



EMC Connectrix B Series
DS-4900B
Version 5.1

HARDWARE REFERENCE MANUAL
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REV A01

EMC Corporation
Corporate Headquarters:
Hopkinton, MA 01748-9103
1-508-435-1000
www.emc.com

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EMC Connectrix B products have been extensively tested and certified to meet UL60950, CSA 22.2 No 60950, IEC 60950/EN60950; Safety of Information Technology Equipment including Electrical Business Equipment, FCC Rules Part 15 Subpart B; CISPR22 Class A; European EMC Directive 89/336/EEC on, electromagnetic compatibility.

The EMC Connectrix B product is a Stationary Pluggable Type B system.

This class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Warning!

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung!

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention!

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The following is a template block of text to meet South Korean RRL Agency Requirements. This block is needed for hardware manuals (both customer and service) only. If you need to include such a block in your manual, please submit a request to Illustration and provide a sample for setting up copy.



기기의 명칭(모델명): DS-8B2, DS-16B2, DS-32B2, DS-8B3,
DS-16B3, DS-220B, DS-4100B, DS-4900B,
ED-12000B, ED-24000B, ED-48000B,
AP-7420B

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This document is a procedural guide to help SAN administrators configure and manage a storage area network (SAN) using the Fabric OS Command Line Interface (CLI).

As part of its effort to continuously improve and enhance the performance and capabilities of the EMC product line, EMC periodically releases new versions of the EMC Connectrix Departmental Switches and Enterprise Directors. Therefore, some functions described in this guide may not be supported by all versions of Fabric OS currently in use. For the most up-to-date information on product features, see the product release notes.

If an EMC Connectrix Departmental Switch or Enterprise Director feature does not function properly or does not function as described in this guide, please contact the EMC Customer Support Center for assistance.

The guide applies to the following EMC product models:

- ◆ EMC Connectrix B switches: DS-220B, DS-8B3, DS-16B3, DS-32B2, DS-4100B, and DS-4900B

These models contain a fixed number of ports (they are *fixed-port switches*). The DS-220B, DS-4100B, and DS4900B allow you to license and activate extra fixed ports with the Ports on Demand feature.

- ◆ EMC Connectrix B directors: ED-24000B and ED-48000B

These models can contain a variable number of ports, which you install by plugging port cards into the director chassis. The ED-48000B can have up to 256 ports, and the ED-24000B can have up to 128 ports.

In those instances in which procedures or parts of procedures apply to some switches but not others, this guide identifies exactly which switches are supported and which are not.

Audience

This document is a procedures guide written to help storage access network (SAN) administrators like you configure and manage your SAN. This guide is part of the EMC Connectrix Departmental Switch and Enterprise Director documentation set.

Readers of this guide are expected to be familiar with the Fabric OS operating environment used on the EMC Connectrix B Series switches and directors.

Organization

This guide provides a complete set of DS-4900B switch installation procedures and an overview of the switch hardware. This document is specific to the DS-4900B switch running Fabric OS v5.1.

Here is a list of where information is located in this guide.

[Chapter 1, “Introducing the DS-4900B,”](#) provides basic information on the DS-4900B switch.

[Chapter 2, “Installing and Configuring the DS-4900B,”](#) provides information on installing and configuring the DS-4900B switch.

[Chapter 3, “Operating the DS-4900B,”](#) provides information about operating the DS-4900B switch.

[Chapter 4, “Fan Assembly Replacement Procedure,”](#) provides instructions on replacing the fan assembly in the DS-4900B switch.

[Chapter 5, “Power Supply Replacement,”](#) provides instructions on replacing the power supply in the DS-4900B switch.

[Chapter 6, “DS-4900B Specifications,”](#) provides information on specifications for the DS-4900B switch.

Supported hardware and software

This document is specific to Fabric OS v5.1 running on the following EMC Connectrix B product models:

- ◆ DS-8B3 switch
- ◆ DS-16B3 switch
- ◆ DS-32B2 switch
- ◆ DS-4100B switch
- ◆ DS-4900B switch
- ◆ DS-220B switch
- ◆ ED-24000B director
- ◆ ED-48000B director

In those instances in which procedures or parts of procedures documented here apply to some switches but not to others, this guide identifies which switches are supported and which are not.

This document sometimes mentions other Fabric OS releases to highlight the changes in the latest release or to point out interoperability issues with other Connectrix B models. It also specifies when procedures or steps of procedures apply only to specific Connectrix B models.

Although many different software and hardware configurations are tested and supported by EMC, for this Fabric OS release, documenting all possible configurations and scenarios is beyond the scope of this document.

Support clarification

EMC may not support all of the functionality of the FOS 5.1 or the operating environment. References in this document to specific configurations, functionality, and capabilities of FOS OS 5.1 should not be interpreted to imply that EMC endorses or will support them. The only configurations, features, and functionality that EMC will support are documented in the *EMC Support Matrix (ESM)* and the *EMC Networked Storage Topology Guide*.

At the time of publication, the following configurations, functionality, and capabilities of the FOS OS 5.1 are not supported by EMC:

- ◆ Customer download of firmware for EMC-supported switches or HBAs
- ◆ Third-party storage service applications
- ◆ Secure Fabric OS
- ◆ QuickLoop
- ◆ Fabric Assist
- ◆ Remote Switch
- ◆ NPIV(N-Port ID Virtualization)

For more information about EMC's currently supported solutions, consult the current version of the EMC support matrices at:

<http://powerlink.EMC.com>

Consult the current version of Connectrix B Series release notes and product documentation at:

<http://powerlink.EMC.com>

What's new in this document

The following changes were made since the last version of this document:

- ◆ The book has been reorganized; Section I contains standard Fabric OS features, and Section II contains licensed Fabric OS features.
- ◆ The RADIUS configuration procedures were revised.
- ◆ New features and procedures related to the ED-48000B switch have been added
- ◆ New features and procedures related to the DS-220B switch have been added.

Related documentation

Related documents include:

- ◆ *EMC Connectrix B Series Diagnostic and System Error Message Reference Manual*
- ◆ *EMC Connectrix B Series Fabric Watch Reference Manual*
- ◆ *EMC Connectrix B Series Management Information Base (MIB) Reference Manual*
- ◆ *EMC Connectrix B Series Fabric OS Command Reference Manual*
- ◆ *EMC Connectrix B Series Web Tools Administrators Guide*
- ◆ *EMC Connectrix ED-24000B Hardware Reference Manual*
- ◆ *EMC Connectrix DS-8B3 and DS-16B3 Hardware Reference Manual*
- ◆ *EMC Connectrix Departmental Switch DS-32B2 Hardware Reference Manual*
- ◆ *EMC Connectrix B Series DS-4100B Hardware Reference Manual*
- ◆ *EMC Connectrix B Series ED-48000B Hardware Reference Manual*
- ◆ *EMC Connectrix B Series DS-220B Hardware Reference Manual*
- ◆ *Brocade Fabric Manager Administrator's Guide*

Conventions used in this guide

EMC uses the following conventions for notes, cautions, warnings, and danger notices.

Note: A note presents information that is important, but not hazard-related.



CAUTION

A caution contains information essential to avoid data loss or damage to the system or equipment. The caution may apply to hardware or software.



WARNING

A warning contains information essential to avoid a hazard that can cause severe personal injury, death, or substantial property damage if you ignore the warning.

Typographical Conventions

Note: For readability, command names in the narrative portions of this guide are presented in mixed letter casing: for example, switchShow. In actual examples, command letter casing is often all lowercase.

EMC uses the following type style conventions in this guide:

AVANT GARDE	Keystrokes
Palatino, bold	<ul style="list-style-type: none"> ◆ Dialog box, button, icon, and menu items in text ◆ Selections you can make from the user interface, including buttons, icons, options, and field names
<i>Palatino, italic</i>	<ul style="list-style-type: none"> ◆ New terms or unique word usage in text ◆ Command line arguments when used in text ◆ Book titles
<i>Courier, italic</i>	Arguments used in examples of command line syntax.

Courier System prompts and displays and specific filenames or complete paths. For example:

```
working root directory [/user/emc]:

c:\Program Files\EMC\Symapi\db
```

Courier, bold ♦ User entry. For example:

```
sympoll -p
```

♦ Options in command line syntax

Where to get help

EMC support, product, and licensing information can be obtained as follows.

Product information — For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to the EMC Powerlink website (registration required) at:

<http://Powerlink.EMC.com>

Technical support — For technical support, go to EMC WebSupport on Powerlink. To open a case on EMC WebSupport, you must be a WebSupport customer. Information about your site configuration and the circumstances under which the problem occurred is required.

Your comments

Your suggestions will help us continue to improve the accuracy, organization, and overall quality of the user publications. Please send your opinion of this guide to:

techpub_comments@EMC.com

Introducing the DS-4900B

This chapter contains the following information:

- ◆ Overview of the DS-4900B..... 1-2
- ◆ Managing the DS-4900B..... 1-6
- ◆ Supported features..... 1-7

Overview of the DS-4900B

The EMC® Connectrix™ B DS-4900B is a 2U Fibre Channel switch with 64 fixed Fibre Channel SFP ports that support link speeds of 1-, 2-, or 4-Gbit/sec. The DS-4900B has two field-replaceable power supplies and three field-replaceable fan units (each fan FRU module has two fans). It includes the Fabric Operating System and is compatible with the entire EMC Connectrix B product family. It can operate independently or in a fabric containing multiple switches.

Ports on demand

The DS-4900B has 64 ports. By default, ports 0 through 31 are enabled. To enable additional ports, you must install Ports On Demand (POD) licenses. The ports on demand license enables ports in 16 port increments. To enable ports 32 through 47, you must install a first POD license. To enable ports 48 through 63, you must install a second POD license. Enabling ports on the switch is nondisruptive. For detailed information on enabling additional ports using the Ports on Demand license, see the *Fabric OS Administrator's Guide*.

Port Side of the DS-4900B

Figure 1-1 shows the port side of the DS-4900B.

