FDDIXPress™ Installation Guide
for Indigo²™ and CHALLENGE M™

Contents

Figures

Tables

Introduction

Welcome to the world of fast communication with the FDDIXPress™ network connection for Indigo² ™ workstations and CHALLENGE M™ servers. CHALLENGE M and Indigo² are shipped with Ethernet as the built-in networking connection, so FDDI can replace Ethernet or be used in addition to Ethernet. Indigo² supports one FDDIXPress network connection; CHALLENGE M supports one or two FDDIXPress network connections.

The *FDDIXPress Release Notes* document provides instructions for installing and configuring the software. You should read and follow the instructions in the release notes first.

This *FDDIXPress Installation Guide for Indigo² and CHALLENGE M* shows you how to install your FDDIXPI™ (single-attachment board), FDDIXPID™ (dual-attachment board), or CDDI (single-attachment board). The board and these instructions are designed so that any customer can successfully complete the installation; no special tools or knowledge is required.

The *FDDIXPress Administration Guide* covers station and software configurations. It also includes verification procedures for the FDDI connection and a glossary of FDDI terms. (For example, if you do not know what *FDDI* or *single-attachment* means, you can look the term up in the glossary to gain a better understanding of the equipment you are installing.)

Product Support

Silicon Graphics®, Inc., provides a comprehensive product support
and maintenance program for its products. If you are in the United
States of America or Canada and would like support for your Silicon
Graphics-supported products, contact the Technical Assistance Center
at 1-800-800-4SGI. If you are outside the U.S.A. or Canada, contact the
Silicon Graphics subsidiary or authorized distributor in your country.

Chapter 1

Installing the FDDIXP Board

This guide tells you how to install the FDDIXPI, FDDIXPID, or CDDI network board into your Indigo² workstation or CHALLENGE M server. You install this board only after you have set up your system as either a standalone or as an Ethernet station.

Note: The term FDDIXP is used within this document whenever the specific package or board (FDDIXPI, FDDIXPID, or CDDI) is not important and the reference is applicable to both.

If your Indigo² or CHALLENGE M computer is not yet up and running, follow the instructions in the system owner's guide to bring it to a functioning state. If an Ethernet connection is available, bring your system up as an Ethernet station. Doing this first verifies that everything is working properly before you install the FDDIXP board.

Caution: The components on the FDDIXP boards and in your computer are sensitive to static electricity. Handle all boards carefully, and use the wrist strap (shipped with your FDDIXP board) to avoid any flow of static electricity.

The FDDIXP Packages

The FDDIXP boards are optional packages shipped separately from your Silicon Graphics computer. Only one of these packages can be ordered for an Indigo² workstation, in which case you will be installing one of the following: an FDDIXPI (single-attachment) board, an FDDIXPID (dual-attachment) board, or a CDDI (unshielded twisted pair single-attachment) board. Two packages can be ordered for CHALLENGE M. If two boards were ordered, you will be installing any combination of FDDIXP boards.

Each FDDIXP package contains all of the items listed below. If anything is missing, contact your sales representative.

- The FDDIXP board inside an antistatic bag.

  Without removing the board from its bag, peek inside to verify that the board is the one you ordered.

  - The single-attachment FDDIXPI board has one cable set attached to the board. The cable set ends in a single MIC receptacle.

  - The dual-attachment FDDIXPID board has two cable sets attached to the board. Each cable set ends in a MIC receptacle: one labeled A and one labeled B.

  - The single-attachment CDDI board has no cable attached. It uses an industry-standard RJ-45 receptacle.

- A Phillips screwdriver.

- An antistatic wrist strap.

- A CD-ROM disk (or tape if specially ordered) containing the FDDIXPress software.

- This manual (*FDDIXPress Installation Guide for Indigo² and CHALLENGE M*).

- The *FDDIXPress Release Notes*.

- The *FDDIXPress Administration Guide*.

And, if you ordered the optional optical bypass switch, you should have received it in a separate package.

Carefully follow all the steps in the following sections to install the FDDIXP board.

Installing the FDDIXP Board

The instructions for installing your FDDIXP board and FDDIXPress software are divided into the three documents as summarized below.

Document	Description
FDDIXPress Release Notes (Follow the instructions in this document first.)	Installing the software.
This guide	Installing the FDDIXP board. Connecting the Indigo² or CHALLENGE M station to the site's FDDI ring. Verifying the board's basic functionality.
FDDIXPress Administration Guide	Configuring the FDDI station and software. Verifying operation of the FDDI connection. Understanding error messages, terminology, and operation.

Table 1-1   Finding Instructions

Getting Ready

To prepare yourself and your system for the FDDIXP board installation, follow these steps:

1. Verify that the following two statements are both true.

    •   FDDIXPress software has been installed, following the instructions in the *FDDIXPress Release Notes*.

- FDDIXPress has been configured, following the instructions in Chapter 2 of the *FDDIXPress Administration Guide* or in the *FDDIXPress Release Notes*.

  If both are true, proceed to the next step. If one or both are not true, follow the instructions in the appropriate document to make both statements true before proceeding.

2. Have the following items nearby:

   - wrist strap

   - Phillips screwdriver

   - FDDIXP board, still in its antistatic bag

Shutting Down the System

To shut down your system, press the power button on the front of the computer, as illustrated in Figure 1-1.
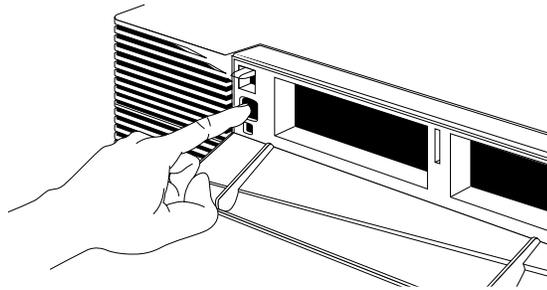
Figure 1-1   Turning Off the Power

Disconnecting the Cables

To disconnect the cables that will interfere with this installation, follow the instructions in this section.

1. Disconnect the thick black power cable from the back of the chassis.

Warning: **Make sure to disconnect the black power cable. Electric shock can be hazardous!**

2. Disconnect all option slot cables (cables to networking and graphics boards) from the I/O panel at the back of the computer. You may wish to label the cables so they can be reconnected properly.

