DIGITAL GIGAswitch/IP Solution for ATM

Products Reference

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2 Installing the DIGITAL GIGAswitch/IP Products

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4 Troubleshooting

5 Technical Specifications

6 Cables

Preface

Overview

This document describes the GIGAswitch/IP products sold by Digital Equipment Corporation:

- DIGITAL GIGAswitch/IP Switch Controller
- DIGITAL IP Switch Gateway

Intended Audience

This document is designed for the following audience:

- System administrators who need to connect and test the network operation of DIGITAL GIGAswitch/IP products
- Trained service personnel who need to check or to install equipment by removing the cover from DIGITAL GIGAswitch/IP products

Content

The major topics covered in this book are:

To Find Information About...	See This Section
The equipment and connectors	DIGITAL GIGAswitch/IP Products Overview, Chapter 1
Installing the hardware	Installing The DIGITAL GIGAswitch/IP Products, Chapter 2
Adding interface cards	Accessing the Internal Components, Chapter 3
Solving hardware problems	Troubleshooting, Chapter 4
Detailed equipment specifications	Technical Specifications, Chapter 5
Cable pinouts	Cables, Chapter 6

Conventions

This manual uses the following conventions:

italic text	Indicates a document title or a variable in examples.
`typewriter text`	Indicates a command, program, filename, or pathname.
`bold typewriter text`	Indicates text that you type in examples.
SMALL CAPS	Represents the name of a key on the keyboard, of a button displayed on your screen, or of a button or switch on the hardware. For example, press the RETURN key or click the CANCEL button.

Online Services

To locate product-specific information, refer to the following online services:

BBS

To read the Bulletin Board System, set your modem to 8 bits, no parity, 1 stop bit and dial 508-486-5777 (U.S.).

WWW

The Digital Equipment Corporation Network Products Business Home Page on the World Wide Web is at the following addresses:

North America:	http://www.networks.digital.com
Europe:	http://www.networks.europe.digital.com
Australia:	http://www.digital.com.au/networks

The DIGITAL GIGAswitch/IP specific files are located at the following address:

http://www.networks.digital.com/dr/gigaip/firmware/

The DIGITAL GIGAswtich/ATM files are located at the following address:

http://www.networks.digital.com/dr/gigatm/firmware/

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

Safety

Overview

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

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

Precautions

WARNING	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	Ensure the correct polarity of the battery before installing it into the unit. Installation with incorrect polarity can cause explosion.
VORSICHT	Stellen Sie sicher, daß die Batterie richtig gepolt ist, bevor Sie sie im Gerät installieren. Falsch installierte Batterien können explodieren.
DANGER	Vérifiez la polarité de la batterie avant de l'installer dans l'unité. Une batterie incorrectement installée risque de provoquer une explosion.
AVISO	Debe controlarse la correcta polaridad de la batería antes de instalar ésta en la unidad. Una instalación deficiente de la batería puede causar una explosión.

WARNING	Replace the unit’s battery with the same or an equivalent type that is recommended by the manufacturer. Failure to do so can cause explosion.
VORSICHT	Ersetzen Sie die Batterie nur durch den gleichen oder einen vergleichbaren vom Hersteller empfohlenen Batterietyp, andernfalls besteht die Gefahr einer Explosion.
DANGER	Afin d'éviter tout risque d'explosion, remplacez la batterie de l'unité par une batterie identique ou de type équivalent recommandé par le fabriquant.
AVISO	Debe sustituirse la batería de la unidad por una igual o de tipo equivalente recomendado por el fabricante. De lo contrario podría producirse una explosión.

WARNING	Remove power from the unit before performing an installation. Failure to do so can result in electrical shock.
VORSICHT	Stellen Sie sicher, daß am Gerät keine Spannung anliegt, bevor Sie Installationen vornehmen, andernfalls besteht die Gefahr eines elektrischen Schlags.
DANGER	Afin d'éviter tout risque d'électrocution, retirez la source d'alimentation de l'unité avant toute installation.
AVISO	Debe desconectarse la unidad antes de llevar a cabo una instalación. De lo contrario podría producirse una descarga eléctrica.

