologies. The chassis accommodates any combination of MultiSwitch 900 and MultiSwitch 600 modules. The MultiSwitch 900-4 is managed with *clearVISN*.

DIGITAL MultiSwitch 900-4 Features

The DIGITAL MultiSwitch 900-4 chassis supports up to four DIGITAL MultiSwitch 900 or DIGITAL MultiSwitch 600 modules. These modules can be installed, in any combination, in slots 1 to 4. It has the following advanced hardware features.

Feature	Description
900 Series Compatibility	Uses any combination of MultiSwitch 900 modules. These separately orderable hardware modules support various networking requirements.
600 Series Compatibility	Uses any combination of MultiSwitch 600 modules. These separately orderable hardware modules support various networking requirements.
900 Series and 600 Series module Compatibility	Uses any combination of MultiSwitch 900 and MultiSwitch 600 modules. These separately orderable hardware modules support various networking requirements. For information about installing modules in the MultiSwitch 900-4, see the documentation that accompanies the module.
Technology Support	Is technology independent supporting Ethernet, Fast Ethernet, FDDI, ATM, and the VNbus.
Hot Swap Capability	Can hot-swap MultiSwitch 900 and MultiSwitch 600 modules, the Management Agent Module, and the power supply, making it easy to accommodate network changes without disrupting users.
Incremental Power System	Is preconfigured with one power supply. This power supply module provides power to the whole system.
Backplane functionality	Has a unique, open technology backplane functionality that is defined by firmware, not limited by hardware.
Mounting	Fits on a desktop, or can be rack- or wall-mounted.

What is the DIGITAL MultiSwitch 900-4?

Feature	Description
Redundant Power	Has an optional power supply available to provide the MultiSwitch 900-4 with a redundant source of power. If a single power supply module provides enough power for the DIGITAL MultiSwitch 900-4, and you add a second power supply module, then the DIGITAL MultiSwitch 900-4 has redundant (N+1) power. If either of the power supply modules fail, the DIGITAL MultiSwitch 900-4 continues to operate without interruption.

The Management Agent Module

A management agent module provides network management for the DIGITAL MultiSwitch 900-4 through the industry-standard Simple Network Management Protocol (SNMP) and a network management station (NMS) with native SNMP, and in-band and out-of-band support. The Management Agent Module includes these features:

Feature	Description
IP Address Management	Has single IP address that manages an entire MultiSwitch 900-4.
RMON Support	Supports four groups of RMON.
Configuration	Supports easy, low-cost management with <i>clearVISN</i> with simple point-and-click commands that let network managers configure and reconfigure the chassis to accommodate changing networks.
Network Management	Provides a connection to a network management station, either in-band or out-of-band.

It also communicates with the functional modules installed in the MultiSwitch 900-4. The MultiSwitch 900-4 is preconfigured with a Management Agent Module. A back-up Management Agent Module is available as an option.

For information on the Management Agent Module, refer to *The Management Agent Module* in Chapter 3.

For information on installation and configuration, refer to the *DIGITAL MultiSwitch 900-4 Installation and Configuration* manual.

What are Docking Stations?

What are Docking Stations?

Docking Stations are single-slot units that provide power for a DIGITAL MultiSwitch 900 full-height module. The DIGITAL MultiSwitch Fast Ethernet Hub 924TX supports the following two types of docking stations:

- DEChub ONE (shown in Figure 3-4)
- DEChub ONE-MX (shown in Figure 3-4)

DEChub ONE and DEChub ONE-MX Docking Stations

The DEChub ONE is a single-slot hub that provides 81.1 watts of standalone power for DIGITAL MultiSwitch 900 full-height module. The DEChub ONE-MX is a single-slot hub that provides 92.2 watts of standalone power for a DIGITAL MultiSwitch 900 full-height module.

The docking stations provide an out-of-band management (OBM) port with an associated LED for remote network management support. A setup port on the DEChub ONE-MX enables you to configure the attached network module using a terminal device, personal computer, or terminal server. In addition, the docking station is designed to provide power failover capability, and can be configured into a redundant power system with a cable included in a separately orderable redundant power kit.

The DEChub ONE and DEChub ONE-MX docking stations support tabletop and rack-mounting. By stacking single-slot docking stations in 19-inch racks, users can buy the Ethernet DIGITAL MultiSwitch 900 modules to support their current needs in a small LAN and use the same products to upgrade to enterprise WANs as their LAN use grows.

Common Features

The following features are common to both the DEChub ONE and DEChub ONE-MX docking stations:

- Flexible mounting configuration helps network managers cope with daily moves, additions, and changes in their networks.
- Suitable for tabletop or rack-mounting.
- OBM port supports remote network management for attached DIGITAL MultiSwitch 900 modules.
- Setup port for easy configuration of attached modules.

For additional information about the DEChub ONE, refer to the *DEChub ONE Installation* manual; for the DEChub ONE-MX, refer to the *DEChub ONE-MX Installation* manual.

Chapter 2

Installing A Modular Media Interface

Overview

Introduction

This chapter describes how to install 100 Mb/s Fast Ethernet Modular Media Interface cards (MM-100) into the module. The installation and removal instructions in this chapter are applicable to all the cards.

For detailed information on the available option cards, refer to the *100 Mb/s Fast Ethernet Modular Media Interface Cards Installation* manual.

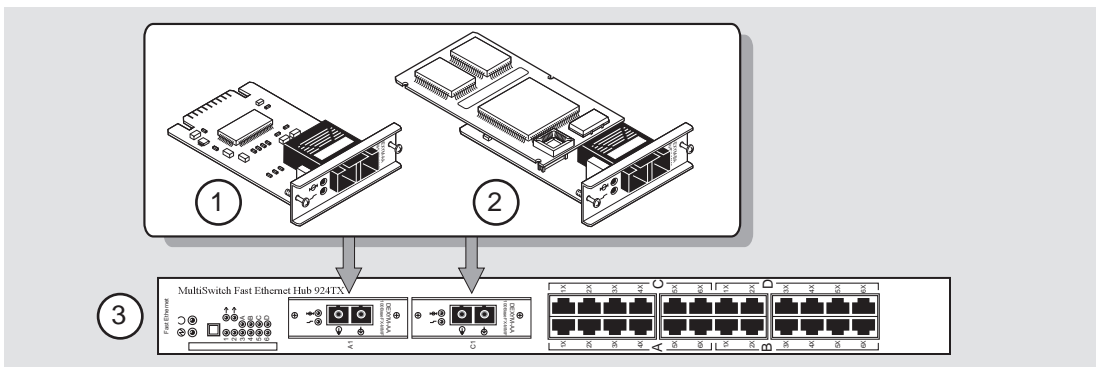
In This Chapter

Topic	Page
Installing DIGITAL MultiSwitch Fast Ethernet Hub 924TX Option Cards	2-2
Required Tools	2-3
Removing the Dust Cover	2-4
Installing the MM-100	2-5

Installing DIGITAL MultiSwitch Fast Ethernet Hub 924TX Option Cards

The DIGITAL MultiSwitch Fast Ethernet Hub 924TX has two expansion slots that accept option cards (**Figure 2-1**). The table following the the figure identifies the option cards. The following sections provide instructions for installing and removing an option card.

Figure 2-1: Optional MMI Cards



NPB-0866-97F

Item	Description
1	100BASE-FX MM-100
2	100BufFX MM-100
3	DIGITAL MultiSwitch Fast Ethernet Hub 924TX

NOTE

When you insert an MM-100 card into option slot A1 or C1, the fixed port for that slot (A1x or C1x, respectively) is disabled.

Installing DIGITAL MultiSwitch Fast Ethernet Hub 924TX Option Cards

Required Tools

We recommend the use of, but do not supply, the following tools to install the cards:

- Phillips-head screwdriver
- Antistatic grounding strap

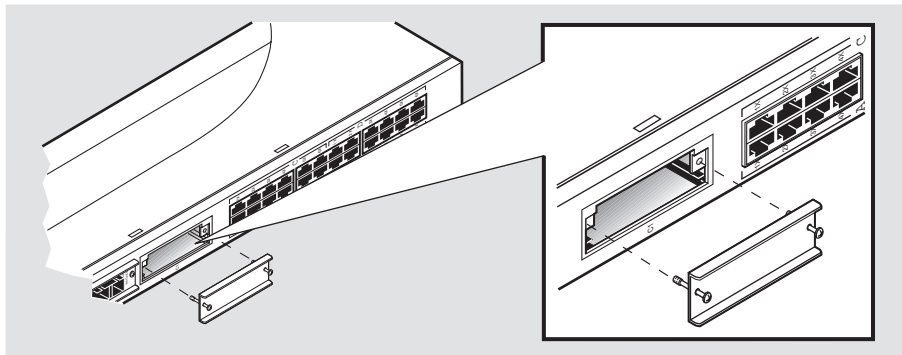
To prepare to install the card into the module, complete the following steps:

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 antistatic wrapping material until you are ready to install the card.
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	Check the shipment for damage and missing parts. In case of damaged or missing parts, contact your delivery agent and your sales representative.

Removing the Dust Cover

To remove the dust cover from the expansion slot (**Figure 2-2**), perform the following steps.

Figure 2-2: Dust Cover Removal



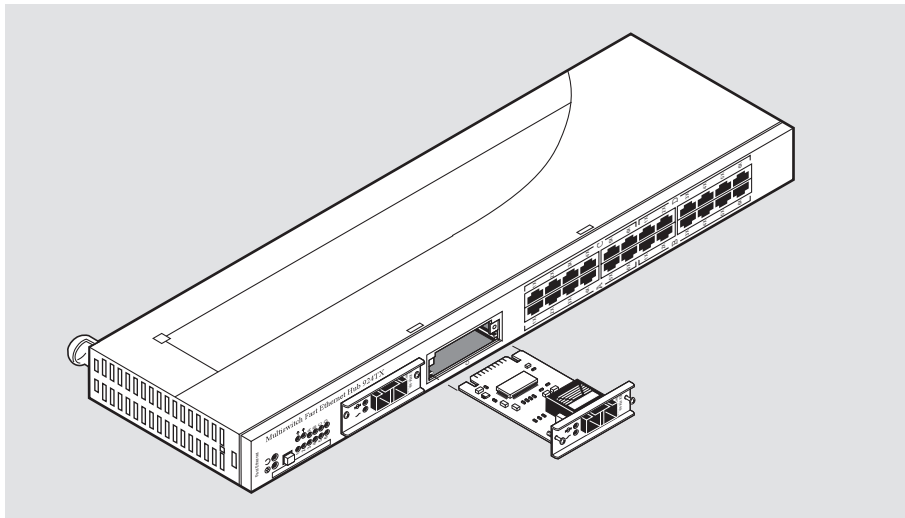
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Step	Action
1	Using a Phillips-head screwdriver, loosen the two captive screws on the dust cover.
2	Save the dust cover and its attached captive screws.

Installing the MM-100

Complete the following steps to install an MM-100 into the module (**Figure 2-3**).

Figure 2-3: Installing the MM-100



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Depending on the type of connectors used on the card, there will be differences in the way cables are attached and removed. For cable connection information for the 100BASE-FX and the 100BuFFX modular media interfaces refer to the *100 Mb/s Fast Ethernet Modular Media Interface Cards Installation* manual:

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 antistatic wrapping material until you are ready to install the card.
<p>CAUTION</p> <p>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.</p>	
2	Remove the dust caps from the card, if necessary.

Installing the MM-100

Step	Action
3	Hold the card by the edges of the bezel and position it so that it is parallel with the slot opening.
4	Insert the card into the slot opening and slide the card along the card guides until the card's bezel is flush with the module. <u>Note:</u> 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.
5	Firmly fasten the card to the module with the two captive screws.

Chapter 3

Module Installation and Setup Port Cabling

Overview

Introduction

This chapter describes how to install and cable the module in a DIGITAL MultiSwitch 900.

In This Chapter

Topic	Page
Installing the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DIGITAL MultiSwitch 900	3-2
Task 1: Compare the Power Ratings	3-3
Task 2: Seat the Module in the DIGITAL MultiSwitch 900	3-4
Task 3: Verify Initial LED Operation	3-5
Task 4: Connect the Setup Port Cables to the DIGITAL MultiSwitch 900	3-6
Connecting Cables to the 100BASE-TX Ports on the Module	3-8

Installing the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DIGITAL MultiSwitch 900

The DIGITAL MultiSwitch Fast Ethernet Hub 924TX hot-swap feature allows you to install the module into the DIGITAL MultiSwitch 900 without turning off power. If you are using an MM-100, you may install it in the module before or after installing the module in the DIGITAL MultiSwitch 900 because MM-100s are hot-swappable. Seating the module initiates the module's power-up sequence.

The following table describes the tasks necessary for installing the module in a DIGITAL MultiSwitch 900.

Task	Description
1	Compare the power ratings.
2	Seat the module into the DIGITAL MultiSwitch 900.
3	Verify initial LED operation.
4	Connect the setup port cables.

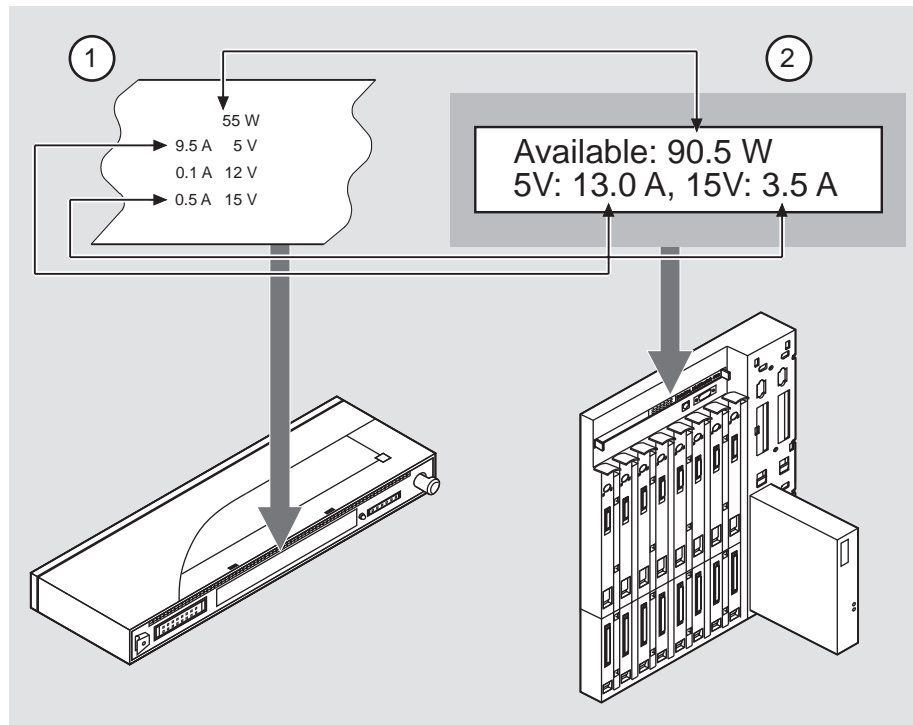
Installing the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DIGITAL MultiSwitch 900

Task 1: Compare the Power Ratings

Compare the DIGITAL MultiSwitch Fast Ethernet Hub 924TX power ratings (1) with the available power value shown in the DIGITAL MultiSwitch 900 Manager Status display (2) (see **Figure 3-1**). For the DIGITAL MultiSwitch 900, the 12V power is derived from the 15V power source. Although it is listed separately in the Product Specification for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX, the 12V requirements are included in the DIGITAL MultiSwitch 900 15V power total.