Removing the Covers

Once you have turned off the power and disconnected all cables, follow these steps:

1. Open the computer's front door (Figure 1-3), if it is not open.

    ■   Face the front of the chassis.
    ■   Open the front door by snapping it away from the top edge of the chassis and tipping it down, as shown in Figure 1-2.
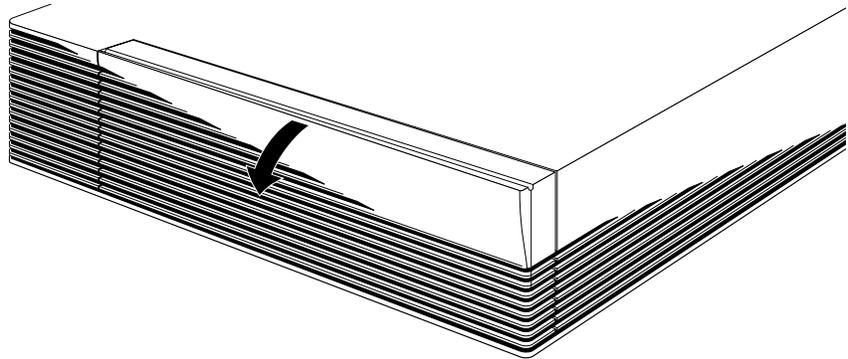
Figure 1-2   Opening the Front Door on the Indigo² or CHALLENGE M Chassis

2. If your system has an antitheft lock bar installed, remove the lock from the lock bar and pull the lock bar out.

3. Remove the front bezel (Figure 1-3).

   ■ Press down on the tabs on each side of the bezel, as shown in Figure 1-3.

   ■ Pull the bezel down and away from the chassis.

   ■ Place the bezel to one side.
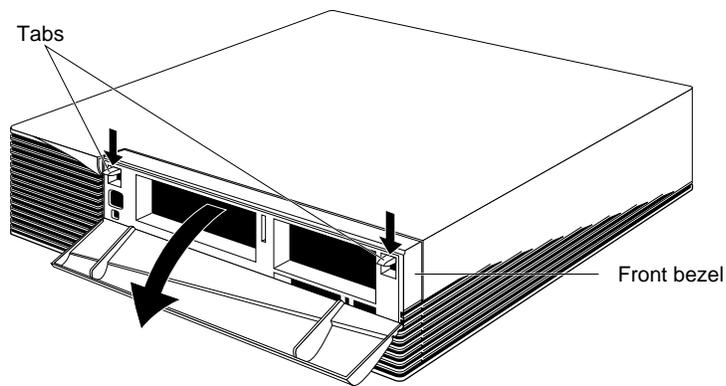
Figure 1-3   Removing the Front Bezel
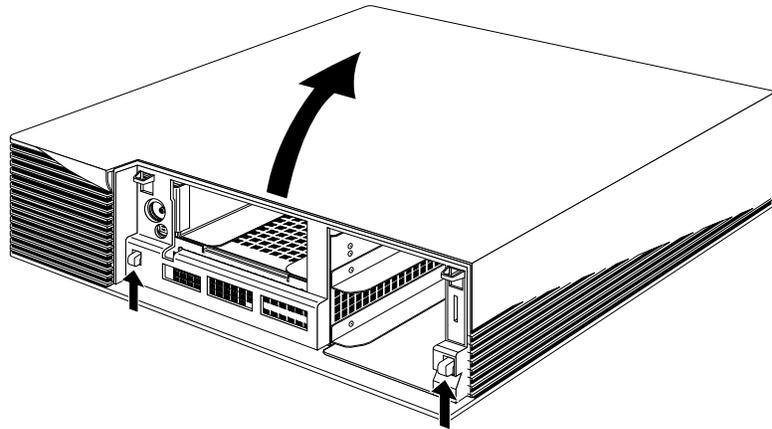
Figure 1-4   Popping Open the Top Cover

4.   Remove the top cover (Figure 1-4 and Figure 1-5).

   ■   Press up on the tabs on each side of the drive openings and
        pull up on the cover to pop it open, as illustrated in
        Figure 1-4.

   ■   Tilt the cover back and away from the chassis, as shown in
        Figure 1-5. Place it to one side.
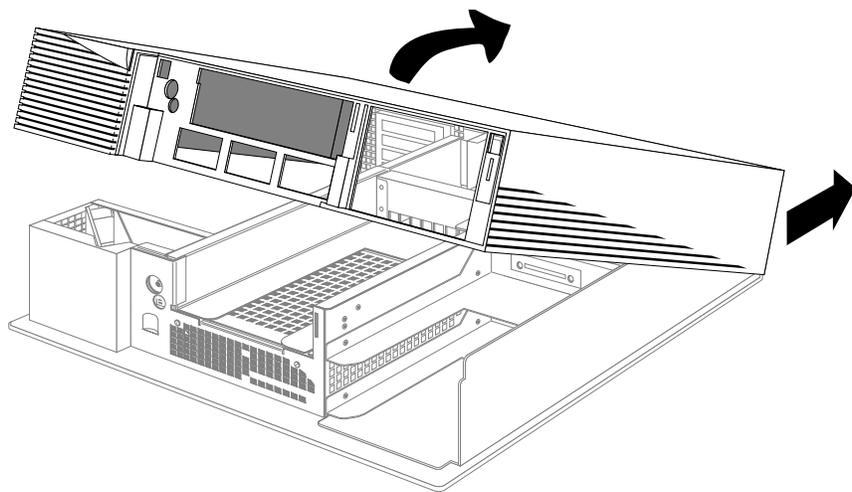
Figure 1-5   Removing the Top Cover

5. Ground yourself to a metal part of the chassis.

   Caution: The components on the FDDIXP boards and in your computer are sensitive to static electricity. Handle all boards carefully, and use the wrist strap (shipped with your FDDIXP board) to avoid any flow of static electricity.

   ■ Put the wrist strap over your wrist, making sure that it's tight against your arm.

   ■ Attach its alligator clip to a metal part of the chassis.

6. Open the side panel (Figure 1-6).

   ■ Locate the side panel.

      Note: Notice the new orientation used in Figure 1-6.

   ■ Pull up the metal panel located on the side of the chassis. The panel does not disconnect.

