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PowerConnect B-DCX-4S Backbone

Hardware Reference Manual

53-1001808-01



Notes, Cautions, and Warnings

NOTE

A NOTE indicates important information that helps you make better use of your computer.



CAUTION

See the safety and regulatory information that shipped with your system. For additional regulatory information, see the Regulatory Compliance Homepage on www.dell.com at the following location: www.dell.com/regulatory_compliance.



CAUTION

A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.



DANGER

A DANGER indicates a potential for property damage, personal injury, or death.

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Regulatory Model Codes: Brocade DCX-4S, Brocade DCX

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How this document is organized

This document is a hardware reference manual written for system administrators and technicians experienced with networking, Fibre Channel, and SAN technologies to help them install, set up, configure, operate, maintain, and troubleshoot the PowerConnect B-DCX-4S Backbone (“PowerConnect B-DCX-4S”).

This document presents information on setting up and operating the PowerConnect B-DCX-4S. It is organized in a loosely chronological order, beginning with an overview of the PowerConnect B-DCX-4S and ending with removal and replacement procedures of field replaceable components.

The document contains the following sections:

- [Chapter 1, “Hardware Overview,”](#) identifies the components of the PowerConnect B-DCX-4S and provides a brief description of its features.
- [Chapter 2, “Installation,”](#) describes how to install, set up, and power on the PowerConnect B-DCX-4S.
- [Chapter 3, “Log In and Configuration,”](#) provides the initial configuration information required to get the PowerConnect B-DCX-4S established in a fabric.
- [Chapter 4, “Monitor System Components,”](#) provides descriptions of the LEDs and their functions, and also lists Fabric OS commands required for monitoring the PowerConnect B-DCX-4S.
- [Chapter 5, “Removal and Replacement Procedures \(RRPs\),”](#) describes how to remove and replace each of the FRUs in the PowerConnect B-DCX-4S.

- [Appendix A, “Specifications,”](#) provides information on the physical characteristics, environmental requirements, and regulatory certifications for the PowerConnect B-DCX-4S.
- [Appendix B, “Application and Encryption Blades”](#) provides information about application blades that are optionally available for the PowerConnect B-DCX-4S.
- [Appendix C, “Diagnostics and Troubleshooting,”](#) provides methods for receiving system-wide or component-level status and interpreting POST and boot activities and diagnostic tests; it also includes troubleshooting tips.
- [Appendix D, “Port Numbering Template,”](#) contains templates where you can record the port numbering sequence for the port blades.

Supported hardware and software

This document includes information specific to the PowerConnect B-DCX-4S running Brocade Fabric OS version 6.3.

What’s new in this document

The control blade replacement instructions have been updated.

The Setting IP Addresses procedure has been updated.

Added power supply requirements for blades.

Document conventions

This section describes text formatting conventions and important notice formats used in this document.

Text formatting

The narrative-text formatting conventions that are used are as follows:

bold text	Identifies command names Identifies the names of user-manipulated GUI elements Identifies keywords and operands Identifies text to enter at the GUI or CLI
<i>italic text</i>	Provides emphasis Identifies variables Identifies paths and Internet addresses Identifies document titles
<code>code text</code>	Identifies CLI output Identifies command syntax examples

For readability, command names in the narrative portions of this guide are presented in mixed lettercase: for example, switchShow. In actual examples, command lettercase is often all lowercase. Otherwise, this manual specifically notes those cases in which a command is case sensitive.

Command syntax conventions

Command syntax in this manual follows these conventions:

command	Commands are printed in bold.
--option, option	Command options are printed in bold.
-argument, arg	Arguments.
[]	Optional element.
variable	Variables are printed in italics. In the help pages, values are <u>underlined</u> or enclosed in angled brackets < >.
...	Repeat the previous element, for example “member[:member...]”
value	Fixed values following arguments are printed in plain font. For example, --show WWN
	Boolean. Elements are exclusive. Example: --show -mode egress ingress

Notes, cautions, and warnings

The following notices and statements are used in this manual. They are listed below in order of increasing severity of potential hazards.

NOTE

A note provides a tip, guidance or advice, emphasizes important information, or provides a reference to related information.

ATTENTION

An Attention statement indicates potential damage to hardware or data.



CAUTION

A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.



DANGER

A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

For definitions of SAN-specific terms, visit the Storage Networking Industry Association online dictionary at:

<http://www.snia.org/education/dictionary>

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These references are made for informational purposes only.

Corporation	Referenced Trademarks and Products
Brocade Communications Systems, Inc.	Web Tools, Extended Fabrics, Enhanced Group Management, Brocade Zoning, Fabric Watch
Microsoft Corporation	Windows, Windows NT, Internet Explorer

Additional information

This section lists additional Brocade and industry-specific documentation that you might find helpful.

Brocade resources

To get up-to-the-minute information, go to <http://my.brocade.com> to register at no cost for a user ID and password.

For practical discussions about SAN design, implementation, and maintenance, you can obtain *Building SANs with Brocade Fabric Switches* through:

<http://www.amazon.com>

White papers, online demos, and data sheets are available through the Brocade Web site at:

<http://www.brocade.com/products-solutions/products/index.page>

For additional Brocade documentation, visit the Brocade Web site:

<http://www.brocade.com>

Release notes are available on the MyBrocade web site and are also bundled with the Fabric OS firmware.

Other industry resources

For additional resource information, visit the Technical Committee T11 Web site. This Web site provides interface standards for high-performance and mass storage applications for Fibre Channel, storage management, and other applications:

<http://www.t11.org>

For information about the Fibre Channel industry, visit the Fibre Channel Industry Association Web site:

Getting technical help

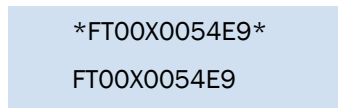
Contact your switch support supplier for hardware, firmware, and software support, including product repairs and part ordering. To expedite your call, have the following information available:

1. General Information

- Technical Support contract number, if applicable
- PowerConnect B-DCX-4S model
- PowerConnect B-DCX-4S operating system version
- Error numbers and messages received
- **supportSave** command output
- Detailed description of the problem and specific questions
- Description of any troubleshooting steps already performed and the results
- Serial console and Telnet session logs
- syslog message logs

2. PowerConnect B-DCX-4S serial number

The PowerConnect B-DCX-4S serial number (Switch Serial No.) and corresponding bar code are provided on the serial number label, as shown here:



The serial number label is located on the nonport side of the chassis, on the left side of the chassis just below the left-hand power supply

In addition, the **chassisShow** command displays the PowerConnect B-DCX-4S serial number, as well as information about the port and application blades, and other field-replaceable units (FRUs).

3. License ID

Use the **licenseIdShow** command to display the license ID.

4. World Wide Name (WWN)

Use the **wwn** command to display the switch WWN.

If you cannot use the **wwn** command because the switch is inoperable, you can get the WWN from the same place as the serial number, except for the PowerConnect B-DCX-4S. For the PowerConnect B-DCX-4S, access the numbers on the WWN cards by removing the Brocade logo plate at the top of the nonport side of the chassis.

ESD precautions

The PowerConnect B-DCX-4S contains electrostatic discharge (ESD) sensitive FRUs. When working with any PowerConnect B-DCX-4S FRU, use correct ESD procedures.

- Wear a wrist grounding strap connected to chassis ground (if the PowerConnect B-DCX-4S is plugged in) or a bench ground.
- Store ESD-sensitive components in antistatic packaging.

Safety notices

NOTE

Translated safety notices are in the *Brocade Product Safety Notices* publication, which is on the CD-ROM that accompanies this product.

When using this product, observe the danger, caution, and attention notices in this manual. The notices are accompanied by symbols that represent the severity of the safety condition.

The danger and caution notices are listed in numerical order based on their IDs, which are displayed in parentheses, for example (D004), at the end of each notice. Use this ID to locate the translations of these danger and caution notices in the *Brocade Product Safety Notices*.

Document feedback

Quality is our first concern at Brocade and we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you. Forward your feedback to:

documentation@brocade.com

Provide the title and version number of the document and as much detail as possible about your comment, including the topic heading and page number and your suggestions for improvement.

Hardware Overview

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PowerConnect B-DCX-4S features

The PowerConnect B-DCX-4S is part of Brocade's industry-leading Backbone-class product line, a highly robust class of network switching platform that combines breakthrough performance, scalability, and energy efficiency with long-term investment. Supporting open systems and System z, DCX Backbones are designed to address the data growth and application demands of evolving enterprise data centers, achieve server, SAN, and data center consolidation, and reduce infrastructure and administrative costs.

Key features of the PowerConnect B-DCX-4S include:

- Up to 192 port horizontal chassis with four usable port blades (in addition to two core switching and two core processing blades).
- Support for all of the application, port blade, and control processor (CP) blades supported in the PowerConnect B-DCX Backbone (with the exception of the PowerConnect B-DCX Core Switch Blade), thereby providing flexible system configurations and fewer types of new blades.
- Up to 384 ports can connect with the use of inter-chassis links (ICLs).
- Support for high-performance port blades running at 1-, 2-, 4-, 8-, or 10-Gbps, enabling flexible system configuration.
- Support for 1-, 2-, 4-, and 8-Gbps auto-sensing Fibre Channel ports. Trunking technology groups up to eight ports to create high performance 64-Gbps ISL trunks between switches (10 Gbps ports (FC10-6) are 10 Gbps only).
- Dual-redundant control processor blades (CP8) and core switch blades (CR4S-8) that provide high availability and enable nondisruptive software upgrades.
- Redundant and hot-swappable CP8 and CR4S-8 blades, power supplies, blower assemblies, and WWN cards that enable a high availability platform for mission-critical SAN applications.

1 Hardware components

- Universal ports that self-configure as E_Ports, F_Ports, FL_Ports, EX_Ports and M_Ports (mirror ports). 10 Gbps ports (FC10-6 blade) are E_Ports only.
- Data cryptographic (encryption/decryption) and data compression capabilities through the Brocade FS8-18 Encryption Blade.
- Fibre Channel over IP (FCIP) functionality through the FX8-24 blade.
- Fibre Channel over Ethernet (FCoE) capability through the FCOE10-24 blade.

Hardware components

The PowerConnect B-DCX-4S features a modular and scalable mechanical construction that allows a wide range of flexibility in installation, fabric design, and maintenance. The chassis may be mounted with the cables facing the front of the equipment rack or to the rear, and consists of the following:

- Up to four hot-swappable port blade assemblies that can be configured in a single chassis, delivering up to 192 Fibre Channel ports.
- Two slots for control processor blades (CP8):
 - A single active CP8 blade can control all 192 ports in the chassis.
 - The standby CP8 blade assumes control of the PowerConnect B-DCX-4S if the active CP fails.
- Two slots for core switch blades (CR4S-8):
 - CR4S-8 blade interconnects all port blades.
 - Two inter-chassis link (ICL) connectors per blade connect to another chassis.
 - Both CR4S-8 blades are active.
- Modular hot-swappable port blades:
 - 16-port, 8-Gbps blades (FC8-16).
 - 32-port, 8-Gbps blades (FC8-32).
 - 48-port, 8-Gbps blades (FC8-48).
 - 6-port, 10-Gbps blades (FC10-6).
- Modular hot-swappable application blades:
 - FA4-18: 18-port (16 FC + 2 10/100/1000 BaseT Ethernet copper interfaces), up to 4 blades per chassis, supporting Fibre Channel Application Services and blade management.
 - FR4-18i: 18-port (16 FC + 2 GbE), up to 4 blades per chassis, supporting Fibre Channel Routing Services and FCIP.
 - FX8-24: 24-port (12 FC, 10 GbE, 2 10GbE) FCIP extension blade enabling long distance communication over existing IP infrastructure.
 - FCOE10-24: 24-port (24 10GbE) CEE-based FCoE blade enabling enhanced connectivity using existing Ethernet infrastructure.
- Modular hot-swappable encryption blades:
 - FS8-18: 16-port, up to 4 blades per chassis, supporting data cryptographic (encryption/decryption) and data-compression capabilities.

NOTE

If the any of the following blades are used 220 VAC is required:
FS8-18, FX8-24, FCOE10-24.

- Modular hot-swappable field replaceable units (FRUs):
 - Two blower assemblies.
 - Two 100 to 240 VAC (auto-sensing) power supplies. 240 VAC is recommended for efficiency and high availability.
 - Two WWN cards.
 - Small Form-factor Pluggable (SFP and SFP+) optical transceivers (1-, 2-, 4-, and 8-Gbps).
 - Extended Form-factor Pluggable (XFP) optical transceivers (10-Gbps).
-

NOTE

The 8-Gbps SFPs autonegotiate at 2, 4, and 8 Gbps. The 4-Gbps SFPs autonegotiate at 1, 2, and 4 Gbps.

- Blades that are serviced from the port side of the PowerConnect B-DCX-4S. Blowers, power supplies, and power cables that are serviced from the nonport side.
- World Wide Name (WWN) cards on the nonport side, with WWN status LEDs located under the bezel.
- Improved cable management using two vertical cable management fingers and a redesigned chassis door.
- Constant intake and FRU temperature monitoring.
- Redundant AC primary power connections to ensure high availability. Each power supply has its own connector.

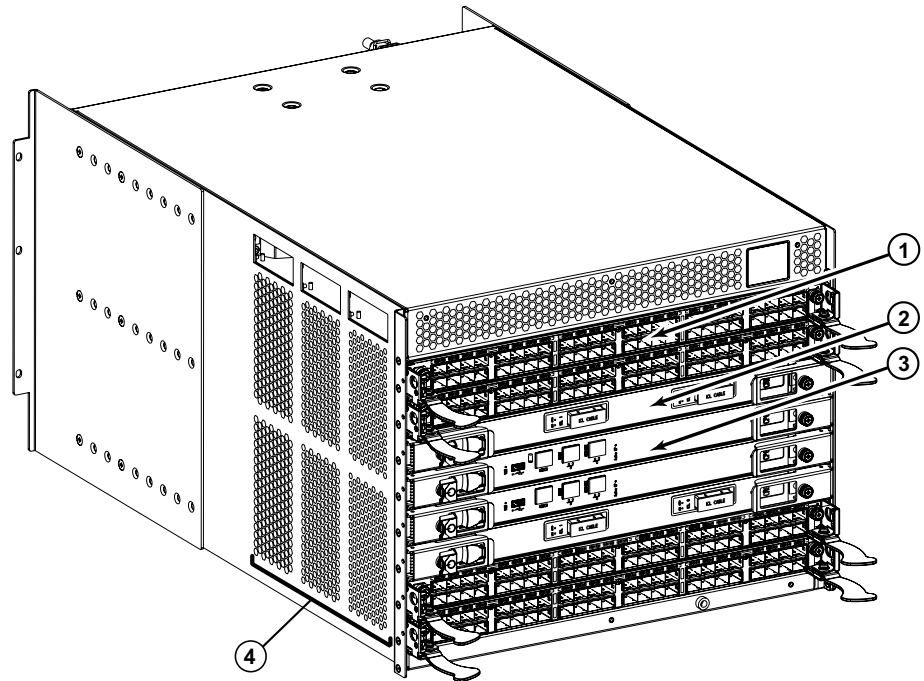
Port side of the PowerConnect B-DCX-4S

NOTE

Airflow in the PowerConnect B-DCX-4S is from the nonport side to the left side of the chassis (viewed from the port side) and out the exhaust vent. If you use the Port Side Exhaust Kit the air vents on the port side of the chassis (see [Figure 2](#)).

[Figure 1](#) displays a sample configuration of the port side of the PowerConnect B-DCX-4S.

1 Hardware components



- 1 FC8-48 port blade (example, 4x)
- 2 Core switch blade (CR4S-8) (2x)
- 3 Control processor blade (CP8) (2x)
- 4 Exhaust vent

FIGURE 1 Port side of the PowerConnect B-DCX-4S (sample configuration)

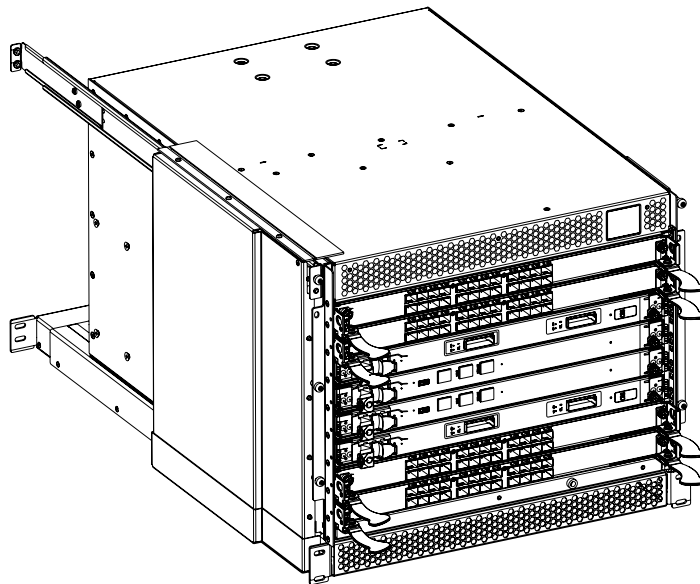


FIGURE 2 Port side of the PowerConnect B-DCX-4S with the port side exhaust kit installed (sample configuration)

Nonport side of the PowerConnect B-DCX-4S

Figure 3 displays a sample configuration of the nonport side view of the PowerConnect B-DCX-4S.

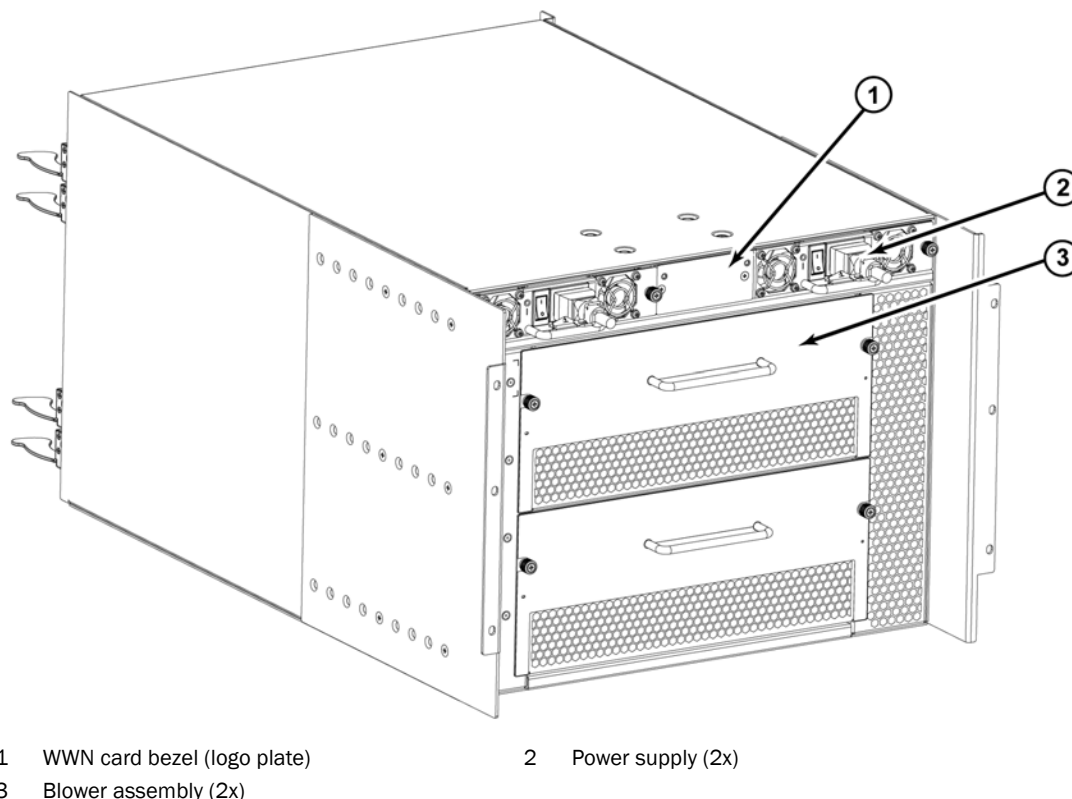


FIGURE 3 Nonport side of the PowerConnect B-DCX-4S (sample configuration)

PowerConnect B-DCX-4S blades

Table 1 summarizes the port, application, control processor, and core switch blades that are available for the PowerConnect B-DCX-4S.