If any of the module's power requirements exceed the available power value shown in the status display, add another power supply (see the *DIGITAL MultiSwitch 900 MultiSwitch Owner's Manual*). If you do not, the module enters a low power mode and disables its ports.

Figure 3-1: Module Power Ratings



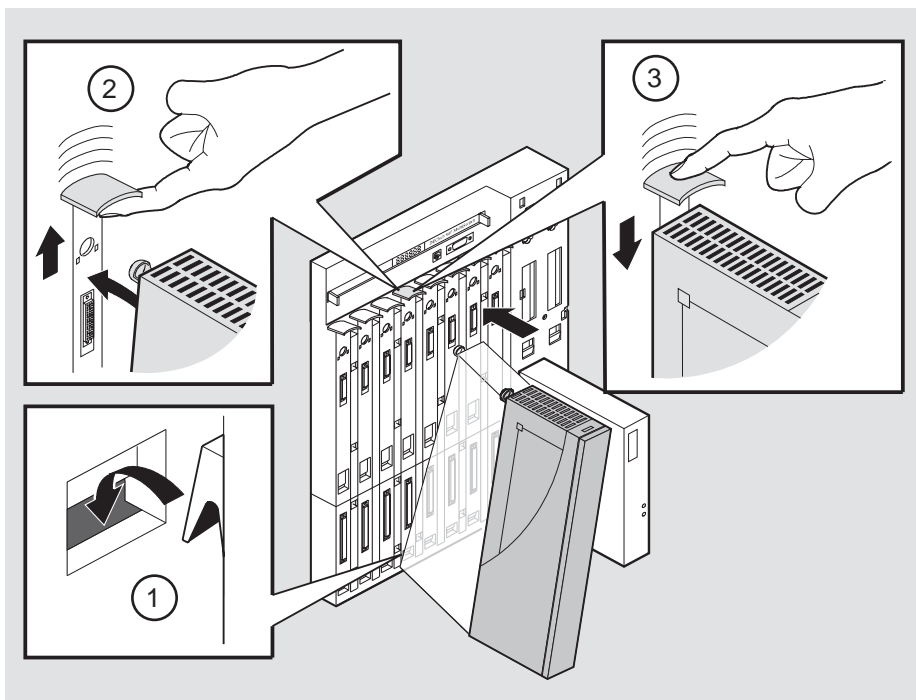
NPB-0870-97F

Installing the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DIGITAL MultiSwitch 900

Task 2: Seat the Module in the DIGITAL MultiSwitch 900

Complete the following steps to seat the module in a DIGITAL MultiSwitch 900 as shown in **Figure 3-2**.

Figure 3-2: Seating the Module



NPG-0004-95F

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

Installing the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DIGITAL MultiSwitch 900

Task 3: Verify Initial LED Operation

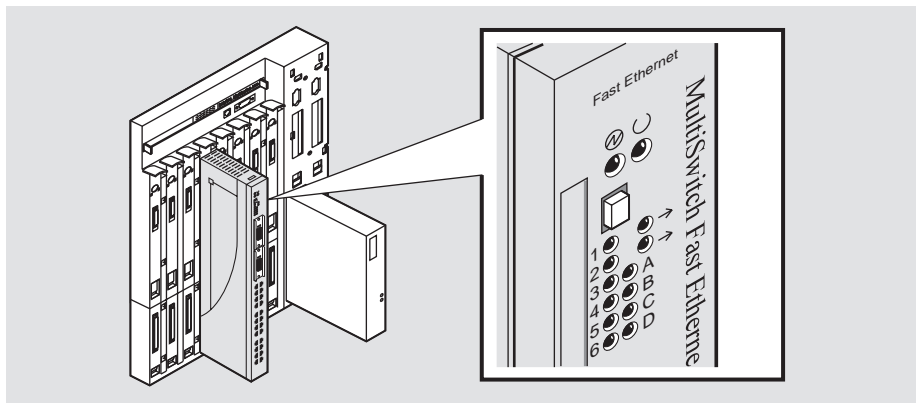
Verify that the power LED and the OK LED on the module light within one minute. The following table describes the LEDs as shown in **Figure 1-2**.

Stage	Description
1	The Power LED lights when power is applied to the module, then the module performs a self-test. During the self-test, the port status LEDs display the various patterns that reflect Diagnostic tests.
2	After the module completes self-test, the Module OK LED lights and remains lit. The Hub Manager identifies the module as the DIGITAL MultiSwitch Fast Ethernet Hub 924TX.

NOTE

If the LEDs do not operate as described, refer to Appendix A.

Figure 3-3: LED Verification



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Installing the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DIGITAL MultiSwitch 900

Task 4: Connect the Setup Port Cables to the DIGITAL MultiSwitch 900

Before you perform this task, make sure that you have installed and cabled the MM-100 according to the instructions provided in Chapter 2.

Connect the setup port on the DIGITAL MultiSwitch 900 to a setup port device (terminal or PC). Once connected, you can use the DIGITAL MultiSwitch 900 setup port or the *clearVISN* application to configure parameters.

To connect the DIGITAL MultiSwitch 900 setup port to a setup port device, use the following cables and adapters:

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

¹xx indicates cable length in meters.

For information on pin assignments, refer to Appendix B.

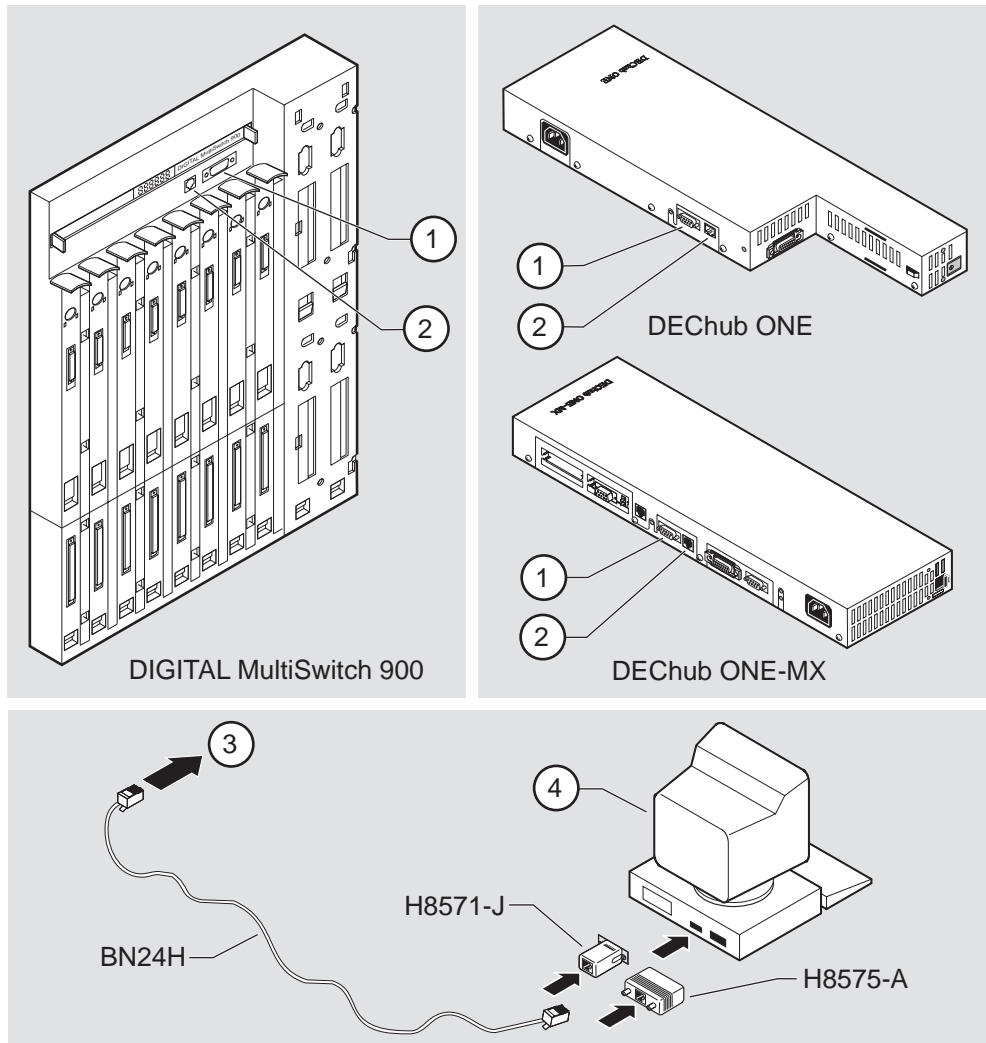
To connect the DIGITAL MultiSwitch 900 setup port to a setup port device, complete the following steps.

Step	Action
1	Configure the setup port device (terminal or PC) as follows: <ul style="list-style-type: none">• 9600 baud• 8 bits• no parity• 1 stop bit
2	Connect the setup port device cable to the setup port connector on the DIGITAL MultiSwitch 900 (refer to Figure 3-4).

Figure 3-4 shows setup port location.

Installing the DIGITAL MultiSwitch Fast Ethernet Hub 924TX in a DIGITAL MultiSwitch 900

Figure 3-4: Setup Port Cabling



NPG-0020-95F

Item	Description
1	OBM port
2	Setup port
3	Setup port cable
4	Setup port device

Connecting Cables to the 100BASE-TX Ports on the Module

This section describes how to connect cables to the 100BASE-TX ports on the DIGITAL MultiSwitch Fast Ethernet Hub 924TX. The 100BASE-TX fixed-ports on the module have crossover port connectors. Use the appropriate cable type (crossover or straight-through) to ensure that the module's transmit and receive signals connect correctly to the connected device. Before connecting the cables to the port, note the guidelines in **Table 3-1** and **Table 3-2**. These guidelines ensure that the sum of crossovers always equal an odd number, which is required for proper operation.

Table 3-1 is a guideline for connecting to the module's eleven 100BASE-TX ports, which have crossover port connectors.

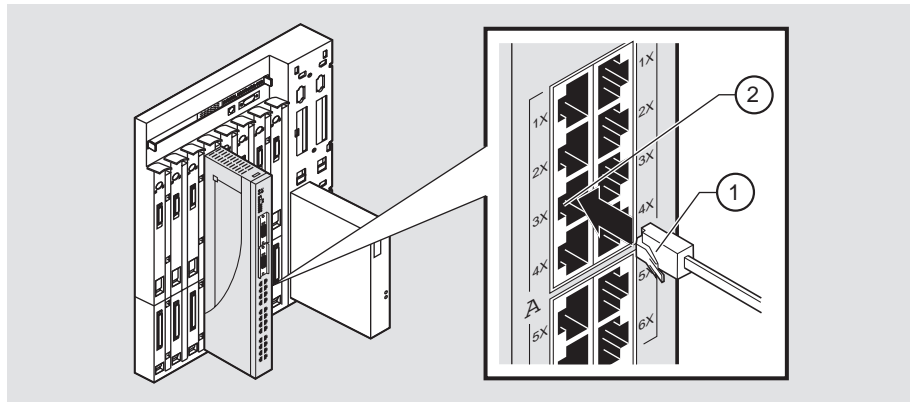
Table 3-1: Cabling 100BASE-TX Crossover Connector on Module

If the connector on the remote device is . . .	Use this cable type . . .
Straight-through connector ¹	Straight-through cable ¹
Crossover connector ¹	Crossover cable ¹

¹DIGITAL's straight-through cables are marked (=); crossover connectors and cables are marked (X).

Connecting Cables to the 100BASE-TX Ports on the Module

Figure 3-5: 100BASE-TX Cable Connection on the Module



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Step	Action
1	Align the release tab (1) on the cable plug with the connector (2) on the module's 100BASE-TX port connector.
2	Insert the plug into the connector (2) until the release tab snaps into the locked position.
3	Connect the other end of the cable to a network device (PC, workstation, switch or repeater).

To determine the appropriate cable type to use, refer to Appendix B, Connectors and Pin Assignments.

To disconnect the cables, refer to Chapter 6.

Chapter 4

Configuring the Module in a DIGITAL MultiSwitch 900

Overview

Introduction

This chapter describes how to configure the module in a DIGITAL MultiSwitch 900. For information on installation and configuration when installed in a DIGITAL MultiSwitch 900-4, refer to the *DIGITAL MultiSwitch 900-4 Installation and Configuration* manual.

NOTE

The module must be installed and cabled prior to configuration.

After configuring the DIGITAL MultiSwitch Fast Ethernet Hub 924TX, you can manage the module in the DIGITAL MultiSwitch 900 using *clearVISN* MultiChassis Manager. For module management procedures, refer to the *clearVISN* User's Guide.

In This Chapter

Topic	Page
Configuring the Module in a DIGITAL MultiSwitch 900	4-2
[9] Start Redirect Mode	4-3
Using the Module's Menus	4-4
[1] Restart with Factory Defaults	4-5
[2] Restart with Current Settings	4-6
[3] Show Current Settings	4-7
[4] Configure IP	4-9
[5] Dump Error Log	4-15
[6] Downline Upgrade	4-16

Configuring the Module in a DIGITAL MultiSwitch 900

This section describes how to configure the module in a DIGITAL MultiSwitch 900. The following screen is an example of the DIGITAL MultiSwitch 900 INSTALLATION MENU when the DIGITAL MultiSwitch Fast Ethernet Hub 924TX module is installed in a DIGITAL MultiSwitch 900.