   ■ Tilt the panel away from the chassis so that it lies flat.
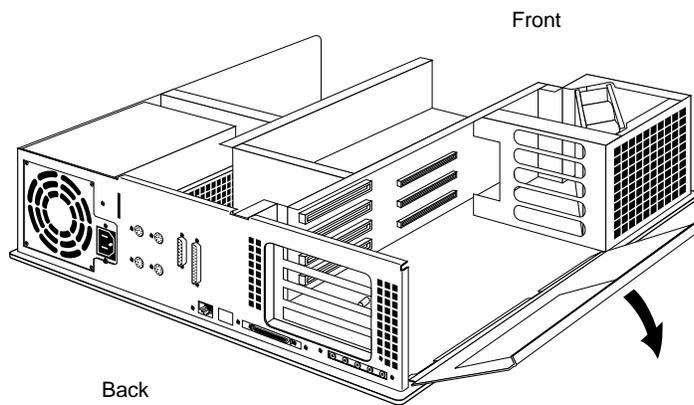
Figure 1-6   Opening the Side Panel

Select a Slot for the FDDIXP Board

Follow the instructions in this section to select and, if necessary, prepare, an option slot for the FDDIXP board.

1. Orient yourself to the chassis, as shown in Figure 1-7 and Figure 1-8, so that the I/O panels are located to your left and the EISA and GIO connectors on the backplane face you.
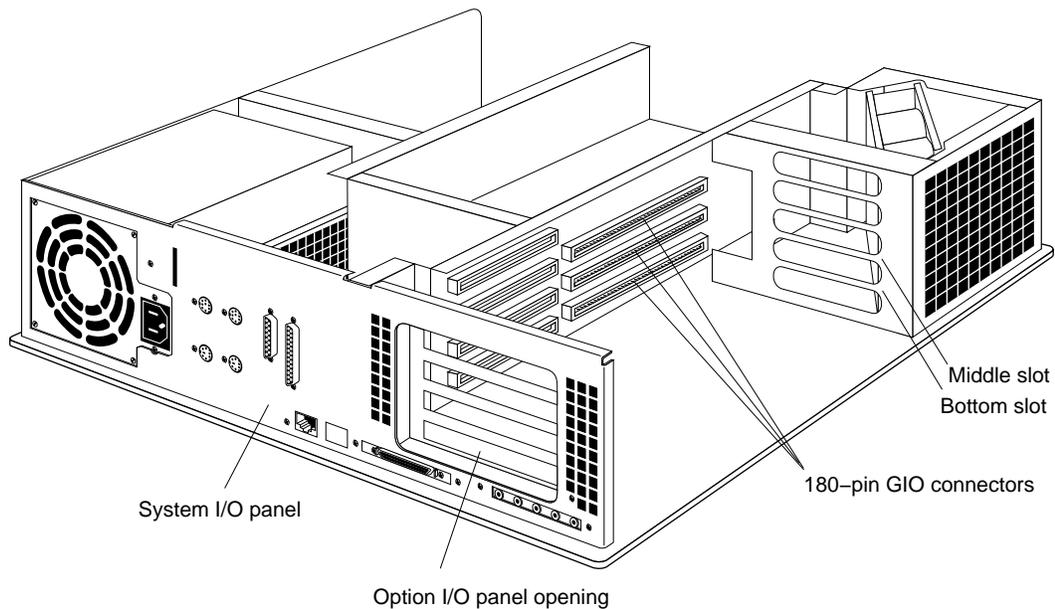
Figure 1-7   Unaltered CHALLENGE M Chassis Showing GIO Slots

2. Locate an unoccupied GIO connector for each FDDIXP board you want to install.

    ■   There are 3 GIO option slots on the right half of your system's backplane. (The 4 option slots on the left are EISA connectors.)

    ■   Notice which GIO connectors are available. One or more of the GIO connectors may be occupied or covered by other boards, as illustrated in Figure 1-8.

3.   Use the rules listed below to determine if the available GIO connector is appropriate for your FDDIXP board(s).

■   One FDDIXP board can be installed into any GIO option slot.

■   Two FDDIXP boards can be installed into the top and bottom slots, or the middle and bottom slots.

Note: Two FDDIXP boards cannot be installed into the top and middle slots.

4.   If an EISA or graphics board covers a GIO slot that you need, move the EISA or graphics board to a different slot.

System I/O panel

Bottom slot I/O panel opening

Graphics I/O panel

Occupied slots
(with graphics
board set)

Bottom slot (unoccupied)

180–pin GIO connector
(covered by graphics board)
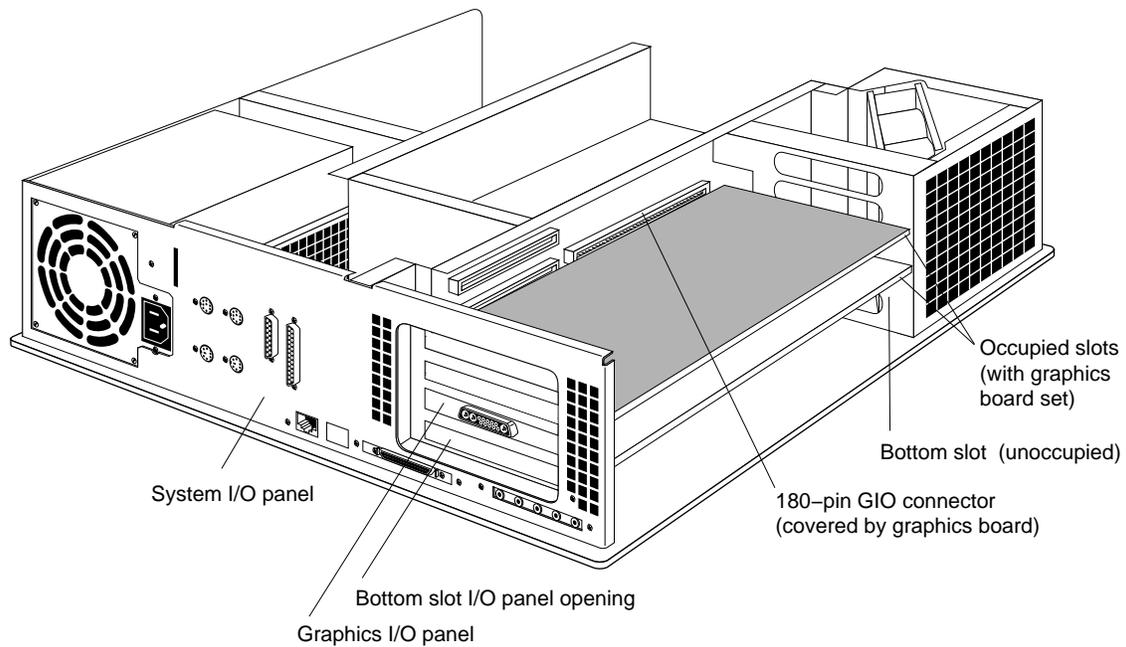
Figure 1-8   Unaltered Indigo^2 Chassis Showing GIO Slots

5. Prepare an I/O panel opening for the selected slot(s).

- If the blanking plate is installed, remove the holding screw located on the edge of the I/O panel that is closest to you, using the screwdriver that was shipped with your FDDIXPress package.