TABLE 1 Blades available for the PowerConnect B-DCX-4S

Description	Name	Function
PowerConnect B-DCX-4S control processor blade	CP8	The CP8 blade contains the control plane for the chassis. There are two CP8 blades for redundancy. This control processor blade is compatible with the PowerConnect B-DCX and the PowerConnect B-DCX-4S.
PowerConnect B-DCX-4S core switch blade	CR4S-8	The CR4S-8 blade contains the ASICs for switching between port blades. Core switch blades have additional front port connectivity to connect multiple chassis and backplane connections for the storage server blade. This core switch blade is compatible only with the PowerConnect B-DCX-4S.
16-port 8-Gbps port blade	FC8-16	A 16-port Brocade port blade supporting 1, 2, 4, and 8 Gbps port speeds. This port blade is compatible with the PowerConnect B-48000 Director, the PowerConnect B-DCX and the PowerConnect B-DCX-4S.

1 High availability

TABLE 1 Blades available for the PowerConnect B-DCX-4S (Continued)

Description	Name	Function
32-port 8-Gbps port blade	FC8-32	A 32-port Brocade port blade supporting 1, 2, 4, and 8 Gbps port speeds. This port blade is compatible with the PowerConnect B-48000 Director, the PowerConnect B-DCX, and the PowerConnect B-DCX-4S.
48-port 8-Gbps port blade	FC8-48	A 48-port Brocade port blade supporting 1, 2, 4, and 8 Gbps port speeds. This port blade is compatible with the PowerConnect B-48000 Director, the PowerConnect B-DCX, and the PowerConnect B-DCX-4S.
6-port 10-Gbps port blade	FC10-6	A 6-port Brocade port blade supporting 10 Gbps port speed. Blade provides 10-Gbps ISLs. This port blade is compatible with the PowerConnect B-48000 Director, the PowerConnect B-DCX, and the PowerConnect B-DCX-4S.
Fibre Channel application blade	FA4-18	The FR4-18 blade has 16 (1-, 2-, and 4-Gbps) physical ports supporting Fibre Channel Application Services and 2 10/100/1000 BaseT Ethernet copper interfaces supporting blade management. This application blade is compatible with the PowerConnect B-48000 Director, the PowerConnect B-DCX, and the PowerConnect B-DCX-4S.
Fibre Channel router blade	FR4-18i	The FR4-18i blade has 16 physical Fibre Channel SFP ports supporting Fibre Channel Routing Services and 2 physical Gigabit Ethernet (GbE) SFP ports supporting Fibre Channel Over IP (FCIP). The two physical GbE ports can support up to 16 virtual E_Ports. This application blade is compatible with the PowerConnect B-48000 Director, the PowerConnect B-DCX, and the PowerConnect B-DCX-4S.
Storage encryption blade	FS8-18	The FS8-18 blade enables data cryptographic (encryption/decryption) and data-compression capabilities. It has 16 Fibre Channel optical SFP ports. This blade requires the use of a 220 VAC power supply in the PowerConnect B-DCX-4S. This application blade is compatible only with the PowerConnect B-DCX and DCX-4S.
FCIP extension blade	FX8-24	The FX8-24 blade enables FCIP functionality over existing IP infrastructure. It has 12 FC ports, 10 1 GbE ports, and 2 10 GbE ports available. This application blade is compatible with the PowerConnect B-DCX and PowerConnect B-DCX-4S.
Fibre Channel over Ethernet blade	FCOE10-24	The FCOE10-24 blade enables FCoE functionality over existing Ethernet infrastructure utilizing CEE protocols. It has 24 10 GbE ports available. This application blade is compatible with the PowerConnect B-DCX and PowerConnect B-DCX-4S.

High availability

The following features contribute to the PowerConnect B-DCX-4S high-availability design:

- Redundant, hot-swappable blades and FRUs.
- Enhanced data integrity on all data paths.
- Fabric Shortest Path First (FSPF) rerouting around failed links.
- Integration with Simple Network Management Protocol (SNMP) managers.
- Automatic control processor failover.
- Nondisruptive “hot” software code loads and activation.
- Easy configuration, save, and restore.

- Hot-swappable World Wide Name (WWN) cards.

The high-availability software architecture of the PowerConnect B-DCX-4S provides a common framework for all applications that reside on the system, allowing global and local states to be maintained through any component failure. High-availability elements consist of the High Availability Manager, the heartbeat, the fault/health framework, the replicated database, initialization, and software upgrade.

The High Availability Manager controls access to the standby control processor, facilitates software upgrades, prevents extraneous switchover activity, closes and flushes streams, provides flow control and message buffering, and supports a centralized active and standby state.

Reliability

The PowerConnect B-DCX-4S uses the following error detection and correction mechanisms to ensure reliability of data:

- Error Detection and Correction mechanism, which checks for encoder errors and fault isolation (EDFI), such as cyclic redundancy checking (CRC), parity checking, checksum, and illegal address checking.
- Power-on self-test (POST).
- Dual control processors that enable hot, nondisruptive fast firmware upgrades.
- One serial port and two Ethernet ports (on each control processor) for management and for service. Offline control processor diagnostics and remote diagnostics simplify troubleshooting. The standby control processor monitors diagnostics to ensure it is operational, should a failover be necessary.
- Bus monitoring and control of blades and other field-replaceable units (FRUs).

Serviceability

The PowerConnect B-DCX-4S provides the following features to enhance and ensure serviceability:

- Modular design with hot-swappable components.
- Flash memory that stores two firmware images per control processor.
- USB port on control processor blades for all tasks that formerly required an FTP/SCP server, including software and firmware upgrades.
- Redesigned cable management using vertical fingers to accommodate the horizontal orientation of the blades.
- Nonvolatile random-access memory (NVRAM), containing the OEM serial number, Brocade serial number, revision information, and part number information.
- Background health-check daemon.
- Memory scrubber, self test, and bus ping to determine if a bus is not functioning.
- RASlog messages.
- SMI-S compliant.
- Watchdog timers.
- Status LEDs.

1 Software features

- Predictive diagnostics analysis through Fabric Watch.
- SNMP (including version 3) integration with higher-layer managers.

Software features

The Fabric OS allows any Fibre Channel-compliant device to attach to the switches as long as it conforms to the device login, name service, and related Fibre Channel standards. Each operating environment requires that a Fibre Channel host bus adapter (HBA) be available with a standards-compliant driver for correct interface to the fabric.

Fabric OS consists of a set of embedded applications running on top of an embedded Linux operating system kernel. These applications include:

- Name server.
- Alias server.
- Zone server
- Simple Network Management Protocol (SNMP) agent.
- SMI-S compliant API.
- Syslog auditing.
- RCS (Reliable Commit Service).
- NTP.
- Tasks to manage address assignment, routing, link initialization, fabric initialization, link shutdown, PowerConnect B-DCX-4S shutdown, and the user interface.

Security

[Table 2](#) highlights some of the key security features available for the PowerConnect B-DCX-4S and for other Brocade enterprise-class products running Fabric OS 5.2.0 or later. For details, contact your PowerConnect B-DCX-4S supplier and refer to the Brocade White Paper, “The Growing Need for Security in Storage Area Networks”.

TABLE 2 Brocade security features

Brocade Security Features	
DH-CHAP	Login banner
SSHv2 (using AES, 3DES, RSA)	Monitoring of attempted security breaches (through audit logging)
HTTPS (using AES)	Monitoring of attempted security breaches (through Fabric Watch Security Class)
SNMPv3	Fibre Channel security policies: DCC and SCC
FC-SP	Trusted Switch (FCS) for central security management
Secure RPC	Management access controls (SNMPv3, Telnet, FTP, serial port, front panel)

TABLE 2 Brocade security features (Continued)

Brocade Security Features	
Secure file copy (SCP)	Hardware-enforced zoning by WWN, domain/port ID, or both
Telnet disable	Default zoning
Telnet timeout	RSCN suppression and aggregation
IP filters (block listeners)	Configurable RSCN suppression by port
Secure passwords (centralized control through RADIUS/CHAP)	NTPv3 (to synchronize timestamps)
Multiple user accounts (MUAs). Up to 255.	Event auditing
Role-based access controls (RBACs)	Change tracking
Administrative domains/Virtual fabrics	Firmware change alerts in DCFM
Boot PROM password reset	Persistent port disable
Password hardening policies	Persistent domain ID
Upfront login in Web Tools	E_Port disable

Network manageability

The PowerConnect B-DCX-4S has a single domain and is managed as a single element with the Data Center Fabric Manager (DCFm). The PowerConnect B-DCX-4S responds to its own IP address and appears as a separate entity to the Telnet protocol and SNMP.

All management interfaces, such as Telnet, Web Tools, standards-compliant SMI-S, and Management Server, support a “port N within blade M” naming scheme.

The PowerConnect B-DCX-4S supports SNMPv1 and SNMPv3. When SNMP devices send SNMP messages to a management console running SAN management software, the information is stored in a management information base (MIB). Fabric OS v6.2 supports the latest Fibre Alliance Fibre Channel Management (FCMGMT) and Storage Management Initiative (SMI) MIBs, which allow common information necessary for management software to provide information to a SAN administrator. Refer to the *Fabric OS MIB Reference* for additional MIB information.

1 Network manageability

Installation

In this chapter

- Time and items required 11
- Preparing for PowerConnect B-DCX-4S installation. 12
- Unpacking and installing the PowerConnect B-DCX-4S 13
- Items included with the PowerConnect B-DCX-4S. 14

Time and items required

You can set up and install the PowerConnect B-DCX-4S in the following ways:

- As a standalone unit on a flat surface.
- In a chassis with the DCX-4S Port Side Exhaust Kit (provided) in a Brocade-qualified rack.
- In a 19-in. Electronic Industries Association (EIA) cabinet, using a PowerConnect B-DCX-4S Rack Mount Kit (either a 27-31 in. or 18-34 in. kit depending on rack used).
- In a mid-mount telecommunications (Telco) rack, using the PowerConnect B-DCX-4S Mid-Mount Rack Kit available from your PowerConnect B-DCX supplier (optional).

This chapter describes how to set up the PowerConnect B-DCX-4S as a standalone unit. For rack-mount installation instructions, refer to the appropriate manual as described in [Table 3](#).

[Table 3](#) describes the main installation and setup tasks and the estimated time required for each, based on a fully populated PowerConnect B-DCX-4S (192 Fibre Channel ports). Configurations with fewer ports require less time. These time estimates assume a prepared installation site and appropriate power and network connectivity.

TABLE 3 Installation tasks, time, and items required

Installation task	Time estimate	Items required
Site preparation and unpacking PowerConnect B-DCX-4S.	30 minutes	1/2-in. socket wrench (to remove pallet bolts). #2 Phillips screwdriver. (for cable management comb). Pallet jack. Hydraulic lift or assisted lift, able to rise to a minimum of 55 in. (140 cm), with a minimum capacity of 113 kg (250 lb). The PowerConnect B-DCX-4S weighs 68 kg (150 lb) with four FC8-48 port cards installed (192 ports).

2 Preparing for PowerConnect B-DCX-4S installation

TABLE 3 Installation tasks, time, and items required (Continued)

Installation task	Time estimate	Items required
Installing the rack mount kit or port side exhaust kit.	30 minutes	Refer to the one of the following if you are mounting the PowerConnect B-DCX-4S in a rack:
Mounting and securing PowerConnect B-DCX-4S in rack.	15 minutes	<i>PowerConnect B-Port Side Exhaust Kit Installation Procedure</i> <i>PowerConnect B-DCX-4S Mid-Mount Rack Kit Installation Procedure</i> or <i>PowerConnect B-DCX-4S Rack Kit Installation Procedure</i> .
Installing power cables and powering on the PowerConnect B-DCX-4S.	10 minutes	Power cables.
Establishing serial connection, logging on to PowerConnect B-DCX-4S, and configuring IP addresses.	20 minutes	Serial cable (provided in the accessory kit). Workstation computer with a serial port or terminal server port and a terminal emulator application (such as HyperTerminal). Ethernet IP addresses for the switch.
Installing an Ethernet cable, opening a Telnet session, and configuring the PowerConnect B-DCX-4S domain ID, date and time, and additional system parameters. Verify and back up configuration.	20 minutes	Ethernet cable for Telnet access. Refer to the <i>Fabric OS Administrator's Guide</i> .
Installing SFPs. Attaching and managing fiber optic cables.	15 minutes	SFP optical transceivers. Fiber optic cables and cable ties.

Preparing for PowerConnect B-DCX-4S installation

NOTE

Read the safety notices before installation ("[Safety notices](#)").

The following steps are required to ensure correct installation and operation.

1. Provide a space that is 9 rack units (9U) high, 61.19 cm (24.09 in.) deep, and 43.74 cm (17.22 in.) wide. 1U is equal to 4.45 cm (1.75 in.). If you do not use the provided port side exhaust kit, the space needs to be only 8 rack units (8U) high.

The PowerConnect B-DCX-4S can be installed facing either direction in a cabinet, if serviceability and cooling requirements are met.

2. Ensure that dedicated electrical branch circuits with the following characteristics are available:
 - 200 – 240 VAC, 50–60 Hz (two branch circuits)
 - Two cables for the 200 - 240 VAC service
 - Power supply standards ("[Power specifications](#)") are met
 - Protected by a circuit breaker in accordance with local electrical codes
 - Supply circuit, line fusing, and wire size adequate to the electrical rating on the chassis nameplate
 - Location close to the chassis and easily accessible

- Grounded outlets installed by a licensed electrician and compatible with the power cords

ATTENTION

To maximize fault tolerance, connect each power cord to a separate power source.

3. Plan for cable management before installing the chassis (“[Managing cables](#)”).
Cables can be managed in a variety of ways, such as by routing cables below the chassis, along either the port or the nonport side of the chassis, through cable channels on the sides of the cabinet, or by using patch panels.
4. Ensure that the following is available for configuration of the PowerConnect B-DCX-4S:
 - Workstation with an installed terminal emulator, such as HyperTerminal
 - Serial cable (provided)
 - Three Ethernet cables (including one spare)
 - Access to an FTP server for backing up the switch configuration or collecting **supportsave** output data (optional)
 - A Brocade USB stick for collecting **supportsave** output data (optional)
 - SFPs and compatible cables

NOTE

For information about the SFP transceivers that are qualified for the Brocade Encryption Switch, go to http://www.brocade.com/products/interop_and_compatibility.jsp.

5. Ensure that the air intake vents have a minimum of 2 inches of airspace.
6. Ensure that the air temperature on the air intake side is less than 40 degrees Celsius (104 degrees Fahrenheit) during operation.

Unpacking and installing the PowerConnect B-DCX-4S

**CAUTION**

Use safe lifting practices when moving the product. (C015)

NOTE

A fully populated PowerConnect B-DCX-4S (four FC8-48 port cards, 192 ports) weighs approximately 68 kg (150 lbs) and requires a hydraulic or assisted lift to install it.

1. Unpack and install the PowerConnect B-DCX-4S.
 - a. Cut the bands that encircle the packaging.
 - b. Remove the lid and the kits and foam from the top of the chassis.
 - c. Lift the cardboard box off the chassis and remove the plastic bag from around the chassis. Save the packing materials for use when returning the old chassis.
 - d. Leave the chassis on top of the plastic shipping tray if the chassis must be transported to the installation location.

2 Items included with the PowerConnect B-DCX-4S

NOTE

The PowerConnect B-DCX-4S packaging does not incorporate a wood pallet and pallet brackets. The chassis sits on top of a plastic shipping tray.

2. Use a pallet jack or other assisted lift to transport the new chassis to the installation area. Doorways must be wider than 36 in. (91 cm) to accommodate the chassis.
3. Remove the PowerConnect B-DCX-4S port side exhaust kit, accessory kit, packing foam, and antistatic plastic from the chassis and set aside.
4. Remove the chassis door from the PowerConnect B-DCX-4S.
5. Remove the vertical cable management fingers.
6. Use a lift to raise the chassis to the correct level. If installing the chassis in a cabinet, follow the instructions provided by the port side exhaust kit installation procedure or the appropriate rack kit installation procedure.
7. If applicable, lock the wheels of the lift.
8. Gently slide the chassis onto the final installation surface, ensuring that it remains supported during the transfer.
9. Ensure the chassis can be oriented so that the nonport side has access to intake air (cool).
10. Reinstall the vertical cable management fingers.
11. If ICL cables will not be used, ensure that the ICL sockets in the core switch blades have EMI plugs inserted.
12. Reinstall the chassis door.

Items included with the PowerConnect B-DCX-4S

The PowerConnect B-DCX-4S ships with the following:

- PowerConnect B-DCX-4S chassis, populated with:
 - Control processor blades (CP8)
 - Core switch blades (CR4S-8)
 - Port blades, application blades, and encryption blades (included based on customer specification)
 - Blade slot filler panels (for slots not filled by blades)
 - Port side exhaust kit
 - WWN cards
 - WWN bezel (logo plate)
 - Power supplies
 - Power supply filler panel (included if there is only one power supply)
 - Blower assemblies
 - Cable management comb
 - Chassis door
- Accessory kit containing the following items:

- *PowerConnect B-DCX-4S Backbone QuickStart Guide*
- Brocade Documentation CD (contains documents related to the PowerConnect B-DCX-4S)
- ESD grounding strap
- RS-232 serial cable. The RS-232 cable has an adapter at one end that can be removed to provide an RJ-45-style connector.
- PowerConnect B-DCX-4S rack mount kit with instructions

Order the optical transceivers (SFP and XFP) from Brocade. The PowerConnect B-DCX-4S supports SWL, LWL, and ELWL transceivers.

NOTE

For information about the SFP and XFP transceivers that are qualified for the PowerConnect B-DCX-4S, go to http://www.brocade.com/products/interop_and_compatibility.jsp.

2 Items included with the PowerConnect B-DCX-4S

Log In and Configuration

In this chapter

- PowerConnect B-DCX-4S Configuration Overview 17
- Powering on the PowerConnect B-DCX-4S 18
- Connecting a serial cable between PowerConnect B-DCX-4S and host 19
- Logging in to the serial console port 20
- Setting the IP addresses 20
- Logging off the serial console port and disconnecting the serial cable 22
- Connecting an Ethernet cable and opening a Telnet session 22
- Customizing a switch name 22
- Setting the domain ID 23
- Setting the date and time 23
- Software licenses 25
- Verifying correct operation and backing up the configuration 27
- Installing SFPs and attaching cables 26
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PowerConnect B-DCX-4S Configuration Overview

NOTE

If the Brocade FS8-18 encryption blade is installed, refer to the *Fabric OS Encryption Administrator's Guide for the procedures to configure the encryption functions*.