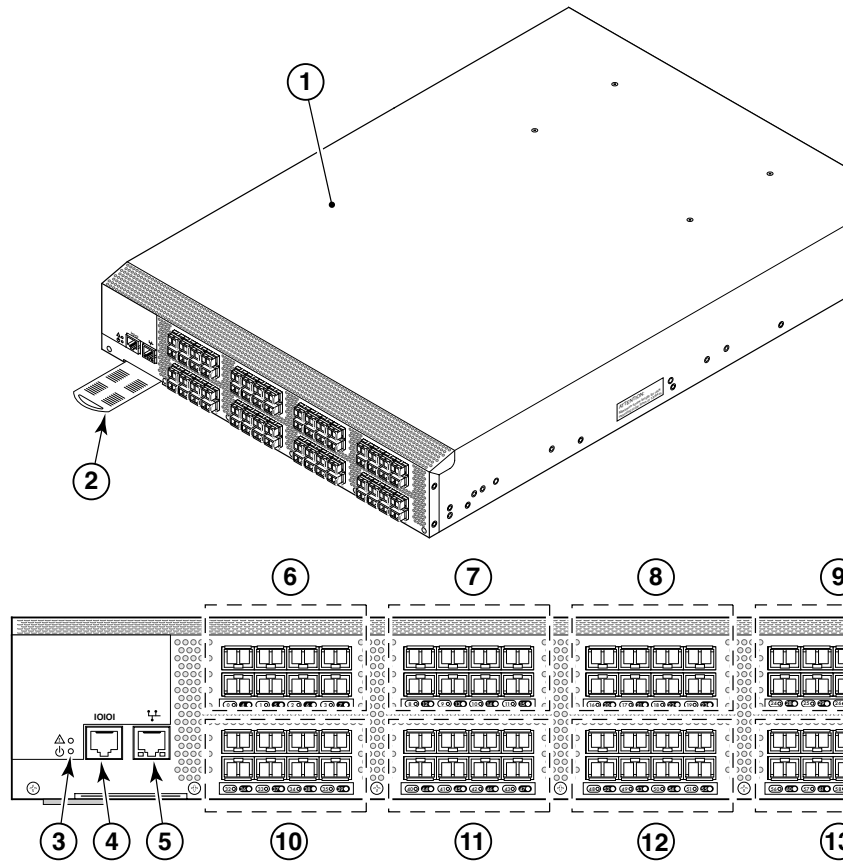


Figure 1-1 Port side view of the DS-4900B

Where:

- | | | | |
|---|--|---|----------------|
| 1 | DS-4900B | 7 | FC Ports 8-15 |
| 2 | Switch ID Pull-out Tab | 8 | FC Ports 16-23 |
| 3 | System Status LED (top)
System Power LED (bottom) | 9 | FC Ports 24-31 |

4	Console Port	10	FC Ports 32-39
5	Ethernet Port	11	FC Ports 40-47
6	FC Ports 0-7	12	FC Ports 48-55
		13	FC Ports 56-63

The Fibre Channel ports are numbered from left to right, in eight-port groups, and also are numbered on the faceplate ([Figure 1-2](#)).

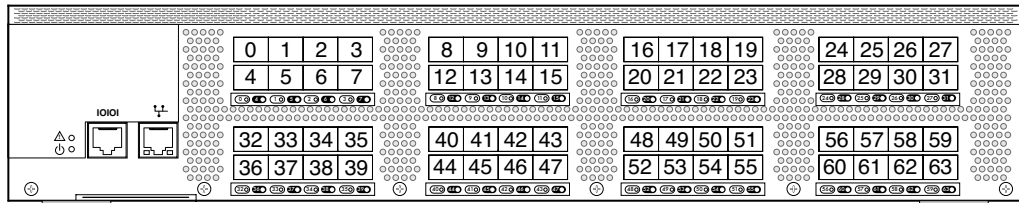


Figure 1-2 Port numbering in the DS-4900B

ISL Trunking is an optionally licensed software feature that allows you to create trunking groups of ISLs between adjacent switches. For more information about ISL Trunking, see the *Fabric OS Administrator's Guide*.

The port side of the DS-4900B also displays the system status LED, power status LED, and port status LEDs ([Figure 3-1 on page 3-3](#)).

Nonport side of the DS-4900B

[Figure 1-3 on page 1-5](#) shows the nonport side of the DS-4900B, which contains the power supplies (including the AC power receptacle and AC power switch) and fans.

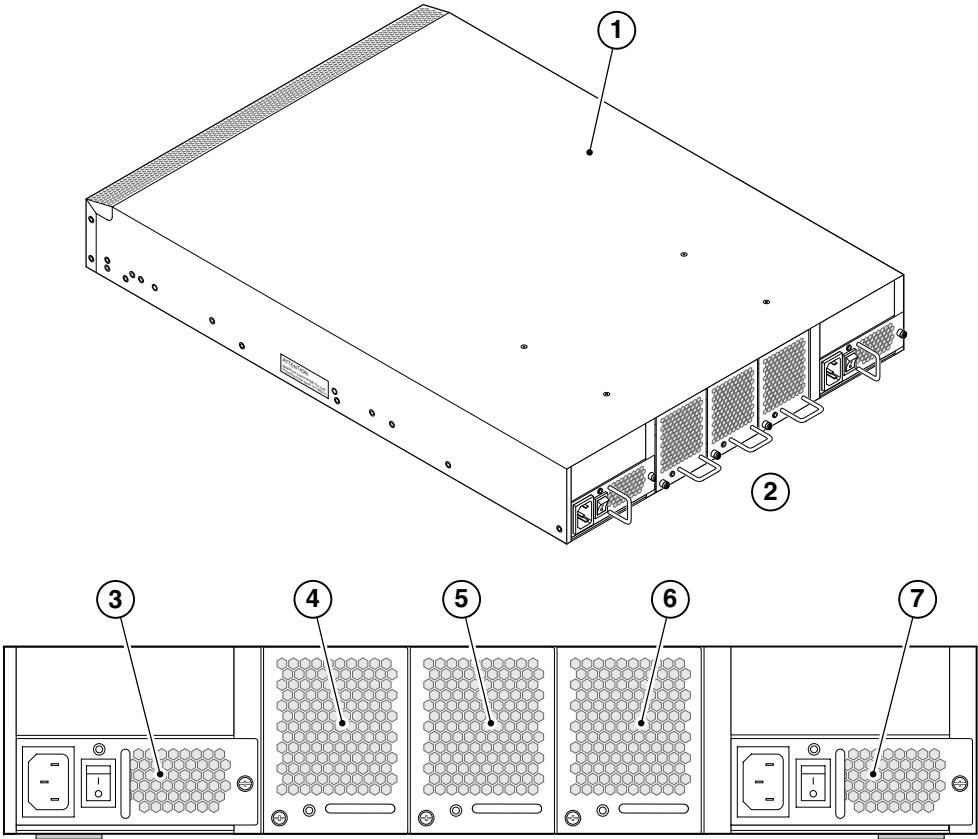


Figure 1-3 Nonport side of the DS-4900B

Where:

- 1 DS-4900B
- 2 Nonport Side of Switch
- 3 Power Supply #2
- 4 Fan Assembly #3
- 5 Fan Assembly #2
- 6 Fan Assembly #1
- 7 Power Supply #1

Managing the DS-4900B

You can use the management functions built into the DS-4900B to monitor the fabric topology, port status, physical status, and other information to help you analyze switch performance and to accelerate system debugging.

The DS-4900B automatically performs power-on self-test (POST) each time it is turned on. Any errors are recorded in the system error log. For more information about POST, see [“POST and boot specifications” on page 6-13](#).

For information about upgrading the version of Fabric OS installed on your switch, see the *Fabric OS Administrator’s Guide*.

You can manage the DS-4900B using any of the management options listed in [Table 1-1](#).

Table 1-1 Management options for the DS-4900B

Management tool	Out-of-band support	In-band support
Command line interface (CLI) Up to two admin sessions and four user sessions simultaneously. For more information, see the <i>Fabric OS Administrator’s Guide</i> and the <i>Fabric OS Command Reference Manual</i> .	Ethernet connection	IP-over-Fibre Channel
Fabric Manager For more information, see the <i>Brocade Fabric Manager Administrator’s Guide</i> .	Ethernet connection	IP-over-Fibre Channel
Web Tools For more information, see the <i>Web Tools Administrator’s Guide</i> .	Ethernet connection	IP-over-Fibre Channel
Standard SNMP Manager Applications For more information, see the <i>Fabric OS MIB Reference Manual</i> .	Ethernet connection	IP-over-Fibre Channel
Management Server For more information, see the <i>Fabric OS Administrator’s Guide</i> and the <i>Fabric OS Command Reference Manual</i> .	Ethernet connection	Native in-band interface (over HBA only)

Note: To achieve in-band support for IP-over-Fibre Channel, the software must be run on both the HBA and the switch, and it must be supported by both the HBA and HBA driver.

Supported features

The DS-4900B is shipped with the following features pre-installed:

- ◆ Zoning
- ◆ Full Fabric license
- ◆ Web Tools

The following optional software features can be enabled by purchasing a corresponding license key:

- ◆ Performance Monitoring
- ◆ Extended Fabrics
- ◆ Fabric Watch
- ◆ ISL Trunking
- ◆ Ports on Demand (1 and 2)

For information on these features, see the *Fabric OS Administrator's Guide*.

Trunking groups and ASIC groups

The DS-4900B provides 8-port trunk groups. The trunking octet groups are in the following ranges: 0-7, 8-15, 16-23, 24-31, 32-39, 40-47, 48-55, and 56-63.

There are 16 user ports per Condor ASIC on the DS-4900B. They are divided as follows: port numbers 0-15, 16-31, 32-47, and 48-63. The distinction between trunk groups and ASIC groups is important for Trunking over long distance, where the ASIC restrictions determine the number of and length of the long distance links.

Trunking over long distances

This section describes the trunking over long distances available on the DS-4900B.

Table 1-2 Trunking over long distances

Distance	Number of 2 G ports Number of Trunked Ports	Number of 4 G ports Number of Trunked Ports
LE - 10 km	64 eight 8-port trunks	64 eight 8-port trunks
L0.5 - 25 km	64 eight 8-port trunks	48 one 8-port trunk per Condor ASIC one 4-port trunk per Condor ASIC
L1 - 50 km	48 one 8-port trunk per Condor ASIC one 4-port trunk per Condor ASIC	20 one 5-port trunk per Condor ASIC
L2 - 100 km	20 one 5-port trunk per Condor ASIC	8 one 2-port trunk per Condor ASIC
LD – 200 km	8 one 2-port trunk per Condor ASIC	0
LD 250 km	8 one 2-port trunk per Condor ASIC	0
LD 500 km	0	0

Max number of long distance ports

This section lists the maximum number of long distance ports for the DS-4900B. There are 16 ports per Condor ASIC on the DS-4900B. They are divided as follows: port numbers 0-15, 16-31, 32-47, and 48-63.

Table 1-3 Max number of long distance ports

Speed and distance	Maximum num of long distance ports ASIC restrictions
1 G-100 km ports	48 12 per Condor ASIC
1 G-250 km ports	16 4 per Condor ASIC
1 G-500 km ports	8 2 per Condor ASIC
2 G-100 km ports	20 5 per Condor ASIC
2 G-250 km ports	8 2 per Condor ASIC
4 G-125 km ports	8 2 per Condor ASIC

This chapter provides the following information:

- ◆ Installation and safety considerations2-2
- ◆ Items included with the DS-4900B2-4
- ◆ Setting up as a stand-alone unit.....2-5
- ◆ Installing in an EIA cabinet2-6
- ◆ Initial setup of the DS-4900B2-7
- ◆ Recommendations for cable management2-18

Installation and safety considerations

You can install the DS-4900B in the following ways:

- ◆ As a standalone unit on a flat surface. For instructions and more information, see [“Setting up as a stand-alone unit” on page 2-5](#).
- ◆ In an EIA cabinet using either the fixed rack mount kit, slide rack mount kit, or the mid-mount rack kit. For more information, see [“Installing in an EIA cabinet” on page 2-6](#).

To install and operate the switch successfully, ensure that the following requirements are met:

- ◆ The primary AC input is 100-240 VAC (switch autosenses input voltage), 47-63 Hz.
- ◆ The primary outlet is correctly wired, protected by a circuit breaker, and grounded in accordance with local electrical codes.
- ◆ The supply circuit, line fusing, and wire size are adequate, as specified by the electrical rating on the switch nameplate.