- Save the blanking plate in case you remove the FDDIXP board.

Caution: You should never run your system without all the I/O panel openings covered by either a blanking plate or an option board.

You are now ready to install the FDDIXP board.

Installing the Board

To install each FDDIXP board, follow these steps:

1. Orient yourself to the chassis, as shown in Figure 1-9, so that the I/O panel is located to your left and the GIO connectors on the backplane face you.

2. Prepare the FDDIXP board for installation.

   Caution: You must still be wearing the wrist strap.

   - Remove the FDDIXP board from its antistatic bag.

   - Remove the fiber cable set(s) from the board.

   Note: Notice how the cable ends are attached to the board. You will need to reattach these exactly as they were before you detached them.

3. Position the FDDIXP board (Figure 1-9).

   - Hold the board so that its I/O panel is to your left and the 180-pin male GIO connector faces away from you.

   - Place the FDDIXP board into the right and left metal grooves of the selected slot.
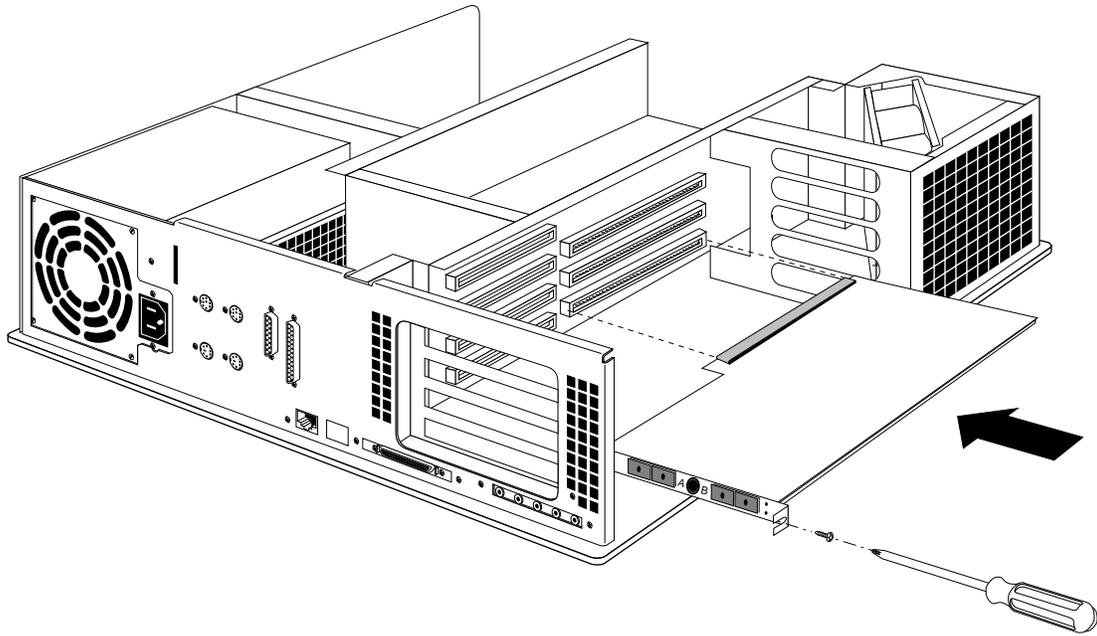
Figure 1-9   Installing the FDDIXP Board

4. Slide the board into the slot.

> **Caution:**   The pins in the male connector on the board are delicate. Gently wiggle or reposition the FDDIXP board to fit the pins of the male connector into their holes in the female connector. Do not apply any pressure until the pins fit properly.

5. Gently push until the connector on the board is securely seated into the GIO connector on the backplane.

   ■ Place the fingers or thumb of one hand on the front edge of the FDDIXP board. Place your other hand on the back of the chassis.

   ■ Push, gently but firmly, until the board slips into the GIO connector. The two 180-pin connectors must fit snugly into each other.

6. Verify that the FDDIXP board is properly seated.

    ■   If possible, look at the 180-pin connectors. The male and female connectors must be touching along the entire shared surface. If possible, check each end of the connection.

7. Insert and tighten the screw that holds the board to the chassis at the edge of the I/O panel.

    ■   Use the screw that was previously removed and the screwdriver that was shipped with the board.

    ■   The screw opening is located to your left, as shown in Figure 1-9.

Replacing the Covers

To replace the covers, follow these steps:

1. Close the side panel.

    ■   Tilt the metal panel, located on the side of the chassis (illustrated in Figure 1-6), toward the chassis.

    ■   Firmly hold the panel so that its sides align evenly with the chassis.

    ■   Push down on the panel.

2. Remove your wrist strap and detach the alligator clip.

3. Replace the top cover (Figure 1-10).

    ■   Place the tabs (hooks) on the back of the cover into the tab holes in the back of the chassis.

    ■   Lower the cover down onto the chassis until it snaps into place, as shown in Figure 1-10.
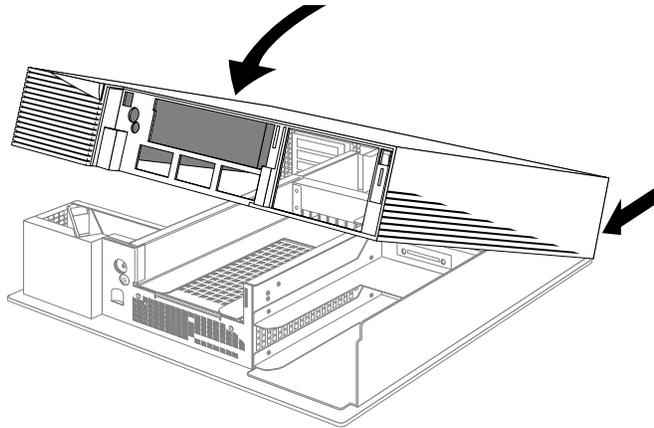
Figure 1-10 Replacing the Top Cover

4. Replace the front bezel (Figure 1-11).

    ■   Place the tabs on the bottom of the bezel in the grooves in the
         front of the chassis.