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

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

CAUTION	Do not place any flat object over the ventilation holes on the top of the unit. Doing so could cause the unit to overheat, resulting in damage to the unit.
ACHTUNG	Decken Sie die Belüftungslöcher auf der Oberseite des Geräts nicht mit flachen Gegenständen ab, da das Gerät sonst durch Überhitzung beschädigt werden könnte.
ATTENTION	Ne placez pas d'objet plat sur les orifices de ventilation de la partie supérieure de l'unité ; ceci pourrait provoquer des dommages par surchauffe de l'unité.
PRECAUCION	Decken Sie die Belüftungslöcher auf der Oberseite des Geräts nicht mit flachen Gegenständen ab, da das Gerät sonst durch Überhitzung beschädigt werden könnte.

CAUTION	For United States delivery, the voltage of the units is set to 115 Vac. Customers outside the United States must verify that the voltage is set correctly to avoid damaging the unit.
ACHTUNG	Für Lieferungen innerhalb der USA wurde die Spannung des Geräts auf 115 VAC eingestellt. Kunden außerhalb der USA müssen sicherstellen, daß die Spannung richtig eingestellt ist, um Beschädigungen am Gerät zu vermeiden.
ATTENTION	Les unités destinées aux États-Unis sont réglées pour une tension de 115 V ca. Hors des États-Unis, vous devez vérifier que la tension est correctement réglée, pour éviter tout dommage de l'unité.
PRECAUCION	Para entregas en los Estados Unidos, el voltaje de la unidad se ha ajustado a 115 Vca. Los usuarios que instalen este equipo fuera de los Estados Unidos deben verificar que se haya ajustado correctamente el voltaje para que no se estropee la unidad.

Chapter 1

DIGITAL GIGAswitch/IP Products Overview

This chapter describes the DIGITAL GIGAswitch/IP products.

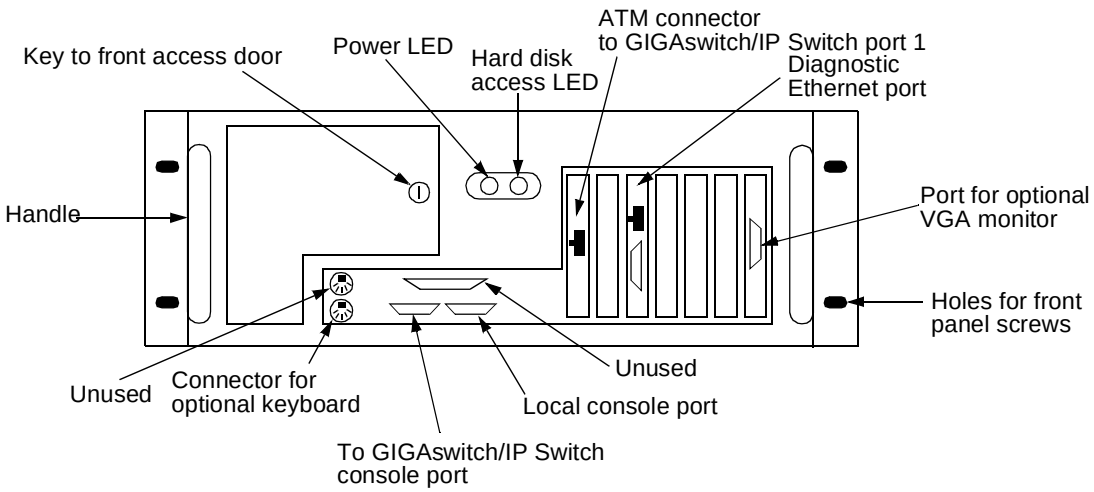
Familiarizing Yourself with the Equipment

Before installing and connecting your DIGITAL GIGAswitch/IP products, familiarize yourself with the appearance of the equipment and the location of the various ports, switches, LEDs, and connectors.

Features

The front panels of the GIGAswitch/IP Switch Controller and the IP Switch Gateway are similar, as shown in Figure 1-1 and Figure 1-2.