For power supply information, see [“Power supply specifications” on page 6-5](#).

To ensure adequate cooling, install the switch with the nonport side, which contains the air intake vents, facing a cool-air aisle.

Verify that the ambient air temperature does not exceed 40° C (104° F) and that the ambient humidity remains between 20 % and 85 % while the switch is operating.

If installing the switch in a cabinet:

- ◆ The cabinet must be a standard EIA cabinet.
- ◆ Plan a cabinet space that is 2U or 8.6 cm (3.4 in.), 42.8 cm (16.8 in.) wide, and at least 61 cm (24 in.) deep.
- ◆ Ground all equipment in the cabinet through a reliable branch circuit connection and maintain ground at all times. Do not rely on a secondary connection to a branch circuit, such as a power strip.
- ◆ Ensure that airflow and temperature requirements are met on an ongoing basis, particularly if the switch is installed in a closed or multitrack assembly.

- ◆ Verify that the additional weight of the switch does not exceed the cabinet's weight limits or unbalance the cabinet in any way.
- ◆ Secure the cabinet to ensure stability in case of unexpected movement.

Items included with the DS-4900B

The following items are included with the DS-4900B:

- ◆ The DS-4900B switch, containing three fan assemblies and two power supplies
- ◆ 32 SFP (small-form-factor pluggable) transceivers (64 total optional)
- ◆ One accessory kit, containing the following items:
 - Fabric Manager Evaluation CD (not required for installation).
 - Rubber mounting feet (to be used when setting up the DS-4900B as a standalone unit).
 - Two grounded 6-ft (approximately 1.83 m) country-specific power cords.
 - One RJ-45 serial cable cable, 10-ft (approximately 3 m) long. The DS-4900B uses an RJ-45 connector for the serial port. An RJ-45 to DB9 adaptor is also provided with the switch.

Setting up as a stand-alone unit

The DS-4900B can be configured as a standalone unit, which means that it resides outside of a rack.

To configure the DS-4900B as a standalone unit:

1. Unpack the DS-4900B and verify that all ordered items are present.
2. Clean the four corner depressions on the bottom of the switch and place a rubber foot in each one. This helps prevent the switch from accidentally sliding off the supporting surface.
3. Place the switch on a stable, flat surface.

Installing in an EIA cabinet

The DS-4900B can be installed into an EIA cabinet using an optionally available rack mount kit. Refer to the documentation that is shipped with the rack kit for installation instructions.

The switch can be installed using the slide rack mount kit in two ways:

- ◆ To allow the port side of the switch to slide out of the exhaust-air side of the cabinet. In this installation, the port side of the switch is flush with the edge of the cabinet.
- ◆ To allow the nonport side of the switch to slide out of the cool-air side of the cabinet. In this installation, the port side of the switch is set 3 in. (7.62 cm) back from the edge of the cabinet, allowing a more gradual bend in the fiber-optic cables.

Initial setup of the DS-4900B

The following items are required for configuring and connecting the DS-4900B for use in a network and fabric:

- ◆ The DS-4900B, installed and connected to a power source
- ◆ A console computer that has a terminal emulator application (such as HyperTerminal for Microsoft Windows)
- ◆ An unused IP address and corresponding subnet mask and gateway address
- ◆ The serial cable provided with the switch
- ◆ An Ethernet cable
- ◆ SFP transceivers and compatible fibre cables, as required
- ◆ Access to an FTP server, for backing up (uploading) or downloading the switch configuration

To configure the DS-4900B, you must perform the following tasks:

1. [“Provide power to the switch” on page 2-8](#)
2. [“Create a serial connection” on page 2-8](#)
3. [“Connect to the switch using the serial connection” on page 2-9](#)
4. [“Set the switch IP address” on page 2-9](#)
5. [“Create an Ethernet connection” on page 2-10](#)
6. [“Set the switch domain ID” on page 2-10](#)
7. [“Install SFPs and cable the switch” on page 2-11](#)
8. [“Set the switch date and time” on page 2-12](#)
9. [“Synchronize local time with an external source” on page 2-13](#)
10. [“Correct the time zone of a switch” on page 2-13](#)
11. [“Verify correct operation and backup the configuration” on page 2-15](#)



CAUTION

Do not connect the switch to the network until the IP address is correctly set.

Provide power to the switch

To provide power to the DS-4900B:

1. Connect the power cords to both power supplies, and then to power sources on separate circuits to protect against AC failure. Ensure that the cords have a minimum service loop of 6 in. available and are routed to avoid stress.
2. Power on the power supplies by flipping both AC switches to the "1" symbol. The power supply LEDs display amber until POST is complete, and then change to green. The switch usually requires from 1 to 3 min. to boot and complete POST.

Note: Power is supplied to the switch as soon as the first power supply is connected and turned on.

3. After POST is complete, verify that the switch power and status LEDs on the left of the port side of the switch are green.

Create a serial connection

To create a serial connection to the DS-4900B:

1. Remove the plug from the serial port and insert the serial cable provided with the DS-4900B.
2. Connect the serial cable to the serial port on the switch and to an RJ-45 serial port on the workstation.

If the serial port on the workstation is RS-232, you can use the adapter on the end of the serial cable and insert the RS-232 connector into the serial port on the workstation.

3. Disable any serial communication programs running on the workstation.
4. Open a terminal emulator application (such as HyperTerminal for Windows or TERM in a UNIX environment) and configure the application as follows:
 - In a Windows NT, 2000, 2003, ME, or XP environment:
 - Bits per second: 9600
 - Databits: 8
 - Parity: None
 - Stop bits: 1

Flow control: None

- In a UNIX environment, enter the following command at the prompt:

```
tip /dev/ttyb -9600
```

Connect to the switch using the serial connection

To log in to the switch through the console port:

1. Verify that the switch has completed POST. When POST is complete, the port status and switch power and status LEDs return to a standard healthy state; for information about LED signals, see [“Interpreting LED activity” on page 3-2](#).
2. When the terminal emulator application stops reporting information, press Enter to display the login prompt.
3. Log in using the administrative account; the login is "admin" and the default password is "password". You are prompted to change the default passwords on the switch during initial login; you can bypass this by pressing Ctrl-C.

For more information refer to the *Fabric OS Administrator's Guide* and the *Fabric OS Command Reference Guide*.

Set the switch IP address

To replace the default IP address and related information:

1. Enter the ipAddrSet command at the terminal emulator application prompt, and enter the requested information at the prompts:

```
switch:admin> ipaddrset
Ethernet IP Address [10.77.77.77]:10.32.53.47
Ethernet Subnetmask [255.0.0.0]:255.255.240.0
Fibre Channel IP Address [0.0.0.0]: 20.32.233.48
Fibre Channel Subnetmask [0.0.0.0]: 255.255.230.0
Gateway IP Address [0.0.0.0]:10.32.48.1
IP address is being changed...Done.
Committing configuration...Done.
switch:admin>
```

2. Optionally, verify that the address was correctly set by typing the ipAddrShow command at the prompt.

3. Record the IP address on the pull out tab on the port side of the DS-4900B (Figure 1-1 on page 1-3).

Create an Ethernet connection

To create an Ethernet connection to the DS-4900B:

1. Remove the protection plug from the Ethernet port.
2. Connect an Ethernet cable from the switch Ethernet port to a network Ethernet hub.

Note: At this point, the switch can be accessed remotely, through telnet or Web Tools. Ensure that the switch is not being modified from any other connections during the remaining tasks.

Set the switch domain ID

To set the switch domain ID:

1. Log on to the switch by telnet, using the administrative account.
2. Modify the domain ID if required.

The default domain ID is 1. If the switch is not powered on until after it is connected to the fabric and the default domain ID is already in use, the domain ID for the new switch is automatically reset to a unique value. If the switch is connected to the fabric after it has been powered on and the default domain ID is already in use, the fabric segments. To find the domain IDs that are currently in use, run the fabricShow command on another switch in the fabric.

- a. Disable the switch by typing the switchDisable command.
- b. Enter the configure command. The command prompts display sequentially; enter a new value or press Enter to accept each default value.
- c. Enter y after the "Fabric parameters" prompt:


```
Fabric parameters (yes, y, no, n): [no] y
```
- d. Enter a unique domain ID (such as the domain ID used by the previous switch, if still available):

```
Domain: (1..239) [1] 3
```

- e. Complete the remaining prompts or press Ctrl-D to accept the remaining settings without completing all the prompts.
 - f. Reenable the switch by entering the switchEnable command.
3. Optionally, specify any custom status policies:
 - a. Enter the switchStatusPolicySet command at the prompt. This command sets the policy parameters that determine overall switch status.
 - b. Customize the status policies as desired. To deactivate the alarm for a condition, enter 0 at the prompt for that condition.

For more information, refer to the *Fabric OS Administrator's Guide* and the *Fabric OS Command Reference Manual*.

Install SFPs and cable the switch

To install SFPs and cable the switch:

1. Install the SFP transceivers in the Fibre Channel ports, as required. The ports selected for use in trunking groups must meet specific requirements. For a list of these requirements, see the *Fabric OS Administrator's Guide*.
 - a. Remove the plugs from the ports to be used.
 - b. Position a transceiver so that it is oriented correctly and insert it into a port until it is firmly seated and the latching mechanism clicks.

Note: The transceivers are keyed to ensure correct orientation. If a transceiver does not install easily, ensure that it is correctly oriented.

- c. Repeat steps **a** and **b** for the remaining ports, as required.
2. Connect the cables to the transceivers.



CAUTION

A 50-micron cable should not be bent to a radius less than 2 in. under full tensile load and 1.2 in. with no tensile load.

Tie wraps are not recommended for optical cables because they are easily overtightened.

- a. Orient a cable connector so that the key (the ridge on one side of connector) aligns with the slot in the transceiver. Then, insert the cable into the transceiver until the latching mechanism clicks. For instructions specific to cable type, refer to the cable manufacturer's documentation.

Note: The cable connectors are keyed to ensure correct orientation. If a cable does not install easily, ensure that it is correctly oriented.

- b. Repeat step a for the remaining cables as required.

Set the switch date and time

The date and time switch settings are used for logging events. Switch operation does not depend on the date and time; a switch with an incorrect date and time value still functions properly.

You can synchronize the local time of the principal or primary fabric configuration server (FCS) switch to that of an external Network Time Protocol (NTP) server. See [“Synchronize local time with an external source” on page 2-13](#).

To set the date and time of a switch:

1. Log in to the switch as admin.
2. Enter the date command at the command line using the following syntax:

```
date "MMDDhhmm[CC]YY"
```

where:

- MM is the month (01-12)
- DD is the date (01-31)
- hh is the hour (00-23)
- mm is minutes (00-59)
- CC is the century (19-20)
- YY is the year (00-99)

Year values greater than 69 are interpreted as 1970-1999; year values less than 70 are interpreted as 2000-2069. The date function does not support Daylight Savings Time or time zones, so changes will have to be reset manually.

```
switch:admin> date
Fri May 5 21:50:00 UTC 1989
switch:admin>
switch:admin> date "0624165203"
Tue Jun 24 16:52:30 UTC 2003
switch:admin>
```

For more information, refer to the *Fabric OS Command Reference Manual*.