    ■   Tilt the bezel up until it snaps into place.
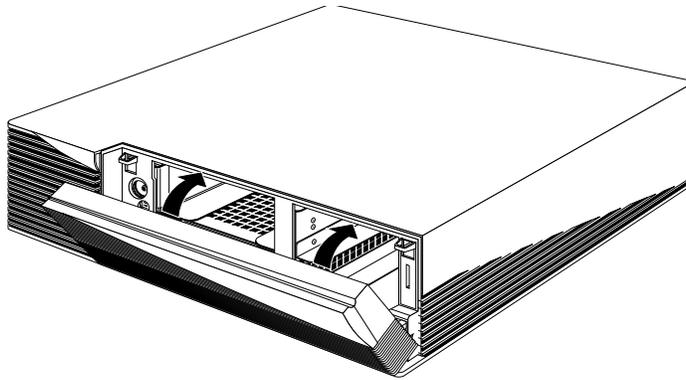
Figure 1-11 Replacing the Front Bezel

5. If your system uses an antitheft lock bar, slide the bar into its slot
    from the front of the chassis, and secure the lock at the back.

6. Reconnect all the original cables to the back of the system.

   If the system was previously connected to an Ethernet network and it will not be using an Ethernet network now, do not reconnect the Ethernet cable.

7. Connect the FDDI cabling to the board.

   Take care to attach the cable ends to the board at the same locations from where you removed them before the installation.

   Note: If you are not sure about the cable attachments, see the section "Reconnecting Cables to the FDDIXP Board" later in this chapter.

You are now ready to connect your Indigo² or Challenge M station to the site's FDDI ring.

Connecting the Station to the Site's FDDI Ring

Determine whether this station is to be connected as a single-attachment station (SAS), dual-attachment station (DAS) to the dual ring, DAS connected to one or two concentrators (frequently referred to as dual-homed), or SAS using an unshielded twisted pair cable.

Follow the appropriate set of instructions below for attaching the new station to your site's FDDI connectors.

Single-attachment Station (SAS)

Both the FDDIXPI board and the FDDIXPID board can be connected as single-attachment stations. When the FDDIXPID is used as an SAS, either of the board's MICs can be connected to your site's equipment.

Caution: Do not touch the fiber optic material exposed at the ends of the FDDI cable. Do not leave the cable ends uncapped. Performance of the fiber optic cable can seriously degrade due to grease or dust.

1. Identify one MIC receptacle (female connector) at the end of the FDDIXP board's cable. (For an FDDIXPID board, either the A or the B MIC can be used.)

2. Identify the male connector for your site's FDDI ring. This connector is part of your site's current equipment, not part of your order. The connector might be labeled S and it connects, at its other end, to an M-port on a concentrator.

3. If any of the MICs have a cap or cover, gently remove the protective covering.

4. Plug the site's connector into the FDDIXP board's MIC receptacle. Push to snap the two together.

Dual-attachment Station (DAS), Dual Ring

The FDDIXPID board can be attached as a dual ring DAS.

Note: The FDDIXPI board cannot be used as a dual-attachment station.

Caution: Do not touch the fiber optic material exposed at the ends of the FDDI cable. Do not leave the cable ends uncapped. Performance of the fiber optic cable can seriously degrade due to grease or dust.

1. Identify the two MIC receptacles (female connectors) labeled A (red colored) and B (blue colored) at the ends of the FDDIXPID board's cables.

2. Identify two male connectors labeled A and B for your site's FDDI ring. These connectors are part of your site's current equipment, not part of your order.

3. If any of the MICs have a cap or cover, gently remove it.

4. Plug your site's connector labeled A into the board's MIC labeled A. Push to snap the two together.

5. Plug your site's connector labeled B into the board's MIC labeled B. Push to snap the two together.

6. Install the optical bypass switch (optional) if one was ordered for this station. Follow that product's installation instructions.

    Note: An optical bypass switch should be used only with a DAS attached to the dual ring. An optical bypass switch should not be used on a station attached to a concentrator.

Dual-attachment Station (DAS), Dual-homed

The FDDIXPID board's two cables can be connected to the same concentrator or to two different concentrators to create a dual-homed DAS where the A port serves as a backup.

Caution: Do not touch the fiber optic material exposed at the ends of the FDDI cable. Do not leave the cable ends uncapped. Performance of the fiber optic cable can seriously degrade due to grease or dust.

1. Identify the two MIC receptacles (female connectors) labeled A (red colored) and B (blue colored) at the ends of the FDDIXPID board's cables.

2. Identify two male connectors for your site's FDDI ring(s). These connectors are part of your site's current equipment, not part of your order. The connectors might be labeled S and they connect, at the other end, to M-ports on concentrators.

3. If any of the MICs have a cap or cover, gently remove the protective covering.

4. Plug one of your site's connectors into the board's MIC labeled A. Push to snap the two together. This is the backup connection.

5. Plug the other S connector into the board's MIC labeled B. Push to snap the two together. This is the main connection.

Single-attachment Station (SAS) Using Unshielded Twisted Pair Cable

The CDDI board is connected as a single-attachment station (SAS), using a special Category 5-compliant, unshielded twisted pair cable. Since the CDDI board uses a standard RJ-45 receptacle, no intermediate cable is necessary.

1. Plug one end of the cable directly into the CDDI board.

2. Plug the other end into an FDDI-UTP concentrator.

It is important that you use the proper FDDI-UTP cable. All cables are wired in a crossover connection. This is because FDDI-UTP boards and concentrators use the same pinouts for their RJ-45 receptacles, unlike Ethernet 10-BASE T boards.

A proper FDDI-UTP cable is wired as shown in Table 1-2. It is essential that pins 1 and 2, 3 and 4, 5 and 6, and 7 and 8 are wired in pairs, that is, that they use the same colored wire.

RJ-45 Plug Pin Number	RJ-45 Plug Pin Number
1	8
2	7
3	6
4	5
5	4
6	3
7	2
8	1

Table 1-2   Correct FDDI-UTP Cable Wiring

Verifying Board Functionality

The FDDIXP board has two small LEDs (light-emitting diodes) that can be seen through its I/O panel. The upper LED signals yellow and the lower one signals green. Different sequences and timings of the LED signals are used to indicate FDDIXP board states.

To verify that the board is functional, do the following:

1. Push the power button at the front of the Indigo^2 or CHALLENGE M. (Figure 1-1 illustrates the location of the power button.)

    If the system does not restart, something is wrong with the system or with the electrical supply.

    ■   Check that the power cable is plugged into a working electrical socket and that it is seated firmly in its receptacle on the back of the Indigo^2 or CHALLENGE M chassis.

    ■   If this does not solve the problem, follow the instructions in the "Troubleshooting" chapter of your system owner's guide. Do not proceed until the system restarts.