Figure 1-1: DIGITAL GIGAswitch/IP Switch Controller Front Panel

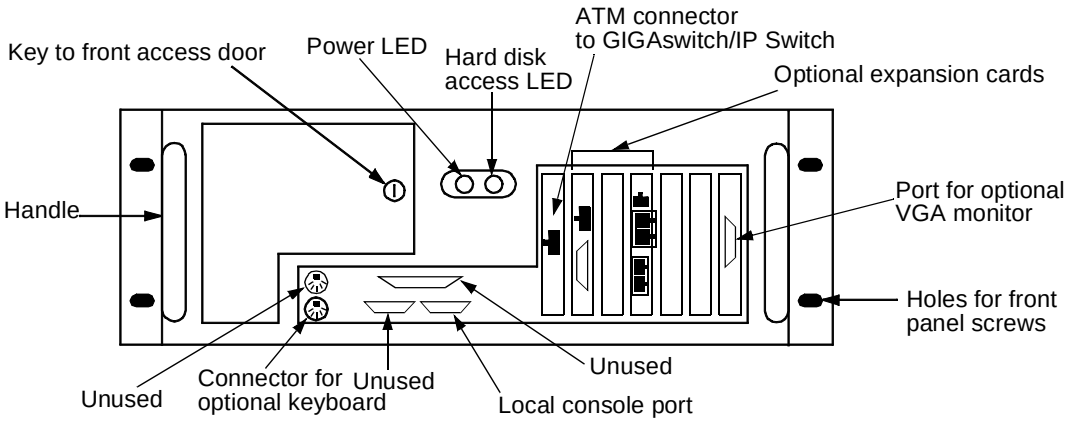


The IP Switch Gateway has three optional expansion network interface cards (NICs). Figure 1-2 shows, from left to right:

- Single-port Ethernet
- Empty slot
- Fiber-distributed data interface (FDDI)

Refer to Chapter 2 for more detailed information on installing the expansion cards.

Figure 1-2: DIGITAL IP Switch Gateway Front Panel



When you open the front access door on either device, as shown in Figure 1-3, you have access to the following features:

- CD-ROM drive
- Diskette drive
- Power switch
- System RESET button

Note: Do not use the RESET button to restart the system unless all standard methods for shutting down and restarting the device fail.

Figure 1-3: Behind the Front Access Door

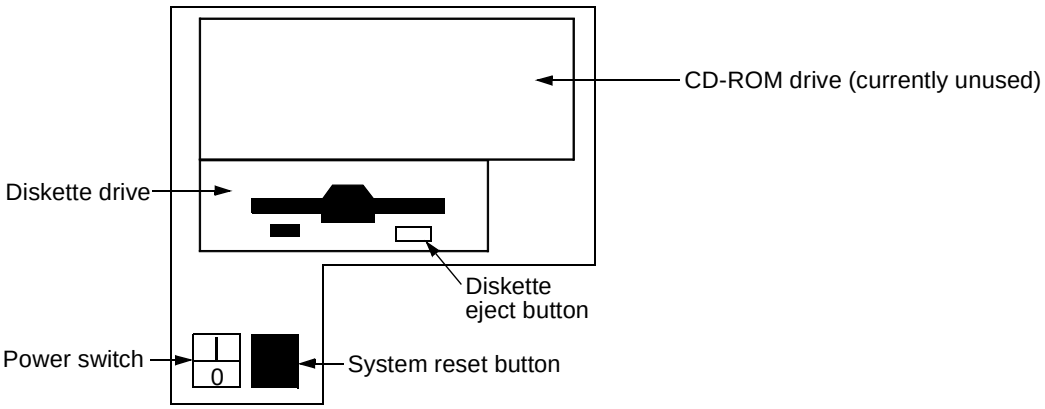
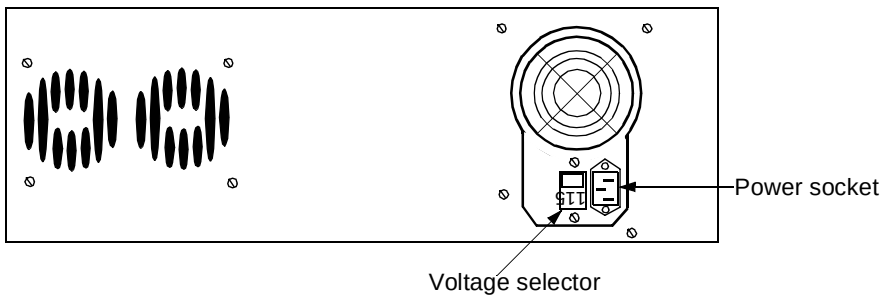


Figure 1-4 shows the back panel for the IP Switch Controller and the IP Switch Gateway.