For information about cabling the DIGITAL MultiSwitch 900 setup port, refer to Chapter 3.

NOTE

Periodically, upgrades to the firmware are released. If you need to upgrade the firmware of an existing module, use the Downline Upgrade procedures provided later in this chapter.

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

```
=====
DIGITAL MultiSwitch 900 INSTALLATION MENU
[1] Restart with Factory Defaults
[2] Restart 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>
```

Examples of the setup screen displays are provided in this chapter to aid in the description of the setup port and to display the options that are available. Because they are examples only as of this publication date, the displays may vary slightly from the actual screen displays on your setup port device.

[9] Start Redirect Mode

The `Start Redirect Mode` option redirects the DIGITAL MultiSwitch 900 setup port or the DIGITAL MultiSwitch 900 Hub Manager setup port to the module that is installed in the requested slot. Choosing this option allows you to configure an installed module or to obtain its status 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 display prompts you for a slot number. Type the slot number in which the DIGITAL MultiSwitch Fast Ethernet Hub 924TX resides. Slot number (8) is used in the following example. After you enter the module's slot number, the console is redirected to that slot.

The following example shows the dialog associated with this option.

```
=====
Enter the slot number for redirection (1-8): 8
Console redirected to 8: MS FE Hub 924TX
Attempting connection [Ctrl/C to abort]...
```

If the redirection is successful, after you press **<Return>**, the `MS FE Hub 924TX INSTALLATION MENU` appears on your screen.

Using the Module's Menus

This section describes the options that are available from the MS FE Hub 924TX INSTALLATION MENU.

When your module is installed in a DIGITAL MultiSwitch 900, the slot number in which the DIGITAL MultiSwitch Fast Ethernet Hub 924TX is installed appears at the top of the menu.

The following example shows the dialog associated with this option.

```
MS FE Hub 924TX - slot 8
=====
                MS FE Hub 924TX INSTALLATION MENU

    [1] Restart with Factory Defaults
    [2] Restart with Current Settings
    [3] Show Current Settings
    [4] Configure IP ...
    [5] Dump Error Log
    [6] Downline Upgrade

    [Ctrl/C] Return to Hub Manager Installation Menu
=====

                Enter selection:
```

The installation menu options are as follows:

Topic	Page
[1] Restart with Factory Defaults	4-5
[2] Restart with Current Settings	4-6
[3] Show Current Settings	4-7
[4] Configure IP . . .	4-9
[5] Dump Error Log	4-15
[6] Downline Upgrade	4-16

[1] Restart with Factory Defaults

This option reboots the module, causing its configured Nonvolatile Random Access Memory (NVRAM) parameters to be cleared and reinitialized to factory default values. If you need to reboot the module and retain the current settings, choose option [2] Restart with Current Settings from the MS FE Hub 924TX INSTALLATION MENU. Allow approximately one minute for the module to reboot and complete self-test.

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.

```
Enter selection: 1
MS FE Hub 924TX - slot 8
=====
                        RESTART 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] Restart with Current Settings

[2] Restart with Current Settings

This option restarts the module but leaves the module's configured NVRAM 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.

```
Enter selection: 2
MS FE Hub 924TX - slot 8
=====
                RESTART 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 will be blank. The software (SW) version number reflects the current version. The hardware ID and ROM (boot) code versions are displayed.

The following example shows the display associated with this option. Entries in this display are defined following the screen.

```

Enter selection : 3
MS FE Hub 924TX - slot 8
=====
MS FE Hub 924TX, HW=B,RO=V1.0,SW=V1.0
SysUpTime           : 6 days 00:03:18      8 resets
SNMP Read/Write Community : public98
SNMP Trap Addresses  : 16.7.88.156
Status of Last Downline Upgrade : TFTP Read
                                00:02:55    7 resets
                                Transfer Complete
BootP                : Disabled

Interface   IP Address  Subnet Mask Def.Gateway Other Info
Ethernet Port 16.20.216.91 255.0.0.0 16.21.0.1 08-00-2B-A6-0E-05

=====
Press Return for Main Menu...

MS FE Hub 924TX - slot 8
=====
=====

```

Line	Field	Description
①	MS FE Hub 924TX	The name of the module.
	HW=B	The hardware version.
	RO=V1.0	The boot ROM version.
	SW=V1.0	The current software version number.
②	SysUpTime 00:31:18	Indicates how long the system has been up since the last reset.
	8 resets	The reset count at the time that the last Downline Upgrade was performed.

[3] Show Current Settings

Line	Field	Description
	SNMP Read/Write Community: public98	The SNMP Read/Write Community name is used for read/write access control.
	SNMP Trap Addresses: 16.7.88.156	This is the address where the module sends SNMP trap addresses.
③	Status of Last Downline Upgrade: TFTP Read 00:02:55 7 resets Transfer Complete	Provides details about the last firmware upgrade. These lines will not be displayed if a Downline Upgrade has never been performed.
④	Interface	The In-Band or Out-of-Band Management interface.
	IP Address	The IP address of the In-Band interface or Out-of-Band Management interface.
	Subnet Mask	The Subnet Mask of the In-Band interface or Out-of-Band Management interface.
	Def.Gateway	The Default Gateway assigned to the In-Band interface interface.
	Other Info	The MAC address of the In-Band interface interface or speed of the Out-of-Band Management in bits per second.

[4] Configure IP

This option provides you with IP configuration selections.

The following example shows the dialog associated with this menu:

```

Enter selection : 4

MS FE Hub 924TX - slot 8
=====
IP CONFIGURATION

[1] Set SNMP Read/Write Community
[2] Add SNMP Trap Addresses
[3] Delete SNMP Trap Addresses
[4] Set In-Band Interface IP Address
[5] Enable/Disable BootP
[6] Return to Main Menu

=====

Enter selection number : [n] <Return>

```

The following pages describe the IP Configuration options:

Topic	Page
[1] Set SNMP Read/Write Community	4-10
[2] Add SNMP Trap Addresses	4-11
[3] Delete SNMP Trap Addresses	4-12
[4] Set In-Band Interface IP Address	4-13
[5] Enable/Disable BootP	4-14

[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 following example shows the dialog associated with this option:

```
Enter selection : 1

MS FE Hub 924TX - slot 8
=====
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] : public98 <Return>

SNMP Read/Write community string set.

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

[2] Add SNMP Trap Addresses

This option prompts you to enter IP addresses to which the DIGITAL MultiSwitch Fast Ethernet 924TX module sends SNMP traps. You can enter up to eight trap addresses. If one or more SNMP trap addresses were previously configured, the screen displays those addresses.

The format of an SNMP trap address is the standard 4-octet dotted decimal notation for an IP address, where each octet of the address is represented as a decimal value, separated by a decimal point (.), for example, 16 . 20 . 54 . 156.

The following example shows the dialog associated with this option:

```

Enter selection : 2
MS FE Hub 924TX - slot 8
=====
ADD SNMP TRAP ADDRESSES

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: 16.20.54.156

=====
Configured SNMP Trap Addresses:  16.20.216.81      ①
        Enter a Trap address [ ]: 16.20.216.89 <Return>      ②
Trap address added!  Enter a Trap Address [ ] : <Return>

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

Line	Field	Description
①	Configure SNMP Trap Addresses: 16.20.216.81	This line appears only if the module has been previously configured.
②	Trap address [] : 16.20.216.89 <Return>	Enter the trap address that you have chosen, then press the Return key.

[4] Configure IP

[3] Delete SNMP Trap Addresses

This option prompts you to select SNMP trap addresses for deletion from the community trap address table. If one or more SNMP trap addresses were previously configured, the screen displays those trap addresses.

The following example shows the dialog associated with this option:

```
Enter selection : 3
MS FE Hub 924TX - slot 8
=====
DELETE SNMP TRAP ADDRESSES

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
=====
Configured SNMP Trap Addresses: 16.20.216.81 ①
Trap address [ ] : 16.20.216.81 <Return> ②
Trap address deleted. Enter a Trap Address [ ] : <Return>
Press Return for IP Configuration Menu...
```

Line	Field	Description
①	Configure SNMP Trap Addresses: 16.20.216.81	This line appears only if the module has been previously configured.
②	Trap address [] : 16.20.216.81 <Return>	Enter the trap address that you have chosen, then press the Return key.

[4] 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 were 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:

```

Enter selection : 4

MS FE Hub 924TX - slot 8
=====

                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      Def.Gateway      Other Info
Ethernet Port  16.20.216.91    255.255.0.0      16.21.0.1        08-00-2B-A3-CD-08

=====
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>
Enter the Default Gateway [16.21.0.1] 16.21.0.1 <Return>.
Press Return for IP Configuration Menu....
    
```

Line	Field	Description
①	[16.20.126.24]	This cell data represents a previously set IP address. During the initial setup, this cell default will appear as [].
②	[16.20.54.156]	Enter the module’s new IP address, then press the Return key.
③	[255.255.255.0]	This cell data represents a previously set Subnet Mask. During the initial setup, this cell default will appear as [].
④	255.255.192.0	Enter the module’s new Subnet Mask, then press the Return key.

[4] Configure IP

[5] Enable/Disable BootP

This option prompts you to enable or disable the bootstrap protocol (BootP) process. BootP is a protocol that the module uses to determine its IP address automatically by communicating with the BootP server.

The factory default setting is `DISABLED`. If BootP is enabled, the word `DISABLED` shown in the following dialog is replaced with the word `ENABLED`.

The following example shows the dialog associated with this option:

```
Enter selection : 5
MS FE Hub 924TX - slot 8
=====
                ENABLE/DISABLE BOOTP
BOOTP is the IP bootstrap protocol. BOOTP may be used
to obtain the module's IP address, subnet mask, and default
gateway. When BOOTP is enabled and the module is not configured
with an IP address, the module will send out BOOTP requests
until it receives a response or is manually configured with an
IP address. When BOOTP is disabled, no BOOTP requests will be
sent.

The BOOTP server must be properly configured to return the
address information.
=====
The BOOTP process is DISABLED
Would you like to ENABLE BOOTP Y/[N]: Y <Return>
                Press Return for IP Configuration Menu...
```

[5] Dump Error Log

This option displays error log dumps for use by DIGITAL support personnel when analyzing system faults. Up to four error log dumps can be stored, and the most recent dump is displayed first. Firmware upgrades are also recorded in the error log.

The following example shows the display associated with this option:

```
Enter selection : 6

MS_FE_Hub_924TX_-_slot_8=====
                        DUMP ERROR LOG
                        CURRENT RESET COUNT: 18
=====
Entry #                = 3
Timestamp              = 0 300
Reset Count            = 7
Firmware Rev          = 1.0
Fatal Error

Dump another entry Y/[N]? N <Return>
=====
No more Error Log entries

Press Return for Main Menu ...
```

NOTE

The format for some entries in the error log may be different from those shown here.

[6] Downline Upgrade

[6] Downline Upgrade

This option allows you to upgrade the module's firmware in nonvolatile flash memory.

Before You Begin

You can perform the downline upgrade (DLU) in one of the following ways:

If the module has...	Then you can...
Been assigned an IP address	Use the module's in-band interface IP address.
Not been assigned an IP address	Use the IP address of the MultiChassis Manager. <i>Note:</i> Refer to the <i>DIGITAL MultiSwitch 900 Owner's Manual</i> for more information. Assign an IP address to the module.

Assigning an IP Address

If you need to assign an IP address to the module, complete the following steps:

Step	Action
1	Select the <code>Configure IP</code> option (option 4) from the <code>MS FE Hub 924TX INSTALLATION MENU</code> .
2	Select the <code>Set In-Band Interface IP Address</code> option (option 4) from the <code>IP Configuration</code> menu.
3	Enter the IP address, subnet mask, default gateway and press <code>Return</code> .

The module retains the IP address at the completion of the DLU process.

Using the DLU Process

CAUTION

If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.

When you select this option from the MS FE Hub 924TX INSTALLATION MENU, the initial setup screen display appears. This screen identifies the option and alerts the user not to interrupt power during the downline load.

```
Enter selection : 6
DEChub 900 MultiSwitch
=====
                OWNLINE UPGRADE
This process upgrades the module's firmware (in nonvolatile Flash
memory). Enter the IP address of your TFTP (Trivial File Transfer
Protocol) load host and the image file name when prompted.
* * * * *
*           IMPORTANT!           IMPORTANT!           IMPORTANT! *
* * * * *
*   If power is interrupted during the downline load, the   *
*   firmware image can be corrupted. Do not turn off power *
*   to the unit or perform any action that can cause the   *
*   unit to lose power during a downline upgrade.           *
* * * * *
=====
Press Return Key to Continue...
```

[6] Downline Upgrade

Initializing the Process

To initiate the DLU process, complete the following steps:

Step	Action	Example
1	Press Return.	<Return>
2	If the file is in the default TFTP directory, enter the firmware image file name and press Return. (The TFTP load host conventions specify the format of the firmware image file name). If the file is not in the default TFTP directory, enter the complete path name and press Return.	DLMT2100.BIN <Return> /BOOT/ DLMT2100.BIN <Return>
3	Enter the IP address of the TFTP load host, and press Return. The screen displays the following message: <div data-bbox="402 1102 901 1339" style="border: 1px solid gray; border-radius: 15px; padding: 10px; background-color: #f0f0f0;"><p>Load will be initiated over the in-band network interface. The device becomes nonfunctional for up to 10 minutes during the time that the flash load is in progress. Press Return Key to Start Load Ctrl/C to abort] . . .</p></div>	16.20.40.156
4	Press Return.	<Return>

When you press <Return>, you initiate the DLU process over the LAN that is connected to the load host. The screen displays the following message:

DLU Process Started!
.....

The DLU Process Stages

The DLU process consists of four stages:

Stage	Description
1	Transferring the image to the module's temporary storage buffer
2	Verifying the image
3	Writing the new image into nonvolatile flash memory
4	Module reset and self-test

Table 4-1 explains what happens during each stage of the DLU process.