The PowerConnect B-DCX-4S must be configured before it is connected to the fabric, and all of the configuration commands must be entered through the active CP blade. The PowerConnect B-DCX-4S configuration includes the following parameters:

- IP address and subnet mask for the chassis
- IP addresses, host names, subnet masks, and gateway addresses for both CP blades
- Switch name
- Domain ID (optional)
- WWN (optional)

The PowerConnect B-DCX-4S WWN is initially set by the factory to match the license ID (which is based on the chassis serial number). The WWN can be changed but the license ID cannot be modified.

3 Powering on the PowerConnect B-DCX-4S

The configuration information is mirrored to the standby CP blade, which allows the current configuration to remain available even if the active CP blade fails. The configuration information for the PowerConnect B-DCX-4S is stored in the WWN cards and the flash memory of the CP blades. The configuration can be backed up to a workstation (uploaded) and then downloaded to the active CP blade if necessary.

Figure 4 illustrates the flow of the basic configuration tasks.

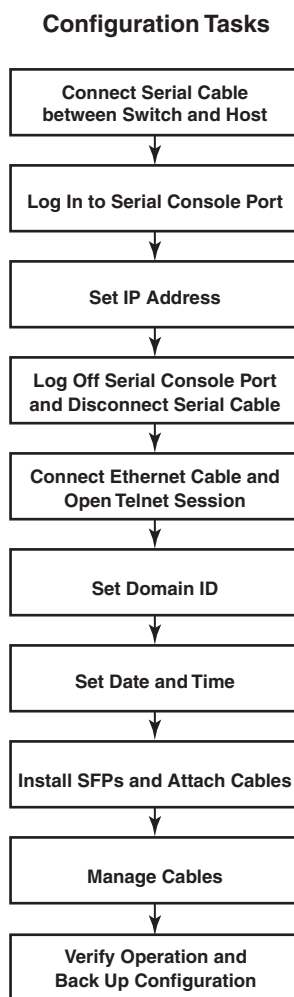


FIGURE 4 Configuration tasks

Powering on the PowerConnect B-DCX-4S



DANGER

Use the supplied power cords. Ensure the facility power receptacle is the correct type, supplies the required voltage, and is properly grounded. (D004)

1. Connect the two AC power cords to each of the two power supplies.
2. Connect the power cords to a power source with a voltage of 200 to 240 VAC, 47 to 63 Hz.
3. Turn the AC power switches on the power supplies to ON. The AC power switches light green when switched on and power is supplied.
4. The PowerConnect B-DCX-4S performs a power-on self-test (POST) each time it is powered on. POST takes approximately ten minutes and is complete when the indicator light activity displays the operational state. For information about LED patterns, see [Chapter 4, "Monitor System Components"](#).

You can bypass POST by using the **fastBoot** command. You can also disable POST for successive reboots on the PowerConnect B-DCX-4S using the **diagDisablePost** command.

ATTENTION

Do not connect the switch to the network until the IP addresses are configured.

Connecting a serial cable between PowerConnect B-DCX-4S and host

Follow these steps to connect a serial cable.

1. Verify that the PowerConnect B-DCX-4S is powered on and that POST is complete by ensuring that all power LED indicators on the port, control processor, and core switch blades display a steady green light.
2. Remove the shipping cap from the CONSOLE port on the active CP. Use the serial cable provided with the PowerConnect B-DCX-4S to connect the CONSOLE port on the active CP to a computer workstation. The active CP blade is indicated by an illuminated (blue) LED.

ATTENTION

The CONSOLE port is intended primarily for the initial setting of the IP address and for service purposes.

3. Access the PowerConnect B-DCX-4S using a terminal emulator application (such as HyperTerminal in a Windows environment or tip in a UNIX environment).
4. Disable any serial communication programs running on the workstation (such as synchronization programs).
5. Open a terminal emulator application (such as HyperTerminal on a PC, or term, tip, or kermi in a UNIX environment), and configure the application as follows:

- In a Windows environment:

Parameter	Value
Bits per second	9600
Databits	8
Parity	None
Stop bits	1
Flow control	None

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

3 Logging in to the serial console port

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

If ttyb is already in use, use **ttya** instead and enter the following string at the prompt:

```
tip /dev/ttya -9600
```

Logging in to the serial console port

To log in to the PowerConnect B-DCX-4S through the serial connection, follow these steps.

1. When the terminal emulator application stops reporting information, press **Enter**. You receive the following login prompt:

```
CP0 Console Login:
```

2. Log in to the PowerConnect B-DCX-4S as **admin**, using the default password: **password**. You are prompted to change the default passwords at initial login.

```
swDir login: admin
```

```
Password:
```

```
Please change your passwords now.
```

```
Use Control-C to exit or press 'Enter' key to proceed.
```

```
Password was not changed. Will prompt again at next login  
until password is changed.
```

```
swDir:admin>
```

NOTE

Passwords can be 8 to 40 characters long. They must begin with an alphabetic character. They can include numeric characters, the dot (.), and the underscore (_). Passwords are case-sensitive, and they are not displayed when you enter them on the command line.

Setting the IP addresses

The PowerConnect B-DCX-4S requires three IP addresses, which are configured using the **ipAddrSet** command. IP addresses are required for both CP blades (CP0 and CP1) and for the chassis management IP (shown as SWITCH under the **ipAddrShow** command) in the PowerConnect B-DCX-4S.

NOTE

The default IP addresses and host names for the PowerConnect B-DCX-4S are:

- 10.77.77.75 / CP0 (the CP blade in slot 4 at the time of configuration)
 - 10.77.77.74 / CP1 (the CP blade in slot 5 at the time of configuration)
-

ATTENTION

Resetting an IP address while the PowerConnect B-DCX-4S has active IP traffic or has management and monitoring tools running, such as DCFM, Fabric Watch, and SNMP, can cause traffic to be interrupted or stopped.

1. Log in to the active CP as **admin** using the serial cable connection.
2. Set up the PowerConnect B-DCX-4S IP address by entering the **ipaddrset -chassis** command:

```
swDir:admin> ipAddrSet -chassis
```

Enter the information at the prompts. Specify the **-chassis** IP address. The **-sw 0** IP address is no longer valid on this chassis.

NOTE

The addresses 10.0.0.0 through 10.0.0.255 are reserved and used internally by the PowerConnect B-DCX-4S. External IPs must not use these addresses.

3. Set up the CPO IP address by entering the **ipaddrset -cp 0** command:

```
swDir:admin> ipAddrSet -cp 0
```

Enter the information at the prompts.

4. Set up the CP1 IP address by entering the **ipaddrset -cp 1** command:

```
swDir:admin> ipAddrSet -cp 1
```

Enter the information at the prompts.

This is a sample IP configuration:

```
swDir:admin> ipaddrset -chassis
Ethernet IP Address [0.0.0.0]: 123.123.123.120
Ethernet Subnetmask [0.0.0.0]: 123.123.123.123
Fibre Channel IP Address [0.0.0.0]:
Fibre Channel Subnetmask [0.0.0.0]:
Issuing gratuitous ARP...Done.
Committing configuration...Done.

swDir:admin> ipaddrset -cp 0
Host Name [cp0]:
Ethernet IP Address [10.77.77.75]: 123.123.123.121
Ethernet Subnetmask [0.0.0.0]: 123.123.123.123
Gateway IP Address [0.0.0.0]: 123.123.123.124
IP address is being changed...Done.
Committing configuration...Done.

swDir:admin> ipaddrset -cp 1
Host Name [cp1]:
Ethernet IP Address [10.77.77.74]: 123.123.123.122
Ethernet Subnetmask [0.0.0.0]: 123.123.123.123
Gateway IP Address [0.0.0.0]: 123.123.123.124
IP address of remote CP is being changed...Done.
Committing configuration...Done.

swDir:admin> reboot
```

5. Type **reboot** to reboot the PowerConnect B-DCX-4S.

3 Logging off the serial console port and disconnecting the serial cable

Logging off the serial console port and disconnecting the serial cable

You can use the serial port to monitor error messages through the serial connection. If the serial port is no longer required, use the **logout** command to log out of the serial console, remove the serial cable, and replace the plug in the serial port.

Connecting an Ethernet cable and opening a Telnet session

NOTE

Connecting the CP blades to a private network/VLAN is recommended.

After using a serial connection to configure the IP addresses for the PowerConnect B-DCX-4S, you can connect the active CP blade to the local area network (LAN).

By establishing an Ethernet connection, you can complete the PowerConnect B-DCX-4S configuration using either a serial session, Telnet, or a management application such as Web Tools or DCFM. To create an Ethernet connection to the PowerConnect B-DCX-4S, follow these steps.

1. Remove the shipping plug from the Ethernet port on the active CP blade.
2. Insert one end of an Ethernet cable into the Ethernet port.
3. Connect the other end to an Ethernet 10/100/1000 BaseT LAN.

The PowerConnect B-DCX-4S can be accessed through a remote connection using any of the management tools, such as Telnet, Web Tools, or DCFM.

4. To complete any additional PowerConnect B-DCX-4S configuration procedures through a Telnet session, log in to the PowerConnect B-DCX-4S by Telnet, using the **admin** login. The default password is **password**.

Customizing a switch name

The switch name of the PowerConnect B-DCX-4S can be up to 15 characters long; it can include alpha, numeric, and underscore characters; and must begin with an alpha character.

NOTE

Changing the name causes a domain address format RSCN to be issued.

1. Type **switchName** followed by the new name in quotes.

```
swDir:admin> switchName "swModularSwitch5"  
Committing configuration...  
Done.  
swModularSwitch5:admin>
```

2. Record the new name for reference.

Customizing a chassis name

For FOS 6.2.0 and later, the chassis name of the PowerConnect B-DCX-4S can be up to 15 characters long; can include alpha, numeric, and underscore characters; and must begin with an alpha character.

1. Type **chassisName** followed by the new name in double quotes.

```
switch:admin> chassisname "DCX4S_chassis_1"  
Committing configuration...  
Done.
```

2. Record the new name for reference.

```
switch:admin> chassisname  
DCX4S_chassis_1
```

3. Record the new name for reference.

Setting the domain ID

Each switch in the fabric must have a unique domain ID. The domain ID can be manually set through the **configure** command or can be automatically set. The default domain ID for the PowerConnect B-DCX-4S is "1". Use the **fabricShow** command to view the already assigned domain IDs.

1. Enter **switchDisable** to disable the PowerConnect B-DCX-4S.
2. Enter **configure**.
3. Enter **y** at the "Fabric parameters" prompt:

```
Fabric parameters (yes, y, no, n): [no] y
```

4. Enter a unique domain ID:

```
Domain: (1.239) [1] 3
```

5. Complete the remaining prompts or press **Ctrl+D** to accept the settings and exit.
6. Enter **switchEnable** to re-enable the PowerConnect B-DCX-4S.

Setting the date and time

The date and time 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. However, because the date and time are used for logging, error detection, and troubleshooting, they should be set correctly.

Setting the date

To set the date, follow these steps.

1. If necessary, log on to the PowerConnect B-DCX-4S by Telnet, using the **admin** account.
2. Enter the **date** command, using the following syntax:

```
date "mmdHHMMyy"
```

Where:

- mm is the month; valid values are 01 through 12.
- dd is the date; valid values are 01 through 31.
- HH is the hour; valid values are 00 through 23.
- MM is minutes; valid values are 00 through 59.
- yy is the year; valid values are 00 through 99 (values greater than 69 are interpreted as 1970 through 1999, and values less than 70 are interpreted as 2000-2069).

```
switch:admin> date
Fri Sep 26 17:01:48 UTC 2008
switch:admin> date "0926123008"
Fri Sep 26 12:30:00 UTC 2008
switch:admin>
```

Setting the time zone

To set the time zone, follow these steps.

1. If necessary, log on to the switch by Telnet, using the **admin** account.
2. Enter the **tsTimeZone** command as follows:

```
switch:admin> tstimezone [--interactive]/ [, timezone_fmt]
```

Use **timezone_fmt** to set the time zone by Country/City or by time zone ID, such as MST.

The following example shows how to change the time zone to US/Mountain.

```
switch:admin> tstimezone
Time Zone : US/Pacific
switch:admin> tstimezone US/Mountain
switch:admin> tstimezone
Time Zone : US/Mountain
```

The following procedure describes how to set the current time zone using interactive mode.

1. Type the **tsTimeZone** command as follows:

```
switch:admin> tstimezone --interactive
```

You are prompted to select a general location.

Please identify a location so that time zone rules can be set correctly.

2. Enter the appropriate **number** or **Ctrl-D** to quit.
3. At the prompt, select a **country location**.
4. At the prompt, enter the appropriate **number** to specify the time zone region or **Ctrl-D** to quit.

Synchronizing local time

To synchronize the local time of the principal or primary switch with that of an external NTP server, follow these steps.

1. If necessary, log on to the switch by Telnet, using the **admin** account.
2. Enter the **tsClockServer** command:

```
switch:admin> tsclockserver "<ntp1;ntp2>"
```

where *ntp1* is the IP address or DNS name of the first NTP server, which the switch must be able to access. The variable *ntp2* is the second NTP server and is optional. The operand "<ntp1;ntp2>" is optional; by default, this value is LOCL, which uses the local clock of the principal or primary switch as the clock server.

The **tsClockServer** command accepts multiple server addresses in either IPv4, IPv6, or DNS name formats. When multiple NTP server addresses are passed, **tsclockserver** sets the first obtainable address as the active NTP server. The rest will be stored as backup servers that can take over if the active NTP server fails. The principal or primary FCS switch synchronizes its time with the NTP server every 64 seconds.

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

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

The following example shows how to set up more than one NTP server using a DNS name:

```
switch:admin> tsclockserver "10.32.170.1;10.32.170.2;ntp.localdomain.net"
Updating Clock Server configuration...done.
Updated with the NTP servers
```

Changes to the clock server value on the principal or primary FCS switch are propagated to all switches in the fabric

Software licenses

Depending on the vendor agreement, certain licenses are factory installed on the PowerConnect B-DCX-4S. To determine which licenses are enabled, use the **licenseShow** command.

```
swDir:admin> licenseshow
AAbbccDDeeFFeeGG:
  Web license
  Zoning license
  Extended Fabric license
  Fabric Watch license
  Performance Monitor license
  Trunking license
  Security license
```

In this example, the license key is AAbbccDDeeFFeeGG. Keep a copy of the license key for reference.

3 Installing SFPs and attaching cables

The 64-bit chassis ID is required to obtain and activate licenses for the PowerConnect B-DCX-4S. The chassis ID is available through the **licenseldShow** command. The **licenseShow** and **licenseldShow** commands must be entered on the active CP blade. Refer to the *Fabric OS Administrator's Guide* for more information.

Installing SFPs and attaching cables

Follow these steps to install SFPs (or XFPs with an FC10-6 port card installed) and cables to the PowerConnect B-DCX-4S.

The ports are color-coded to indicate which can be used in the same port group for trunking (trunking port groups can be up to eight ports). The ports and cables used in trunking groups must meet specific requirements. Refer to the *Fabric OS Administrator's Guide* for more information.

1. Position one of the optical transceivers so that the key is oriented correctly to the port. Insert the transceiver into the port until it is firmly seated and the latching mechanism clicks.

Transceivers are keyed so that they can only be inserted with the correct orientation. If a transceiver does not slide in easily, ensure that it is correctly oriented.

2. Position a cable so that the key (the ridge on one side of the cable connector) is aligned with the slot in the transceiver. Insert the cable into the transceiver until the latching mechanism clicks.

Cables are keyed so that they can be inserted in only one way. If a cable does not slide in easily, ensure that it is correctly oriented.

3. Repeat [step 1](#) and [step 2](#) for the remaining ports.

Managing cables

ATTENTION

The minimum bend radius for a 50 micron cable is 2 in. under full tensile load and 1.2 in. with no tensile load.

Cables can be organized and managed in a variety of ways: for example, using cable channels on the port or nonport sides of the cabinet or patch panels to minimize cable management. With the horizontal orientation of the blades in the DCX-4S, a pair of vertical cable management finger assemblies have been provided to keep the cables from hanging down in front of other blades.

Following is a list of recommendations:

- Leave at least 1 m (3.28 ft) of slack for each port cable. This provides room to remove and replace the PowerConnect B-DCX-4S, allows for inadvertent movement of the rack, and helps prevent the cables from being bent to less than the minimum bend radius.
- If ISL Trunking is in use, group the cables by trunking group. The ports are color-coded to indicate which ports can be used in the same ISL Trunking group: eight ports marked with solid black ovals alternate with eight ports marked with oval outlines.
- For easier maintenance, label the fiber optic cables and record the devices to which they are connected.
- Route the cables to both the left and right sides of the DCX-4S through the cable management fingers.

- Keep LEDs visible by routing port cables and other cables away from the LEDs.

For the procedure to install the ICL cables see “[RRP: Inter-chassis link \(ICL\) cables.](#)”

Verifying correct operation and backing up the configuration

To verify correct operation and back up the PowerConnect B-DCX-4S configuration, follow these steps.

1. Check the LEDs to verify that all components are functional. For information about LED patterns, see [Table 4](#) on page 34.
2. If necessary, log on to the switch by Telnet, using the **admin** account.
3. Run the **portcfgpersistentenable** command to activate the FC ports for FC operation.
4. Verify the correct operation of the PowerConnect B-DCX-4S by entering the **switchShow** command from the workstation. This command provides information about switch and port status.
5. Verify the correct operation of the PowerConnect B-DCX-4S in the fabric by entering the **fabricShow** command from the workstation. This command provides general information about the fabric.
6. To back up the configuration, enter the **configupload** command. This command uploads the PowerConnect B-DCX-4S configuration to the server so that it is available for downloading to a replacement PowerConnect B-DCX-4S.
7. Run the following commands to save the configuration to a file on a secure host.
 - configShow
 - ipaddrShow
 - licenseShow
 - switchShow

Alternatively, you can save the configuration file to a Brocade USB.

NOTE

Passwords are not saved in the configuration file, and are not uploaded during a **configUpload**.

NOTE

It is recommended that the configuration be backed up on a regular basis to ensure that a complete configuration is available for downloading to a replacement PowerConnect B-DCX-4S.

Powering off the PowerConnect B-DCX-4S

1. Shut down the PowerConnect B-DCX-4S using the **sysShutdown** command.

```
switch::admin> sysshutdown
This command will shutdown the operating systems on your switch.
You are required to power-cycle the switch in order to restore operation.
Are you sure you want to shutdown the switch [y/n]?y
HA is disabled
Stopping blade 1
```

3 Powering off the PowerConnect B-DCX-4S

```
Shutting down the blade....  
Stopping blade 2  
Shutting down the blade....  
Stopping blade 8  
Shutting down the blade....  
  
Broadcast message from root (pts/1) Tue Aug 23 14:23:06 2008...  
  
The system is going down for system halt NOW !!
```

2. Power off the chassis by flipping the AC power switches on the power supplies to “0” (LEDs inside AC power switches should turn off). To maintain the ground connections, leave power cords connected to the power supplies and to the electrical outlets.

Monitor System Components

In this chapter

- Monitoring overview 29
- Determining the status of a port, application, or encryption blade..... 29
- Determining the status of a control processor blade (CP8)..... 36
- Determining status of a core switch blade (CR4S-8) 38
- Determining the status of a power supply..... 39
- Determining the status of a blower assembly..... 40
- Determining the status of a WWN card 41

Monitoring overview

The PowerConnect B-DCX-4S is engineered for reliability and requires no routine operational steps or maintenance. This chapter provides information about determining the status of each component using LEDs and CLI commands. Refer to the *Web Tools Administrator's Guide* and the *Fabric OS Administrator's Guide* for additional information.