Figure 1-4: Back Panel



Chapter 2

Installing The DIGITAL GIGAswitch/IP Products

Overview

This chapter describes how to install the DIGITAL GIGAswitch/IP products. The steps to installing the products are:

- Step 1: Unpacking the Equipment
- Step 2: Placing the Equipment
- Step 3: Connecting the Power
- Step 4: Connecting the DIGITAL GIGAswitch/IP Switch Controller to the DIGITAL GIGAswitch/ATM
- Step 5: Connecting the Console
- Step 6: Connecting ATM Interfaces
- Step 7: Connecting the DIGITAL IP Switch Gateway to the Network
- Step 8: Connecting a Monitor and a Keyboard

Step 1: Unpacking the Equipment

Each product unit consists of an outer metal cover and an internal frame on which boards, power supplies, and other components are mounted.

Note

The seating of the boards should be checked by trained service personnel only.

Step 2: Placing the Equipment

Before connecting power and communication cables to the GIGAswitch/IP products, set up the equipment in the desired location.

You can set up your GIGAswitch/IP products in one of two ways:

- Rack mounted
- Stand alone

Rack-Mounted Units

The GIGAswitch/IP product covers are designed for front-screw mounting in a 19-inch rack. Each IP Switch Gateway or GIGAswitch/IP Switch Controller requires 7.5 inches (18 centimeters (cm)) of vertical space, and it projects 17.9 inches (45.2 cm) behind the front face of the rack.

To mount the units in a rack:

- Provide sufficient clearance (about 6 inches or 15 cm) behind the rack to allow the rear exit fan to move air through the unit.
- Optionally, provide a gap of 12 inches (30 cm) between the units to allow the units to be serviced after being mounted. If rack space is in short supply, GIGAswitch/IP products can be mounted above and below each other.

Stand-Alone Units

If you do not mount the GIGAswitch/IP products in a rack, you can stack them.

To stack the units:

- Provide sufficient clearance (about 6 inches or 15 cm) behind the units to allow the rear exit fan to move air through the units.
- Do not remove the rubber feet that come with the units when stacking them. The feet ensure that sufficient ventilation is available across the tops of lower units.
- Do not stack the units more than 3 units high.
- Do not stand the units on their sides.

CAUTION

Do not place any flat objects over the ventilation holes on top of the unit. Doing so could cause the units to overheat, resulting in damage to the unit.

Step 3: Connecting the Power

Connect power before connecting other cables.

To connect power to a GIGAswitch/IP Switch Controller or an IP Switch Gateway:

1. Ensure that your site is equipped to handle the power requirements described in Chapter 5.
2. Set the voltage selector on the back of the unit (see Figure 1-4) to 115VAC (90-132) or 240VAC (180-264) to match your site's input voltage.

CAUTION

For United States deliveries, the voltage of the unit is set to 115VAC. Customers outside the U.S. must verify that the voltage is set correctly to avoid damaging the unit.

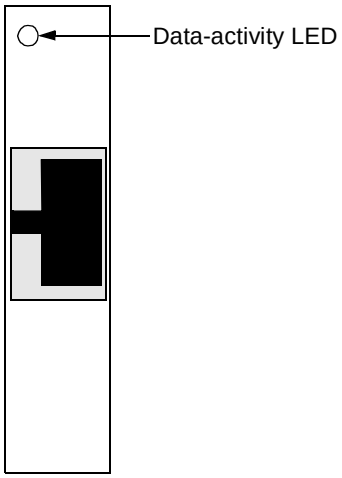
3. Open the front access door and turn off the power (see Figure 1-3).
4. Connect the power cord securely into the outermost power socket on the back of the unit. Plug the other end into a 3-wire grounded power strip or wall outlet.
5. Turn on the power switch.

Step 4: Connecting the DIGITAL GIGAswitch/IP Switch Controller to the DIGITAL GIGAswitch/ATM

The GIGAswitch/ATM must have an Asynchronous Transfer Mode (ATM) communication link to its GIGAswitch/IP Switch Controller. To connect these products:

1. Connect the provided ATM cable securely into the ATM card connector (shown in Figure 2-1) in the center back of the GIGAswitch/IP Switch Controller.

Figure 2-1: ATM Card Faceplate



2. Connect the other end of the cable into the lowest numbered port on the lowest numbered slot of the GIGAswitch/ATM.

   Note the slot and port number on the GIGAswitch/ATM that is used for this connection. You need this information when you configure the GIGAswitch/ATM for IP switching service.