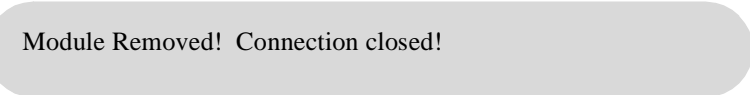
Table 4-1: DLU Process Description

Stage	Description
1	<p>The DLU process transports the new firmware image across the network from the TFTP load host and places it into a temporary storage buffer in the module.</p> <p>This stage normally takes 1 minute to complete. However, due to variations in network configurations (load path and traffic levels), this stage can take 10 minutes or more.</p> <p>The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none">• Module status – functional and manageable• Module can respond to management requests• LED display – normal operation• Hub Manager display – <div data-bbox="418 1056 1183 1142" style="background-color: #e0e0e0; border-radius: 15px; padding: 5px; margin: 5px 0;"><p>MS FE Hub 924TX unknown</p></div> <ul style="list-style-type: none">• Setup screen display – <div data-bbox="418 1213 1183 1299" style="background-color: #e0e0e0; border-radius: 15px; padding: 5px; margin: 5px 0;"><p>DLU Process Started!</p></div> <p>When the series of dots ends, the screen displays the following message:</p> <div data-bbox="418 1413 1183 1499" style="background-color: #e0e0e0; border-radius: 15px; padding: 5px; margin: 5px 0;"><p>Transfer Completed.</p></div>

continued on next page. . .

Stage	Description
2	<p>The module verifies that the firmware image is correct.</p> <p>This stage normally takes 10 seconds to complete.</p> <p>The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none">• Module status – functional and manageable• Module can respond to management requests• LED display – normal operation• Hub Manager display – <div style="border: 1px solid gray; border-radius: 15px; background-color: #f0f0f0; padding: 5px; margin-top: 10px;"><p>MS FE Hub 924TX unknown</p></div>
3	<p>The DLU process transfers the new image from the module’s temporary storage buffer to the nonvolatile flash memory, overwriting the old image.</p> <p>CAUTION: If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.</p> <p>This stage normally takes less than 2 minutes to complete.</p>

[6] Downline Upgrade

Stage	Description
3 (<i>cont.</i>)	<p>The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none">• Module status – cannot respond to management requests• LED display:<ul style="list-style-type: none">— Power LED is on.— Module OK LED is on.— Port State LED 4 lights green for up to 2 minutes.— Port State LED 5 lights green for successful completion of the DLU process.— Port State LED 6 lights green for failure in the completion of the DLU process.• Hub Manager display – • Setup screen display – 

These messages are normal and indicate the module is not manageable.

continued on next page. . .

Stage	Description
4	<p>The module resets, runs self-test, and then begins executing the new firmware image.</p> <p>This stage normally takes 1 minute to complete.</p> <p>The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none"> • Module status – not functional or manageable. • Module cannot respond to management requests. • LED display – <ul style="list-style-type: none"> — Power LED is on. — Module OK LED is off. — Port State LEDs flash indicating various subroutines are running (standard self-test pattern). • Hub Manager display – <div style="background-color: #e0e0e0; border-radius: 15px; padding: 5px; margin: 10px 0;"> <p>MS FE Hub 924TX unknown</p> </div> <p>This message is normal and indicates the module is not manageable.</p>

If the Process Does not Complete

If the process does not complete as described in Stage 3, take one of the following actions:

If...	Then...	Because...
The module loses power.	Contact your representative.	The firmware image is corrupted.
The Port State LEDs 4 and 5 do not light.	Check that the load host is operational.	The load did not succeed.

[6] Downline Upgrade

When the DLU Process is Complete

When the DLU process is complete, the following events occur:

- The module exits from the DLU process.
- The module begins the execution of the new firmware image.
- The Module OK LED turns on.
- The module becomes fully operational.
- The Hub Manager status display shows the following message:



MS FE Hub 924TX
unknown

Verifying the Upgrade

After the DLU process has completed, you can verify the firmware upgrade by completing the following steps:

Step	Action
1	Select Option [3] Show Current Settings from the MS FE Hub 924TX INSTALLATION MENU.
2	Verify that the correct firmware version has been loaded.
3	Press <Return> for the Main Menu.

Chapter 5

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

Overview

Introduction

This chapter describes how to configure the module as a standalone module with a DEChub ONE or DEChub ONE-MX docking station. For installation procedures refer to the *DEChub ONE-MX Installation* or *DEChub ONE-MX Installation* manual.

NOTE

The module must be installed and cabled prior to configuration.

In This Chapter

Topic	Page
Configuring the Module	5-2
[1] Restart with Factory Defaults	5-3
[2] Restart with Current Settings	5-4
[3] Show Current Settings	5-5
[4] Configure IP	5-7
[5] Dump Error Log	5-14
[6] Downline Upgrade	5-15
[7] Configure Out-of-Band Port	5-22

Configuring the Module

This section describes how to configure your DIGITAL MultiSwitch Fast Ethernet Hub 924TX when the module is installed in a DEChub ONE or DEChub ONE-MX as a standalone device. For cabling and setup port information refer to Chapter 3.

The following example shows the dialog associated with this option.

```
MS FE Hub 924TX
-----
MS FE Hub 924TX INSTALLATION MENU

[1] Restart with Factory Defaults
[2] Restart with Current Settings
[3] Show Current Settings
[4] Configure IP ...
[5] Dump Error Log
[6] Downline Upgrade
[7] Configure Out-of-Band port ...

[Ctrl/C] Return to Hub Manager Installation Menu
-----

Enter selection:
```

The installation menu options are as follows:

Topic	Page
[1] Restart with Factory Defaults	5-3
[2] Restart with Current Settings	5-4
[3] Show Current Settings	5-5
[4] Configure IP ...	5-7
[5] Dump Error Log	5-14
[6] Downline Upgrade	5-15
[7] Configure Out-of-Band Port ...	5-22

[1] Restart with Factory Defaults

This option reboots the module, causing its configured Nonvolatile Random Access Memory (NVRAM) parameters to be cleared and reinitialized to factory default values. If you need to reboot the module and retain the current settings, choose option [2] Restart with Current Settings from the MS FE Hub 924TX INSTALLATION MENU. Allow approximately one minute for the module to reboot and complete self-test.

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.

```
Enter selection: 1
MS FE Hub 924TX
=====
                RESTART 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] Restart with Current Settings

[2] Restart with Current Settings

This option restarts the module but leaves the module's configured NVRAM 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.

```
Enter selection: 2

MS FE Hub 924TX
=====
                RESTART 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 will be blank. The software (SW) version number reflects the current version. The hardware ID and ROM (boot) code versions are displayed.

The following example shows the display associated with this option. Entries in this display are defined following the screen.

```

Enter selection : 3

MS FE Hub 924TX
=====
MS FE Hub 924TX, HW=B,RO=V1.0,SW=V1.0                               ①
Last Firmware Upgrade D1.0.17 -> D1.0.18 @18 resets
SysUpTime : 6 days 00:03:18 8 resets                                ②
SNMP Read/Write Community : public98
SNMP Trap Addresses : 16.7.88.156
Status of Last Downline Upgrade : TFTP Read                               ③
                                00:02:55 7 resets
                                Transfer Complete

Out-of-band Management RTS : Disabled
BootP : Disabled

Interface IP Address Subnet Mask Def.Gateway Other Info           ④
Ethernet Port 16.20.216.91 255.255.0.0 16.21.0.1 08-00-2B-A6-0E-05
OBM Port 16.20.66.156 255.255.255.0 Speed 38400 bps
=====
Press Return for Main Menu...

MS FE Hub 924TX
=====
Press Return for Main Menu...

```

Line	Field	Description
①	MS FE Hub 924TX	The name of the module.
	HW=B	The hardware version.
	RO=V1.0	The boot ROM version.
	SW=V1.0	The current software version number.
②	SysUpTime 00:31:18	Indicates how long the system has been up since the last reset.
	8 resets	The reset count at the time that the last Downline Upgrade was performed.

[3] Show Current Settings

Line	Field	Description
	SNMP Read/Write Community: public98	The SNMP Read/Write Community name is used for read/write access control.
	SNMP Trap Addresses: 16.7.88.156	This is the address where the module sends SNMP trap addresses.
③	Status of Last Downline Upgrade: TFTP Read 00:02:55 7 resets Transfer Complete	Provides details about the last firmware upgrade. These lines will not be displayed if a Downline Upgrade has never been performed.
④	Interface	The In-Band or Out-of-Band Management interface
	IP Address	The IP address of the In-Band interface or Out-of-Band Management interface.
	Subnet Mask	The Subnet Mask of the In-Band interface or Out-of-Band Management interface.
	Def.Gateway	The Default Gateway assigned to the In-Band interface.
	Other Info	The MAC address of the In-Band interface or speed of the Out-of-Band Management in bits per second.

[4] Configure IP

This option provides you with IP configuration selections.

The following example shows the dialog associated with this menu:

```

Enter selection : 4

MS FE Hub 924TX
=====
IP CONFIGURATION

[1] Set SNMP Read/Write Community
[2] Add SNMP Trap Addresses
[3] Delete SNMP Trap Addresses
[4] Set In-Band Interface IP Address
[5] Set Out-of-Band Interface IP Address
[6] Enable/Disable BootP
[7] Return to Main Menu

=====

Enter selection number : [n] <Return>

```

The following pages describe the IP Configuration options:

Topic	Page
[1] Set SNMP Read/Write Community	5-8
[2] Add SNMP Trap Addresses	5-9
[3] Delete SNMP Trap Addresses	5-10
[4] Set In-Band Interface IP Address	5-11
[5] Set Out-of-Band Interface IP Address	5-12
[6] Enable/Disable BootP	5-15

[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 following example shows the dialog associated with this option:

```
Enter selection : 1

MS FE Hub 924TX
=====
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] : public98 <Return>

SNMP Read/Write community string set.

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

[2] Add SNMP Trap Addresses

This option prompts you to enter IP addresses to which the DIGITAL MultiSwitch Fast Ethernet Hub 924TX module sends SNMP traps. You can enter up to eight trap addresses. If one or more SNMP trap addresses were previously configured, the screen displays those addresses.

The format of an SNMP trap address is the standard 4-octet dotted decimal notation for an IP address, where each octet of the address is represented as a decimal value, separated by a decimal point (.), for example, 16 . 20 . 54 . 156.

The following example shows the dialog associated with this option:

```

Enter selection : 2
MS FE Hub 924TX
=====
ADD SNMP TRAP ADDRESSES

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: 16.20.54.156
=====
Configured SNMP Trap Addresses      : 16.20.216.81 ①
Enter a Trap address [ ]: 16.20.216.89 <Return> ②
Trap address added! Enter a Trap Address [ ] : <Return>

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

Line	Field	Description
①	Configure SNMP Trap Addresses: 16.20.216.81	This line appears only if the module has been previously configured.
②	Trap address []: 16.20.216.89 <Return>	Enter the trap address that you have chosen, then press the Return key.

[4] Configure IP

[3] Delete SNMP Trap Addresses

This option prompts you to select SNMP trap addresses for deletion from the community trap address table. If one or more SNMP trap addresses were previously configured, the screen displays those trap addresses.

The following example shows the dialog associated with this option:

```
Enter selection : 3
MS FE Hub 924TX
=====
DELETE SNMP TRAP ADDRESSES

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
=====
Configured SNMP Trap Addresses      : 16.20.216.81
Trap address [ ] : 16.20.216.81 <Return>
Trap address deleted. Enter a Trap Address [ ] : <Return>

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

Line	Field	Description
①	Configure SNMP Trap Addresses: 16.20.216.81	This line appears only if the module has been previously configured.
②	Trap address [] : 16.20.216.81 <Return>	Enter the trap address that you have chosen, then press the Return key.

[4] 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 were 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:

```

Enter selection : 4

MS FE Hub 924TX
=====
                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      Def.Gateway      Other Info
Ethernet Port 16.20.216.91 255.255.0.0 16.21.0.1 08-00-2B-A3-CD-08
=====
Enter the IP address [16.20.126.24] ① 16.20.54.156 <Return> ②
Enter the Subnet Mask [255.0.0.0] ③: 255.255.0.0 : <Return> ④
Enter the Default Gateway [16.21.0.1] 16.21.0.1 <Return>.
        Press Return for IP Configuration Menu.....
    
```

Line	Field	Description
①	[16.20.126.24]	This cell data represents a previously set IP address. During the initial setup, this cell default will appear as [].
②	[16.20.54.156]	Enter the module's new IP address, then press the Return key.
③	[255.255.255.0]	This cell data represents a previously set Subnet Mask. During the initial setup, this cell default will appear as [].
④	255.255.192.0	Enter the module's new Subnet Mask, then press the Return key.

[4] Configure IP

[5] 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.

This feature allows you to manage your module through the OBM port as an alternative to normal in-band management. To enable out-of-band management, you need to assign an OBM IP address and select an OBM port speed from the MS FE Hub 924TX Installation MENU. See *DEChub ONE Installation* or *DEChub ONE-MX Installation* manuals for OBM port cabling information.

The module does not need to be configured with a subnet mask for SNMP and Telnet communications with management stations located on the same subnet as the module.

The following example shows the dialog associated with this option:

```
Enter selection :5
MS FE Hub 924TX
=====
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      Def.Gateway      Other Info
Ethernet Port  16.20.216.91    255.255.0.0      16.21.0.1        08-00-2B-A3-CD-08
OBM Port       16.20.66.156   255.255.255.0                                Speed 38400 bps
=====
Enter the IP address [16.20.66.156 ①] : 16.20.54.157 <Return> ②
Enter the Subnet Mask [255.255.255.0 ③]: 255 255 192 0 <Return> ④

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

Line	Field	Description
①	[16.20.66.156]	This cell data represents a previously set IP address. During the initial setup, this cell default will appear as [].
②	16.20.54.157	Enter the module's IP address, then press the Return key.
③	[255.255.255.0]	This cell data represents a previously set Subnet Mask. During the initial setup, this cell default will appear as [].
④	255.255.192.0	Enter the module's Subnet Mask, then press the Return key.

[6] Enable/Disable BootP

This option prompts you to enable or disable the bootstrap protocol (BootP) process. BootP is a protocol that the module uses to determine its IP address automatically by communicating with the BootP server.

The factory default setting is `DISABLED`. If BootP is enabled, the word `DISABLED` shown in the following dialog is replaced with the word `ENABLED`.