2. Rebuild the operating system.

    ■   When you are prompted with `Automatically reconfigure the operating system (y or n)?`, answer **yes** or **y**.

    Note: If you are doing a first-time installation and you are not prompted to reconfigure the operating system, something is wrong (for example, the FDDIXPress software may not be installed). Follow the instructions in the section "Recognition of Board by Software" of Chapter 4 in the *FDDIXPress Administration Guide*.

3. When the login window appears, push the power button to reboot the system. (You may need to push the button twice.)

4. Check the FDDIXP board.

    ■   The FDDIXP LEDs are located on the FDDIXP board's I/O panel.

■ Verify that the green LED is blinking and that the yellow LED is off most of the time. Each green flash indicates that the board has seen something on the ring; a solid green indicates heavy traffic.

   If the yellow LED flashes a lot, something might be wrong. If this occurs, verify that the board is functional, as described in Chapter 2.

5. Optional. You are ready to make your station's environment user-friendly and safe, as described in Chapter 2 of the *FDDIXPress Administration Guide*.

6. Verify the FDDI connection, as described in Chapter 2 of the *FDDIXPress Administration Guide*.

Network Interface Names for FDDIXPress

The network interface name for the FDDIXP board is *xpi#*, where # is 0 for the first board and 1 for the second board (if installed). During each startup, the system looks for FDDIXP boards in the following order: top GIO slot first, middle GIO slot second, bottom GIO slot last. The system assigns *xpi0* to the first FDDIXP board that it finds, and *xpi1* to a second FDDIXP board. For example, any system with one FDDIXP board installed in any of the GIO slots will have a network interface called *xpi0*.

You can use the commands in the examples shown below to display the network interface names.

• To verify that the operating system has located the FDDIXP board. use this command:

   %/**bin/hinv**

• To verify that the network interface is configured properly and is enabled, use this command:

   %/**usr/etc/netstat -in**

Reconnecting Cables to the FDDIXP Board

To reattach the cables to the FDDIXP board, follow the instructions below.

FDDIXPI Board (Single-attachment board)

Position yourself in relation to the Indigo^2 or Challenge M chassis so that you are facing the I/O panel, as illustrated in Figure 1-12.

Identify the FDDIXPI board's I/O panel. The board has one FDDI port protruding through the I/O panel. The port has two lines: one for transmit and one for receive. The transmit line passes through the round hole within the port that is marked with TX in Figure 1-12. The receive line access is indicated with the letters RV.

To reconnect the cable to the board:

1. Identify the end of the cable that connects to the board.

    ■ The connector to the board is a rectangular, black, male connector. It is not labeled and has two white-colored optical fibers visible inside it.

2. Position the connector so the guiding ridges slide into the grooves on the board's connector.

3. Slide the connector in until it clicks and will not slide farther.

4. The two optic wires (lines) that make up the cable are marked with arrows indicating the signal's direction. The arrows on the cable should be in accord with Figure 1-12.

System I/O panel

TX

RV

FDDI board I/O panel

LEDs
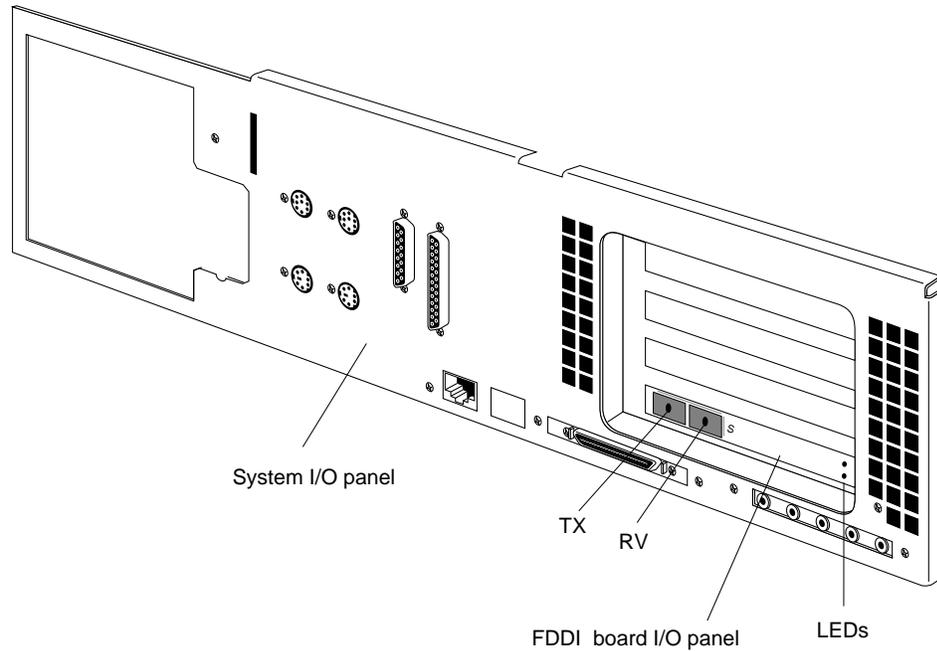
Figure 1-12   FDDIXPI Cable Connections on I/O Panel

FDDIXPID Board (Dual-attachment board)

Position yourself in relation to the Indigo² or Challenge M chassis so that you are facing the I/O panel, as illustrated in Figure 1-13.

The FDDIXPID board has two FDDI ports protruding through the I/O panel. Each port has two fiber optic lines (wires): one for transmit and one for receive. The two lines marked TX in Figure 1-13 are for transmit, and the two lines marked RV are for receive.

Note: The transmit lines are data output lines for the primary ring (PO) and for the secondary ring (SO). The receive lines are data input lines from the primary ring (PI) and the secondary ring (SI).

To reconnect the cables to the board:

1. Identify the ports on the I/O panel (Figure 1-13).

   ■ Port A is the leftmost port, labeled **A** on the I/O panel.

   ■ Port B is the port closest to the outer edge of the I/O panel. This port is labeled **B**.