Determining the status of a port, application, or encryption blade

1. Check the LEDs on the blade.
 - [Figure 5](#) illustrates the FC8-16 port blade.
 - [Figure 6](#) illustrates the FC8-32 port blade.
 - [Figure 7](#) illustrates the FC8-48 port blade.
 - [Figure 8](#) illustrates the FC10-6 port blade.
 - [Figure 9](#) illustrates the FR4-18i application blade.
 - [Figure 10](#) illustrates the FA4-18 application blade.
 - [Figure 11](#) illustrates the FS8-18 encryption blade.
 - [Figure 12](#) illustrates the FX8-24 extension blade.
 - [Figure 13](#) illustrates the FCOE10-24 FCOE blade.

The LED patterns may temporarily change during POST and other diagnostic tests. For information about how to interpret the LED patterns, see [Table 4](#).

2. Check the blade status by entering **slotShow**.

4 Determining the status of a port, application, or encryption blade

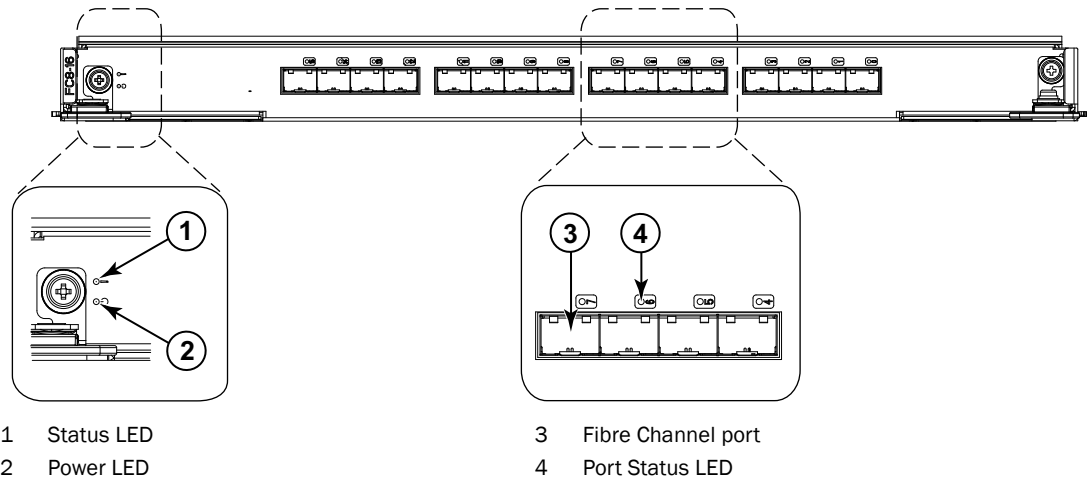


FIGURE 5 FC8-16 Port blade

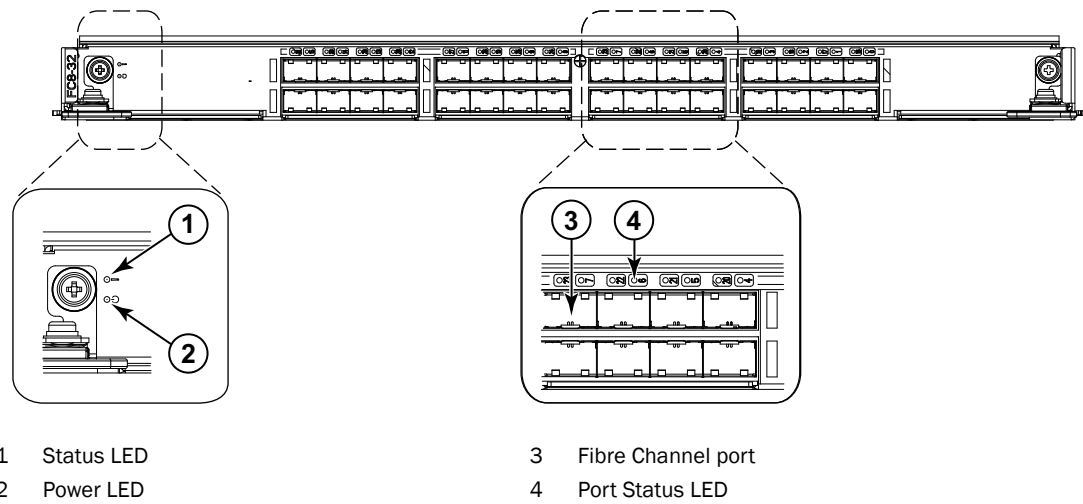
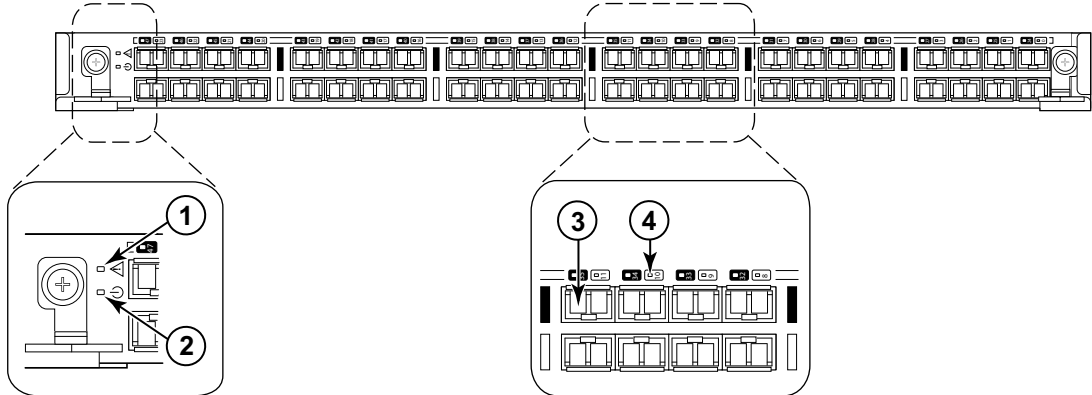
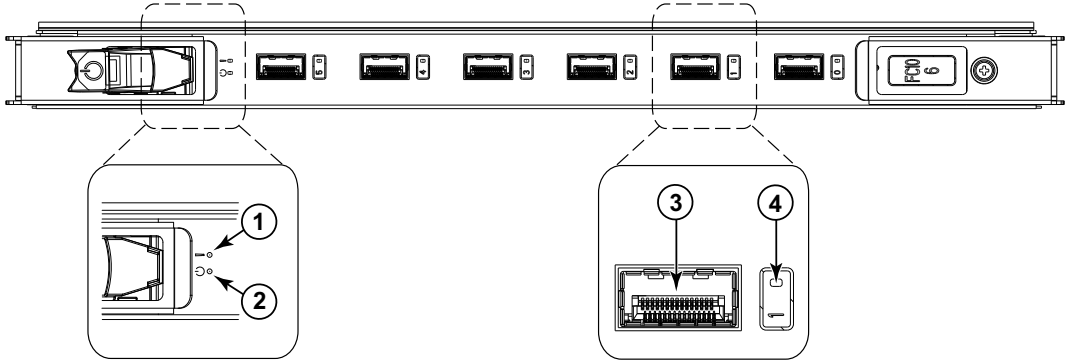


FIGURE 6 FC8-32 Port blade



- 1 Status LED
- 2 Power LED
- 3 Fibre Channel port
- 4 Port Status LED

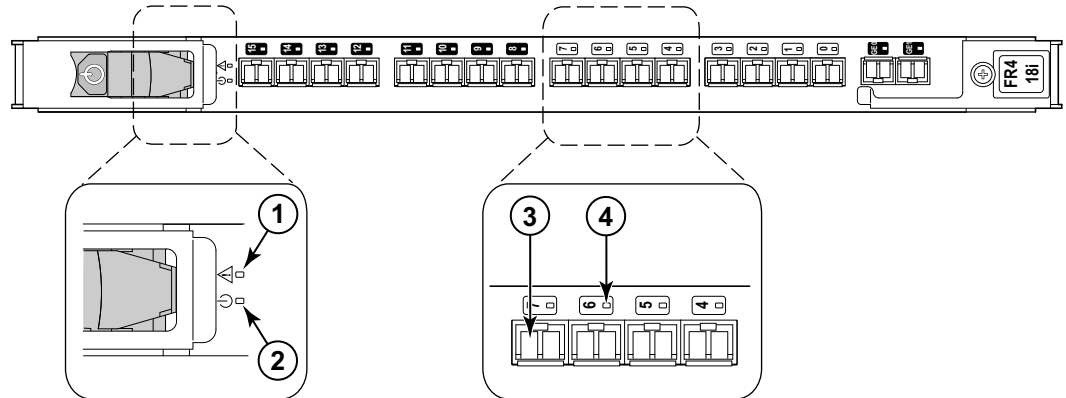
FIGURE 7 FC8-48 Port blade



- 1 Status LED
- 2 Power LED
- 3 Fibre Channel port
- 4 Port Status LED

FIGURE 8 FC10-6 Port blade

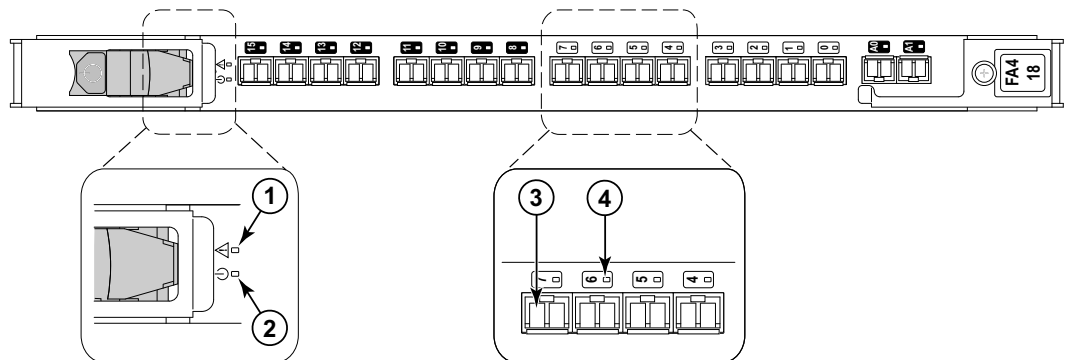
4 Determining the status of a port, application, or encryption blade



- 1 Status LED
- 2 Power LED

- 3 Fibre Channel port
- 4 Port Status LED

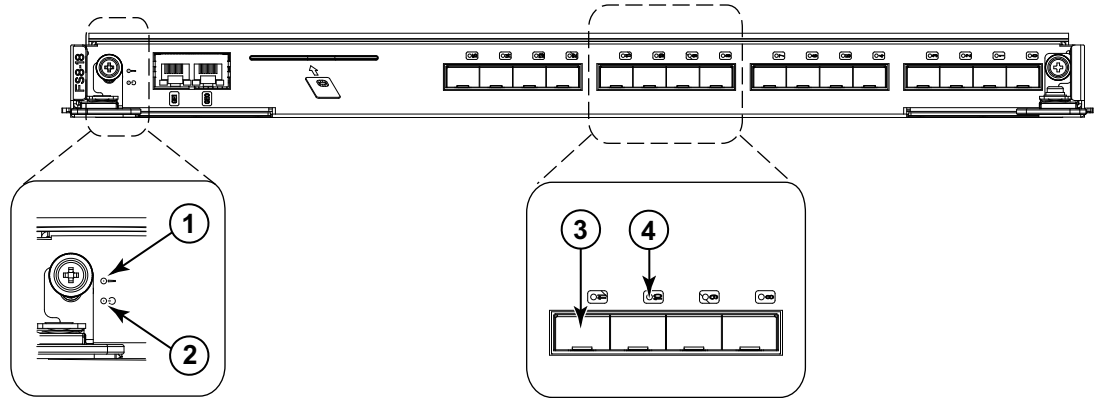
FIGURE 9 FR4-18i Application blade



- 1 Status LED
- 2 Power LED

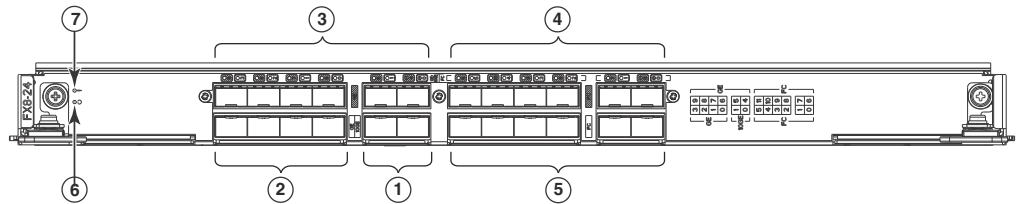
- 3 Fibre Channel port
- 4 Port Status LED

FIGURE 10 FA4-18 Application blade



- | | | | |
|---|------------|---|--------------------|
| 1 | Status LED | 3 | Fibre Channel port |
| 2 | Power LED | 4 | Port Status LED |

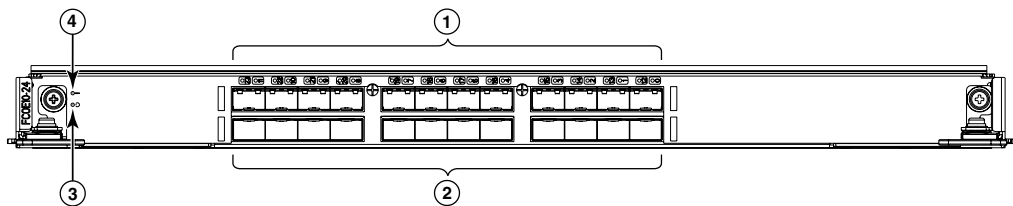
FIGURE 11 FS8-18 Encryption blade



- | | | | |
|---|------------------|---|--------------|
| 1 | 10 GbE ports 0-1 | 5 | FC ports 0-5 |
| 2 | 1 GbE ports 0-3 | 6 | Power LED |
| 3 | 1 GbE ports 4-9 | 7 | Status LED |
| 4 | FC ports 6-11 | | |

FIGURE 12 FX8-24 Extension blade

See [“FX8-24 blade”](#) for information about trunking groups on this blade.



- | | | | |
|---|-------------------------|---|------------|
| 1 | 10 GbE FCoE ports 12-23 | 3 | Power LED |
| 2 | 10 GbE FCoE ports 0-11 | 4 | Status LED |

FIGURE 13 FCOE10-24 FCOE blade

4 Determining the status of a port, application, or encryption blade

Table 4 describes the port, application, and encryption blade LED patterns and the recommended actions for those patterns.

TABLE 4 Port, application, and encryption blade LED descriptions



LED purpose	Color	Status	Recommended action
Power LED 	Steady green	Blade is enabled.	No action required.
	No light (LED is off)	Blade is not powered on.	Ensure that the blade is firmly seated and either the thumbscrew is fully engaged or the slider is pushed up and the ejectors are fully engaged..
Status LED 	No light (LED is off)	Blade is either healthy or does not have power.	Verify that the power LED is on.
	Steady amber	Blade is faulty.	Ensure that the blade is firmly seated and check the status by entering the slotShow command. If LED remains amber, consult the PowerConnect B-DCX-4S supplier.
	Slow-flashing amber (on 2 seconds, then off 2 seconds)	Blade is not seated correctly or is faulty.	Pull the blade out and reseal it. If LED continues to flash, replace the blade.
	Fast-flashing amber (on 1/2 second, then off 1/2 second)	Environmental range exceeded.	Check for out-of-bounds environmental condition and correct it.

TABLE 4 Port, application, and encryption blade LED descriptions (Continued)

LED purpose	Color	Status	Recommended action	
FC Port Status	No light (LED is off)	Port has no incoming power, or there is no light or signal carrier detected.	Verify that the power LED is on, check the transceiver and cable.	
		Polling is in progress.	Allow 60 seconds for polling to complete.	
		Connected device is configured in an offline state.	Verify the status of the connected device.	
	Steady green	Port is online (connected to an external device) but has no traffic.	No action required.	
	Slow-flashing green (on 1 second, then off 1 second)	Port is online but segmented, indicating a loopback plug or cable or an incompatible switch.	Verify that the correct device is attached to the PowerConnect B-DCX-4S.	
	Fast-flashing green (on 1/4 second, then off 1/4 second)	Port is in internal loopback (diagnostic).	No action required.	
	Flickering green	Port is online, with traffic flowing through port.	No action required.	
	Steady amber	Port is receiving light or signal carrier, but it is not online yet.	Reset the port from the workstation using the portEnable or portCfgPersistentEnable command.	
	Slow-flashing amber (on 2 seconds, then off 2 seconds)	Port is disabled due to diagnostic tests or portDisable or portCfgPersistentEnable command.	Reset the port from the workstation using the portEnable or portCfgPersistentEnable command.	
Fast-flashing amber (on 1/2 second, then off 1/2 second)	Transceiver or port is faulty.	Change the transceiver or reset the switch from the workstation.		
Alternating green/amber	Port is bypassed.	Reset the port from the workstation using the portEnable or portCfgPersistentEnable command.		
GbE Port Status (FX8-24) - both 1 GbE and 10 GbE ports	No light (LED is off)	Port has no incoming power, or there is no light or signal carrier detected.	Verify that the power LED is on, check the transceiver and cable.	
		Steady green	Port is online but has no traffic.	No action required.
		Slow-flashing green (on 1 second, then off 1 second)	Beacon. Used to identify specific ports.	No action required.
		Flickering green	Port is online, with traffic flowing through port.	No action required.
		Fast-flashing amber (on 1/4 second, then off 1/4 second)	Transceiver or port is faulty.	Change the transceiver or reset the switch from the workstation.

4 Determining the status of a control processor blade (CP8)

TABLE 4 Port, application, and encryption blade LED descriptions (Continued)

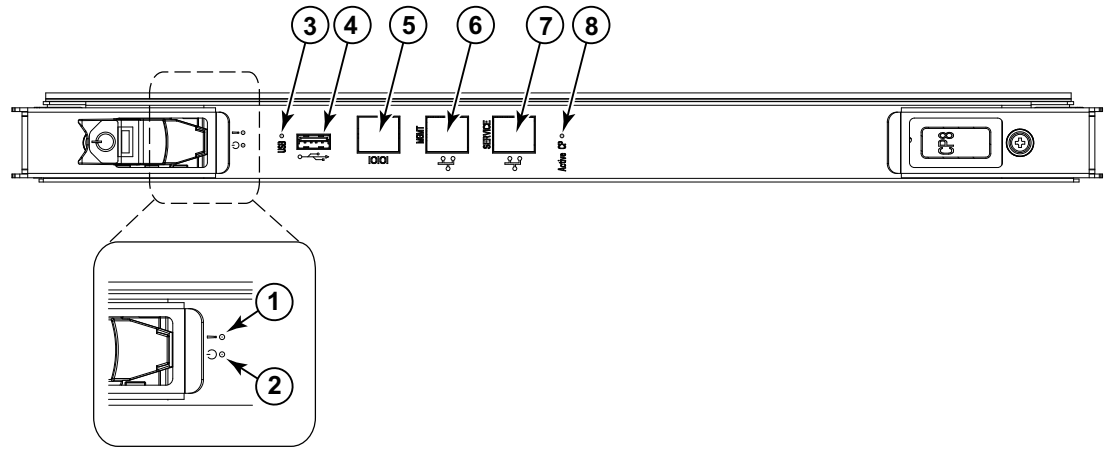
LED purpose	Color	Status	Recommended action
10GbE Port Status (FCOE10-24)	No light (LED is off)	Port is offline.	Verify that the power LED is on, check the transceiver and cable.
	Steady green	Port is online but has no traffic.	No action required.
	Flickering green	Port is online, with traffic flowing through port.	No action required.
	Steady amber	Port is receiving light but it is not online yet.	Reset the port by doing a “shutdown” and “no shutdown” sequence from a cmsh session.
	Slow-flashing amber (on 2 seconds, then off 2 seconds)	Port is disabled.	Enable the port by using the “no shutdown” command from a cmsh session.
	Fast-flashing amber (on 1/4 second, then off 1/4 second)	Transceiver or port is faulty.	Change the transceiver or reset the port by doing a “shutdown” and “no shutdown” sequence from a cmsh session.