Step 5: Connecting the Console

GIGAswitch/IP Switch Controllers and IP Switch Gateways require console connections for configuring and maintenance.

To connect a console to the GIGAswitch/IP Switch Controller or IP Switch Gateway:

1. Select a console device.

   The console can be any of the following:

   - Any standard VT100-compatible terminal
   - A DOS/Windows PC
   - Any other workstation that can run terminal emulation software
   - A modem that provides connection to such a workstation

2. If you are using a modem, connect a cable to the console port on the back panel of the GIGAswitch/IP unit. Otherwise, connect a null-modem cable (see Chapter 6) to the console port.

   The serial console port presents a data terminal equipment (DTE) interface (see Figure 1-1 and Figure 1-2) with 8 data bits, no parity, and 1 stop bit, running at 9600 baud.

3. Connect the other end of the cable to the modem or console.

Step 6: Connecting ATM Interfaces

You can make ATM connections between the following devices:

- A GIGAswitch/ATM and its GIGAswitch/IP Switch Controller (as described in Step 4: Connecting the DIGITAL GIGAswitch/IP Switch Controller to the DIGITAL GIGAswitch/ATM)
- A GIGAswitch/ATM and an IP Switch Gateway
- Two GIGAswitch/ATMs

Note the slot number and port number on the GIGAswitch/ATM used for the connection to the GIGAswitch/IP Switch Controller. You need this information when you configure the GIGAswitch/ATM for IP switching service. The remaining ATM ports are available for attaching DIGITAL IP Switch Gateways and additional GIGAswitch/IP products.

GIGAswitch/IP products support ATM connections using SONET STS3c over multimode fiber-optic (MMF) cable with SC-style duplex connectors.

Step 7: Connecting the DIGITAL IP Switch Gateway to the Network

The IP Switch Gateway comes with up to three expansion network-interface cards (NICs), which can be of the following varieties:

- Single-port Ethernet or Fast Ethernet
- Fiber Distributed Data Interface (FDDI)

Connecting Ethernet

Ethernet cards on IP Switch Gateways, shown in Figure 2-2, have dual-mode 10/100 megabit-per-second ports. Set the speed and full- or half-duplex mode using the DIGITAL Configuration_Tool's Interfaces Advanced Options view.

Figure 2-2: Ethernet Card Faceplates on a DIGITAL IP Switch Gateway

Up to three Ethernet cards can be used in an IP Switch Gateway.

Each Ethernet port is assigned a logical name using the following format:

```
eth-snp1c0
```

where *n* is the slot number in which the card is installed. To connect the IP Switch Gateway to a 10- or 100-megabit/sec hub, use a straight-through RJ-45 cable of the appropriate length. To directly connect the IP Switch Gateway to an RJ-45 female connector on a host, use an Ethernet crossover cable. Chapter 6, Cables discusses cables.

After connection, the Ethernet data-activity (LINK) LEDs on both the Ethernet port on the IP Switch Gateway and on the remote equipment (hub or directly attached interface) should light to indicate the connection. The T/R LED should also flash for every packet that passes by that interface. See Chapter 4 if either LED does not light.

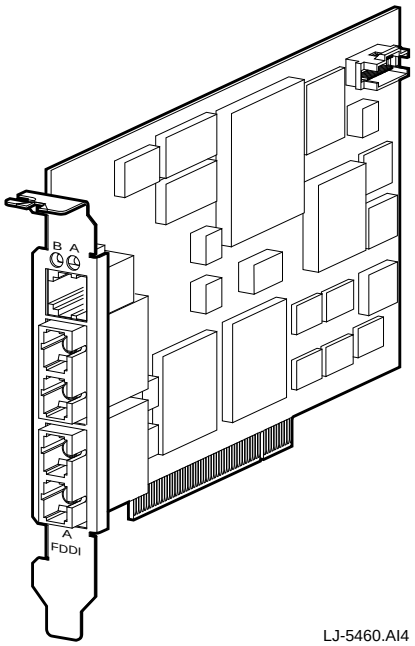
Connecting FDDI

The fiber distributed data interface (FDDI) card, shown in Figure 2-3, provides FDDI over multimode fiber.

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.