FDDI board I/O panel

System I/O panel

TX (SO)

RV (PI)

TX (PO)

RV (SI)

LEDs

Optical bypass switch connection
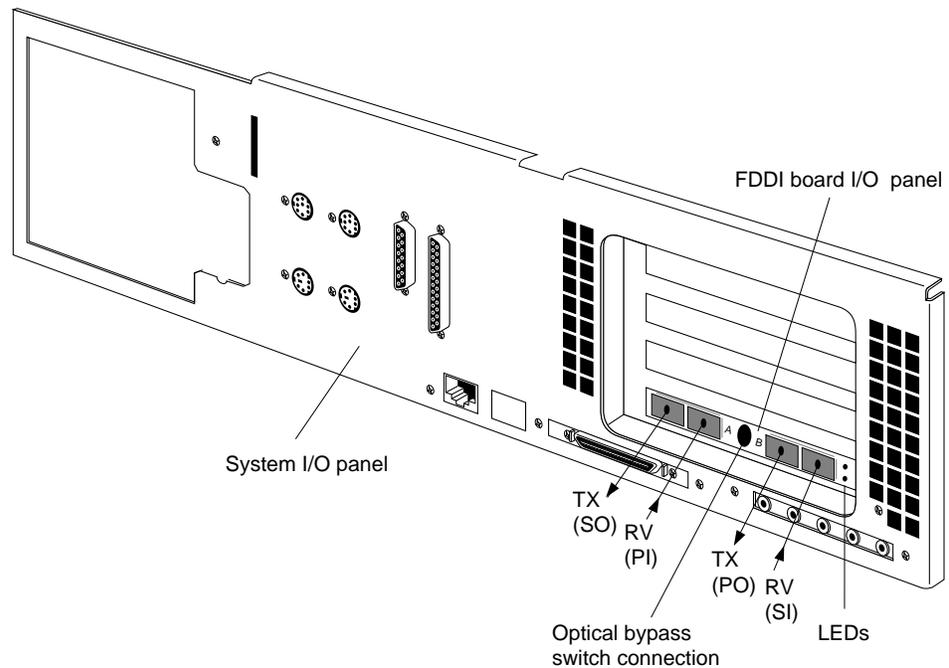
Figure 1-13 FDDIXPID Cable Connections on I/O Panel

2. Identify the ends of the cables that connect to the board.

   ■ The connectors to the board are rectangular, black, male connectors. They are not labeled and have two white-colored optical fibers visible inside them.

3. The connector with a red-colored band around its cable must be plugged into Port A.

   Position the connector so that the guiding ridges slide into the grooves on the board's connector. Slide the connector in until it clicks and will not slide further.

4. The connector with a blue-colored band must be plugged into Port B.

    Position the connector so that the guiding ridges slide into the grooves on the board's connector. Slide the connector in until it clicks and will not slide farther.

5. The four fiber lines that make up the cable package are marked with arrows indicating the direction of the signal. The arrows on the cables should match those in Figure 1-13.

CDDI Board (Single-attachment Unshielded Twisted Pair Board)

Position yourself in relation to the Indigo^2 or Challenge M chassis so that you are facing the I/O panel, as shown in Figure 1-14.

Identify the CDDI board's I/O panel. The board has one FDDI-UTP port in the form of an RJ-45 receptacle. This looks similar to a phone jack, only wider.

To reconnect the cable to the board:

1. Identify the end of the cable that connects to the board.

   ■ The connector to the board is an 8-wire RJ-45 plug. It looks similar to a phone plug, and is the same plug used for Ethernet 10-BASE T connections.

2. Slide the plug into the receptacle on the board until it clicks into place. Tug lightly on the cable to verify that it is properly seated.
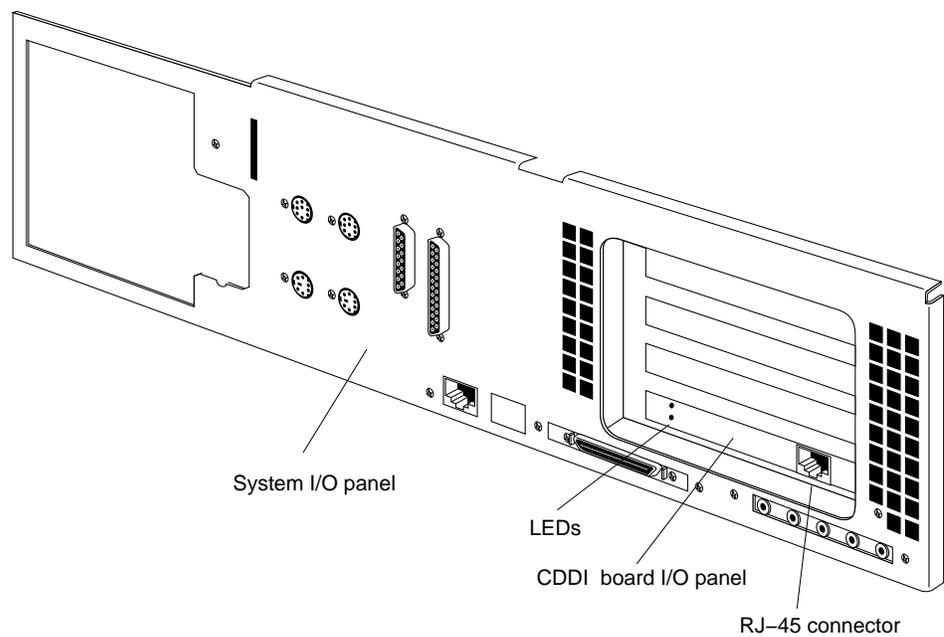

System I/O panel

LEDs

CDDI board I/O panel

RJ–45 connector

Figure 1-14   CDDI Cable Connectors on I/O Panel

Chapter 2

FDDIXP LEDs

This chapter describes the behavior of the two light-emitting diodes (LEDs) on each of the FDDIXP boards for Indigo² or CHALLENGE M systems.

The LED behavior described in this chapter assumes that the following two statements are true:

- the FDDIXP board and its FDDIXPress driver have been installed

- the driver has been built into the operating system and is available

Note: The driver is available (although not necessarily enabled or functional) whenever it is listed by the */usr/etc/netstat -i* command. The driver is not available when the system is displaying the System Maintenance menu or the PROM monitor prompt, or when the network interface is not listed by the */usr/etc/netstat -i* command. (Failure by *netstat* to list an installed interface may indicate that the system has not been rebooted in order to start using the new operating system.)

Instructions for Troubleshooting with LEDs

Use this section to troubleshoot the FDDIXP board. Each combination of LED signal behavior is listed below with an explanation of what the signals indicate about the board.

- ☼ GREEN LED is steadily on or intermittently flashing
  - ◉ YELLOW LED is off

  Normal operation. The board has passed its on-board diagnostics, the driver has successfully written the EEPROM, and the board is sending and/or receiving packets from the ring. Steady green indicates that the board is sending or receiving a steady stream of packets.