The following example shows the dialog associated with this option:

```
Enter selection : 6
MS FE Hub 924TX
=====
                ENABLE/DISABLE BOOTP
BOOTP is the IP bootstrap protocol. BOOTP may be used
to obtain the module's IP address, subnet mask, and default
gateway. When BOOTP is enabled and the module is not configured
with an IP address, the module will send out BOOTP requests
until it receives a response or is manually configured with an
IP address. When BOOTP is disabled, no BOOTP requests will be
sent.

The BOOTP server must be properly configured to return the
address information.
=====
The BOOTP process is DISABLED
Would you like to ENABLE BOOTP Y/[N]: Y <Return>
                Press Return for IP Configuration Menu...
```

[5] Dump Error Log

[5] Dump Error Log

This option displays error log dumps for use by support personnel when analyzing system faults. Up to four error log dumps can be stored, and the most recent dump is displayed first. Firmware upgrades are also recorded in the error log.

The following example shows the display associated with this option:

```
Enter selection : 6
MS FE Hub 924TX - slot 8
=====
DUMP ERROR LOG
CURRENT RESET COUNT: 18
=====
Entry #           = 3
Timestamp         = 0 300
Reset Count       = 7
Firmware Rev      = 1.0
Fatal Error

Dump another entry Y/[N]? N <Return>
=====
No more Error Log entries

Press Return for Main Menu ...
```

NOTE

The format for some entries in the error log may be different from those shown here.

[6] Downline Upgrade

This option allows you to upgrade the module's firmware in nonvolatile flash memory.

Before You Begin

You can perform the downline upgrade (DLU) in one of the following ways:

If the module has...	Then you can...
Been assigned an IP address	Use the module's in-band interface IP address.
Not been assigned an IP address	Assign an IP address to the module. Use the IP address of the OBM interface in the DEChub ONE.

Assigning an IP Address

If you need to assign an IP address to the module, complete the following steps:

Step	Action
1	Select the <code>Configure IP</code> option (option 4) from the <code>MS FE Hub 924TX INSTALLATION MENU</code> .
2	Select the <code>Set In-Band Interface IP Address</code> option (option 4) from the <code>IP Configuration</code> menu.
3	Enter the IP address, subnet mask and default gateway and press Return.

The module retains the IP address at the completion of the DLU process.

[6] Downline Upgrade

Using the DLU Process

CAUTION

If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.

When you select this option from the MS FE Hub 924TX INSTALLATION MENU, the initial setup screen display appears. This screen identifies the option and alerts the user not to interrupt power during the downline load.

```
Enter selection : 6
MS FE Hub 924TX
=====
                OWNLINE UPGRADE

This process upgrades the module's firmware (in nonvolatile Flash
memory). Enter the IP address of your TFTP (Trivial File Transfer
Protocol) load host and the image file name when prompted.
* * * * *
*           IMPORTANT!           IMPORTANT!           IMPORTANT! *
* * * * *
*   If power is interrupted during the downline load, the   *
*   firmware image can be corrupted. Do not turn off power *
*   to the unit or perform any action that can cause the   *
*   unit to lose power during a downline upgrade.           *
* * * * *
=====
Press Return Key to Continue...
```

Initializing the Process

To initiate the DLU process, complete the following steps:

Step	Action	Example
1	Press Return.	<Return>
2	If the file is located in the default TFTP directory, enter the firmware image file name and press Return. (The TFTP load host conventions specify the format of the firmware image file name). If the file is not in the default TFTP directory, enter the complete path name and press Return.	DLMT2100.BIN <Return> C/BOOT/ DLMT2100.BIN <Return>
3	Enter the IP address of the TFTP load host, and press Return. The screen displays the following message: <div data-bbox="451 1104 950 1339" style="border: 1px solid gray; border-radius: 15px; padding: 10px; background-color: #f0f0f0;"> <p>Load will be initiated over the in-band network interface. The device becomes nonfunctional for up to 10 minutes during the time that the flash load is in progress. Press Return Key to Start Load Ctrl/C to abort] . . .</p> </div>	16.20.40.156 <Return>
4	Press Return.	<Return>

When you press <Return>, you initiate the DLU process over the LAN that is connected to the load host. The screen displays the following message:

DLU Process Started!
.....

DLU Process Stages

The DLU process consists of four stages:

Stage	Description
1	Transferring the image to the module's temporary storage buffer
2	Verifying the image
3	Writing the new image into nonvolatile flash memory
4	Resetting module and self-test

Table 5-1 explains what happens during each stage of the DLU process:

Table 5-1: DLU Process Description

Stage	Description
1	<p>The DLU process transports the new firmware image across the network from the TFTP load host and places it into a temporary storage buffer in the module.</p> <p>This stage normally takes 1 minute to complete. However, due to variations in network configurations (load path and traffic levels), this stage can take 10 minutes or more.</p> <p>The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none">• Module status – cannot respond to management requests• LED display – normal operation• Setup screen display – <div data-bbox="406 1396 1185 1486" style="background-color: #e0e0e0; border-radius: 15px; padding: 10px; margin: 10px 0;"><p>DLU Process Started!</p></div> <p>When the series of dots ends, the screen displays the following message:</p> <div data-bbox="406 1585 1185 1680" style="background-color: #e0e0e0; border-radius: 15px; padding: 10px; margin: 10px 0;"><p>Transfer Complete.</p></div>

continued on next page . . .

Stage	Description
2	<p>The module verifies that the firmware image is correct.</p> <p>This stage normally takes 10 seconds to complete.</p> <p>The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none"> • Module status – cannot respond to management requests • LED display – normal operation
3	<p>The DLU process transfers the new image from the module’s temporary storage buffer to the nonvolatile flash memory, overwriting the old image.</p> <p>CAUTION: If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.</p> <p>This stage normally takes less than 2 minutes to complete.</p> <p>The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none"> • Module status – not functional or manageable • Module cannot respond to management requests • LED display: <ul style="list-style-type: none"> — Power LED is on. — Module OK LED is on. — Port State LED 4 lights green for 3 or 4 seconds. — Port State LED 5 lights green for up to 2 minutes. — All the Port State LEDs flash alternately green and yellow for 10 seconds.

continued on next page . . .

[6] Downline Upgrade

Stage	Description
4	<p>The module resets, runs self-test, and then begins executing the new firmware image.</p> <p>This stage normally takes 1 minute to complete.</p> <p>The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none">• Module status – not functional or manageable.• Module cannot respond to management requests.• LED display:<ul style="list-style-type: none">— Power LED is on.— Module OK LED is off.— Port State LEDs flash indicating various subroutines are running (standard self-test pattern).

If the Process Does not Complete

If the process does not complete as described in Stage 3, take one of the following actions:

If...	Then...	Because...
The module loses power	Contact your representative.	The firmware image is corrupted.
The Port State LEDs 4 and 5 do not light	Check that the load host is operational.	The load did not succeed.

When the DLU Process is Complete

When the DLU process is complete, the following events occur:

- The module exits from the DLU process.
- The module begins the execution of the new firmware image.
- The Module OK LED turns on.
- The module becomes fully operational.

Verifying the Upgrade

After the DLU process has completed, you can verify the firmware upgrade by completing the following steps:

Step	Action
1	Select Option [3] Show Current Settings from the MS FE Hub 924TX INSTALLATION MENU.
2	Verify that the correct firmware version has been loaded.
3	Press <Return> for the Main menu.

[7] Configure Out-of-Band Port

[7] Configure Out-of-Band Port

Out-of-band port configuration is operational only when the module is installed into a DEChub ONE or DEChub ONE-MX docking station.

This option provides you with two configuration selections:

- Set port speed
- Enable or disable Request to Send (RTS)

The following example shows the dialog associated with this option:

```
Enter selection : 7
MS FE Hub 924TX
=====
[1] Set Port Speed
[2] Enable/Disable RTS
[3] Return to Main Menu
=====
Enter selection number: n <Return>...
```


[7] Configure Out-of-Band Port

[1] Set Port Speed

This option lets you select and enter the speed of your OBM port. The factory default for this option is 9600. The OBM port speed that you select must match the speed of your OBM device.

NOTE

The port speeds at both ends of the communications link must be identical.

The following example shows the dialog associated with this option:

```
Enter selection : 1
MS FE Hub 924TX
=====
      SET OUT-OF-BAND (OBM) PORT SPEED
      [1] 2400 baud
      [2] 9600 baud
      [3] 19200 baud
      [4] 38400 baud
=====
Enter selection : [2] (9600) : n <RETURN>
OBM port speed set

Press Return for OBM Configuration Menu...
```

[7] Configure Out-of-Band Port

[2] Enable/Disable RTS

This option allows you to enable or disable Request to Send (RTS). The factory default for this option is Disabled.

The following example shows the dialog associated with this option if RTS is disabled:

```
Enter selection : 2
MS FE Hub 924TX
=====
                ENABLE/DISABLE OUT-OF-BAND PORT RTS
Enable/Disable request to send (RTS) option allows additional
control to modem communications. When the RTS option is disabled
the RTS signal on the OBM port is asserted after self-test is
completed and left asserted. When the RTS option is Enabled the
RTS signal is asserted only when there is data to be transmitted
and deasserted after the data has been transmitted.
=====
RTS is Disabled. Would you like to ENABLE RTS? [N] <Return>
Press Return for OBM Configuration Menu...
```

If RTS is enabled, the screen displays the following screen:

```
RTS is Enabled. Would you like to DISABLE RTS?
```

Chapter 6

Removing a Module and Option Cards

Overview

Introduction

This chapter describes how to remove a module and MM-100 option cards from the DIGITAL MultiSwitch 900.

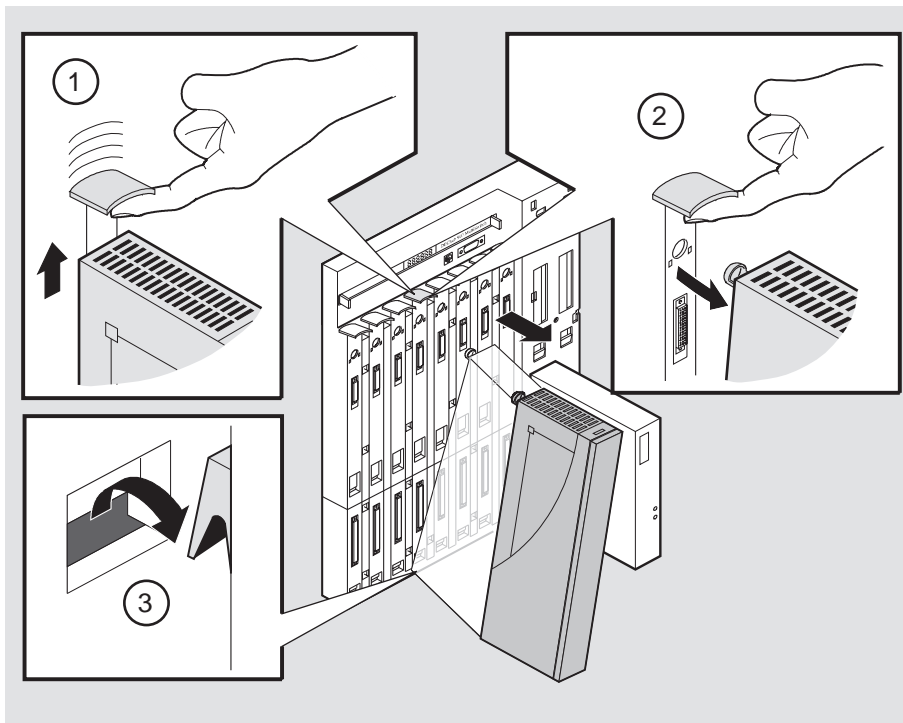
In This Chapter

Topic	Page
Removing Modules from the DIGITAL MultiSwitch 900 (Hot-Swappable)	6-2
Removing Cables from the 100BASE-TX Fixed Ports	6-3
Removing the MM-100	6-4
Replacing the Dust Cover on the DIGITAL MultiSwitch Fast Ethernet Hub 924TX	6-6

Removing Modules from the DIGITAL MultiSwitch 900 (Hot-Swappable)

To remove the module from the DIGITAL MultiSwitch 900, complete the following steps (see **Figure 6-1**).

Figure 6-1: Removing the Module from a DIGITAL MultiSwitch 900



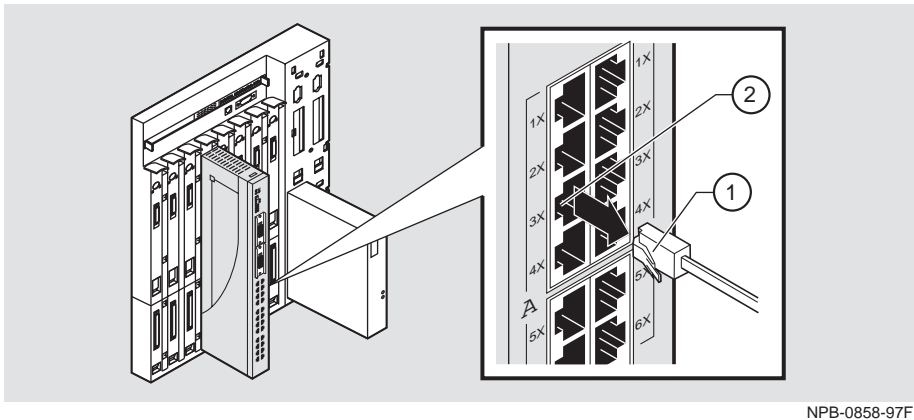
NPG-0008-95F

Step	Action
1	Lift the release lever (1) located 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).
3	Remove the module.

Removing Cables from the 100BASE-TX Fixed Ports

Complete the following steps to remove 100BASE-TX cables from the module as shown in **Figure 6-2**.

Figure 6-2: 100BASE-TX Cable Removal on the Module



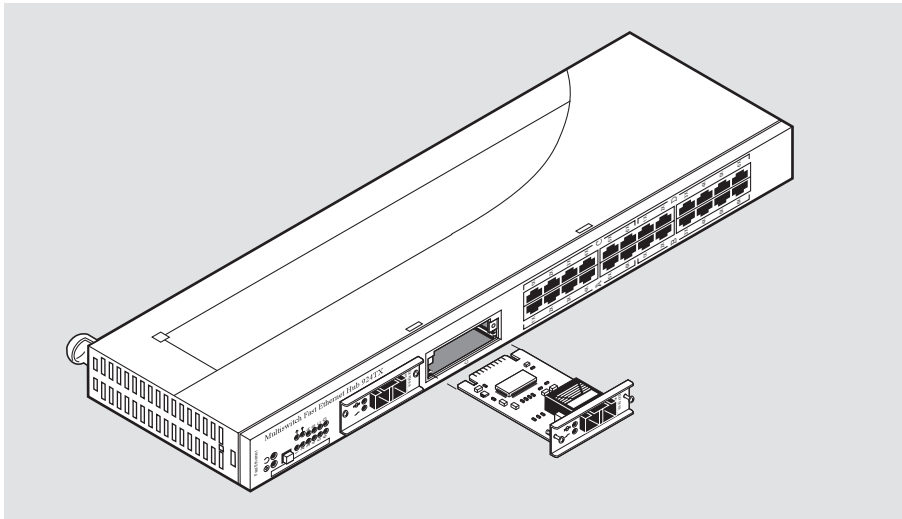
NPB-0858-97F

Step	Action
1	Push in on the release tab (1) and remove the connector (2) from the module's 100BASE-TX port.
2	Remove the other end of the cable from the network device (PC or workstation), if needed.
3	Repeat steps 1 and 2 for additional 100BASE-TX connectors.