Figure 2-3: FDDI Card Faceplate on a DIGITAL IP Switch Gateway



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Up to three FDDI cards can be used in an IP Switch Gateway. Each FDDI card is assigned a logical name using the following format:

```
fddi-snp1c0
```

where *n* is the slot number in which the card is installed.

FDDI cards are configured with either multimode fiber (MMF) or unshielded twisted pair (UTP) physical media. Use standard MMF cable with SC connectors or CAT-5 UTP cable to connect the IP Switch Gateway to its neighboring machines depending upon the media or use.

FDDI cards are configured as either single-attached (SAS) or dual-attached (DAS) stations. If you are using a DAS card in a single-attached configuration, be sure to use the B port on the card.

The FDDI card optionally includes an optical-bypass relay (OBR) port. This is an RJ-12 connector for inserting an optional third-party OBR, which maintains

connectivity of the FDDI ring in the absence of power or during fault conditions on the IP Switch Gateway.

Warning

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

After a port is connected to a neighbor, the link LED for the port should light to verify the connection. If the LED flashes, then the port is configured to be up but has not synchronized with the neighbor's port. If the LED stays dark, then the port has not been configured to be up.

Step 8: Connecting a Monitor and a Keyboard

A VGA monitor and keyboard are not required for normal operation. Occasionally, you might need to connect a VGA monitor to diagnose extreme problems with the BIOS. To connect a VGA monitor:

1. Locate the mini-DB-15 VGA connector on the far right at the back of the cover. Screw down the connector to ensure proper video synchronization.
2. Connect the keyboard to the DIN-5 connector located in the center of the rear of the cover.
3. Enter the BIOS from the keyboard by pressing F1 after the memory and keyboard tests.

   It is normal for the cursor to turn solid after the BIOS is completed, as the initial kernel output is being sent to the serial console. If the unit boots correctly, the monitor displays a log-in prompt.

Chapter 3

Accessing Internal Components

Overview

This chapter describes how to access the inside of DIGITAL GIGAswitch/IP products. This chapter contains the following sections:

- Before Installing Internal Components
- Removing the Cover

Note

The instructions in this section are for service personnel only. These procedures should be performed only by a trained service person. There are no user-serviceable components inside a DIGITAL GIGAswitch/IP Switch Controller or DIGITAL IP Switch Gateway.

Before Installing Internal Components

The DIGITAL GIGAswitch/IP products have been carefully configured to work with DIGITAL supported hardware.

Note

Do not install equipment into a DIGITAL GIGAswitch/IP Switch Controller or a DIGITAL IP Switch Gateway that is not supported by Digital Equipment Corporation. Doing so voids the warranty and the service agreements.

Removing the Outer Cover

To remove the outer cover from a GIGAswitch/IP Switch Controller or IP Switch Gateway:

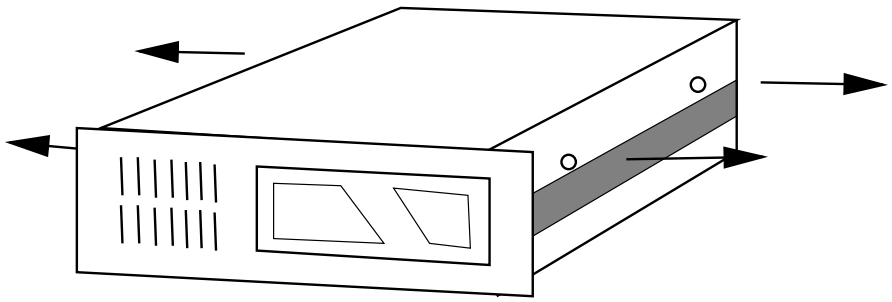
1. Shut down the product
2. Turn off the power switch.

Warning

Remove power from the unit before performing an installation. Failure to do so can cause electrical shock.

3. Remove the four side screws holding the top of the cover onto the internal frame.
4. Lift off the cover.

Figure 3-1: Removing the Cover Screws



You can now replace the components inside the unit.

Warning

Replace the unit's battery with the same or an equivalent type that is recommended by the manufacturer. Failure to do so can cause explosion.

Warning

Ensure the correct polarity of the battery before installing it into the unit. Installing the battery incorrectly can cause explosion.

Note

Dispose of the used batteries according to the manufacturer's instructions.