Synchronize local time with an external source

To synchronize the local time of the principal or primary FCS switch with that of an external NTP server:

1. Log in as admin.
2. Enter the `tsClockServer ipaddr` command.

The `ipaddr` variable represents the IP address of the NTP server that the switch can access. This argument is optional; by default the value is "LOCL".

```
switch:admin> tsclockserver
LOCL
switch:admin> tsclockserver 132.163.135.131
switch:admin>
```

For more information, refer to the *Fabric OS Command Reference Manual*.

Correct the time zone of a switch

If the time of your switch(es) is off by hours (and not minutes), use the following procedure on all switches.

To set the time zone:

1. Log in as admin.
2. Enter the `tsTimeZone` command as follows:

```
tstimezone [houroffset [, minuteoffset]]
```

For Pacific Standard Time, enter `tsTimeZone -8,0`

For Central Standard Time, enter `tsTimeZone -6,0`

For Eastern Standard Time, enter `tsTimeZone -5,0`

The default time zone for switches is universal time conversion (UTC), which is 8 hours ahead of Pacific Standard Time. Additional time zone conversions are listed later in this section.

The parameters listed do not apply if the time zone of the switch(es) has already been changed from the default (8 hours ahead of PT).

For more detailed information about the command parameters, see the `tsTimeZone` command in the *Fabric OS Command Reference Manual*.

3. Repeat steps 1 and 2 on all switches that the time zone needs to be set.

This needs to be done only once, because the value is stored in nonvolatile memory. For U.S. time zones, use [Table 2-1](#) to determine the correct parameter for the `tsTimeZone` command.

Table 2-1 tsTimeZone command parameter selection

Local time	tsTimeZone parameter (difference from UTC)
Atlantic Standard	-4,0
Atlantic Daylight	-3,0
Eastern Standard	-5,0
Eastern Daylight	-4,0
Central Standard	-6,0
Central Daylight	-5,0
Mountain Standard	-7,0
Mountain Daylight	-6,0
Pacific Standard	-8,0
Pacific Daylight	-7,0
Alaskan Standard	-9,0
Alaskan Daylight	-8,0
Hawaiian Standard	-10,0

Verify correct operation and backup the configuration

To verify correct operation and backup the switch configuration:

1. Check the LEDs to verify that all components are functional. For information about LED patterns, see [“Interpreting LED activity” on page 3-2](#).
2. Use the switchShow command to verify that the ports are enabled and alive. Without the Ports on Demand licenses, port 32-63 will be disabled.

```
SW4900:admin> switchshow
switchName:      SW4900
switchType:      44.1
switchState:     Online
switchMode:      Native
switchRole:      Principal
switchDomain:    48
switchId:        fffc30
switchWwn:       ff:ff:ff:ff:ff:ff:ff:ff
zoning:          ON (cfg_em)
switchBeacon:    OFF
```

```
Area Port Media Speed State
=====
 0  0  id  N4  No_Light
 1  1  id  N4  No_Light
 2  2  id  N4  No_Light
 3  3  id  N4  No_Light
 4  4  id  N4  No_Light
 5  5  id  N4  No_Light
 6  6  id  N4  No_Light
 7  7  id  N4  No_Light
 8  8  id  N4  No_Light
 9  9  id  N2  Online   F-Port  10:00:00:00:00:00:00:14
10 10  id  N2  Online   F-Port  10:00:00:00:00:00:00:22
11 11  id  N2  Online   F-Port  10:00:00:00:00:00:00:18
12 12  id  N2  No_Light
13 13  id  N2  No_Light
14 14  id  N2  No_Light
15 15  id  N2  No_Light
16 16  id  N2  Online   F-Port  10:00:00:00:00:00:00:24
17 17  id  N2  Online   F-Port  10:00:00:00:00:00:00:16
18 18  id  N4  No_Light
19 19  id  N2  Online   F-Port  10:00:00:00:00:00:00:20
20 20  id  N2  No_Light
21 21  id  N2  No_Light
22 22  id  N2  No_Light
23 23  id  N2  No_Light
24 24  id  N2  Online   F-Port  10:00:00:00:00:00:00:15
```

```

25 25 id N2 Online F-Port 10:00:00:00:00:00:21
26 26 id N2 Online F-Port 10:00:00:00:00:00:17
27 27 id N2 Online F-Port 10:00:00:00:00:00:23
28 28 id N4 No_Light
29 29 id N4 No_Light
30 30 id N4 No_Light
31 31 id N4 No_Light
32 32 id N1 Online L-Port 5 public
33 33 id N1 Online L-Port 4 public
34 34 id N4 No_Light
35 35 id N4 No_Light
36 36 id N4 Online E-Port 10:00:00:05:1e:34:02:84 "sw046"
    (upstream) (Trunk master)
37 37 id N2 Online E-Port 10:00:00:05:1e:34:01:39 "sw023"
38 38 id N4 Online E-Port (Trunk port, master is Port 36 )
39 39 id N2 Online E-Port 10:00:00:05:1e:34:01:39 "sw023"
40 40 id N2 Online E-Port (Trunk port, master is Port 44 )
41 41 id N2 Online E-Port (Trunk port, master is Port 44 )
42 42 id N2 Online E-Port 10:00:00:60:69:e4:20:3e "sw48000" (Trunk
    master)
43 43 id N2 Online E-Port (Trunk port, master is Port 45 )
44 44 id N2 Online E-Port 10:00:00:60:69:e4:20:3e "sw48000" (Trunk
    master)
45 45 id N2 Online E-Port 10:00:00:60:69:e4:20:3e "sw48000"
    (downstream) (Trunk master)
46 46 id N2 No_Light
47 47 id N4 No_Light
48 48 id N4 No_Light
49 49 id N4 No_Light
50 50 id N4 No_Light
51 51 id N4 No_Light
52 52 id N4 No_Light
53 53 id N4 No_Light
54 54 id N2 Online F-Port 10:00:00:00:00:00:06
55 55 id N2 Online F-Port 10:00:00:00:00:00:04
56 56 id N2 Online F-Port 10:00:00:00:00:00:13
57 57 id N2 Online F-Port 10:00:00:00:00:00:19
58 58 id N4 No_Light
59 59 id N4 No_Light
60 60 id N2 Online F-Port 10:00:00:00:00:00:12
61 61 id N2 Online F-Port 10:00:00:00:00:00:08
62 62 id N2 Online F-Port 10:00:00:00:00:00:10
63 63 id N2 Online F-Port 10:00:00:00:00:00:02
SW4900:admin>

```

3. Use the fabricShow command to verify fabric connectivity.
4. Back up the switch configuration to an FTP server by typing the configUpload command and following the prompts.

EMC recommends backing up the configuration on a regular basis to ensure that a complete configuration is available as backup. For specific instructions about how to back up the configuration, see the *Fabric OS Administrator's Guide*. The `switchShow`, `fabricShow`, and `configUpload` commands are described in detail in the *Fabric OS Command Reference Manual*.

Recommendations for cable management

Cables can be organized and managed in a variety of ways, such as by using cable channels or patch panels. Following is a list of recommendations:

- ◆ Plan cable management before installing the switch in a rack.
- ◆ Leave at least 1 m. of slack for each port cable. This provides room to remove and replace the switch, allows for inadvertent movement of the rack, and helps prevent the cables from being bent to less than the minimum bend radius.



CAUTION

A 50-micron cable should not be bent to a radius less than 2 in. under full tensile load and 1.2 in. with no tensile load. Tie wraps are not recommended for optical cables because they are easily overtightened.

- ◆ If using ISL Trunking:
 - It might be useful to group cables by trunking groups.
 - The cables used in trunking groups must meet specific requirements. For a list of these requirements, see the *Fabric OS Administrator's Guide*.
- ◆ For easier maintenance, label the fiber-optic cables and record the devices to which they are connected.
- ◆ Keep LEDs visible by routing port and other cables directly down or otherwise away from the LEDs.

This chapter contains the following information:

- ◆ Interpreting LED activity3-2
- ◆ Interpreting POST results3-8
- ◆ Maintaining the DS-4900B3-9
- ◆ Powering off the DS-4900B3-10

Interpreting LED activity

System activity and status can be determined through the activity of the LEDs on the switch.

There are three possible LED states:

- ◆ No light
- ◆ Steady light
- ◆ Flashing light

The lights are in one of the following colors:

- ◆ Green
- ◆ Amber

The status LEDs may display amber or flash during boot, POST, or other diagnostic tests. This is normal; it does not indicate a problem unless the LEDs do not indicate a healthy state after all boot processes and diagnostic tests are complete.

LEDs on the port side of the switch

The port side of the switch has the following LEDs:

- ◆ One system status LED (above) on the left side.
- ◆ One power status LED (below) on the left side.
- ◆ Two Ethernet Port LEDs.
- ◆ One port status LED for each port on the switch. These LEDs are arrayed below each pair of Fibre Channel ports. The port LEDs are located in the array in the same relative positions as the ports.

[Figure 3-1 on page 3-3](#) shows the port side of the DS-4900B.

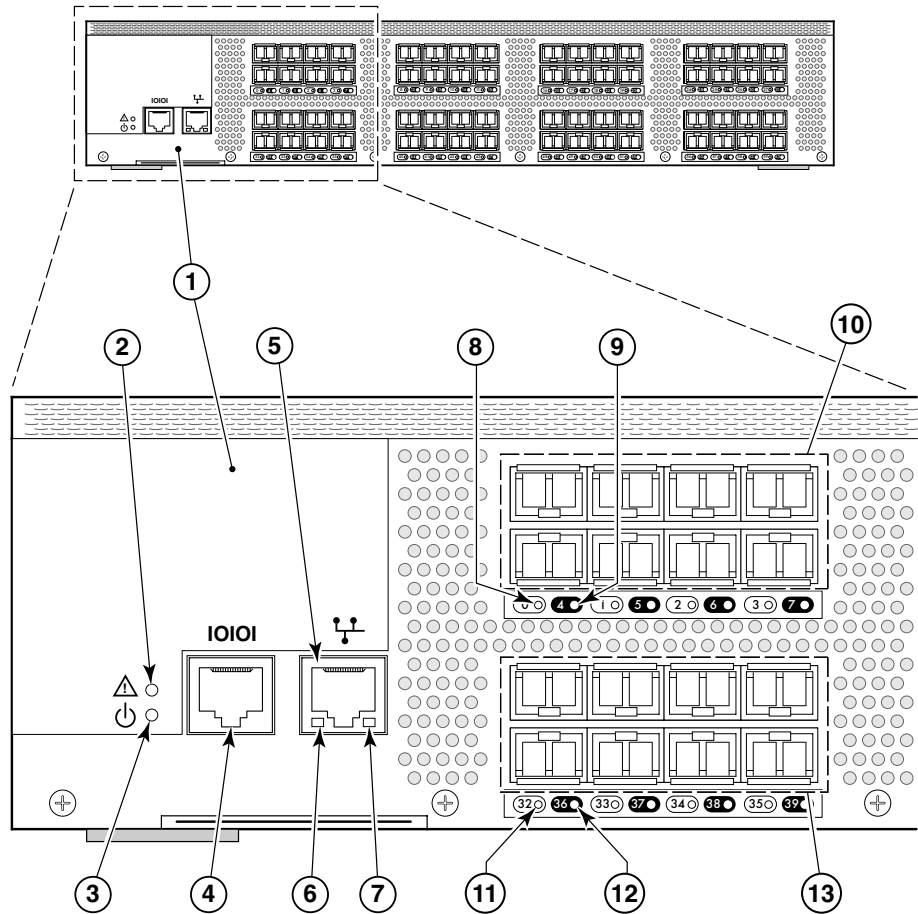


Figure 3-1 LEDs on Port Side of the DS-4900B

- | | | | |
|---|--------------------|----|---------------------|
| 1 | DS-4900B | 8 | Port 0 Status LED |
| 2 | System Status LED | 9 | Port 4 Status LED |
| 3 | System Power LED | 10 | Ports 0 through 7 |
| 4 | Console Port | 11 | Port 32 Status LED |
| 5 | Ethernet Port | 12 | Port 36 Status LED |
| 6 | Ethernet Speed LED | 13 | Ports 32 through 39 |
| 7 | Ethernet Link LED | | |

Table 3-1 describes the LEDs and their actions on the port side of the switch.