Removing the MM-100

Complete the following steps to remove an MM-100 from the module (**Figure 6-3**).

Figure 6-3: Removing the MM-100



NPB-0869-97F

Depending on the type of connectors used on the card, there will be differences in the way cables are removed. For cable removal information for the modular media interfaces, refer to the *100 Mb/s Fast Ethernet Modular Media Interface Cards Installation* manual.

Step	Action
------	--------

- 1 Attach one end of the antistatic wrist strap to your wrist and the other end to the 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 the *100 Mb/s Modular Media Interface Installation* manual for removal information.

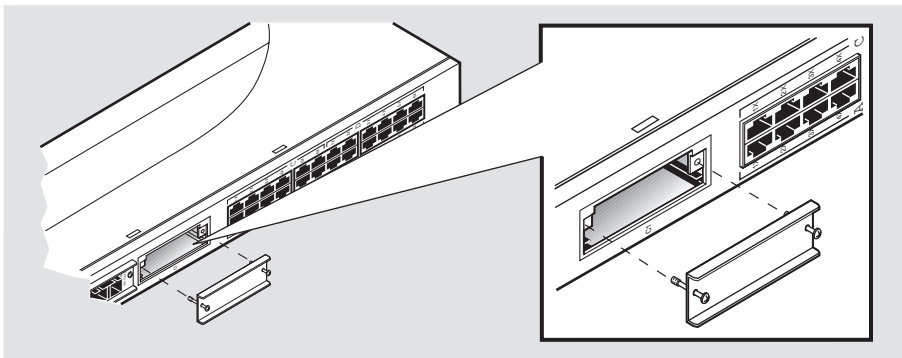
Removing the MM-100

Step	Action
3	Use a Phillips-head screwdriver to loosen the two captive screws that hold the card in place.
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 dust cover.

Replacing the Dust Cover on the DIGITAL MultiSwitch Fast Ethernet Hub 924TX

Figure 6-4 shows dust cover location and the table describes how to replace the cover.

Figure 6-4: Dust Cover Replacement



NPB-0863-97F

Step	Action
1	Align the two captive screws with the threaded holes in the module.
2	Tighten the captive screws.

Appendix A

Problem Solving

Overview

Introduction

This appendix describes the LED states and troubleshooting information for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX.

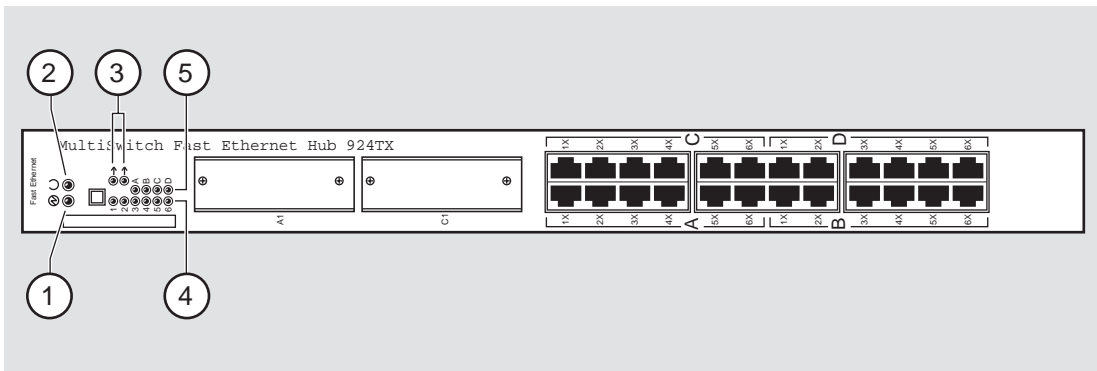
For detailed information about modular media interface LEDs, refer to the *100 Mb/s Fast Ethernet Modular Media Cards Installation* manual.

In This Appendix

Topic	Page
DIGITAL MultiSwitch Fast Ethernet Hub 924TX LED States	A-2
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Problem Solving Using the LEDs	A-4




DIGITAL MultiSwitch Fast Ethernet Hub 924TX LED States

Table A-1 describes the states indicated by the module's LEDs (shown in the following illustration).



NPB-0922-97F

Table A-1: DIGITAL MultiSwitch Fast Ethernet Hub 924TX LED States

LED(s)	Off	Green On	Green Blinking	Yellow On	Yellow Blinking
(1)  Power OK LED	Module is not receiving power	Module has power	N/A	N/A	N/A
(2)  Module OK LED	Module failed self-test or module problem exists	Module passed self-test	Non-fatal failure (for example: bad fan)	N/A	N/A
(3)  Network Activity LEDs	No network activity	N/A	Internal LAN network traffic	N/A	External LAN network traffic

DIGITAL MultiSwitch Fast Ethernet Hub 924TX LED States

LED(s)	Off	Green On	Green Blinking	Yellow On	Yellow Blinking
--------	-----	----------	----------------	-----------	-----------------

NOTE

If one group is selected (all 24 ports are in one collision domain), LED1 will blink when LAN1 (Groups A, B, C, and D) is active. If two groups are selected, LED1 will blink when LAN1 (Group A and B) is active and LED2 will blink when LAN2 (Group C and D) is active.

(4) Port Status LEDs 1 - 6	Bad or no connection	Port is connected to another operational network device	The associated port is disabled by network management	N/A	N/A
(5) Port Group Select LEDs A, B, C, D	Associated port group is not currently displaying its port connection status on the 24 Port Status LEDs	Indicates port group for which the 24 Port Status LEDs display status	N/A	N/A	N/A

DIGITAL MultiSwitch Fast Ethernet Hub 924TX Problem Solving Using the LEDs

A problem is often indicated by the combined states of the DIGITAL MultiSwitch Fast Ethernet Hub 924TX's LEDs. **Table A-2** lists the states of the LEDs for various error conditions, the probable causes, and corrective action to take.

NOTE

If sufficient power becomes unavailable to a DIGITAL MultiSwitch Fast Ethernet Hub 924TX that is operating in a DIGITAL MultiSwitch 900, the module enters into a low power mode and suspends operations. The DIGITAL MultiSwitch 900 LCD displays the message, "Not Enough Power!"

DIGITAL MultiSwitch Fast Ethernet Hub 924TX Problem Solving Using the LEDs

Table A-2: Typical Combined States of LEDs

Symptom	Probable Cause	Corrective Action
Power LED is off.	The module is not receiving +5Vdc.	<p>Check the power status on the module, or DIGITAL MultiSwitch 900.</p> <p>If the module indicates that power is available for this module, lift the release lever and reseal or remove the module.</p> <p>If the problem persists, either replace the module or contact your service representative to correct the problem.</p>
Module OK LED is off.	<p>The module Self-test in progress.</p> <p>Self-test failed.</p>	<p>Wait for self-test to complete.</p> <p>If the LED does not light within 60 seconds disconnect the module and plug it in again.</p> <p>If self-test fails again, replace the module. If the problem persists, contact your service representative to correct the problem.</p>
The module OK LED is off and Ethernet Activity LED for Port 1 is blinking green (once every 8 seconds).	<p>The module's firmware image is corrupted.</p> <p>Module failed diagnostics with a fatal error; or a fatal error was sensed during steady state operation.</p>	<p>Either replace the module or contact your service representative to correct the problem.</p>

DIGITAL MultiSwitch Fast Ethernet Hub 924TX Problem Solving Using the LEDs

Symptom	Probable Cause	Corrective Action
The module OK LED is blinking, but continues to operate normally.	A non-fatal error occurred. The module passed diagnostics with a non-fatal error; or a non-fatal error (fan failure) is being sensed currently, even though module passed diagnostics successfully when it was initialized.	Power off and on. If the problem persists, either replace the module or contact your service representative to correct the problem.
Port Status LED is off.	1. Connection is bad (loose or incorrect cable). 2. Port not connected.	Correct the cable connection. None — normal operation.
Port Status LED is blinking green.	Port is disabled (e.g., by management, security, or is isolated).	None — normal operation.
Port activity LED is flickering green.	Traffic sensed on network connected to port.	None.
Port activity LED is off.	No traffic sensed.	None.

Appendix B

Connectors and Pin Assignments

Overview

Introduction

This appendix shows the pin assignments of the connectors, cables, and adapters that are part of, or can be used with, the DIGITAL MultiSwitch Fast Ethernet Hub 924TX module and DIGITAL MultiSwitch 900.

For detailed information about Modular Media Interface (MM-100) connectors, refer to the *100 Mb/s Fast Ethernet Modular Media Cards Installation* manual.

In This Appendix

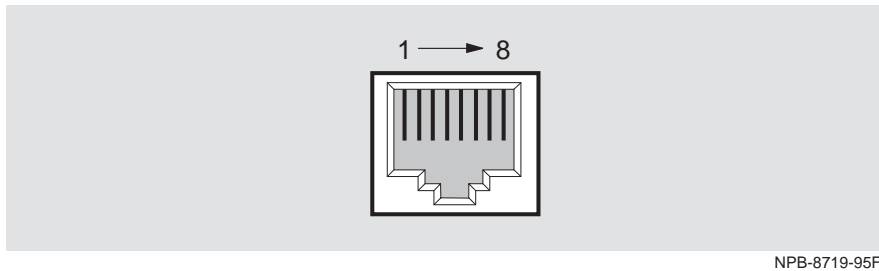
Topic	Page
DIGITAL MultiSwitch Fast Ethernet Hub 924TX Connectors and Pin Assignments	B-2
100BASE-TX (8-pin MJ) Port Connector	B-2
DIGITAL MultiSwitch 900 Connectors and Pin Assignments	B-3
OBM Port (9-Pin) Connector	B-3
DEChub ONE and DEChub ONE-MX Connectors and Pin Assignments	B-4
10BaseT (8-pin MJ) Port Connector	B-4
AUI (15-pin D-Sub) Port Connector	B-5
OBM Port (9-Pin) Connector	B-6
Adapters	B-7
H8571-J Adapter	B-7
H8575-A Adapter	B-7
Internal and External Crossover Configurations	B-8

DIGITAL MultiSwitch Fast Ethernet Hub 924TX Connectors and Pin Assignments

100BASE-TX (8-pin MJ) Port Connector

All 24 fixed port connectors on the DIGITAL MultiSwitch Fast Ethernet Hub 924TX are 100BASE-TX, 8-pin MJ, crossover connectors. **Table B-1** defines the 8-pin MJ connector pin assignments. **Figure B-1** shows their location.

Figure B-1: 100BASE-TX (8-pin MJ) Connector



NPB-8719-95F

Table B-1: 100BASE-TX (8-pin MJ) Connector Pin Assignments

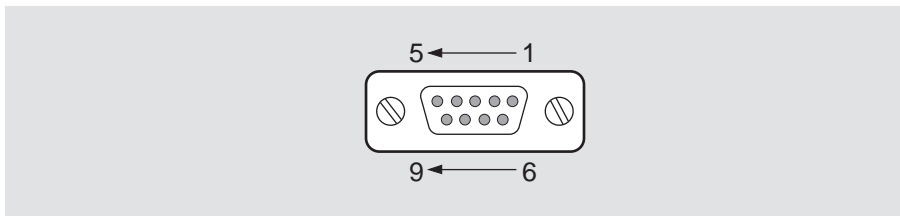
Pin No.	Assignment
1	RX+
2	RX-
3	TX+
4	Not Connected
5	Not Connected
6	TX-
7	Not Connected
8	Not Connected

DIGITAL MultiSwitch 900 Connectors and Pin Assignments

OBM Port (9-Pin) Connector

Table B-2 describes the OBM connector pin assignments used on the DIGITAL MultiSwitch 900 and Figure B-2 shows their location.

Figure B-2: OBM Port (9-Pin) Connector



NPG-0299-95F

Table B-2: OBM Port (9-Pin) Connector Pin Assignments

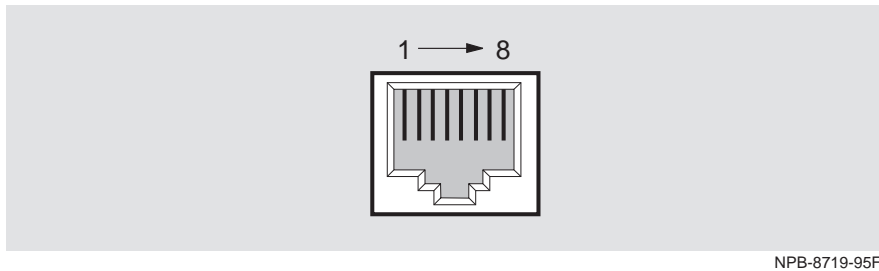
Pin No.	Assignment
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground
6	Data Set Ready (DSR)
7	Request To Send (RTS)
8	Clear To Send (CTS)
9	Not Connected

DEChub ONE and DEChub ONE-MX Connectors and Pin Assignments

10BaseT (8-pin MJ) Port Connector

Figure B-3 shows the 8-pin MJ (straight-through) connector and its pin assignments. **Table B-3** describes the 8-pin MJ (straight-through) connector and its pin assignments used on the DEChub ONE and DEChub ONE-MX.