Chapter 4

Troubleshooting

Overview

This chapter describes how to diagnose and solve problems with the DIGITAL GIGAswitch/IP products. This chapter contains the following sections:

- Solving Operational Problems
- Troubleshooting the Units
- Replacing Air Filters

Solving Operational Problems

Use the following information to help solve problems that you experience with your GIGAswitch/IP product.

Table 4-1: Troubleshooting

Symptom	Possible Causes	Solution
Beeps more than once when powering up.	Hardware problem with the motherboard. See Troubleshooting the Units on page 16 for details.	Contact your DIGITAL Service Representative.
Does not beep after you turn on the power switch.	The unit is not connected to a power source, or the power source is turned off.	Check the Power LED. Check that the power cord is firmly seated. Verify that the power switch is fully on. Check fuses and power strips.
	Hardware problem with the motherboard.	Contact your DIGITAL Service Representative.

Continued on next page...

Table 4-1: Troubleshooting

Symptom	Possible Causes	Solution
Power LED on the inner panel does not light.	The unit is not connected to a power source, or the power source is turned off.	Check that the power cord is firmly seated. Verify that the power switch is fully on. Check fuses and power strips.
	Unsupported card installed in unit.	Replace with a card supported by Digital Equipment Corporation.

Troubleshooting the Units

Power-up Beep Codes

The number of times that a GIGAswitch/IP Switch Controller or an IP Switch Gateway beeps during power-up provides information about possible problems with the motherboard.

Number of Beeps	Meaning
1	Memory refresh failure
2	Parity error
3	Main memory failure
4	Timer failure
5	Processor error
6	A20 gate failure
7	Processor exception
8	Display memory error
9	ROM checksum error
10	CMOS shutdown register
11	Cache error

IRQ Conflicts

The following problems can occur if you use unsupported ISA or PCI cards in a GIGAswitch/IP Switch Controller or IP Switch Gateway:

- ISA interrupt conflicts
- Port conflicts
- Dynamic PCI interrupt assignment
- Incompatible or nonexistent drivers

Replacing Air Filters

The GIGAswitch/IP Switch Controller and the IP Switch Gateway have replaceable air filters. Under continuous use, you should remove the filter and replace it about once a month. To replace the filter:

1. Open the front access door.
2. Remove the filter by gently pulling the PULL OPEN tab and sliding the filter to the right.
3. Slide a new filter in until it snaps into place.
4. Close the front access door.

Chapter 5

Technical Specifications

Overview

This chapter provides technical specifications for the DIGITAL GIGAswitch/IP products. This chapter contains the following sections:

- Interfaces
- Dimensions
- Environment

Interfaces

	DIGITAL IP Switch Gateway
Slots	4 PCI (1 reserved)
ATM Types (single port)	SONET STS3c multimode fiber (155 megabits/sec full-duplex)
Frame Structure	SONET STS3c (ATM Forum UNI Specification 3.1 for Physical Interface Layer)
Ethernet (up to 3 ports)	Standards: IEEE 802.3 (10BASE-T, 100BASE-TX) and ISO/IEC 8802-3 Ethernet Cables/connectors: 2-wire pairs; 100BASE-TX: RJ-45 (UTP cable, EIA/TIA Category 5); 10BASE-T: RJ-45 (UTP cable; EIA/TIA Categories 3, 4, 5)
FDDI (up to 3 ports)	Stds: FDDI-ANSI X3T12 specification and FDDI Standard Series Cables/connectors: SC/Dual Attach Station (fiber); RJ-45 (UTP cable; EIA/TIA Category 5)

Dimensions

		DIGITAL GIGAswitch/IP Switch Controller	DIGITAL IP Switch Gateway
Rack Mount		19.0 in (48.2 cm)	19.0 in (48.2 cm)
Dimensions	**Height**	7.0 in (17.7 cm)	7.0 in (17.7 cm)
	Width	19.0 in (48.2 cm)	19.0 in (48.2 cm)
	Depth	17.8 in (45.2 cm)	17.8 in (45.2 cm)
Weight		41.8 lb (19.0 kg) without interface cards	41.8 lb (19.0 kg) without interface cards

Environment

		DIGITAL GIGAswitch/IP Switch Controller	DIGITAL IP Switch Gateway
Temperature (Celsius (C))	**Operating**	5°C to 40°C	5°C to 40°C
	Storage	0°C to 70°C	0°C to 70°C
Electrical	**Voltage**	90 to 132, 180 to 264 VAC	90 to 132, 180 to 264 VAC
	Frequency	60/50 Hz	60/50 Hz
	Power		