For more information on the CEE Management Shell (cmsh), see the *Fabric OS Command Reference Manual* or the *Converged Enhanced Ethernet Command Reference*.

Determining the status of a control processor blade (CP8)

1. Check the LED indicators on the CP blade ([Figure 14](#)). The LED patterns may temporarily change during POST and other diagnostic tests. For information about how to interpret the LED patterns, see [Table 5](#).
2. Check the port blade status by entering **slotShow** and **haShow**.

[Figure 14](#) identifies the CP8 blade.





- 1 Status LED
- 2 Power LED
- 3 USB LED
- 4 USB port
- 5 Console port (10101)
- 6 Ethernet port (MGM IP)
- 7 Ethernet port (SERVICE IP)
- 8 Active CP LED

FIGURE 14 Control processor blade (CP8)

Table 5 describes the CP blade LED patterns and the recommended actions for those patterns.

TABLE 5 CP blade LED descriptions

LED purpose	Color	Status	Recommended action
Power 	Steady green	CP blade is on.	No action required.
	No light (LED is off)	CP blade is not on.	Ensure that the blade is firmly seated and has power.
Status 	No light (LED is off)	CP blade is either healthy or does not have power.	Verify that the power LED is on.
	Steady amber	CP blade is faulty or the switch is still booting.	Ensure that the blade is firmly seated and the switch has completed booting. If LED remains yellow, consult the PowerConnect B-DCX-4S supplier.
	Slow-flashing amber (on 2 seconds; then off 2 seconds)	CP blade is not seated correctly or is faulty.	Pull the blade out and reseal it. If the LED continues to flash, replace the blade.
	Fast-flashing amber (on 1/2 second; then off 1/2 second)	Environmental range exceeded.	Check for out-of-bounds environmental condition and correct it.
Ethernet Link Status	No light (LED is off)	Either an Ethernet link is not detected, or it does not have incoming power.	Ensure that the blade has power, the Ethernet cable is firmly seated, and the connected device is functioning.
	Flickering green/amber	Ethernet link is healthy and traffic is flowing through port.	No action required.

4 Determining status of a core switch blade (CR4S-8)

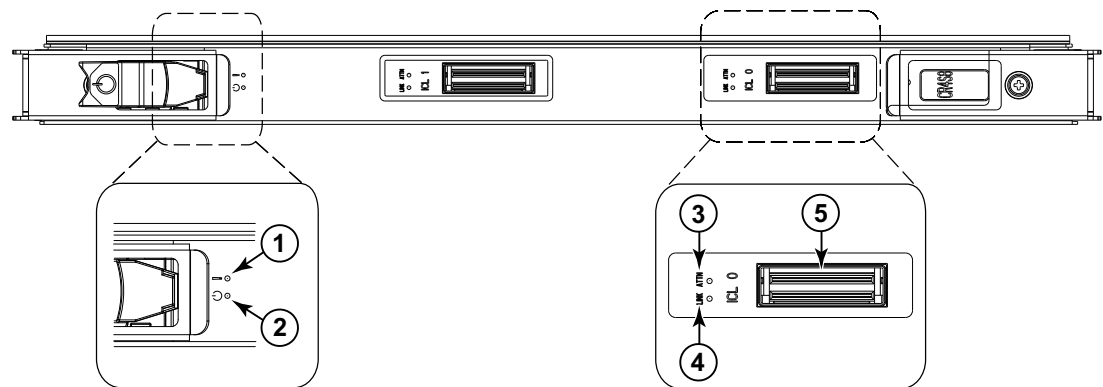
TABLE 5 CP blade LED descriptions (Continued)

LED purpose	Color	Status	Recommended action
Ethernet Link Speed	No light (LED is off)	Ethernet link speed is 10 Mbps or CP blade does not have incoming power.	Ensure that the CP has power. NOTE: To force a persistent Ethernet link speed, enter the ifModeSet command.
	Steady green	Ethernet link speed is 100/1000 Mbps.	No action required.
USB Status	Lamp on	USB stick enabled.	No action required.
	Lamp off	USB stick not present or disabled.	No action required.
Active CP	Steady blue	Active CP blade.	No action required.
	No light (LED is off)	Standby CP blade.	No action required.

Determining status of a core switch blade (CR4S-8)

1. Check the LED indicators on the core switch blade (Figure 15). The LED patterns may temporarily change during POST and other diagnostic tests; for information about how to interpret the LED patterns, see Table 6.
2. Check the core switch blade status by entering **slotShow** and **haShow**.

Figure 15 identifies the core switch blade.





- | | |
|--------------|-----------------|
| 1 Status LED | 4 ATTN LED |
| 2 Power LED | 5 ICL connector |
| 3 LINK LED | |

FIGURE 15 Core switch blade (CR4S-8)

Table 6 describes the core switch blade LED patterns and the recommended actions for those patterns.

TABLE 6 CR4S-8 blade LED descriptions

LED purpose	Color	Status	Recommended action
Power 	Steady green	CR4S-8 blade is on.	No action required.
	No light (LED is off)	CR4S-8 blade is not on.	Ensure that the blade is firmly seated and has power.
Status 	No light (LED is off)	CR4S-8 blade is either healthy or does not have power.	Verify that the power LED is on.
	Steady amber	CR4S-8 blade is faulty or the switch is still booting.	Ensure that the blade is firmly seated and the switch has completed booting. If the LED remains yellow, consult the PowerConnect B-DCX-4S supplier.
	Slow-flashing amber (on 2 seconds; then off 2 seconds)	CR4S-8 blade is not seated correctly or is faulty.	Pull the blade out and reseat it. If the LED continues to flash, replace the blade.
	Fast-flashing amber (on 1/2 second; then off 1/2 second)	Environmental range exceeded.	Check for out-of-bounds environmental condition and correct it.
LINK LED	No light (LED is off)	No ICL, or ICL cable present but no connection.	Ensure that the ICL cable is correctly installed.
	Steady green	ICL connected.	No action required.
ATTN LED	No light (LED is off)	ICL operational.	No action required.
	Blinking amber	Attention required.	Ensure that the ICL cable is correctly installed.

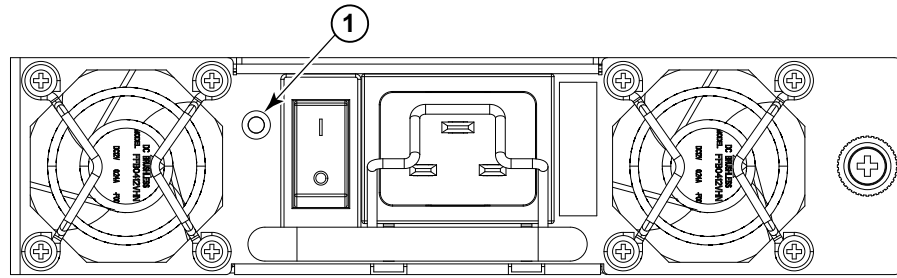
Determining the status of a power supply

1. Check the LED indicator on the power supply ([Figure 16](#)). The LED patterns may temporarily change during POST and other diagnostic tests; for information about how to interpret the LED patterns, see [Table 7](#).
2. Check the power supply status by entering **psShow**.

The power supply status displays **OK**, **Absent**, or **Faulty**. If a power supply is absent or faulty, contact the PowerConnect B-DCX-4S supplier to order replacement parts.

[Figure 16](#) displays the power supply.

4 Determining the status of a blower assembly




1 Power LED

FIGURE 16 Power supply

[Table 7](#) describes the power supply LED patterns and the recommended actions for those patterns.

TABLE 7 Power supply LED descriptions

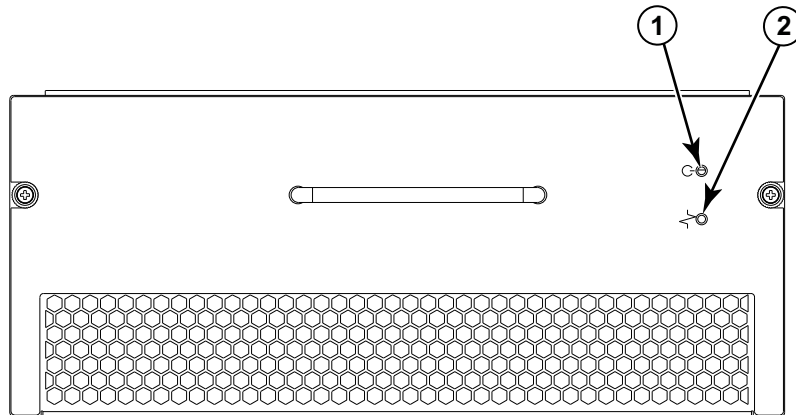
LED purpose	Color	Status	Recommended action
Power 	No light (LED is off)	Power supply does not have incoming power and is not providing power to the PowerConnect B-DCX-4S.	Ensure that the power supply is firmly seated, the PowerConnect B-DCX-4S has incoming power, both power cables are connected, and AC power switches are on.
	Steady green	Power supply has incoming power and is providing power to the PowerConnect B-DCX-4S.	No action required.
	Flashing green	Power supply is about to fail.	Replace the power supply.

Determining the status of a blower assembly

1. Check the LED indicators on the blower assembly ([Figure 17](#)). The LED patterns may temporarily change during POST and other diagnostic tests; for information about how to interpret the LED patterns, see [Table 8](#).
2. Check the blower assembly status using the **fanShow** command.

The status for each blower assembly displays **OK**, **Absent**, or **Faulty**. The RPM of each fan in the assembly is also provided. If a blower assembly is absent or faulty, contact the PowerConnect B-DCX-4S supplier to order replacement parts.

[Figure 17](#) displays the blower assembly.





1 Power LED

2 Fault LED

FIGURE 17 Blower assembly

TABLE 8 Blower assembly LED descriptions

LED purpose	Color	Status	Recommended action
Power 	No light (LED is off)	Blower assembly does not have power.	Ensure that the blower assembly is firmly seated and has power.
	Steady green	Blower assembly has power.	No action required.
Fault 	No light (LED is off)	Blower assembly is either healthy or does not have power.	Ensure that the blower assembly has power.
	Steady amber	Blower assembly has a failure (full or partial).	Replace the blower assembly.
	Slow-flashing amber (on 2 sec, then off 2 sec)	Blower assembly is not seated correctly or is faulty.	Pull the unit out and reseal it. If the LED continues to flash, replace the unit.
	Flashing amber (on 1/2 sec, then off 3.5 sec)	Fan is disabled.	Run the fanEnable command to enable the fan.
	Fast-flashing amber (on 1/2 sec, then off 1/2 sec)	Environmental range exceeded.	Check for out-of-bounds environmental condition, resolve any problems, and reseal the unit. If the LED continues to flash, replace the unit.

Determining the status of a WWN card

NOTE

The WWN bezel (logo plate) covers the WWN cards. The LEDs on the WWN cards are not visible unless the bezel is removed.

4 Determining the status of a WWN card

1. Enter the **chassisShow** command to display information about the WWN card. (WWN units correspond to information specific to the WWN card.) Error messages that may indicate problems with a WWN card are summarized in [Table 9](#).

TABLE 9 Messages that may indicate WWN card failure

Type of message	Sample error message
WWN unit fails its FRU header access.	0x24c (fabos): Switch: switchname, error EM-I2C_TIMEOUT, 2, WWN 1 I2C timed out: state 0x4
WWN unit is being faulted.	0x24c (fabos): Switch: switchname, Critical EM-WWN_UNKNOWN, 1, Unknown WWN #2 is being faulted
WWN unit is not present or is not accessible.	0x24c (fabos): Switch: switchname, Error EM-WWN_ABSENT, 2, WWN #1 not present
Writing to the FRU history log (hilSetFruHistory) has failed.	0x24c (fabos): Switch: switchname, Error EM-HIL_FAIL, 2, HIL Error: hilSetFruHistory failed, rc=-3 for SLOT 3

[Figure 18](#) displays the WWN bezel (logo plate).

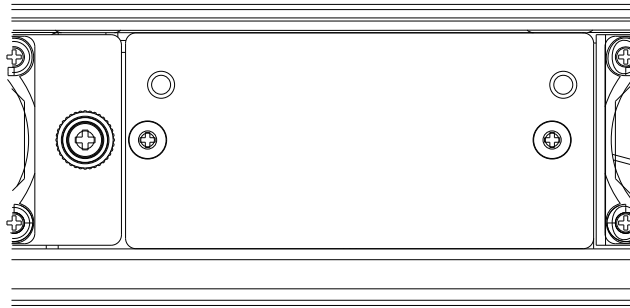


FIGURE 18 WWN bezel (logo plate)

Removal and Replacement Procedures (RRPs)

In this chapter

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Introduction

NOTE

Read the safety notices before servicing (“[Safety notices](#)”).

The field replaceable units (FRUs) in the PowerConnect B-DCX-4S can be removed and replaced without special tools. The PowerConnect B-DCX-4S can continue operating during many of the FRU replacements if the conditions specified in the procedure are followed.

The following sections contain FRU removal and replacement procedures (RRPs).

RRP: Chassis door

NOTE

The chassis door must be installed to ensure the PowerConnect B-DCX-4S meets EMI and other regulatory certifications. Additionally, if ICL cables are not used, EMI plugs must be inserted in the ICL cable ports to meet certification standards.

Time and items required

The replacement procedure for the chassis door takes less than five minutes.

Removing a chassis door

Support the door to prevent it from falling. Pull and remove the door.

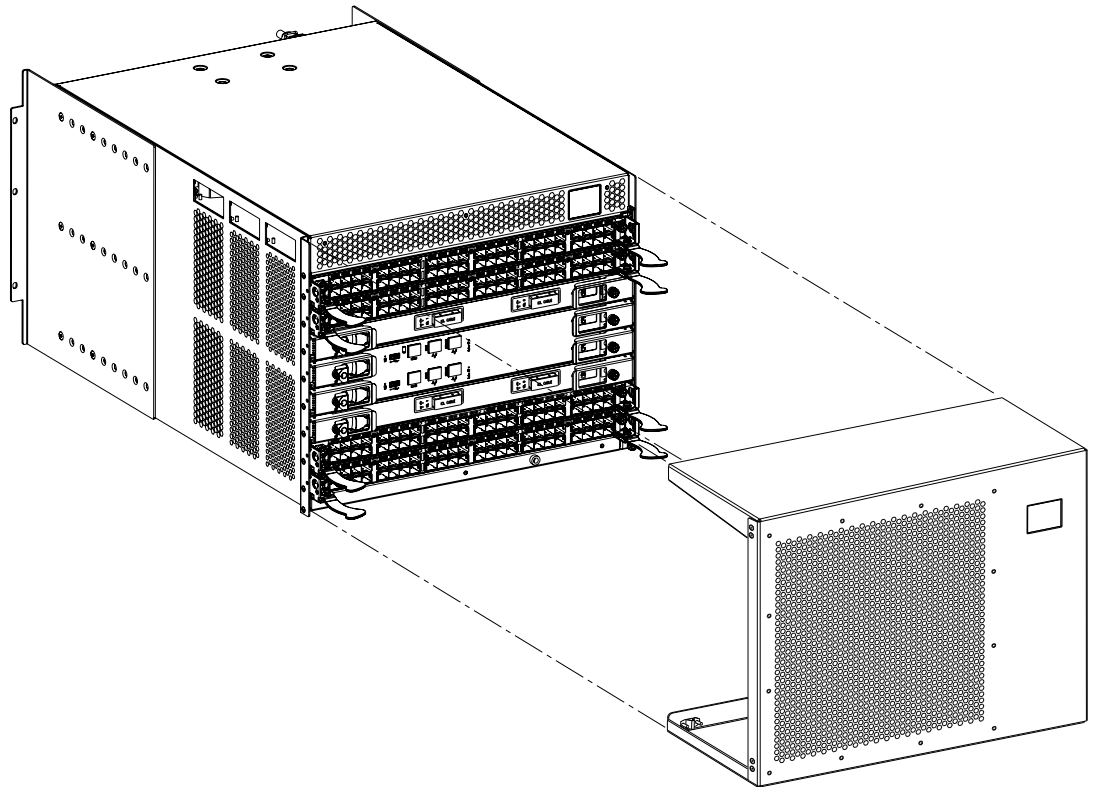


FIGURE 19 RRP: Chassis door

Replacing a chassis door

1. Align the holes in the door with the pins in the chassis.
2. Push the door into place.

RRP: Vertical cable management fingers

The PowerConnect B-DCX-4S comes equipped with two vertical cable management finger assemblies. It can continue to operate during the replacement of the cable management fingers. Due to the horizontal orientation of the blades in the DCX-4S, the finger assemblies are attached to the uprights of the mounting rack.

Time and items required

The replacement procedure for the cable management fingers takes less than five minutes. A #1 Phillips screwdriver is required.

Removing a cable management finger assembly

1. Rearrange the cables around one of the cable management finger assemblies.
2. Unscrew and save the three (3) screws holding the finger assembly to the rack upright (Figure 20). Support the assembly to prevent it from falling.
3. Remove the cable management finger assembly.
4. If necessary, repeat steps 1-3 for the other finger assembly.

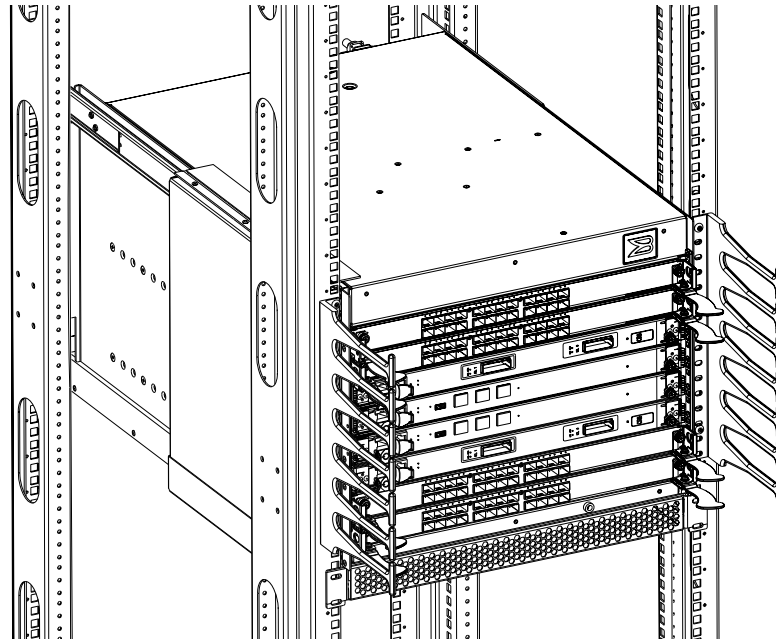


FIGURE 20 RRP: Vertical cable management finger assemblies

Replacing a cable management finger assembly

1. Position and tighten the three (3) screws to secure the vertical cable management finger assembly to the rack upright.
2. Arrange the cables along the cable management finger assembly.
3. If necessary, repeat steps 1-2 for the other cable management assembly.