- ◉ GREEN LED is off (for more than two minutes)
  - ◉ YELLOW LED is off (for more than two minutes)

  The board is either not receiving power or it is completely dead.

  First, verify that the system has power.

  - – Look at the front of the chassis to verify that the CPU board's LED is green. If it is not green, something is wrong with the system. Follow the instructions in the "Troubleshooting" section of the system owner's guide.

  If the CPU board's LED is green, reinstall the FDDIXP board.

  - – Go to the beginning of this guide and reinstall the FDDIXP board, taking extra care to seat the FDDIXP board firmly into the system's GIO connector.

  Note: If you have already done this step once before and have reached this paragraph a second time, the board might be defective. Contact Silicon Graphics' Technical Assistance Center.

- ☼ GREEN LED is steadily on
  ☼ YELLOW LED is steadily on

  Two problems can produce this symptom: the ring is going from operational to nonoperational very quickly or the board is not functioning properly.

  First, verify the health of the ring and the board's MAC, using **smtstat -s -I xpi0** or **smtstat -s -I xpi1**. The *FDDIXPress Administration Guide* provides details on the use of this command.

If the ring is transitioning from operational (RINGOP) to nonoperational, contact your network administrator.

If the ring is normal (RINGOP), but the board's MAC is OFF, perform the following steps:

– Use one of the commands below to enable the FDDI network interface:

```
#/usr/etc/smtconfig xpi0 down up
or
#/usr/etc/smtconfig xpi1 down up
```

– If the LEDs continue to be steadily on, continue.

– Reboot the system to give the driver an opportunity to reload the firmware.

As the system comes up, look for xpi error messages on the terminal. If you see any, look them up in the *FDDIXPress Administration Guide*.

– If the LEDs continue to be steadily on, reinstall the FDDIXPress software. Then, use */etc/autoconfig* to rebuild the operating system. And finally, push the power button to reboot the system in order to start using the new operating system.

– If the problem continues, contact Silicon Graphics' Technical Assistance Center.

• ○ GREEN LED is off (for more than two minutes)
☼ YELLOW LED is steadily on

The board has not transitioned to an operational state (that is, the state of the ring is not RINGOP). This may indicate that the station's FDDI network interface is disabled (that is, OFF or not enabled at startup due to improper configuration), that a cable connection is faulty or disconnected, that the FDDI ring is not functioning, or that the board is dysfunctional.

Perform the following steps:

– Stop and restart the FDDI network interface:

```
#/usr/etc/smtconfig xpi0 down up
or
 #/usr/etc/smtconfig xpi1 down up
```

– If the green LED does not start flashing, verify all the cable connections, starting at the FDDIXPress board's I/O panel and ending at the connection to the dual ring or concentrator.

– If the green LED still does not flash, use *netstat -in* to verify that the FDDI network interface (*xpi#*) is UP and is configured properly. The displayed address must be an IP address for your site's FDDI network. An asterisk next to the interface (for example, xpi0*) indicates that the interface is disabled.

```
#/usr/etc/netstat -in
```

– If the network interface is enabled and the green LED still does not flash, verify that the FDDI ring is functional. You might ask your network administrator or use *smtstat -s* from another station on the FDDI ring.

– If the FDDI ring is functioning and the green LED still does not flash, the board may be defective. Contact Silicon Graphics' Technical Assistance Center.

Description of LED Signals

This section describes situations that cause each LED to turn on and off.

Green LED

The green LED flashes with the following events:

- when power is supplied to the board and each time the board is reset

  Within seconds of a reset, the board's firmware turns the LED off. Henceforth, the driver controls the LED as described in the next paragraph. The green LED can be steadily on if the firmware on the board is not functioning properly or if the board has become badly dysfunctional.

- each time the Media Access Control (MAC) component on the FDDIXP board sends or receives a packet

  When the number of packets being processed is large, the LED will appear to be steadily on because it is flashing faster than the human eye can perceive.

Yellow LED

The yellow LED flashes with the following events:

- when power is supplied to the board and each time the board is reset

  Within seconds of the reset, the board's firmware turns the LED off. Henceforth, the driver controls the LED as described in the next paragraph. The yellow LED can be steadily on if the firmware on the board is not functioning properly or if the board has become badly dysfunctional.

- each time the state of the ring transitions from operational (`RINGOP`) to nonoperational

  The ring transitions to nonoperational whenever the MAC component on the FDDIXP board has not seen a token in a recent fraction of a second or when the valid transmission timer (TVX) has expired. Situations that cause the ring's state to become nonoperational include, but are not limited to, the following:

  – The board is not connected to the ring.

    This can be caused by MIC connectors that have not been snapped firmly together.

    This can also be caused by broken individual lines within the cabling. On an SAS, one of the fiber lines within the cabling between the FDDIXP board and the concentrator could be disconnected or broken. On a DAS, two or more fiber lines between the FDDIXP board and ring could be disconnected or broken. (A single fiber line fault on a DAS results in a wrap.)

  – The ring is completely quiet (no token and no packets), which implies that not even the local station is issuing a token.

  – The MAC component on the FDDIXP board is not active.

    This can be caused if the board is reset so many times that the setting for `max_flops`[*] is reached. When this occurs, the driver turns the MAC off. Turning the power off, then on, will resolve this situation.

  – The FDDI network interface has been disabled or was not enabled during startup. For example, an improperly configured network interface is not enabled during startup.

---

[*] max_flops is the maximum number of resets allowed before the board is deactivated. This value can be configured in the SMT daemon configuration file.

We'd Like to Hear From You

As a user of Silicon Graphics documentation, your comments are important to us. They help us to better understand your needs and to improve the quality of our documentation.

Any information that you provide will be useful. Here is a list of suggested topics to comment on:

- General impression of the document

- Omission of material that you expected to find

- Technical errors

- Relevance of the material to the job you had to do

- Quality of the printing and binding

Please include the title and part number of the document you are commenting on. The part number for this document is 007-2144-002.

Thank you!

Three Ways to Reach Us

The **postcard** opposite this page has space for your comments. Write your comments on the postage-paid card for your country, then detach and mail it. If your country is not listed, either use the international card and apply the necessary postage or use electronic mail or FAX for your reply.

If **electronic mail** is available to you, write your comments in an e-mail message and mail it to either of these addresses:

- If you are on the Internet, use this address: techpubs@sgi.com

- For UUCP mail, use this address through any backbone site: *[your_site]*!sgi!techpubs

You can forward your comments (or annotated copies of manual pages) to Technical Publications at this **FAX** number:

415 965-0964