Figure B-3: 10BaseT (8-pin MJ) Connector



NPB-8719-95F

Table B-3: 10BaseT (8-pin MJ) Connector Pin Assignments

Pin No.	Assignment
1	TX+
2	TX-
3	RX+
4	Unused
5	Unused
6	RX-
7	Unused
8	Unused

NOTE

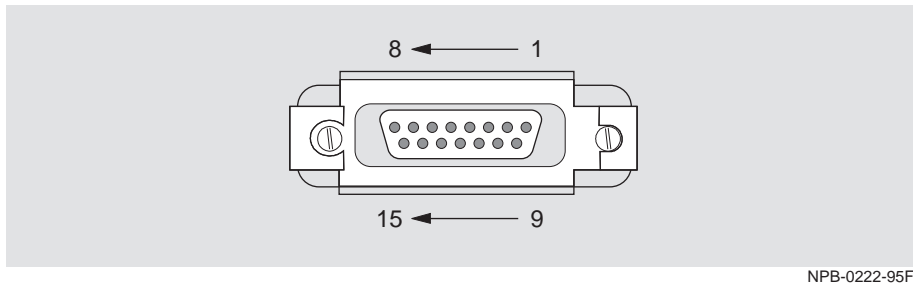
All 10BaseT port connectors on the module are straight-through connections.

DEChub ONE and DEChub ONE-MX Connectors and Pin Assignments

AUI (15-pin D-Sub) Port Connector

Figure B-4 shows the shielded 8-pin MJ Twisted Pair 15-pin AUI connector and its pin assignments. **Table B-4** describes the shielded 8-pin MJ Twisted Pair 15-pin AUI connector and its pin assignments used on the DEChub ONE and DEChub ONE-MX.

Figure B-4: AUI 15-Pin Port Connector



NPB-0222-95F

Table B-4: AUI 15-Pin Port Connector Pin Assignments

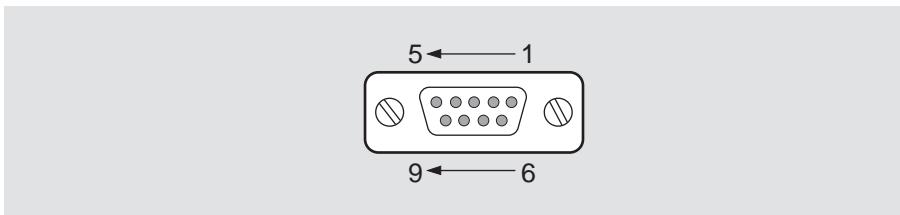
Pin No.	Assignment
1	Ground
2	CI+
3	DO+
4	Ground
5	DI+
6	Power rtn
7	NC
8	Ground
9	CI-
10	DO-
11	Ground
12	DI-
13	Power 12V
14	Ground
15	NC

DEChub ONE and DEChub ONE-MX Connectors and Pin Assignments

OBM Port (9-Pin) Connector

Table B-5 describes the OBM connector pin assignments used on the DIGITAL MultiSwitch 900 and Figure B-5 shows their location.

Figure B-5: OBM Port (9-Pin) Connector



NPG-0299-95F

Table B-5: OBM Port (9-Pin) Connector Pin Assignments

Pin No.	Assignment
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground
6	Data Set Ready (DSR)
7	Request To Send (RTS)
8	Clear To Send (CTS)
9	Not Connected

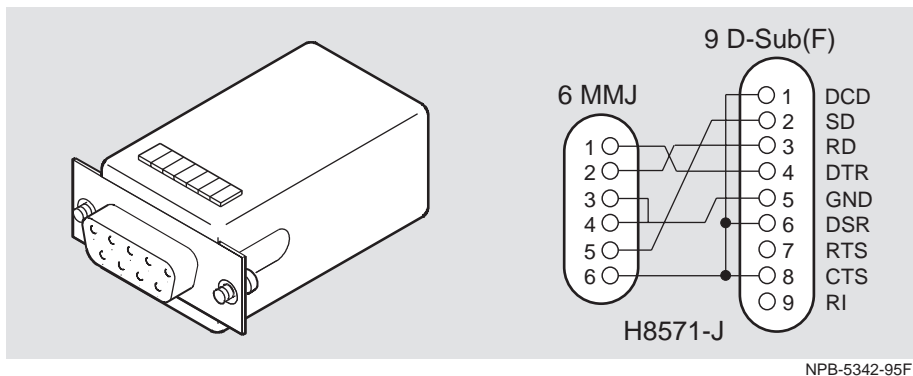
Adapters

The following adapters are used with the DIGITAL MultiSwitch 900 or a device such as a PC or terminal.

H8571-J Adapter

Figure B-6 shows the H8571-J adapter (6-pin MMJ to 9-pin D-Sub connector) can be used when connecting to the OBM port on the DIGITAL MultiSwitch 900. EOS/ESD protection devices are not shown in the illustration.

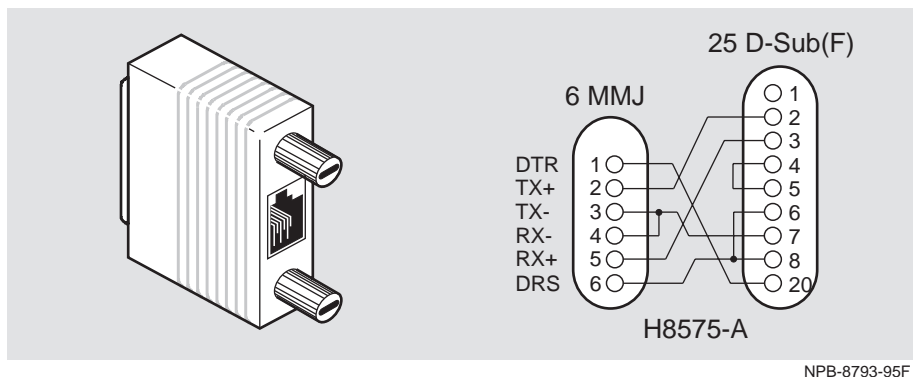
Figure B-6: H8571-J Adapter



H8575-A Adapter

Figure B-7 shows the H8575-A adapter (6-pin MMJ connector to 25-pin D-Sub connector) and its pin assignments.

Figure B-7: H8575-A Adapter



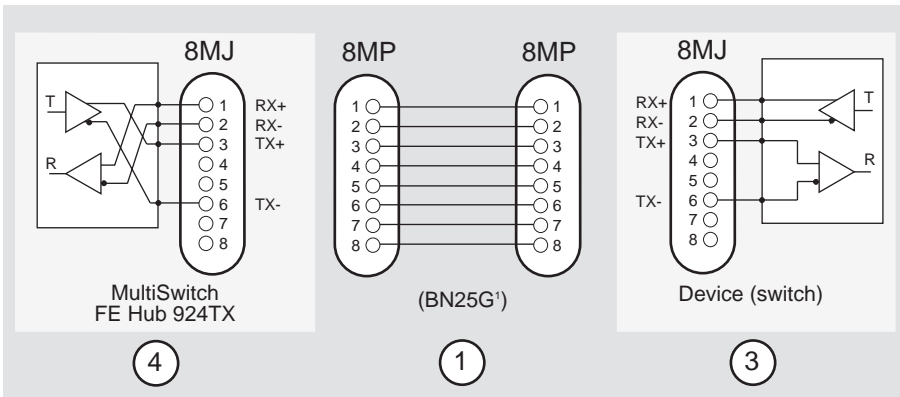
Internal and External Crossover Configurations

A crossover function must be implemented in every twisted-pair link. The crossover function (internal or external) allows the transmitter of one device to connect to the receiver of the device at the other end of the twisted-pair link.

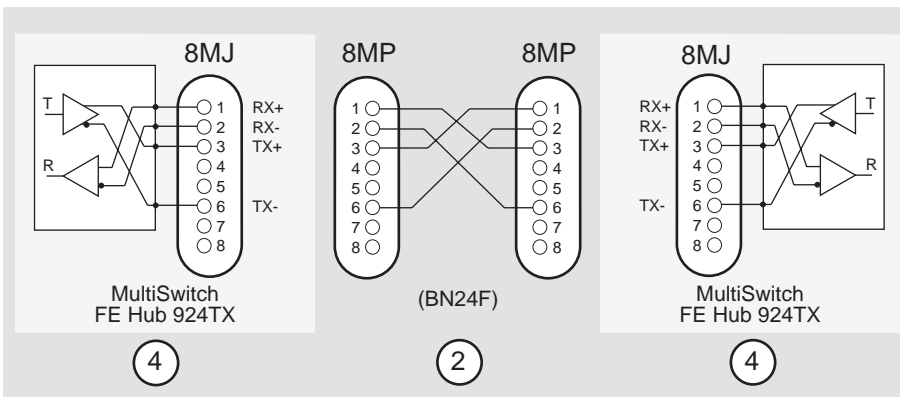
Figure B-8 shows straight-through (1) and crossover cables (2) for connecting straight-through (3) and crossover (4) types of devices. The module uses crossover connectors.

Figure B-8: Crossover Configurations

Internal Crossover Configuration:



External Crossover Configuration:



NPB-0919-97F

¹ If screened cabling is required, use BN26M.

Appendix C

Product Specifications

Overview

Introduction

This appendix lists product and acoustical specifications for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX, and connectors used with these products.

In This Appendix

Topic	Page
Product Specifications for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX	C-2
Acoustical Specifications	C-3

Product Specifications for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX

Table C-1 lists the product specifications for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX.

Table C-1: Product Specifications for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX

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 4,267 m (14,000 ft)
• Non-operating	Sea level to 12,192 m (40,000 ft)
Power	49.5 W total power
	<ul style="list-style-type: none"> • 8.4 A, 5 Vdc • 0.0 A, 12 Vdc • 0.5 A, 15 Vdc
Physical	
Height (installed vertically)	44.45 cm (17.5 in)
Width (installed vertically)	4.45 cm (1.75 in)
Depth	15.25 cm (6.02 in); 25.40 cm (10.0 in) with a DEChub ONE docking station; 30.48 cm (12.0 in) with a DEChub ONE-MX docking station
Weight	1.75 kg (3.86 lb); 3.89 kg (8.58 lb) with a DEChub ONE-MX docking station; 1.51 kg (7.20 lb) with a DEChub ONE docking station
Shock (Class A/B for products weighing under 100 lbs)	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 0.02 in (0.5mm) displacement DA* 200 to 500 Hz sine sweep @ 0.10 G
Certification	CE, CSA, FCC, TÜV, UL, VCCI, C-TICK, BCIQ

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 lists the acoustical specifications for the module in English. **Table C-3** lists the acoustical specifications for the module in German.

Table C-2: Acoustical Specifications

Declared Values per ISO 9296 and ISO 7779¹

Product	Sound Power Level $L_{WA,d}$, B	Sound Pressure Level L_{pAm}, dBA (bystander positions)
	Idle/Operate	Idle/Operate
DIGITAL MultiSwitch Fast Ethernet Hub 924TX DLMT2	5.0	37
DIGITAL MultiSwitch Fast Ethernet Hub 924TX + DEChub ONE DLMT2-MA + DEFHU	5.2	42
DIGITAL MultiSwitch Fast Ethernet Hub 924TX + DEChub ONE-MX DLMT2-MA + DEF1H	5.1	43

¹ Current values for specific configurations are available from Cabletron Systems representatives. 1 B = 10 dBA.

Table C-3: German Acoustical Specifications

Schallemissionswerte Werteangaben nach ISO 9296 und ISO 7779/DIN EN27779²

Produkt	Schalleistung- speigel $L_{WA,d}$, B	Schalldruckpegel L_{pAm}, dBA (Zuschauer- positionen)
	Leerlauf/Betrieb	Leerlauf/Betrieb
DIGITAL MultiSwitch Fast Ethernet Hub 924TX DLMT2	5,0	37
DIGITAL MultiSwitch Fast Ethernet Hub 924TX + DEChub ONE DLMT2-MA + DEFHU	5,2	42
DIGITAL MultiSwitch Fast Ethernet Hub 924TX + DEChub ONE-MX DLMT2-MA + DEF1H	5,1	43

²Aktuelle Werte für spezielle Ausrüstungsstufen sind über die Cabletron Systems Vertretungen erhältlich.
1 B = 10 dBA.

Appendix D

Ordering Options

Overview

Introduction

This appendix describes the ordering information for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX.

In This Appendix

Topic	Page
Ordering Options	D-2

Ordering Options

Ordering Options

Option	Part Number
DIGITAL MultiSwitch Fast Ethernet Hub 924TX, fixed 24-port 100 Mb/s Hub	DLMT2-MA
Expansion Slot MM-100 Options:	
• 100BASE-FX	DEXYM-AA
• 100BufFX	DEXYM-BA
Straight-through Cable	BN25G-xx
Crossover Cable	BN24Q-xx
Adapter (Used when connecting to the OBM port on the DIGITAL MultiSwitch 900)	H8571-J

Appendix E

Associated Documentation

Overview

Introduction

This appendix describes the associated documentation, how to order additional documentation, and correspondence.

In This Appendix

Topic	Page
Documentation	E-2
Accessing Online Information	E-4

Documentation

The following documents provide information relating to the DIGITAL MultiSwitch Fast Ethernet Hub 924TX module. To order any of the following documents, refer to the section titled How to Order Additional Documentation.

Title and Order Number	Description
<i>DIGITAL MultiSwitch Fast Ethernet Hub 924TX Installation and Configuration</i> EK-DLMT2-IN	Provides installation, setup, and configuration information for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX installed in a DIGITAL MultiSwitch 900.
<i>DIGITAL MultiSwitch Fast Ethernet Hub 924TX Quick Start</i> EK-DLMT2-QS	Provides a four page guide for installation, setup, and configuration information for the DIGITAL MultiSwitch Fast Ethernet Hub 924TX installed in a DIGITAL MultiSwitch 900.
<i>DIGITAL MultiSwitch 900 Owner's Manual</i> EK-DH2MS-OM	Provides installation, use, security, and troubleshooting information for the DIGITAL MultiSwitch 900.
<i>clearVISN Installation</i> AA-QX86*-TK	Describes how to install <i>clearVISN</i> software. It includes a list of distribution kit contents, system requirements, pre-installation considerations, and the installation procedure.
<i>clearVISN Overview</i> AA-QX87*-TK	Provides an overview of <i>clearVISN</i> , an explanation of each <i>clearVISN</i> application, and descriptions of all concepts necessary to understand and use the application efficiently.
<i>clearVISN User's Guide</i> AA-QX88*-TK	Provides information for starting each application, configuring them (when necessary), and general use information.
<i>DEChub Network Modules 900-Series Repeater Reference</i> EK-REPTR-HR	Describes the functions and features of the DIGITAL HUB-based 900-series repeaters.