RRP: Port, application, and encryption blades

This section describes how to remove and replace port, application, and encryption blades.

ATTENTION

A blade should be removed only when being replaced with another port, application, or encryption blade, or a filler panel (“[RRP: Blade filler panel](#)”). Any slot that is not occupied by a blade should be occupied by a filler panel to ensure correct cooling of the chassis and protection from dust.

Slots are numbered from 1 through 8, from bottom to top when facing the port side of the PowerConnect B-DCX-4S. Port, application, and encryption blades can be installed in slots 1-2 and 7-8.

Time and items required

The replacement procedure for each blade takes less than 10 minutes. The following items are required for the blade and filler panel replacement:

- ESD (electrostatic discharge) grounding strap
- Workstation computer
- Replacement blade or filler panel
- Phillips screwdriver
- Small form-factor pluggable (SFP) or extended form-factor pluggable (XFP, FC10-6 blade only) transceivers (as needed)
- Optical cables (as needed)

Removing a blade

ATTENTION

Follow ESD precautions (“[ESD precautions](#)”).

NOTE

The FC8-16, FC8-32, FC8-48, FC10-6, FR4-18i, and FA4-18 blades are compatible with the PowerConnect B-DCX, PowerConnect B-DCX-4S, and the PowerConnect B-48000. The FS8-18 encryption blade and the FX8-24 and FCOE10-24 blades are compatible only with the PowerConnect B-DCX and DCX-4S.

1. Remove the chassis door (“[RRP: Chassis door](#)”).
2. Check the power LED, status LED, and port status LED to identify any possible problems. A failed port or application blade can be identified by inspecting the LEDs on the front panel of each blade. See [Figure 5](#) to [Figure 13](#) for LED locations.
3. Establish a Telnet or console session.

Before replacing a blade, establish a Telnet or console connection to determine a failure and verify operation after replacement. Use the **switchShow** command to view the status of blades.
4. Check for adequate cable slack. Ensure there is plenty of cable slack to remove a blade without cable obstruction.

5. Ensure that the part number on the unit being replaced matches the replacement part number. The **chassisShow** command displays information about the blades, including part numbers (xx-xxxxxx-xx), serial numbers, and additional status.
6. Ensure that traffic is not flowing through the blade (port status LED should be off) prior to disconnecting cables.

NOTE

Before removing any cables from a blade, note the cable order (identify each cable by its physical port). If multiple blades are being replaced, replace one blade at a time.

7. Ensure that traffic is not flowing through the blade.
8. Disconnect all cables and SFP or XFP transceivers from the blade.
9. *Perform the appropriate following action based on the type of blade:*
 - **For FC8-16, FC8-32, FC8-48 port blades, FX8-24, FCOE10-24 application blades, and FS8-18 encryption blade:** Unscrew the two thumb screws from the left and right ejectors on the blade using the Phillips screwdriver. Unscrew the left thumb screw until it pops out. This initiates a hot-swap request. Adjust the ejectors to the open position ([Figure 21](#)).
 - **For FC10-6 port blade, and FA4-18, and FR4-18i application blades:** Turn the blade off by sliding the slider switch in the left ejector to the right, to the off position. This initiates a hot-swap request.
10. Wait for the power LED to turn off in response to the hot-swap request before removing the blade.
11. *Perform the appropriate following action based on the type of blade:*
 - **For FC8-16, FC8-32, and FC8-48 port blades, FX8-24, FCOE10-24 application blades, and FS8-18 encryption blade:** Open the ejectors. Pull the blade out of the chassis using the ejectors ([Figure 21](#)).
 - **For FC10-6 port blade, and FA4-18, and FR4-18i application blades:** Unscrew the two thumb screws from the left and right ejectors on the blade using the Phillips screwdriver. Lever both ejectors open simultaneously to approximately 45 degrees and pull the blade out of the chassis.
12. If the blade is not being replaced by another blade, install a filler panel ("[RRP: Blade filler panel](#)").

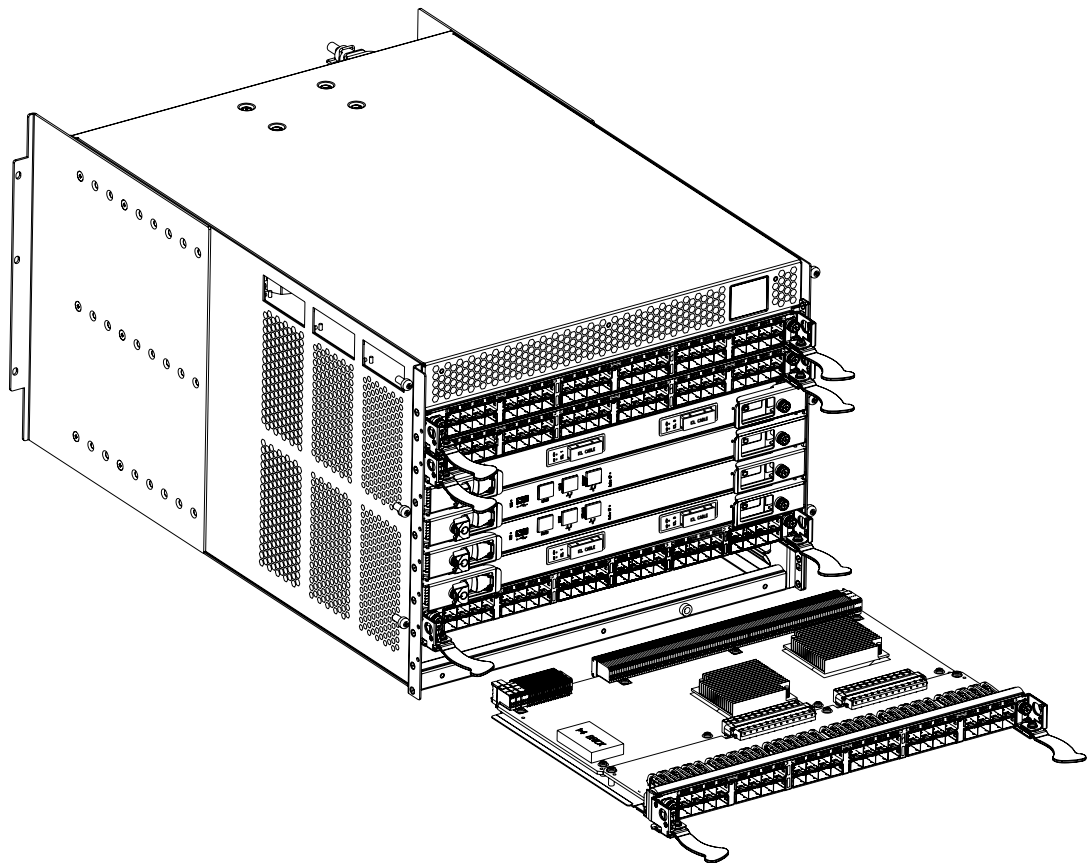


FIGURE 21 RRP: Port, application, or encryption blade (FC8-48 port blade shown)

Replacing a blade

ATTENTION

Follow ESD precautions (“[ESD precautions](#)”).

NOTE

An FA4-18i application blade and the PowerConnect B-DCX-4S must have the same version of firmware. To upgrade firmware versions, refer to the *Fabric OS Administrator’s Guide*.

1. Orient the blade so that the ports are at the front of the chassis and the flat side of the blade is on the bottom.
2. Perform the appropriate following action based on the type of blade:
 - **For FC8-16, FC8-32, FC8-48 port blades, FX8-24, FCOE10-24 application blades, and FS8-18 encryption blade:** Adjust the ejectors to the open position, align the flat side of the blade inside the left and right rail guides in the slot, and slide the blade into the slot until it is firmly seated.
 - **For FC10-6 port blade, and FA4-18, and FR4-18i application blades:** Open the ejectors to approximately 45 degrees, align the flat side of the port blade inside the left and right rail guides in the slot, and slide the blade into the slot until it is firmly seated.

3. Perform the appropriate following action based on the type of blade:
 - **For FC8-16, FC8-32, FC8-48 port blades, FX8-24, FCOE10-24 application blades, and FS8-18 encryption blade:** Adjust the ejectors to the closed position by pulling them away from the center of the blade.
 - **For FC10-6 port blade, and FA4-18, and FR4-18i application blades:** Close the ejectors by pushing the handles toward the center of the blade until the ejectors lock. The levering action of the handles seats the blade in the slot.
4. Perform the appropriate following action based on the type of blade:
 - **For FC8-16, FC8-32, FC8-48 port blades, FX8-24, FCOE10-24 application blades, and FS8-18 encryption blade:** Tighten the left and right thumb screws using the Phillips screwdriver.
 - **For FC10-6 port blade, and FA4-18, and FR4-18i application blades:** Tighten the thumb screw inside each handle using the Phillips screwdriver.
5. Perform the appropriate following action based on the type of blade:
 - **For FC8-16, FC8-32, FC8-48 port blades, FX8-24, FCOE10-24 application blades, and FS8-18 encryption blade:** Skip to step 6.
 - **For FC10-6 port blade, and FA4-18, and FR4-18i application blades:** Turn the blade on by sliding the slider switch in the left ejector to the left, covering the thumb screw.
6. Verify that the power LED on the port blade is displaying a steady green light. If it does not turn on, ensure that the blade is firmly seated.
7. Install the SFP or XFP (FC10-6 only) transceivers and cables in the port blade.
8. Group and route the cables through the vertical cable fingers.
9. Replace the chassis door ("[RRP: Chassis door](#)").

RRP: Blade filler panel

This section describes how to remove and replace blade filler panels.

Removing a filler panel

ATTENTION

A filler panel should be removed only when being replaced with a port, application, or encryption blade, or new filler panel. Any slot that is not occupied by a blade should be occupied by a filler panel to ensure correct cooling of the chassis and protection from dust.

1. Remove the chassis door ("[RRP: Chassis door](#)").
2. Unscrew the thumb screw at the right of the panel using the Phillips screwdriver.
3. Pull the filler panel out of the chassis ([Figure 22](#)).

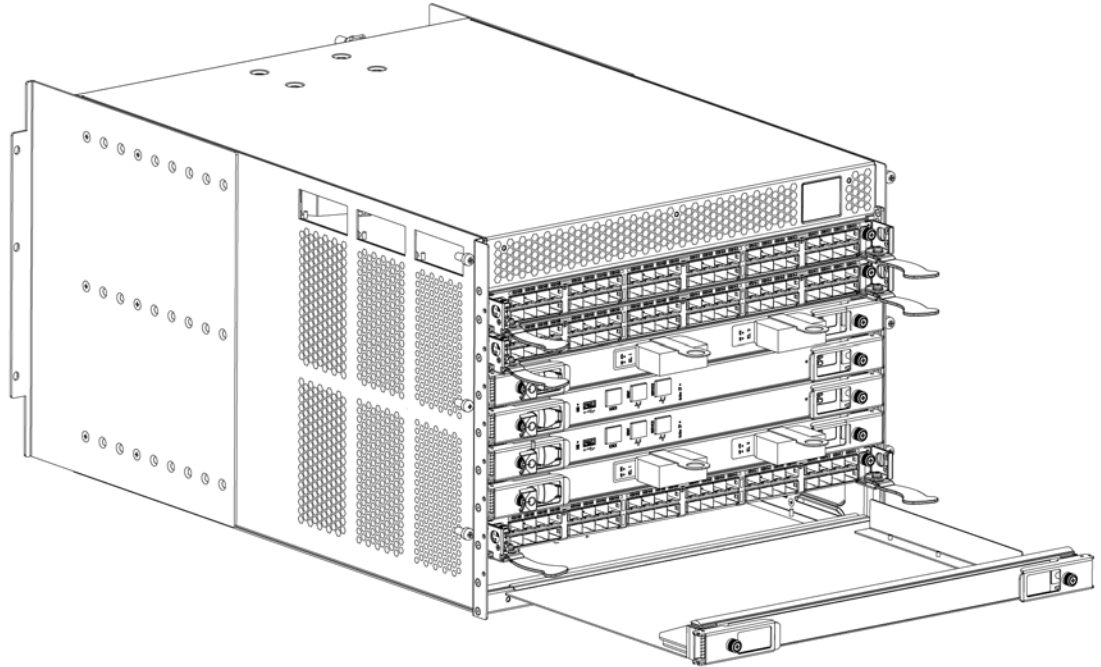


FIGURE 22 RRP: Blade filler panel

Replacing a filler panel

1. Orient the filler panel (Figure 22).
2. Slide the filler panel into the slot until it is firmly seated.
3. Tighten the thumb screw at the right of the panel.
4. Replace the chassis door (“RRP: Chassis door”).

RRP: Control processor blade (CP8)

This section describes how to remove and replace a control processor (CP8) blade. Each PowerConnect B-DCX-4S has two CP8 blades located in slot 4 and slot 5.

NOTE

If the new CP blade does not have the same firmware as the active CP blade, the new blade must be upgraded to the same firmware version. Refer to the *Fabric OS Administrator's Guide* for information.

Time and items required

The replacement procedure for the CP blade takes approximately 30 minutes. The following items are required for the CP blade replacement:

- ESD (electrostatic discharge) grounding strap
- Workstation computer
- Serial cable
- IP address of an FTP server for backing up the PowerConnect B-DCX-4S configuration
- Phillips #2 screwdriver
- Replacement CP blade. Requires the PowerConnect B-DCX-4S CP blade (CP8)

Verifying the necessity of replacement

Confirm that you need to replace the CP blade. The following events might indicate that a CP blade is faulty:

- The status LED on the CP blade is lit amber, or the power LED is not lit.
- The CP blade does not respond to Fabric OS commands, or the serial console is not available.
- The **slotShow** command does not show that the CP blade is enabled.
- The **haShow** command indicates an error.
- The clock is inaccurate, or the CP blade does not boot up or shut down normally.
- Any of the following messages display in the error log:
 - “Slot unknown” message relating to a CP slot
 - CP blade errors or I²C timeouts
 - FRU: FRU_FAULTY messages for a CP blade
 - Configuration loader messages or “Sys PCI config” messages
 - Generic system driver messages (“FABSYS”)
 - Platform system driver messages (“Platform”)
 - EM messages that indicate a problem with a CP blade
 - Function fail messages for the CP master

For more information about error messages, refer to the *Fabric OS Message Reference*.

Recording critical PowerConnect B-DCX-4S information

Back up the PowerConnect B-DCX-4S configuration before you replace a CP blade. Refer to the *Fabric OS Administrator’s Guide* for backup information.

1. Connect to the PowerConnect B-DCX-4S and log in as **admin**, using either a Telnet or a serial console connection.
2. Enter **haShow** to determine which CP blade is active:


```
switch:admin> haShow
Local CP (Slot 5, CP1) : Active
Remote CP (Slot 4, CP0) : Standby, Healthy
HA Enabled, Heartbeat Up, HA State Synchronized
```
3. Enter all remaining commands from the serial console for the *active* CP blade, unless otherwise indicated. For more information about commands, refer to the *Fabric OS Command Reference*.

4. If the functioning CP blade is performing as the active CP blade, go to [step 5](#). If the faulty CP blade is performing as the active CP blade, fail over the blades:
 - a. Log in to the faulty CP blade as **admin**, using either a Telnet or a serial console connection.

If you connect successfully to the faulty CP, continue to step b.

If you cannot connect to the faulty CP, remove the faulty CP blade for repair as follows:

 - Turn the CP blade off and notify the PowerConnect B-DCX-4S of a hot swap request by sliding the slider switch in the left ejector to the off position ([Figure 23](#)).
 - Wait until the active CP LED on the functioning CP blade is lit. Remove the CP blade.
 - b. Enter **haFailover**. The functioning CP blade becomes the active CP blade.
 - c. Wait until the status LED on the functioning CP blade is no longer lit.
 - d. Enter **haShow** from the functioning CP blade (the new active CP blade) to verify the failover.

This is an example of failing over a CP blade:

```
Fabric OS (cp1)

cp1 login: admin
Password:
switch:admin> hashow
Local CP (Slot 5, CP1): Active
Remote CP (Slot 4, CP0): Standby, Healthy
HA enabled, Heartbeat Up, HA State synchronized
switch:admin> hafailover
Local CP (Slot 5, CP1): Active
Remote CP (Slot 4, CP0): Standby, Healthy
HA enabled, Heartbeat Up, HA State synchronized

Warning: This command is being run on a redundant control
processor(CP) system. If the above status does not indicate
'HA State synchronized', then the CPs are not synchronized
and this operation will cause the active CP to reset. This
will cause disruption to devices attached to both switch 0
and switch 1 and will require that existing Telnet sessions
be restarted. To reboot a single logical switch on this
system, use the switchreboot command while logged in to
that logical switch.

Are you sure you want to fail over to the standby CP [y/n]?
switch:admin> hashow
Local CP (Slot 5, CP1) : Standby, Healthy
Remote CP (Slot 4, CP0) : Active
HA Enabled, Heartbeat Up, HA State Synchronized
```

5. Enter **firmwareShow** to note the firmware version of the active CP blade.
6. Enter **haDisable** from the active CP blade to prevent failover or communication between the CP blades during the replacement.
7. Logged into the active CP, use the **configUpload** command to upload the PowerConnect B-DCX-4S configuration to a specified FTP server. Enter information at the prompts.

This is a sample of backing up the configuration files:

```
switch:admin> configUpload
Protocol (scp or ftp) [ftp]: ftp
```

```
Server Name or IP Address [host]: 123.456.78.90
User Name [None]: user
File Name [config.txt]: config.txt
Password: xxxxxxxx
upload complete
```

Removing a control processor blade (CP8)

The PowerConnect B-DCX-4S continues to operate while a CP blade is being replaced if the redundant CP blade is active and a failover does not occur. You can prevent failover by entering the **haDisable** command.

ATTENTION

Follow ESD precautions ([“ESD precautions”](#)).

NOTE

The CP8 blade is compatible only with the PowerConnect B-DCX and the PowerConnect B-DCX-4S.

1. Remove the chassis door ([“RRP: Chassis door”](#)).
2. Log in to the active CP as the **admin** user. You can use a serial cable or Telnet, Web Tools, or Fabric Manger. Determine which CP is active using the **haShow** command or view the active LED on the front of the CP.
3. If the faulty CP is the active CP, issue the **haFailover** command. Wait until the failover has completed. Use the **haShow** command to verify the CPs are synchronized and the failover is complete.
4. Power off the blade by sliding the slider switch in the left ejector down to the off position ([Figure 23](#)).
5. Disconnect all cables from the faulty (standby) CP.
6. Unscrew the thumb screw from both ejectors using the Phillips screwdriver.
7. Lever open both ejector handles simultaneously to approximately 45 degrees and pull the CP blade out of the chassis ([Figure 23](#)).