Table 3-1 Port side LED patterns during normal operation

LED name	LED color	Status of hardware	Recommended action
Power Status	No light	System is off or there is an internal power supply failure.	Verify that system is powered on (power supply switches to “1”), the power cables attached, and your power source is live. If the system power LED is not green, the unit may be faulty. Contact your EMC Customer Service Representative.
	Steady green	System is on and power supplies are functioning properly.	No action required.
System Status	No light	System is off or there is no power.	Verify that system is on and has completed booting.
	Steady green	System is on and functioning properly.	No action required.
	Steady amber (for more than five seconds)	Unknown state, boot failed, or the system is faulty. This LED displays steady amber during POST, this is normal and does not indicate a fault.	Perform the following steps: Connect a serial cable to the system. Reboot the system. Check the failure indicated on the system console. Contact your EMC Customer Service Representative.
	Flashing amber/green	Attention is required. A number of variables can cause this status including a single power supply failure, a fan failure, or one or more environmental ranges has exceeded.	Check the management interface and the error log for details on the cause of status. Contact your EMC Customer Service Representative.
Ethernet Speed	No light	Port speed is 10 Mb/sec.	No action required.
	Steady green	Port speed is 100 Mb/sec.	No action required.
Ethernet Link	No light	There is no link.	Verify that the Ethernet cable is connected correctly.
	Steady amber	There is a link.	No action required.
	Flashing amber/no light	There is link activity (traffic).	No action required.

Table 3-1 Port side LED patterns during normal operation (continued)

LED name	LED color	Status of hardware	Recommended action
Port Status	No light	No signal or light carrier (media or cable) detected.	Check transceiver and cable.
	Slow flashing green (flashing in 2-second intervals)	Port is online but segmented because of a loopback cable or incompatible switch connection.	No action required.
	Fast flashing green (flashing in half-second intervals)	Port is online and an internal loopback diagnostic test is running.	No action required.
	Flickering green (steady with random flashes)	Port is online and frames are flowing through the port.	No action required.
	Steady green	Port is online, but has no traffic.	No action required.
	Slow flashing amber (flashing in 2-second intervals)	Port is disabled (because of diagnostics or the portDisable command).	Verify that the diagnostic tests are not running. Reenable the port using the portEnable command.
	Fast flashing amber (flashing in half-second intervals)	Port is faulty.	Check the management interface and the error log for details on the cause of status. Contact your EMC Customer Service Representative.
	Steady amber (for more than 5 seconds)	Port is receiving light or signal carrier at 4 Gbit/sec; but is not yet online.	No action required.

LEDs on the nonport side of the switch

The nonport side of the switch has the following LEDs:

- ◆ One power supply LED above the AC power switch on each power supply
- ◆ One fan status LED at the bottom of each fan assembly

Figure 3-2 shows the nonport side of the switch.

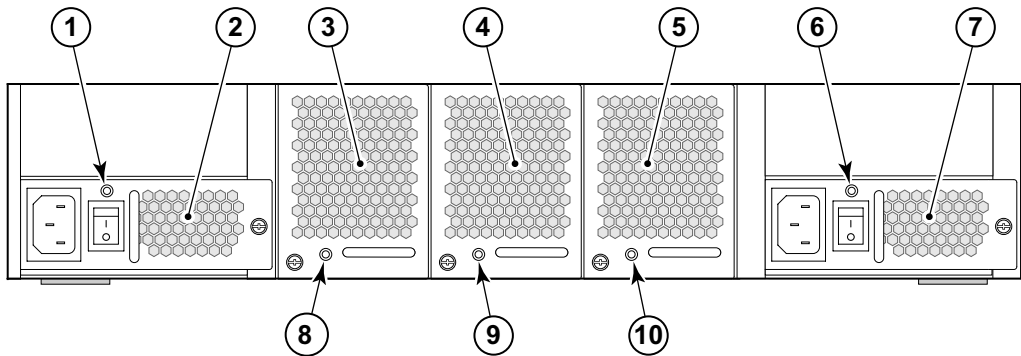


Figure 3-2 LEDs on nonport side of the DS-4900B

1	Power Supply #2 Status LED	6	Power Supply #1 Status LED
2	Power Supply #2	7	Power Supply #1
3	Fan Assembly #3	8	Fan Assembly #3 Status LED
4	Fan Assembly #2	9	Fan Assembly #2 Status LED
5	Fan Assembly #1	10	Fan Assembly #1 Status LED

Table 3-2 on page 3-7 describes the LEDs on the nonport side of the switch.

Table 3-2 Nonport Side LED Patterns During Normal Operation

LED Name	LED Color	Status of Hardware	Recommended Action
Power Supply Status	No light	Power supply is not receiving power or is off.	Verify that the power supply is on and seated and the power cord is connected to a functioning power source.
	Steady green	Power supply is operating normally.	No action required.
	Steady amber (for more than 5 seconds)	Power supply fault for one of the following reasons: Power supply is switched off The power cable is disconnected The power supply has failed Note: When the switch is first powered on the power supply status LED will show amber until POST has completed.	Try the following: Check the power cable connection Verify that the power supply is powered on Contact your EMC Customer Service Representative to replace the power supply FRU.
Fan Status	No light	Fan assembly is not receiving power.	Try the following: Verify that the fan FRU is seated correctly Verify that the switch is powered on
	Steady green	Fan assembly is operating normally.	No action required.
	Steady amber (for more than 5 seconds)	Fan fault for one of the following reasons: One or more of the fan(s) in the fan assembly has failed The fan FRU was disabled by the user Note: When the switch is first powered on the fan status LED will show amber until POST has completed.	Try the following: Verify that the fan FRU is enabled (use the fanEnable command) Contact your EMC Customer Service Representative to replace the fan FRU.

Interpreting POST results

POST is a system check that is performed each time the switch is powered on, rebooted, or reset, and during which the LEDs flash different colors.

To determine if POST completed successfully and whether any errors were detected:

- ◆ Verify that the LEDs on the switch indicate that all components are healthy (LED patterns are described in [Table 3-1 on page 3-4](#) and [Table 3-2 on page 3-7](#)). If one or more LEDs do not display a healthy state:
 - Verify that the LEDs are not set to “beacon” (this can be determined through the switchShow command or Web Tools). For information about how to turn beaconing on and off, see the *Fabric OS Administrator’s Guide* or the *Web Tools Administrator’s Guide*.
 - Follow the recommended action for the observed LED behavior, as listed in [Table 3-1 on page 3-4](#) or [Table 3-2 on page 3-7](#).
- ◆ Verify that diagShow command displays that the diagnostic status for all ports in the switch is OK.
- ◆ Review the system log for errors. Errors detected during POST are written to the system log, which is viewed using the errShow command. For more information about this command, see the *Fabric OS Command Reference Manual*. For information about specific error messages, see the *Fabric OS System Error Message Reference Manual*.

Maintaining the DS-4900B

The DS-4900B is designed for high availability and low failure; it does not require any regular physical maintenance. It includes diagnostic tests and field-replaceable units, described in the following sections.

Diagnostic tests

In addition to POST, Fabric OS includes diagnostic tests to help you troubleshoot the hardware and firmware. This includes tests of internal connections and circuitry, fixed media, and the transceivers and cables in use. The tests are implemented by command, either through a telnet session or through a console set up to the serial connection to the switch. Some tests require the ports to be connected by external cables, to allow diagnostics to verify the serializer/deserializer interface, transceiver, and cable. Some tests require loopback plugs.

Diagnostic tests run at link speeds of 1-, 2-, and 4-Gb/s. Diagnostic tests might temporarily lock the transmit and receive speed of the links during diagnostic testing. For information about specific diagnostic tests, see the *Fabric OS Command Reference Manual*.

Field replaceable units (FRUs)

You can replace the power supplies and fan assemblies onsite without the use of special tools. The power supplies and fan assemblies are keyed to ensure correct orientation during installation. Installation instructions are provided with all replacement units.



WARNING

The DS-4900B has two power cords. To remove all power from the switch, disconnect both power cords before servicing.

Power supplies

The two power supplies are hot-swappable. They are identical and fit into either power supply slot.

Fabric OS identifies the power supplies as follows (viewing the switch from the nonport side):

- ◆ Power supply 1 on the right
- ◆ Power supply 2 on the left

Use any of the following methods to determine if you need to replace a power supply:

- ◆ Check the power supply status LED next to the On/Off switch (see [“LEDs on the nonport side of the switch” on page 3-6](#))
- ◆ Enter the psShow command at the prompt to display power supply status as shown below:

```
sw4900:admin> psshow
Power Supply #1 is OK
V10529, TQ2H0000030 , 60-0300031-01,X2, , SP640 , 2X,TQ2H0000
Power Supply #2 is OK
V10541, TQ2H0000189 , 60-0300031-01,X3, , SP640-2P , A ,TQ2H0000
sw4900:admin>
```

- ◆ In Web Tools, click the Power Status icon.

Fan assemblies

The three fan assemblies are hot-swappable. They are identical and fit into any fan assembly slot.

Each fan assembly contains two fans, identified by Fabric OS as follows (viewing the switch from the nonport side):

- ◆ Fan assembly #1 on the right
- ◆ Fan assembly #2 in the center
- ◆ Fan assembly #3 on the left

Use any of the following methods to determine if you need to replace a fan assembly:

- ◆ Check the fan status LED on the face of the fan assembly (see [“LEDs on the nonport side of the switch” on page 3-6](#))
- ◆ Enter the fanShow command at the prompt:

```
sw4900:admin> fanshow
Fan 1 is Ok, speed is 4821 RPM
Fan 2 is Ok, speed is 4821 RPM
Fan 3 is Ok, speed is 4891 RPM
sw4900:admin>
```

- ◆ In Web Tools, click the Fan Status icon.

Powering off the DS-4900B

To power off the DS-4900B:

1. Run the sysShutdown command.
2. Set each AC power switch to “0”.

Fan Assembly
Replacement
Procedure

This chapter contains information for replacing the fan assembly in a DS-4900B.

- ◆ Fan assembly replacement.....4-2

Fan assembly replacement

Fan assembly replacement should be performed by an EMC Customer Service Representative.