Documentation

Title and Order Number	Description
<i>DIGITAL MultiSwitch 900 Owner's Manual EK-DH2MS-OM</i>	Provides installation, use, security, and troubleshooting information for the DIGITAL MultiSwitch 900.
<i>DEChub Network Modules 900-Series Switch Reference EK-SWTCH-HR</i>	Describes the functions and features of DIGITAL's HUB-based 900-Series switching products.
<i>OPEN DECconnect Applications Guide EC-G2570-42</i>	Contains general descriptions to help plan and install networking systems based on Digital Equipment Corporation's OPEN DECconnect System and networking products.

* Denotes revisions that are indicated alphabetically (A, B, C, etc.)

Accessing Online Information

Documentation Comments

If you have comments or suggestions about this document, send them to
TechWriting@cabletron.com

Online Services

To locate product-specific information, refer to one of the following World Wide Web sites:

Americas:	http://www.networks.digital.com or http://www.cabletron.com/
Europe	http://www.networks.europe.digital.com
Asia Pacific	http://www.networks.digital.com.au

Appendix F

Accessing and Configuring RMON Groups

Overview

Introduction

This appendix describes how to access the four RMON groups and how to configure the Alarms and Events groups.

In This Appendix

Topic	Page
What Is RMON?	F-2
Groups Supported	F-3
How to Access RMON Groups	F-4

What Is RMON?

What Is RMON?

RMON is a Remote Network Monitoring Management Information Base (RMON MIB). RMON gathers a wide variety of statistical information about network operation. A typical network consists of multiple network segments with one RMON agent connected to each segment. RMON gathers this information by examining each packet passed on a network segment. Segment statistics are stored in counters within the module. The counters are continuously updated and reset at powerup.

RMON also captures and stores network traffic information. RMON allows you to examine these captured packets or sequences of packets to identify and isolate network operational software or hardware problems.

A list of RMON features is described in Chapter 1.

NOTE

The online help includes management tasks and information for the RMON Manager application.

Groups Supported

The four RMON groups supported by this module are Statistics, History, Alarms, and Events. The following table defines these four groups:

This group...	Allows you to...
Statistics	Obtain an array of operational statistics including: <ul style="list-style-type: none">• Packets• Octets• Broadcasts• Collisions• Dropped packets• Fragments• CRC alignment errors• Undersize/oversize packets• Multicasts• Jabbers• 64 octet packets• 65 to 127 octet packets• 128 to 255 octet packets• 256 to 511 octet packets• 512 to 1023 octet packets• 1024 to 1518 octet packets
History	Obtain a historical representation of statistics for individual ports for customized trend analysis.
Alarms	Set a wide variety of thresholds and sampling intervals on any statistic to create an alarm condition. An alarm will cause an event. You may set threshold values as: <ul style="list-style-type: none">• An absolute value• A rising value• A falling value• A delta value
Events	Create entries in the monitor log and generate SNMP traps for selected events. You can initiate events by setting an alarm on any counter. The log includes a description and the time of each event.

How to Access RMON Groups

This section provides you with procedures that describe how to access the RMON Groups.

RMON Group	To Access/Use these Groups ...
Statistics and History	Use the <i>clear</i> VISN MultiChassis Manager
Alarms and Events	Use any SNMP network manager

Accessing Statistics and History

To access the Statistics and History groups, you must use the *clear*VISN MultiChassis Manager as follows:

Step	Action
1	Run the <i>clear</i> VISN MultiChassis Manager.
2	Double-click on the DECrepeater 924FE module. (The summary screen displays the module's summary.)
3	Click on the RMON button to display the Statistics screen.
4	Click on the HISTORY button on the Statistics screen.

For additional Statistics and History information refer to online help.

Accessing Alarms and Events

This section describes how to set up a condition to be monitored (an alarm) and an event to be generated once that condition has occurred. You use an SNMP network manager to set up conditions and events. For a more complete description of the alarmTable and eventTable, refer to RFC 1757: S. Waldbusser, "Remote Network Monitoring Management Information Base", 02/10/1995.

The event group consists of the eventTable and the logTable. The alarmTable contains configuration entries that define a variable, polling period, and threshold parameters.

If an entry is found to have crossed the threshold value, an event is generated that is processed as specified by your entries in the eventTable. Thus, the eventTable controls the generation and notification of events from the device.

How to Access RMON Groups

The RMON Alarms and Events MIB objects eventDescription, alarmOwner, and eventOwner support up to 127 characters. MIB object eventCommunity supports up to 32 characters. The maximum number of entries that can be placed in the alarmTable is 20. For the eventTable, the maximum is 32.

Alarm and Event Table Entries

Alarm table entries can only be created for SNMP Integer MIB variables of the following types:

- INTEGER
- Counter
- Gauge
- TimeTicks

The following tables list and define the fields that make up an alarm table entry and an event table entry.

How to Access RMON Groups

Table F-1: Alarm Table Entry Fields

Alarm Table Entry Fields	Definition
alarmIndex	An index that uniquely identifies an entry (see note below).
alarmInterval	The interval, in seconds, over which the data is sampled and compared with the rising and falling threshold.
alarmVariable	The object identifier of the particular variable to be sampled.
alarmSampleType	The method of sampling the selected variable and calculating the value to be compared against the thresholds.
alarmValue	The value of the statistic during the last sampling period (see note below).
alarmStartupAlarm	The alarm that may be sent when this entry is first set to valid.
alarmRisingThreshold	Rising (increasing) threshold for the sampled statistic.
alarmFallingThreshold	Falling (decreasing) threshold for the sampled statistic.
alarmRisingEventIndex	The index of the eventEntry that is used when a rising threshold is crossed.
alarmFallingEventIndex	The index of the eventEntry that is used when a falling threshold is crossed.
alarmOwner	The person who configured this entry and is therefore using the resources assigned to it.
alarmStatus	The status of this alarm entry.

NOTE

The alarmIndex and alarmValue objects are read-only. You cannot set these fields. The alarmIndex is implicitly specified when the entry is created. The alarmValue is made available after the current sampling period.

Table F-2: Event Table Entries

Event Table Entry Fields	Definition
eventIndex	An index that uniquely identifies an entry (see note below).
eventDescription	A comment describing this event.
eventType	The type of notification that will occur when the threshold is being reached.
eventCommunity	If an SNMP trap is to be sent, it will be sent to the SNMP community specified.
eventLastTimeSent	The value of sysUpTime at the time this event entry last generated an event. (see note below).
eventOwner	The person who configured this entry and is therefore using the resources assigned to it.
eventStatus	The status of this event entry.

NOTE

The eventIndex and eventLastTimeSent objects are read-only. You cannot set these fields. The eventIndex is implicitly specified when the entry is created. The eventLastTimeSent is made available after the current sampling period.

How Traps Work

SNMP-managed devices are able to send trap messages to network management stations. You configure the IP addresses of NMS “trap sinks” that are to receive the RMON trap messages. For additional information on traps, refer to RFC 1215: M. Rose, “A Convention for Defining Traps for use with the SNMP”, 03/27/1991.

The trap IP address can be configured on all DEChub 900 modules through the device’s set-up port. With the exception of the DECserver 900 products, the trap IP address can also be added via SNMP set-requests to the device’s private MIB (pcomSnmppAuthTrapAddressTable).

You can specify that when an alarm condition is reached, a trap is generated and sent to the trap sinks specified. For additional information on how to specify trap generation, refer to eventType RFC 1757: S. Waldbusser, “Remote Network Monitoring Management Information Base”, 02/10/1995.

Glossary

Overview

Introduction

This glossary lists and defines terms used in the DIGITAL MultiSwitch Fast Ethernet Hub 924TX module documentation.

In This Glossary

Topic	Page
Terms	Glossary-2

Terms

This manual uses the following terms

Terms	Descriptions
Ethernet	Local Area Network (LAN) compatible with the ISO 802-3 ANSI/IEEE 802.3 standards and the Ethernet standards for Carrier Sense Multiple Access with Collision Detection (CSMA/CD) local area networks (LANs).
Fast Ethernet	A 100 Mb/s extension to Ethernet, also referred to as 100BaseT. Fast Ethernet uses ISO 802-3 ANSI/IEEE Standard 802.3, but implements the protocol at 100 Mb/s. MAC frame formats and sizes are identical to those used by 10 Mb/s Ethernet.
Hot-swappable	<p>The removal or insertion of a module into the DIGITAL MultiSwitch 900 without disrupting power to the unit or affecting the connectivity to other modules in the stack or chassis.</p> <p>Do not simultaneously hot-swap more than one module. Simultaneously inserting or removing more than one module can cause problems with the operation of other installed modules.</p>
Internet Protocol (IP) Address	The format of an IP address 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 (.). For example, 16.20.54.156
Media Access Control (MAC) Address	<p>The following format represents a Media Access Control (MAC) address:</p> <p style="text-align: center;">08-00-2B-A3-00-00</p>

Terms	Descriptions
DEChub ONE-MX	A 90 watt power supply, setup port, OBM and AUI ports, and Fiber Optic, FDDI or Ethernet LAN connection for a functional module.
DEChub ONE	A 81.1 watt power supply and setup port interface, OBM and AUI ports for functional module.
dedicated Ethernet (formerly ThinWire)	10Base2 coaxial cable 10 Mb/s Ethernet connection.
Twisted Pair	Twisted-pair cable 10 Mb/s Ethernet connection. This is wiring similar to that found in the telephone system, consisting of two insulated wires loosely twisted around each other to help cancel out induced noise in balanced circuits.
100BASE-FX	100Mb/s Fast Ethernet connection using multimode fiber-optic cable over a distance of up to 320 meters.
100BufFX	100Mb/s full-duplex Fast Ethernet connection using multimode fiber-optic cable over a distance of up to 2 kilometers.

Index

A

- Accessing
 - Alarms and Events F-4
 - Statistics and History F-4
- Accessing and Configuring RMON Groups F-1
- Acoustical Specifications C-3
- Acoustical specifications C-3
- Adapters
 - H8571-J Adapter B-7
- Add SNMP Trap Addresses 4-11, 5-9
- Associated Documentation E-1
- AUI (15-pin D-Sub) Port Connector B-5

C

- cards
 - 100BaseFX, 100BufFX 1-10
- Chassis Manager 1-14
- Class II Hub configuration 1-10
- Compare the Power Ratings 3-3
- Configure IP 4-9, 5-7
- configure the module as a standalone module 5-1
- Configuring the Module 5-2
- Configuring the Module in a DEChub ONE or DEChub ONE-MX 5-1
- Configuring the Module in a DIGITAL MultiSwitch 900 4-1 to 4-2
- Connect the Setup Port Cables to the DIGITAL MultiSwitch 900 3-6
- Connectors
 - 100BaseFX and 100BufFX Connectors (DFNR) B-3
- Connectors and Pin Assignments B-1
- Correspondence E-5

D

- DEChub 900 MultiSwitch
 - hardware features 1-13, 1-16
 - management features 1-14
- DEChub ONE 1-3
- DEChub ONE Docking Station 1-18
- DEChub ONE-MX 1-3, 1-18
- Delete SNMP Trap Addresses 5-10
- DIGITAL MultiSwitch

- 900 1-3, 1-13, 1-16
- 900 Connectors and Pin Assignments B-3
- 900 Features 1-13
- 900 management agent 1-14
- Fast Ethernet Hub 924TX Back Panel 1-9
- Fast Ethernet Hub 924TX Connectors and Pin Assignments B-2
- Fast Ethernet Hub 924TX Features 1-4 to 1-5
- Fast Ethernet Hub 924TX Front Panel 1-7
- Fast Ethernet Hub 924TX LED States A-2
- Fast Ethernet Hub 924TX Problem Solving Using the LEDs A-4
- DIGITAL MultiSwitch Hub 612TX
 - product specifications C-2
- Docking Stations 1-3, 1-18
 - DEChub ONE 1-18
 - DEChub ONE and DEChub ONE-MX Connectors and Pin Assignments B-4
 - DEChub ONE-MX 1-18
- Documentation E-2
- Documentation Comments E-4
- DownLine Upgrade 5-22
- Dump Error Log 4-15

E

- Enable/Disable BootP 4-14, 5-13
- Enable/Disable RTS 5-24

F

- Fast Ethernet 1-10

I

- Installing
 - DIGITAL MultiSwitch Fast Ethernet Hub 924TX Option Cards 2-2
 - the MM-100 2-5
- Installing A Modular Media Interface 2-1
- Internal and External Crossover Configurations B-8

M

Management features 1-14

MIB Support 1-6

N

Network Management Architecture 1-13, 1-17

Network Topology for Class II Hubs to Switches
with MMIs 1-10

O

OBM Port (9-Pin) Connector B-3, B-6

Online Services E-4

Optical Bypass Relay (6-pin MJ) Connector B-7

Ordering Options D-1 to D-2

P

Power Management 1-14

Preface ix

Problem Solving A-1

Product Description 1-1

Product specifications

DIGITAL MultiSwitch Hub 612TX C-2

R

Remote Monitoring (RMON) 1-6

Removing

a Module and Option Cards 6-1

Modules from the DIGITAL MultiSwitch
900 (Hot-Swappable) 6-2

the Dust Cover 2-4

the MM-100 6-4

Replacing the Dust Cover on the DIGITAL
MultiSwitch Fast Ethernet Hub 924TX
6-6

Restart with Current Settings 4-6, 5-4

Restart with Factory Defaults 4-5, 5-3

RMON

Alarm and Event Table Entries F-5

description F-2

Groups Supported F-3

How to Access RMON Groups F-4

How Traps Work F-7

trap messages F-7

What Is RMON? F-2

S

Safety xiii

Seat the Module into the DIGITAL MultiSwitch
900 3-4

Set

In-Band Interface IP Address 5-11

Out-of-Band Interface IP Address 5-12

Port Speed 5-23

SNMP Read/Write Community 5-8

Set In-Band Interface IP Address 4-13

Set Out-of-Band Interface IP Address 4-14

Show Current Settings 4-7, 5-5

Simple Network Management Protocol (SNMP)
1-13, 1-17

Standalone installation menu options

Downline Upgrade 5-15

Start Redirect Mode 4-3

U

User Support in a Class II Environment 1-12

Using the Module's Menus 4-4

V

Verify Initial LED Operation 3-5

W

What are Docking Stations? 1-18

What is the DIGITAL MultiSwitch 900? 1-13

What is the DIGITAL MultiSwitch 900-4? 1-16

What Is the DIGITAL MultiSwitch Fast Ethernet
Hub 924TX? 1-3