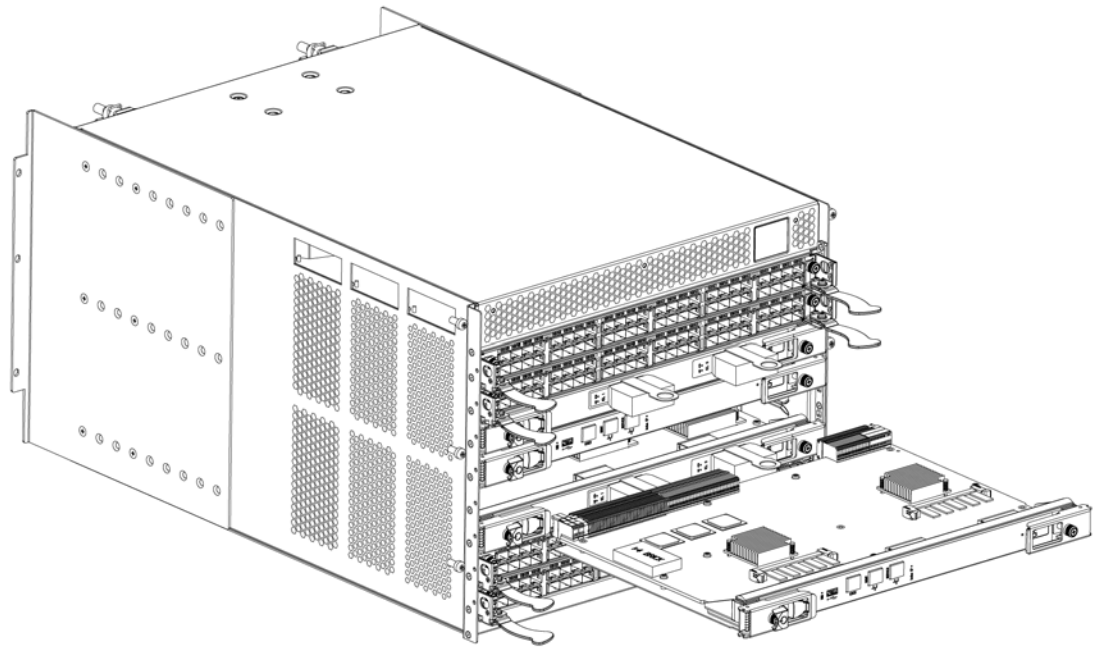


FIGURE 23 RRP: Control processor blade (CP8)

Replacing a control processor blade (CP8)

ATTENTION

Follow ESD precautions ([“ESD precautions”](#)).

1. Open the ejector handles to approximately 45 degrees. Orient the CP blade so that the handles are toward you and the flat metal side is on the bottom.
2. Align the flat metal side of the CP blade inside the left and right blade guides in the slot. Slide the CP blade into the slot until it is firmly seated.
3. Tighten the thumb screw inside each handle using the Phillips screwdriver.
4. Turn the CP blade on by sliding the ON/OFF switch in the left handle to the left, to cover the thumb screw.
5. Verify that the power LED is green. If not, ensure that the CP blade has power and is firmly seated and that the ejectors are in the locked position.
6. Connect the cables to the new CP blade.
7. Remain logged in to the active CP and continue to [“Verifying operation of the new CP blade.”](#)

Verifying operation of the new CP blade

To verify that boot and POST are complete on the new CP blade and that the CP blade has achieved failover redundancy, perform the following steps.

1. Type **slotShow**. The command output shows the new CP blade as “enabled”:

```
switch:admin> slotShow
```

```

Slot   Blade Type   ID   Status
-----
      1   UNKNOWN           VACANT
      2   SW BLADE    55   ENABLED
      3   CORE BLADE  52   ENABLED
      4   CP BLADE    50   ENABLED
      5   CP BLADE    50   ENABLED
      6   CORE BLADE  52   ENABLED
      7   UNKNOWN           VACANT
      8   SW BLADE    51   ENABLED

```

```
switch:admin>
```

- Determine the version by typing **firmwareShow**.

This example shows sample output for the **firmwareShow** command:

```

switch:admin> firmwareShow
Local CP (Slot 4, CP1): Active
    Primary partition:    v6.2.0
    Secondary Partition:  v6.2.0
Remote CP (Slot 5, CP0): Standby
    Primary partition:    v6.2.0
    Secondary Partition:  v6.2.0

```

Note: If Local CP and Remote CP have different versions of firmware, please retry **firmwaredownload** command.

```
switch:admin>
```

- If the firmware versions for both CP blades are the same, skip to [step 11](#).
- If the firmware version on the replacement blade does not match that on the active CP blade a warning message appears with the results of the **firmwaredownload** command. You must bring the replacement blade to the same firmware level as the active blade using the **firmwareDownload -s** command. Complete the following steps beginning with [step 5](#).
- Log out of the active CP blade and log in to the standby CP blade.
- Type **firmwareDownload -s** to download the firmware to the standby CP blade. The **-s** option also disables the autoreboot, so you will have to manually issue a reboot after the download finishes in order to initiate **firmwarecommit**. Enter all requested information (use default values).

```

switch:admin> firmwaredownload -s
Server Name or IP Address: 192.168.100.1
User Name: user
File Name: /software/v6.2.0/release.plist
Password: *****
Do Auto-Commit after Reboot [Y]:
Reboot system after download [N]:
Firmwaredownload has started.
2008/07/03-14:59:21, [SULB-1001], 923,, WARNING, Brocade DCX-4S, Firmwaredownload
command has started.
Start to install packages.....
dir #####

```

5 RRP: Core switch blade (CR4S-8)

```
ldconfig #####
glibc #####
bash #####
readline #####
terminfo #####
termcap #####
setup #####

<output truncated>

tz #####
mtracer-tool #####
lkcd #####
sysstat #####
Removing unneeded files, please wait ...
Finished removing unneeded files.

All packages have been downloaded successfully.
Firmwaredownload has completed successfully.
2008/07/03-15:05:56, [SULB-1002], 924,, INFO, Brocade DCX-4S, Firmwaredownload
command has completed successfully.
```

7. Type **firmwareDownloadStatus** to verify that the firmware has been updated.
8. Ensure that you are still logged in to the standby CP blade (the blade for which you just changed the firmware level) and type **reboot**. The reboot of the standby CP will initiate a firmwarecommit to the secondary partition and log you out.
9. Log back in to standby CP blade and type **firmwaredDownloadStatus** on the standby CP blade to validate a successful commit. This may take 10 minutes.
10. Log out of the standby CP blade and log in to the active CP blade.
11. Type **haEnable** to re-enable HA on the active CP blade.

NOTE

For FOS 6.3.0 and later, haEnable will cause the standby CP blade to reboot. Wait until the power cycles and the POST completes before moving to the next step.

12. Type **haShow** and verify that the command output includes “HA Enabled Heartbeat Up”. If not, reenter the command until you have verified that redundancy is achieved.
13. Type **version** or **firmwareShow** to verify that the firmware version has been updated.
14. Pack the faulty CP blade in the packaging provided with the new CP blade, and contact the PowerConnect B-DCX-4S supplier to determine the return procedure.
15. Replace the chassis door (“[RRP: Chassis door](#)”).

RRP: Core switch blade (CR4S-8)

This section describes how to remove and replace a core switch blade. The PowerConnect B-DCX-4S has two core switch blades: one in slot 3 and one in slot 6. Note that the blade shown in the removal illustration ([Figure 24](#)) is shown with EMI plugs installed.

Time and items required

The replacement procedure for the core switch blade takes approximately 30 minutes. The following items are required for the core switch blade replacement:

- ESD (electrostatic discharge) grounding strap
- Phillips #2 screwdriver
- Replacement core switch blade (PowerConnect B-DCX-4S requires the CR4S-8 core switch blade)

Verifying the necessity of replacement

Confirm that you need to replace the core switch blade before continuing. The following events might indicate that a core switch blade is faulty:

- The status LED on the core switch blade is lit amber, or the power LED is not lit.
- The **slotShow** command does not show that the core switch blade is enabled.
- The **haShow** command indicates an error.
- Any of the following messages display in the error log:
 - “Slot unknown” message relating to a core switch blade slot.
 - Core switch blade errors or I²C timeouts.
 - FRU: FRU_FAULTY messages for a core switch blade.
 - Configuration loader messages or “Sys PCI config” messages.
 - Generic system driver messages (“FABSYS”).
 - Platform system driver messages (“Platform”).
 - EM messages that indicate a problem with a core switch blade.
 - Function fail messages for the core switch blade master.

For more information about error messages, refer to the *Fabric OS Message Reference*.

Removing a core switch blade (CR4S-8)

The PowerConnect B-DCX-4S continues to operate while a core switch blade is being replaced.

ATTENTION

Follow ESD precautions (“[ESD precautions](#)”).

NOTE

The CR4S-8 blade is compatible only with the PowerConnect B-DCX-4S.

1. Remove the chassis door (“[RRP: Chassis door](#)”).
2. Power off the blade by sliding the slider switch in the left ejector to the right to the off position ([Figure 24](#)).
3. Disconnect all cables from the faulty core switch blade. If ICL cables are not used, remove the EMI plugs from the cable sockets.
4. Unscrew the thumb screw from both ejectors using the Phillips screwdriver.

5. Lever open both ejector handles simultaneously to approximately 45 degrees and pull the core switch blade out of the chassis (Figure 24).

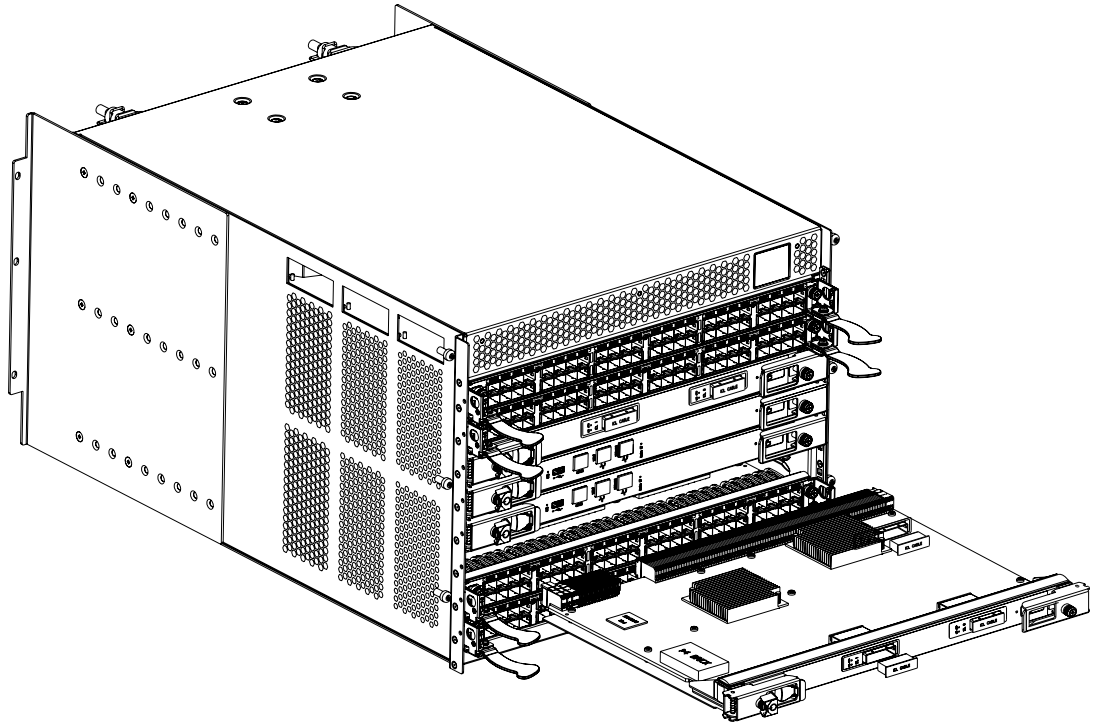


FIGURE 24 RRP: Core switch blade (CR4S-8)

Replacing a core switch blade (CR4S-8)

ATTENTION

Follow ESD precautions (“[ESD precautions](#)”).

1. Open the ejector handles to approximately 45 degrees; then, orient the CR blade so that the handles are toward you and the flat metal side is on the bottom.
2. Align the flat metal side of the core switch blade inside the left and right blade guides in the slot; then, slide the core switch blade into the slot until it is firmly seated.
3. Tighten the thumb screw inside each handle using the Phillips screwdriver.
4. Turn the core switch blade on by sliding the ON/OFF switch in the left handle to the left, to cover the thumb screw.
5. Verify that the power LED is green (might require a few seconds). If not, ensure that the core switch blade has power and is firmly seated and that the ejectors are in the locked position.
6. Connect the cables to the new core switch blade. If ICL cables are not used, insert EMI plugs into the cable sockets.
7. Replace the chassis door (“[RRP: Chassis door](#)”).

8. Pack the faulty core switch blade in the packaging provided with the new core switch blade, and contact the PowerConnect B-DCX-4S supplier to determine the return procedure.

RRP: Power supply

Use this procedure to remove and replace a power supply.

NOTE

The PowerConnect B-DCX-4S can continue operating during the replacement if the second 220 VAC power supply is operating.

DCX-4S power supplies are 100-240 VAC, auto-sensing.

Time and items required

The replacement procedure for each power supply takes less than 5 minutes. A power supply unit or filler panel is required for the power supply replacement.

Identification

Figure 25 shows the location and identification of the power supplies.

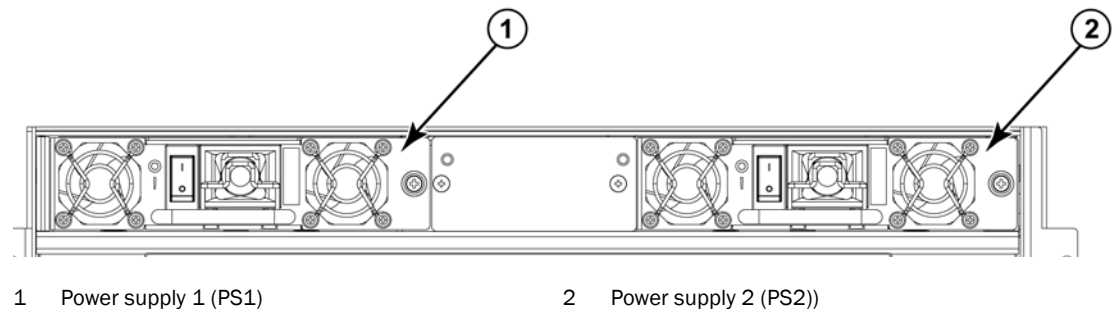


FIGURE 25 Power supply identification

Removing a power supply

1. Perform the appropriate following action based on whether the PowerConnect B-DCX-4S is operating:
 - If the PowerConnect B-DCX-4S is not operating during the replacement procedure, go to step 2.
 - If the PowerConnect B-DCX-4S is operating and will continue to operate during the replacement, check the power LEDs to verify that the minimum number of power supplies is functioning. A fully populated PowerConnect B-DCX-4S requires a minimum of one power supply at all times.
2. Turn off the power switch.
3. Remove the power cord.
4. Loosen the thumb screw (Figure 26).

5 RRP: Blower assembly

5. Grasp the handle and pull, sliding the power supply from the chassis and supporting the power supply from beneath as you remove it.
6. If you are not replacing the power supply, insert a power supply filler panel into the slot.

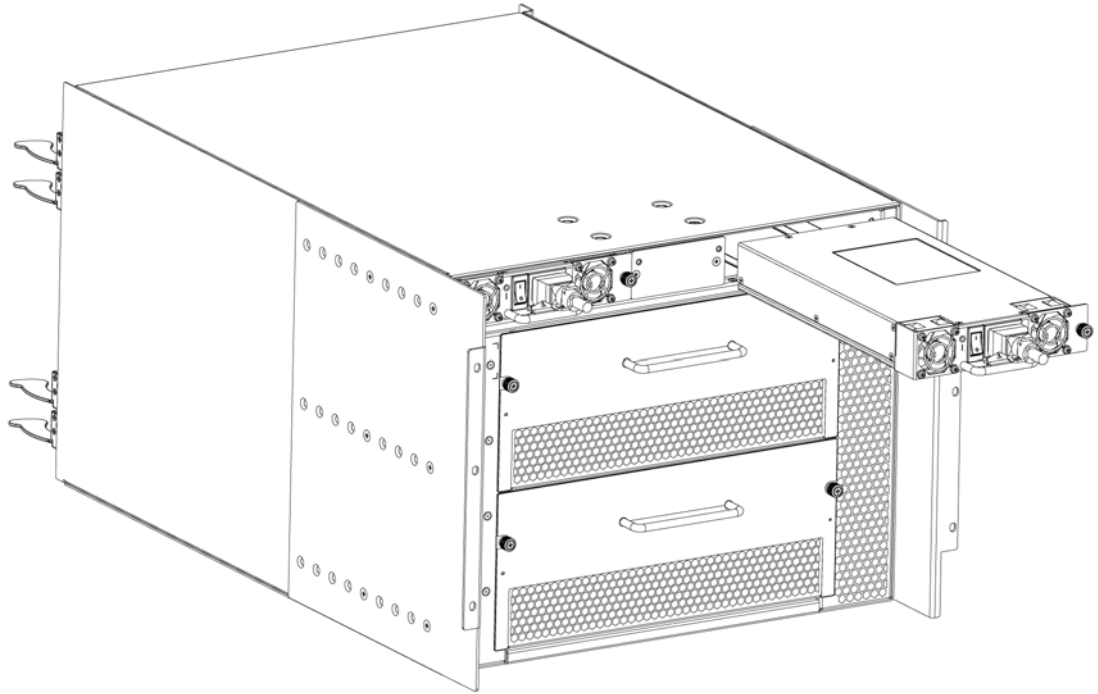


FIGURE 26 RRP: Power supply

Replacing a power supply

1. Remove any filler panel.
2. Insert the power supply into the slot. Verify that the power supply is seated by gently pulling on the handle. The power supply should resist movement as you pull.
3. Tighten the thumb screw.
4. Replace the power cord.
5. Turn on the power switch.
6. Verify that the power LED on the power supply displays a steady green light.

RRP: Blower assembly

This procedure provides instructions for removing and replacing a blower assembly.

ATTENTION

The PowerConnect B-DCX-4S can continue operating during the replacement if the second blower assembly is operating.

Time and items required

The replacement procedure for each blower assembly takes less than 5 minutes. The following items are required for the blower assembly replacement:

- Replacement blower assembly
- Phillips #2 screwdriver

Removing a blower assembly

1. Before removing a blower assembly, verify that the other blower assembly is functioning correctly. The power LEDs should be steady green.
2. Use the screwdriver to loosen the captive screws at the left and right of the blower assembly (Figure 27).
3. Grasp the handle and pull, sliding the blower assembly from the chassis and supporting the blower assembly from beneath as you remove it.