Chapter 6

Cables

Overview

This chapter describes cables used with Digital's GIGAswitch/IP devices. This chapter contains the following sections:

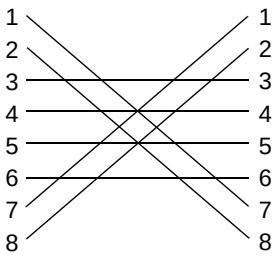
- Crossover Cables
- Null-Modem Cables
- Straight-Through Cables

Crossover Cables

ATM Crossover Cable

Use the crossover cable shown in Figure 6-1 for connecting two GIGAswitch/IPs when using Category 5 cable as discussed in Chapter 2.

Figure 6-1: ATM Crossover Cable Pin Connections

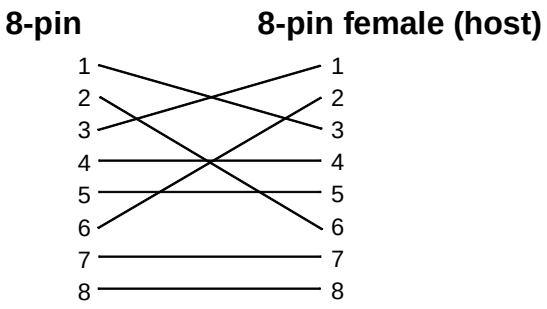


The RJ-45 is numbered from left to right with the copper tabs facing up and towards you.

Ethernet Crossover Cable

Use the Ethernet crossover cables shown in Figure 6-2 when directly connecting an Ethernet port on an IP Switch Gateway to an RJ-45 female connector on a host as discussed in Chapter 2.

Figure 6-2: Ethernet Crossover Cable Pin Connections



Null-Modem Cables

Use the null-modem cables shown in Figure 6-3 or Figure 6-4 when directly connecting a console to an IP Switch Gateway or GIGAswitch/IP Switch Controller as described in Chapter 2.

Figure 6-3: Null-modem 25-pin to 9-pin Cables Pin Connections

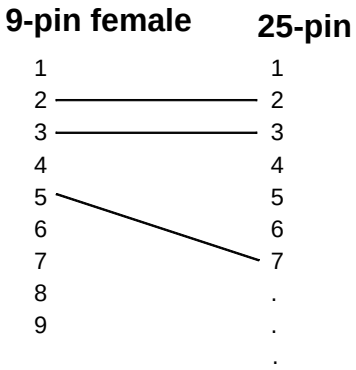
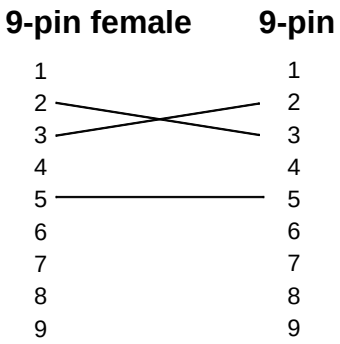


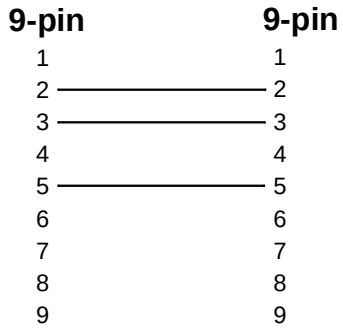
Figure 6-4: Null-modem 9-pin to 9-pin Cable Pin Connections



Straight-Through Cables

Use the straight-through serial cable shown in Figure 6-5 to connect the serial port of the DIGITAL GIGAswitch/IP Switch Controller to the console port of the DIGITAL GIGAswitch/ATM.

Figure 6-5: Straight-through 9-pin to 9-pin Cable Pin Connections



Serial Cables

The following table lists the serial cabling used to connect an IP Switch, IP Switch Controller, IP Gateway, modem, or terminal:

	IP Switch	**IP Controller/IP Gateway**	**Modem**	**Terminal**
IP Switch	N/A	Straight	Crossover	Straight
IP Controller/IP Gateway	Straight	Crossover	Straight	Crossover
Modem	Crossover	Straight	N/A	Straight
Terminal	Straight	Crossover	Straight	Crossover