Note: Customer servicing of the DS-4900B could result in the voiding of the warranty or service agreement.

The DS-4900B switch has three fan assemblies as displayed in [Figure 4-1](#). The Fabric OS identifies the fans from left to right as Fan assembly #3, Fan assembly #2, and Fan assembly #1.

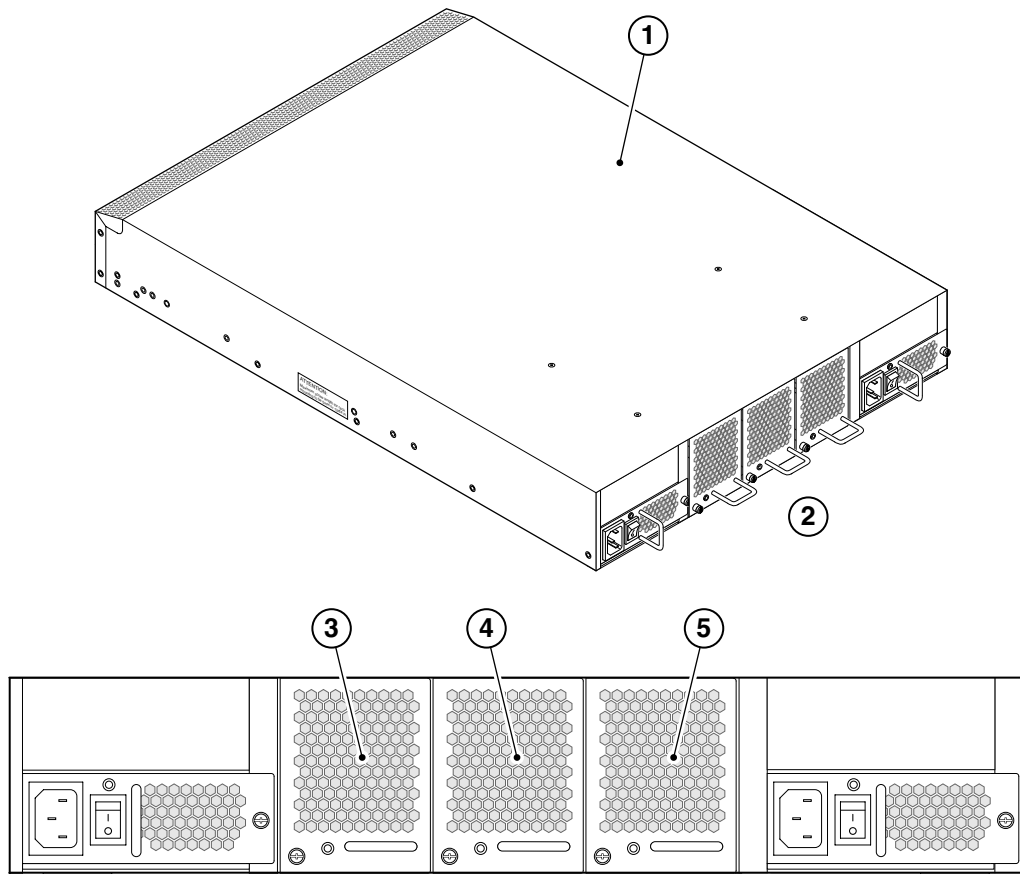


Figure 4-1 DS-4900B fan assemblies on the nonport side

1	DS-4900B	4	Fan Assembly #2
2	Nonport side	5	Fan Assembly #1
3	Fan Assembly #3		



CAUTION

Disassembling any part of the fan assembly voids the part warranty and regulatory certifications. There are no user-serviceable parts inside the fan assembly.

Because the cooling system relies on pressurized air, do not leave any of the fan assembly slots empty longer than two minutes while the switch is operating. If a fan assembly fails, leave it in the switch until it can be replaced.

Maintain all three fan assemblies in operational condition to provide redundancy.

Table 4-1 describes the fan status LED colors, behaviors, and actions required, if any.

Table 4-1 Fan status LED behavior, description, and required actions

LED color and behavior	Description	Action required
No light	Fan assembly is not receiving power.	Verify that the fan FRU is seated correctly.
Steady green	Fan assembly is operating normally.	No action required.
Steady amber (for more than five seconds)	Fan fault for one of the following reasons: One or more of the fan(s) in the fan assembly has failed The fan FRU was disabled by the user	Verify that the fan FRU is enabled. If the fan FRU is enabled and the FRU is faulty it should be replaced.

Time required

Replacing a fan assembly in the DS-4900B switch should take less than two minutes.

Items required

You need the following items to replace a fan assembly in a DS-4900B:

- ◆ DS-4900B switch
- ◆ New fan FRU assembly
- ◆ Phillips-head screwdriver #1

Replacing the fan assembly

To replace a fan assembly in a DS-4900B:

1. Unscrew the captive screw on the fan assembly you are replacing using a Phillips-head screwdriver.
2. Remove the fan assembly you are replacing from the chassis by pulling the handle out, away from the chassis.
3. Install the new fan assembly in the chassis:
 - a. Orient the new fan assembly as shown in [Figure 4-2 on page 4-5](#), with the captive screw on the right.
 - b. Gently push the fan assembly into the chassis until it is firmly in.



CAUTION

Do not force the installation. If the fan assembly does not slide in easily, ensure that it is correctly oriented before continuing.

- c. Secure the fan assembly to the chassis by screwing in the captive screw using the Phillips-head screwdriver.
4. Verify that the fan status LED is lit steady green to indicate normal operation ([Table 4-1 on page 4-3](#)).

5. Optionally, display the fan status using the fanShow command from the CLI (Figure 4-1 on page 4-2 for the locations of Fan assembly #1, Fan assembly #2, and Fan assembly #3).

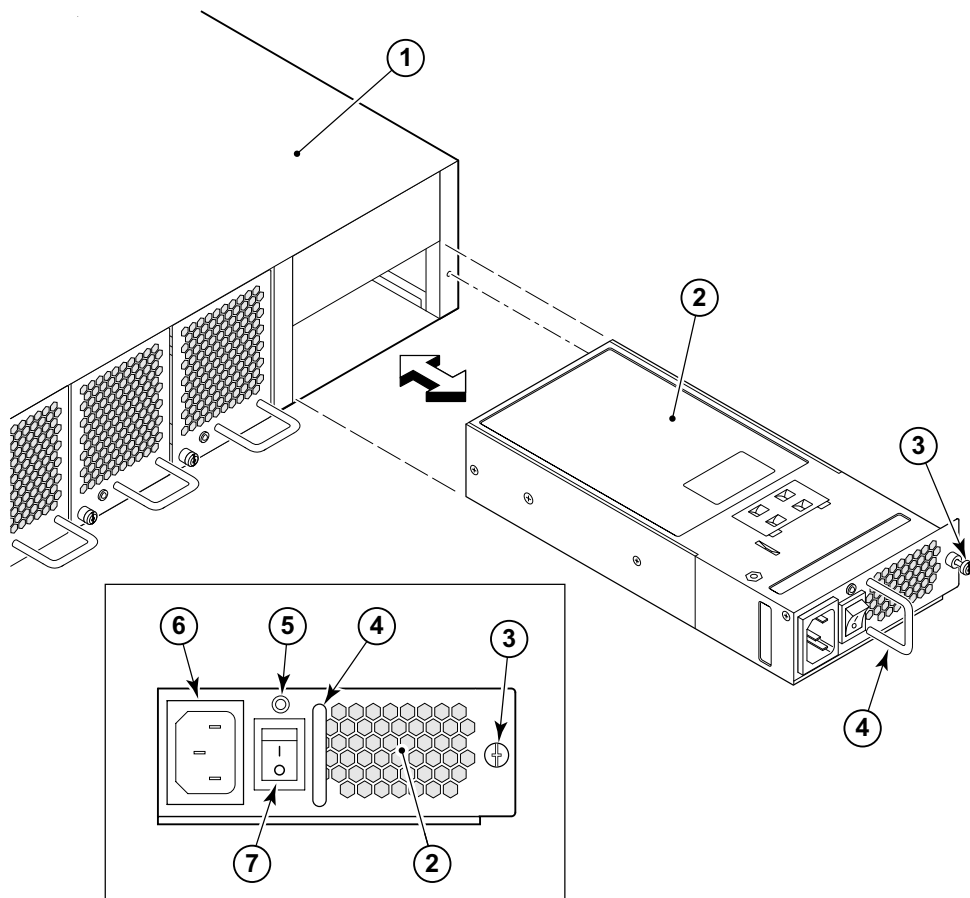


Figure 4-2 Inserting the fan assembly in the DS-4900B

1	DS-4900B	4	Status LED
2	Fan assembly unit	5	Handle
3	Captive screw	6	Non-port side

Power Supply Replacement

This chapter contains information on replacing the power supply in a DS-4900B.

- ◆ [Power supply replacement.....5-2](#)

Power supply replacement

Power supply replacement should be performed by the EMC Customer Service Representative.

Note: Customer servicing of the DS-4900B could result in the voiding of the warranty or service agreement.

The DS-4900B switch has two power supplies, as displayed in [Figure 5-1](#). The Fabric OS identifies the power supplies from right to left on the nonport side as Power supply #1 (on the right) and Power supply #2 (on the left).

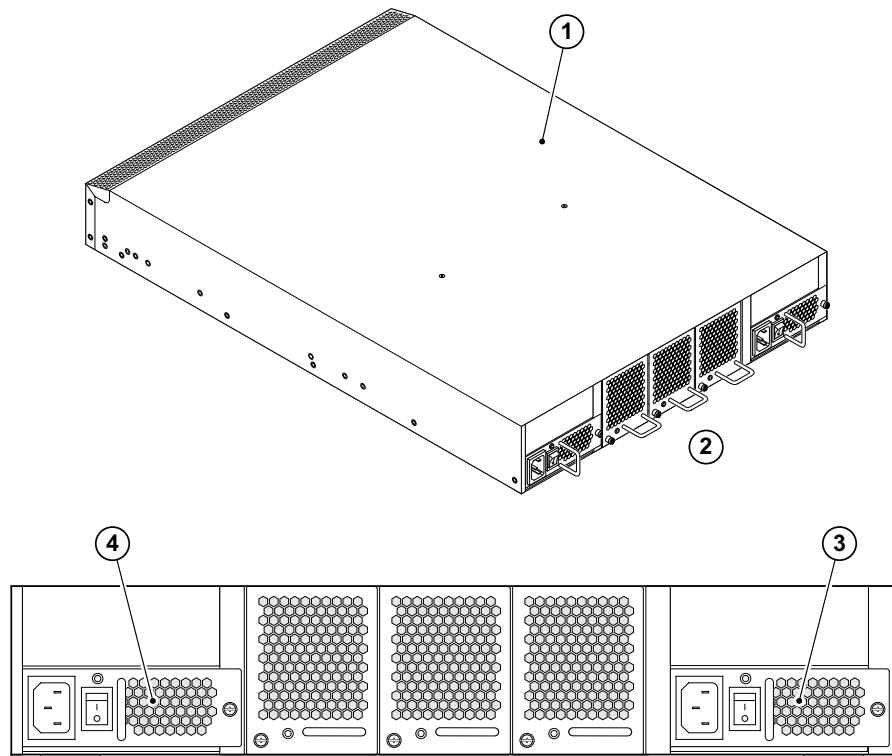


Figure 5-1 DS-4900B power supplies on the nonport side

1	DS-4900B switch	3	Power Supply #1
2	Nonport side	4	Power Supply #2



CAUTION

Disassembling any part of the power supply voids the part warranty and regulatory certifications. There are no user-serviceable parts inside the power supply.

Because the cooling system relies on pressurized air, do not leave either of the power supply slots empty longer than two minutes while the switch is operating. If a power supply fails, leave it in the switch until it can be replaced.

Maintain both power supplies in operational condition to provide redundancy.

Table 5-1 describes the power supply status LED colors, behaviors, and actions required, if any.

Table 5-1 Power supply status LED behavior, description, and required actions

LED color	Description	Action required
No light	Power supply is not receiving power or is off.	Verify that the power supply is on and seated and the power cord is connected to a functioning power source.
Steady green	Power supply is operating normally.	No action required.
Steady amber (for more than 5 seconds)	Power supply fault for one of the following reasons: Power supply is switched off The power cable is disconnected The power supply has failed When the switch is first powered on the power supply status LED will show amber until POST has completed.	Try the following: Check the power cable connection Verify that the power supply is powered on Replace the power supply FRU

Time required

Replacing a power supply in the DS-4900B should take less than two minutes.

Items required

You need the following items to replace a power supply in a DS-4900B:

- ◆ DS-4900B switch
- ◆ New power supply
- ◆ Phillips-head screwdriver #1

Replacing a DS-4900B switch power supply

To replace a power supply unit in a DS-4900B:

1. To leave the switch in service while you replace a power supply, verify that the other power supply (the one not being replaced) has been powered on for at least four seconds and has a green LED.
2. Power off the power supply by pressing the AC power switch to the “0” symbol. See [Figure 5-1](#) for the location of the AC power switch.
3. Unplug the power cord from the power supply that you are replacing.
4. Unscrew the captive screw on the power supply that you are replacing using the Phillips-head screwdriver.
5. Remove the power supply from the chassis by pulling the handle on the power supply out, away from the chassis.
6. Install the new power supply in the chassis:



CAUTION

Do not force the installation. If the power supply does not slide in easily, ensure that it is correctly oriented before continuing.

- a. Orient the power supply as shown in [Figure 5-2 on page 5-5](#), with the AC power switch on the left.
- b. Gently push the power supply into the chassis until it is firmly in.

- c. Secure the power supply to the chassis by screwing in the captive screw using the Phillips-head screwdriver.
7. Plug the power cord in to the power supply and power on the switch by pressing the AC power switch to the "1" symbol.
8. Verify that the LED on the new power supply displays a steady green light while the switch is operating (Table 5-1 on page 5-3). If the LED is not green, ensure that the power supply is securely installed.
9. Optionally, enter the psShow command at the command line prompt to display power supply status (Figure 5-1 on page 5-2 for the location of Power supply #1 and Power supply #2).

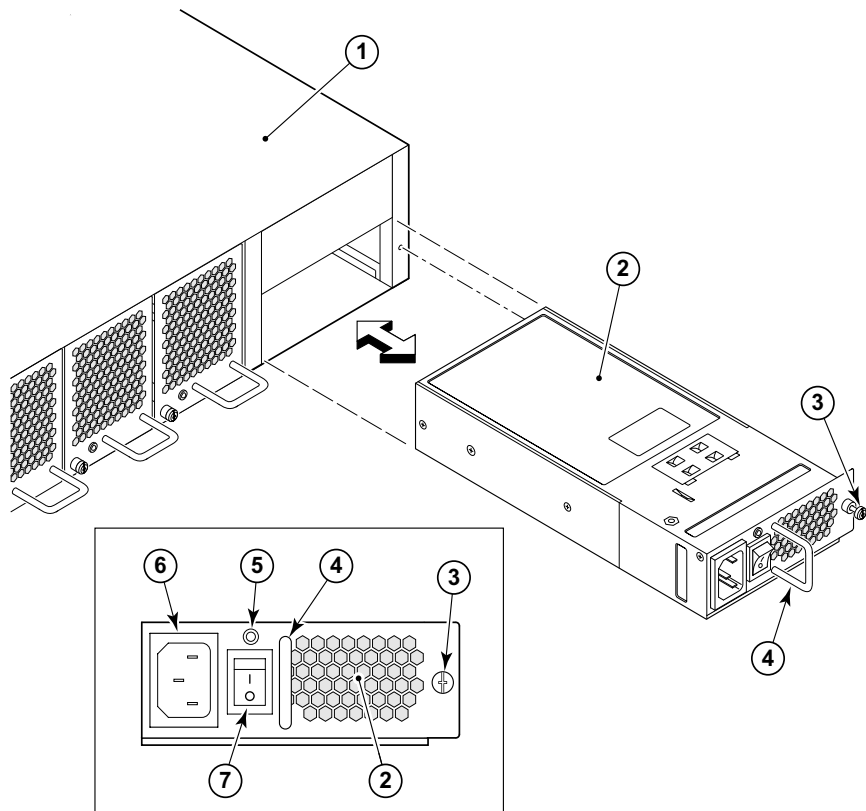


Figure 5-2 Inserting the power supply in the DS-4900B switch

1	Connectrix B Switch	5	Status LED
2	Power supply	6	AC Power receptacle
3	Captive screw	7	AC Power switch
4	Handle		

This chapter provides the following information:

- ◆ Switch components 6-2
- ◆ Weight and physical dimensions 6-3
- ◆ Facility requirements 6-4
- ◆ Power supply specifications 6-5
- ◆ Environmental requirements 6-6
- ◆ General specifications 6-7
- ◆ Data transmission ranges 6-9
- ◆ Memory specifications 6-10
- ◆ Fibre Channel port specifications 6-11
- ◆ Serial port specifications 6-12
- ◆ POST and boot specifications 6-13
- ◆ Regulatory compliance 6-14

Switch components

The DS-4900B switch includes the following components:

- ◆ Cabinet-mountable 2U chassis designed to be mounted in a 19-in. cabinet space, with forced-air cooling that flows from the nonport side of the switch to the port side
- ◆ 64 Fibre Channel ports, compatible with short wavelength (SWL), long wavelength (LWL), and extended long wavelength (ELWL) SFP transceivers
- ◆ Two IEEE-compliant RJ-45 connector on the port side of the switch for use with a serial console and 10/100 MB Ethernet
- ◆ 64 port Link LEDs, one switch power LED, one switch status LED, two Ethernet LEDs, two power supply LEDs, and three fan LEDs
- ◆ 2 universal AC input with AC switches and built-in fans
- ◆ 3 fan assemblies containing two fans each. The fans have two speeds, which are set automatically and cannot be modified. They default to high speed upon boot, then switch to low speed as the Fabric OS comes online, returning to high speed only as required.

Weight and physical dimensions

Table 6-1 lists the weight and dimensions of the DS-4900B switch.

Table 6-1 Physical specifications

Dimension	Value
Height	2U or 8.6 cm (3.4 in.)
Depth	61 cm (24 in.)
Width	42.8 cm (16.8 in.)
Weight (with two power supplies, three fan assemblies, and zero SFPs installed)	13.7 kg (30.2 lb)

Facility requirements

To ensure correct operation of the switch, the facility where the switch is in use must meet the following requirements:

- ◆ Electrical:
 - Primary AC input 100-240 VAC (switch autosenses input voltage), 47-63 Hz
 - Correctly wired primary outlet, protected by a circuit breaker and grounded in accordance with local electrical codes
 - Adequate supply circuit, line fusing, and wire size, as specified by the electrical rating on the switch nameplate
 - Electrical interference must be less than the levels stated in the standards listed in [Table 6-4 on page 6-7](#), under “Immunity”
- ◆ Thermal:
 - Air flows from the nonport side to the port side. A minimum air flow of 47 cu ft/min (79.8 cu m/hr) available in the immediate vicinity of the switch
 - Ambient air temperature must not exceed 40° C (104° F) while the switch is operating
- ◆ Environmental: Specifications are listed in [Table 6-3 on page 6-6](#).
- ◆ Cabinet:
 - Cabinet space of 2U in a EIA 19-in. cabinet
 - All equipment in cabinet must be grounded through a reliable branch circuit connection
 - The additional weight of the switch must not exceed the cabinet’s weight limits
 - The cabinet must be secured to ensure stability in case of unexpected movement

Power supply specifications

The power supplies are universal and capable of functioning worldwide without voltage jumpers or switches. They meet IEC 61000-4-5 surge voltage requirements and are autoranging in terms of accommodating input voltages and line frequencies. Each power supply has a built-in fan for cooling, pushing air towards the port side of the switch.

Table 6-2 lists the power supply specifications for the DS-4900B switch.

Table 6-2 Power supply specifications

Specification	Value
Inlet	IEC320/C14
System power draw from AC line	225 Watts Nominal, 245 Watts Maximum
Input Voltage Range	90-264Vac, 47-63HZ
Harmonic Distortion	Active power factor correction
BTU rating	836 BTU/hr
Inrush current	Maximum of 15A for period of 10-150mS
Input line protection	Both AC lines are fused
Maximum output of one power supply	300 Watts
Nominal system power draw from power supplies	175 Watts

Environmental requirements

Table 6-3 lists the acceptable environmental ranges for both operating and nonoperating (such as during transportation or storage) conditions.

Table 6-3 Environmental requirements

Condition	Acceptable during operation	Acceptable during non-operation
Ambient Temperature	0° to 40° C 32° to 104° F	-25° to 70° C -13° to 158° F
Humidity	20% to 85% RH non-condensing, at 40° C (104° F) , with maximum gradient of 10% per hour	10% to 85% RH non-condensing, at 70° C (158° F)
Altitude	0 to 3 km (10,000 feet) above sea level	0 to 12 km (40,000 feet) above sea level
Shock	20 G, 6 ms, half-sine wave	15 G, 12-18 milliseconds, trapezoid
Vibration	0.5 G, 5-500 Hz	2.0 G, 5-500 Hz
Air flow	54.02 cu ft/min (42.5 cu m/hr)	None required.

General specifications

Table 6-4 lists the general specifications for the DS-4900B.

Table 6-4 General specifications

Specification	Description
Configurable port types	F_Port, FL_Port, and E_Port
EMC (electromagnetic compatibility)	<p>The DS-4900B complies with the following regulatory EMC requirements:</p> <p>Emissions</p> <p>FCC Rules & Regulations, Part 15 subpart B, Class A</p> <p>CSA C108.8 Class A</p> <p>VCCI Class A ITE</p> <p>CISPR 22 Class A</p> <p>EN55022 Class A</p> <p>Korean EMC Requirements</p> <p>BSMI Standard CNS 13438</p> <p>EMC Directive 89/336/EEC</p> <p>EN50082-2/EN55024: 1998</p> <p>ICES-003 Class A</p> <p>Immunity</p> <p>IEC 61000-4-2 Severity Level 3 for Electrostatic Discharge</p> <p>IEC 61000-4-3 Severity Level 3 for Radiated Fields</p> <p>IEC 61000-4-4 Severity Level 3 for Fast Transients</p> <p>IEC 61000-4-5 Severity Level 3 for Surge Voltage</p> <p>IEC 61000-4-6 Conducted Emissions</p> <p>IEC 61000-4-11 Voltage Variations</p> <p>EN 61000-4-12 Oscillatory Waves Immunity</p> <p>EN 61000-3-2 Limits for Harmonic Current Emissions</p> <p>EN 61000-3-3 JEIDA</p>
System architecture	Nonblocking shared-memory switch
System processor	PowerPC 440GP, 400 MHz CPU
ANSI Fibre Channel protocol	FC-PH (Fibre Channel Physical and Signalling Interface standard)
Modes of operation	Fibre Channel Class 2 and Class 3
Fabric initialization	Complies with FC-SW-3 Rev. 6.6
FC-IP (IP-over-Fibre Channel)	Complies with FC-IP 2.3 of FCA profile

Table 6-4 General specifications (continued)

Specification	Description
Aggregate switch I/O bandwidth	512 Gbit/sec if all 64 ports are running at 4 Gbit/sec, full duplex
Port-to-port latency	Less than 2 microseconds with no contention (destination port is free)

Data transmission ranges

Table 6-5 provides the data transmission ranges for different cable types and port speeds.

Table 6-5 Laser data transmission ranges

Port speed	Cable size (microns)	Short wavelength (SWL)	Long wavelength (LWL)	Extended long wavelength (ELWL)
1 Gbit/sec	50	1,640 ft (500 m)	NA	NA
	62.5	984 ft (300 m)	NA	NA
	9	NA	10 km (6.2 mi)	80 km (50 mi)
2 Gbit/sec	50	984 ft (300 m)	NA	NA
	62.5	492 ft (150 m)	NA	NA
	9	NA	10 km (6.2 mi)	80 km (50 mi)
4 Gbit/sec	50	492 ft (150 m)	NA	NA
	62.5	230 ft (70 m)	NA	NA
	9	NA	10 km (6.2 mi)	NA

Up to 500 km at 1 G is supported when using long distance transport system such as DWDM.

Memory specifications

The DS-4900B has three types of memory devices:

- ◆ Boot flash – 4 MB
- ◆ Compact flash – 512 MB
- ◆ Main memory (DDR SDRAM) – 256 MB

Fibre Channel port specifications

The Fibre Channel ports in the DS-4900B are compatible with SWL, LWL, and ELWL SFP transceivers. The strength of the signal is determined by the type of transceiver in use.

The ports meet all required safety standards. For more information about these standards, see [“Regulatory compliance” on page 6-14](#).

The ports are capable of operating at 1-, 2-, or 4-Gbit/sec and are able to auto-negotiate to the maximum link speed.

Serial port specifications

The serial port is located on the port side of the switch. The DS-4900B uses an RJ-45 connector for serial port. An RJ-45 to DB9 adaptor cable is also provided with the switch.

Note: To protect the serial port from damage, keep the cover on the port when not in use.

The serial port can be used to connect to a workstation to configure the switch IP address before connecting the switch to a fabric or IP network. The serial port's parameters are fixed at 9600 baud, 8 data bits, and no parity, with flow control set to None.

[Table 6-6](#) lists the serial cable pinouts.

Table 6-6 Serial cable pinouts

PIN	Signal	Description
1	Not supported	NA
2	Not supported	NA
3	UART1_TXD	Transmit data
4	GND	Logic ground
5	GND	Logic ground
6	UART1_RXD	Receive data
7	Not supported	NA
8	Not supported	NA

POST and boot specifications

The switch performs POST by default each time it is powered on or rebooted or the system is reset. Boot time with POST is usually about 1 to 3 minutes.

POST can be skipped after subsequent reboots by entering the fastBoot command. For more information about this command, see the *Fabric OS Command Reference Manual*.

POST

The success/fail results of the diagnostic tests that run during POST can be monitored through LED activity, the error log, or a command line interface.

POST includes the following tasks:

1. Conduct preliminary POST diagnostics
2. Initialize the operating system
3. Initialize hardware
4. Run diagnostic tests on several functions, including circuitry, port functionality, memory, statistics counters, and serialization

Boot

In addition to POST, boot includes the following tasks after POST is complete:

1. Perform universal port configuration
2. Initialize links
3. Analyze fabric. If any ports are connected to other switches, the switch participates in a fabric configuration
4. Obtain a domain ID and assigning port addresses
5. Construct unicast routing tables
6. Enable normal port operation

Regulatory compliance

This section describes the regulatory compliance requirements for the DS-4900B. It contains:

- ◆ “FCC warning (US only)”
- ◆ “MIC statement (Republic of Korea)” on page 6-15
- ◆ “VCCI statement” on page 6-15
- ◆ “BSMI statement (Chinese)” on page 6-16
- ◆ “CE statement” on page 6-17
- ◆ “Canadian requirements” on page 6-17
- ◆ “Laser compliance” on page 6-17
- ◆ “RTC battery” on page 6-18
- ◆ “Electrical safety” on page 6-18
- ◆ “Regulatory certifications” on page 6-19

FCC warning (US only)

This equipment has been tested and complies with the limits for a Class A computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, might cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user’s own expense.

MIC statement (Republic of Korea)

사용자 안내문 : A 급기기

이 기기는 업무용으로 전자파 적합 등록을 받은 기기 이오니, 판매자 또는 사용자는 이점을 주의하시기 바라며, 만약 잘못 구입하셨을 때에는 구입한 곳에서 비업무용으로 교환하시기 바랍니다.

VCCI statement

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance might arise. When such trouble occurs, the user might be required to take corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるようにより要求されることがあります。

BSMI statement (Chinese)

BSMI 通告（僅限於台灣）

大多數的 Dell 電腦系統被 BSMI（經濟部標準檢驗局）劃分為乙類數位裝置。但是，使用某些選件會使有些組態的等級變成甲類。若要確定您的電腦系統適用等級，請檢查所有位於電腦底部或背面板、擴充卡安裝托架，以及擴充卡上的 BSMI 註冊標籤。如果其中有一甲類標籤，即表示您的系統為甲類數位裝置。如果只有 BSMI 的檢驗號碼標籤，則表示您的系統為乙類數位裝置。

一旦確定了系統的 BSMI 等級，請閱讀相關的 BSMI 通告。請注意，BSMI 通告規定凡是未經 Dell Inc. 明確批准的擅自變更或修改，將導致您失去此設備的使用權。

此裝置符合 BSMI（經濟部標準檢驗局）的規定，使用時須符合以下兩項條件：

- 此裝置不會產生有害干擾。
- 此裝置必須能接受所接收到的干擾，包括可能導致無法正常作業的干擾。

甲類

此設備經測試證明符合 BSMI（經濟部標準檢驗局）之甲類數位裝置的限制規定。這些限制的目的是為了在商業環境中使用此設備時，能提供合理的保護以防止有害的干擾。此設備會產生、使用並散發射頻能量；如果未遵照製造廠商的指導手冊來安裝和使用，可能會干擾無線電通訊。請勿在住宅區使用此設備。

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，
在這種情況下，使用者會被要求採取某些適當的對策。

乙類

此設備經測試證明符合 BSMI（經濟部標準檢驗局）之乙類數位裝置的限制規定。這些限制的目的是為了在住宅區安裝時，能防止有害的干擾，提供合理的保護。此設備會產生、使用並散發射頻能量；如果未遵照製造廠商的指導手冊來安裝和使用，可能會干擾無線電通訊。但是，這並不保證在個別的安裝中不會產生干擾。您可以透過關閉和開啟此設備來判斷它是否會對廣播和電視收訊造成干擾；如果確實如此，我們建議您嘗試以下列一種或多種方法來排除干擾：

- 重新調整天線的接收方向或重新放置接收天線。
- 增加設備與接收器的距離。
- 將設備連接至不同的插座，使設備與接收器連接在不同的電路上。
- 請向經銷商或有經驗的無線電／電視技術人員查詢，以獲得幫助。

CE statement



CAUTION

This is a Class A product. In a domestic environment, this product might cause radio interference, and the user might be required to take corrective measures.

The standards compliance label on the DS-4900B contains the CE mark which indicates that this system conforms to the provisions of the following European Council directives, laws, and standards:

- ◆ Electromagnetic Compatibility (EMC) Directive 89/336/EEC and the Complementary Directives 92/31/EEC and 93/68/EEC
- ◆ Low Voltage Directive (LVD) 73/23/EEC and the Complementary Directive 93/68/EEC
- ◆ EN50082-2/EN55024:1998 (European Immunity Requirements)
 - EN61000-3-2/IEIDA (European and Japanese Harmonics Spec)
 - EN61000-3-3

Canadian requirements

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations, ICES-003 Class A.

Laser compliance

This equipment contains Class 1 laser products and complies with FDA Radiation Performance Standards, 21 CFR Subchapter I and the international laser safety standard IEC 825-2.

**CAUTION**

Use only optical transceivers that are qualified by EMC Corporation and comply with the FDA Class 1 radiation performance requirements defined in 21 CFR Subchapter I, and with IEC 825-2. Optical products that do not comply with these standards might emit light that is hazardous to the eyes.

RTC battery**CAUTION**

Do not attempt to replace the real-time clock (RTC) battery. There is danger of explosion if the battery is incorrectly replaced or disposed of. Contact your EMC Customer Service Representative if the real-time clock begins to lose time.

Electrical safety**CAUTION**

This switch might have more than one power cord. To reduce the risk of electric shock, disconnect both power cords before servicing.

**CAUTION**

Connect the power cord only to a grounded outlet.

**CAUTION**

This product is designed for an IT power system with phase-to-phase voltage of 230V. After operation of the protective device, the equipment is still under voltage if it is connected to an IT power system.

Regulatory certifications

Table 6-7 lists the safety and EMC (electromagnetic compatibility) specifications for which the DS-4900B is certified.

Table 6-7 EMC Certifications

Country	Safety specification	EMC specification
Canada	CSA 22.2 No. 60950 Third Ed.	CSA 108.8 Class A
United States	UL 60950 Third Ed., Info. Tech. Equip.	EN55022 Class A FCC Part 15, Subpart B (CFR title 47), Class A
Japan	IEC 60950+A1+A2+A3+A4+A11	EN55022 Class A EN 61000-3-2 Harmonics (JEIDA Limits)
International	IEC 60950+A1+A2+A3+A4+A11	EN55022 Class A
European Union (Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, The Netherlands, United Kingdom) and Republic of Korea	EN 60950:92 +A1:93+A2:93+A3:95+A4:96+A11:97 73/23/EEC EN60825-1:1994/A11, -2 TUV (Germany only) IEC 60950+A1+A2+A3+A4+A11 (NEMKO CB Report) (Norway only)	EN 55022:1998 Class A EN 55024 (Immunity) EN 61000-4-2 Electrostatic Discharge EN 61000-4-3 Radiated Fields EN 61000-4-4 Electrical Fast Transients EN 61000-4-5 Surge Voltage EN 61000-4-6 Conducted Emissions EN 61000-4-8 Magnetic Fields EN 61000-4-11 Voltage Dips and Interruptions EN 61000-3-2 Limits for Harmonic Current Emissions EN 61000-3-3 Flicker
Australia and New Zealand		EN 55022: 1998 Class A

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