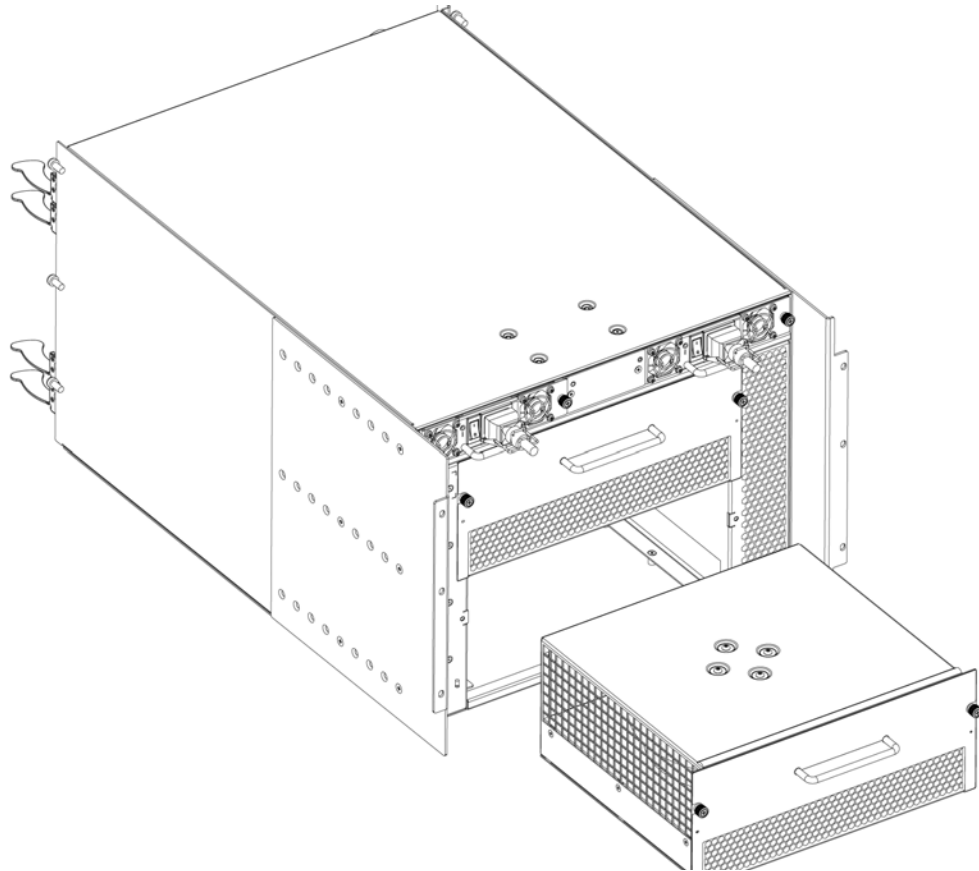


FIGURE 27 RRP: Blower assembly

Replacing a blower assembly

1. Orient the blower assembly and slide it into the chassis, pushing firmly to ensure that it is seated.
2. Verify that the power LED displays a green light.
3. Use the screwdriver or your fingers to tighten the captive screws.

RRP: WWN card

NOTE

The World Wide Name (WWN) cards contain fully redundant circuits and normally do not require replacement. Two WWN cards are located beneath the WWN bezel (logo plate).

Time and items required

Allow approximately 20 minutes to replace a WWN card. The following items are needed to replace a WWN card:

- Electrostatic discharge (ESD) grounding strap
- #2 Phillips screwdriver (required only for some versions of the WWN card)
- If a serial console session is used: serial cable and a workstation computer with a terminal emulator application (such as HyperTerminal for Windows systems or TIP for Solaris systems)

Verifying necessity of replacement

Before replacing a WWN card, verify that the replacement is necessary. Any of the following events can indicate that the card requires replacement:

- Status LED on WWN card (beneath the bezel) indicates a problem
- Problems viewing or modifying the data stored on the WWN card
- Error messages regarding WWN units #1 or #2

NOTE

On the DCX-4S the power and status LEDs for all blades are no longer present on the WWN card.

Determining the status of a WWN card

1. Check the WWN card status using the commands listed in [Table 10](#). Difficulty retrieving or modifying this data could indicate a WWN card failure.

TABLE 10 Commands identifying the WWN card status

Data	Related commands
WWN values	wwn, chassisShow
Data about the chassis and WWN card	chassisShow

TABLE 10 Commands identifying the WWN card status (Continued)

Data	Related commands
Ethernet and Fibre Channel IP address information for the CP blades	ipAddrShow, ipAddrSet
History log information	historyShow, historyLastShow
Name of switch	switchName
Name of chassis	chassisName

2. Enter the **chassisShow** command to display information about the WWN card. WWN units correspond to information specific to the WWN card. An error message is logged that indicates the status of the WWN unit (Table 11).

TABLE 11 WWN card related system log messages

Type of message	System message (errshow or errdump)
WWN unit removal was detected	<timestamp>, [EM-1050], <sequence-number>,, INFO, <system-name>, FRU WWN # removal detected.
WWN unit insertion was detected	<timestamp>, [EM-1049], <sequence-number>,, INFO, <system-name>, FRU WWN # insertion detected.
WWN unit fails to power on	<timestamp>, [EM-1004], <sequence-number>,, CRITICAL, <system-name>, WWN # failed to power on
WWN unit is being faulted	<timestamp>, [EM-1034], <sequence-number>,, ERROR, <system-name>, WWN # set to faulty, rc=<return code>

Removing the WWN bezel (logo plate) and WWN card

ATTENTION

Follow ESD precautions (“ESD precautions”).

1. Open a Telnet session to the PowerConnect B-DCX-4S and log in to the active CP as **admin**. The default password is **password**.
2. Verify that you are logged in to the active CP. Run the **haShow** command to determine the active CP.
3. Remove the two screws from the WWN bezel (Figure 28). Pull the bezel away from the chassis and set it aside. The WWN cards and their status LEDs are visible.
4. Enter **fruReplace wwn** from the active CP blade and wait for the phrase “Do you wish to continue [y/n]?” to display; then enter **y**.
5. Wait until the WWN card data is backed up. Do *not* enter **continue** until the mechanical replacement is complete.

```
switch:admin> frureplace wwn
This is the WWN card hot swap interface.
Continuing from this point will require
the whole process to be completed.
If this process is not complete due to a
power cycle, or CP failover, please follow
the recovery procedure in
Core Switch WWN Card Removal and
Replacement document.
```

5 RRP: WWN card

Do you wish to continue [y/n]? **y**

Backing up WWN card data, please wait about 25 seconds for further instruction.

Please install the new FRU now.

If this session lost for any reason, please re-enter the frureplace command and follow the instructions to complete the operation.

Please enter the word `continue` after the new WWN card has been installed:

6. Wait until all the LEDs on the WWN card turn off.
7. Use a Phillips screwdriver to unscrew the screw that secures the WWN card to the chassis. Use the pull tab to remove the card.
8. Disconnect the WWN cable by depressing the cable connector latch and pulling the connector from the WWN module.
9. Set the WWN card on a static-free surface, such as a grounding pad.

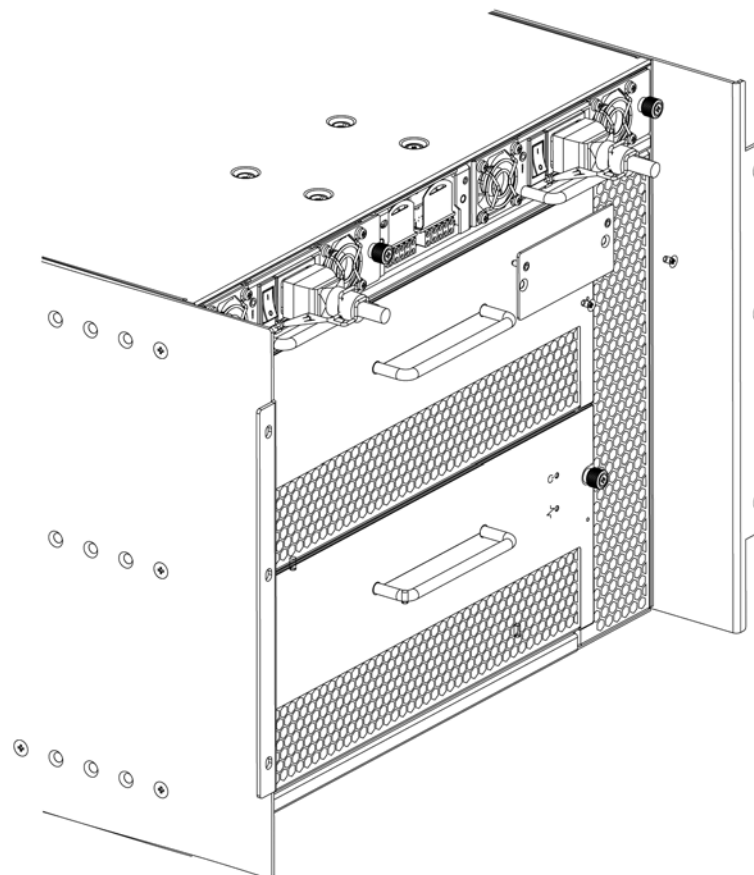


FIGURE 28 RRP: WWN bezel (logo plate) and WWN card

Replacing the WWN bezel (logo plate) and WWN card

ATTENTION

Follow ESD precautions (“[ESD precautions](#)”).

1. Unpack the new WWN card and save the packaging for the faulty WWN card.
2. Hold the card by the pull tab and insert the WWN cable onto the WWN module until it is fully seated. Use the Phillips screwdriver and the two screws to attach the WWN card to the chassis.

NOTE

If a serial console session is active, several “removal detected” and “insertion detected” messages display on the console because of the replacement.

3. In the CLI session, enter **continue** to indicate that the replacement has been completed.

```
Please enter the word `continue' after the new WWN card has been installed:
continue
```

```
Restoring the information to the replacement FRU now, please wait about 20
seconds to complete
```

```
Verifying the replacement FRU now...
```

```
WWN card hot swap is now complete.
```

```
FRU replacement completed successfully!
```

4. Verify that the WWN card is correctly connected by checking the LED on the WWN card.

NOTE

The LED might take up to 2 minutes after WWN card installation to begin functioning.

5. Install the WWN bezel. Orient the bezel on the chassis ([Figure 28](#)). Insert and tighten the two screws.
6. Pack the faulty WWN card in the packaging provided with the new card and return it to the PowerConnect B-DCX-4S supplier.

RRP: SFPs and XFPs

NOTE

The 8-Gbps SFPs autonegotiate at 2, 4, and 8 Gbps. The 4-Gbps SFPs autonegotiate at 1, 2, and 4 Gbps.

To remove an SFP or XFP (FC6-10 blade only) transceiver, pull the bale down and out, sliding the transceiver out of the port or application blade.

To install an SFP or XFP, position one of the transceivers so that the key is oriented correctly to the port. Insert the transceiver into the port until it is firmly seated and the latching mechanism clicks. Transceivers are keyed so that they can only be inserted with the correct orientation. If a transceiver does not slide in easily, ensure that it is correctly oriented.

The PowerConnect B-DCX-4S comes with a transceiver extraction tool ([Figure 29](#)) and holster. The extraction tool is designed to remove transceivers from blades where the space is limited. To use the extraction tool, slide the tool on to the bale of the transceiver and pull it out.

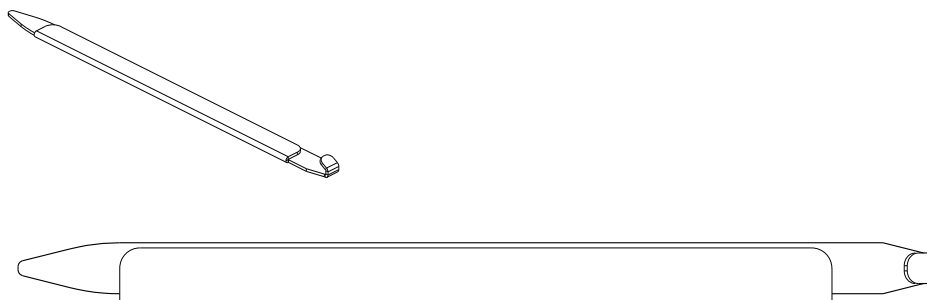


FIGURE 29 Optical transceiver (SFP and XFP) extraction tool

RRP: Inter-chassis link (ICL) cables

NOTE

ICL ports can be used only with an ICL license. After the addition or removal of a license, the license enforcement is performed on the ICL ports only when the **portdisable** and **portenable** commands are issued on the ports. An ICL license must be installed on all Brocade Backbones forming the ICL connection. The backbones can be any combination of up to three PowerConnect B-DCX-4S and PowerConnect B-DCX chassis.

ATTENTION

If ICL cables are not in use, the ports must have EMI plugs installed to meet EMI and other regulatory certifications.

Table 12 describes the ICL connector port LED patterns and the recommended actions for those patterns.

TABLE 12 ICL connector port LEDs

LED purpose	Color	Status	Recommended action
LINK LED	No light (LED is off)	No ICL, or ICL cable present but no connection.	Ensure that the ICL cable is correctly installed.
	Steady green	ICL connected.	No action required.
ATTN LED	No light (LED is off)	ICL operational.	No action required.
	Blinking amber	Attention required.	Ensure that the ICL cable is correctly installed.

Follow this procedure to install the ICL cables. Refer to the *Fabric OS Administrator's Guide* for the configuration procedure and requirements.

Figure 30 shows an ICL cable. The ICL cables (2 meters long) and the ICL connectors (Figure 15) are color-coded and labeled for ease of installation. Four cables are required for a complete installation.

Time Required

The replacement procedure for an ICL cable takes less than five minutes.

Items Required

Replacement ICL cable.

Removing an ICL cable

ATTENTION

To prevent the latch mechanism from wear, use the color-coded (green) latch-release tab for cable removal. Pull the tab to disengage the retention latch before cable removal.

1. Using the latch release tabs, pull each plug on the cable from its respective socket on the core switch blades (CR4S-8). If you are installing cables for the first time, remove the EMI plugs from the sockets.
2. Repeat for each cable that requires replacement.

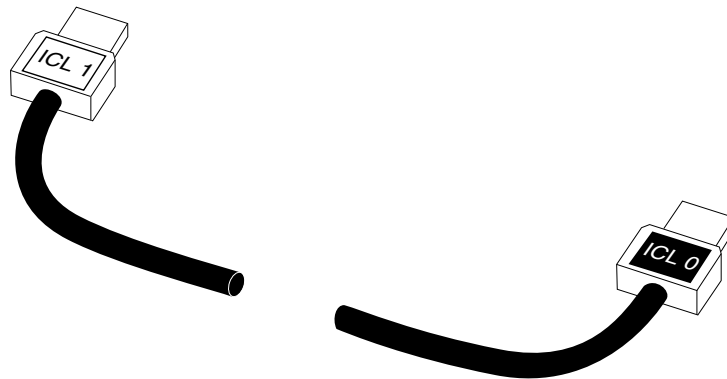


FIGURE 30 ICL cable

Replacing an ICL cable

1. Align the color-coded and labeled (ICL 1 and ICL 0) plugs on either end of the ICL cable with their respective connectors on the core switch blades (CR4S-8).
2. Push each plug in until the latch mechanism clicks into place.
3. Repeat steps 1 and 2 for each cable that requires replacement.

If you are installing ICL cables for the first time, pay particular attention to the configuration in which the cables must be installed.

ATTENTION

Since the blades in the DCX-4S are installed horizontally, the familiar top-to-bottom orientation becomes a left-to-right orientation.

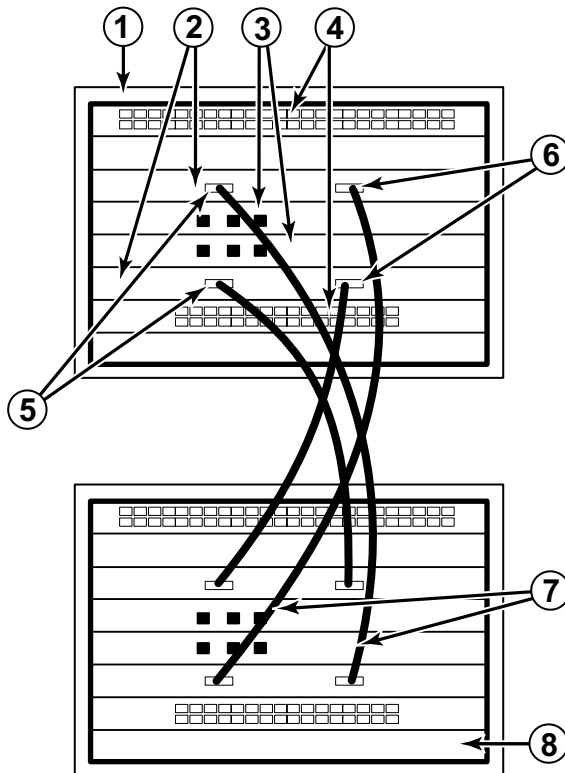
Connect the cables from the left (top) connectors (ICL 1) of the CR4S-8 blades in the first chassis to the right (bottom) connectors (ICL 0) of the CR4S-8 blades in the second chassis. Similarly, connect the cables from the right (bottom) connectors (ICL 0) of the CR4S-8 blades in the first chassis to the left (top) connectors (ICL 1) of the CR4S-8 blades in the second chassis. [Figure 31](#) and [Figure 32](#) show two of the acceptable cabling configurations for the ICL feature between two DCX-4S chassis and between a DCX-4S and a DCX. The drawings show the cables attached between the blades in slot 3 on one chassis and slot 6 on the second chassis. It is

5 RRP: Inter-chassis link (ICL) cables

also acceptable to attach the cables from slot 3 on one chassis to slot 3 on the second chassis (or slot 6 to slot 6) as long as the left-to-right (top-to-bottom) rule is followed.

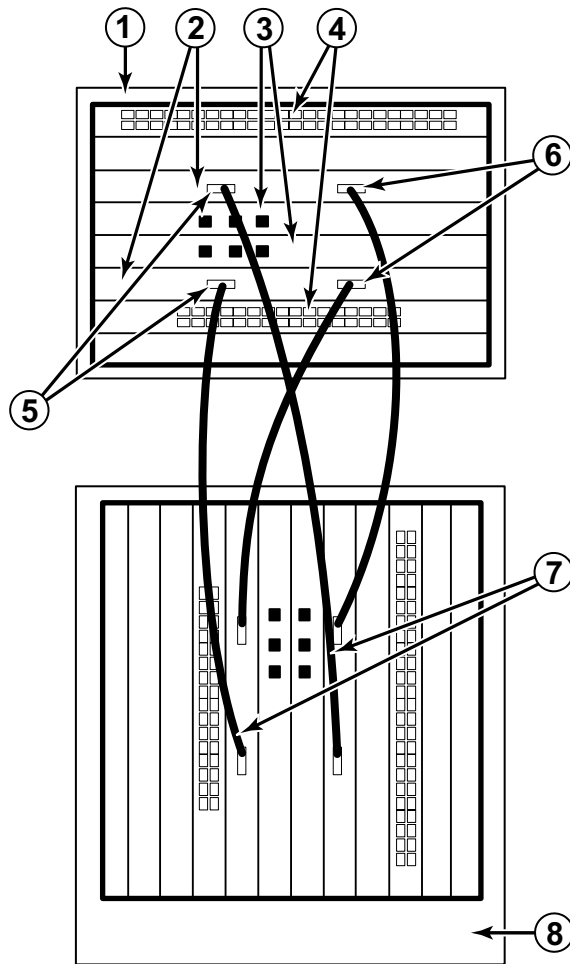
Figure 33 and Figure 34 show the arrangement of cables in a 3-way configuration of backbone chassis. Note the relationship of the horizontal DCX-4S layout to the vertical layout of the DCX.

- Once all the cables are attached, see the *Fabric OS Administrator's Guide* for the configuration procedure.



- | | | | |
|---|--------------------------------|---|-----------------------|
| 1 | Chassis 1 | 5 | ICL connector (ICL 1) |
| 2 | Core switch blades (CR4S-8) | 6 | ICL connector (ICL 0) |
| 3 | Control processor blades (CP8) | 7 | ICL cables |
| 4 | Port blades | 8 | Chassis 2 |

FIGURE 31 ICL cable connections – between two DCX-4S chassis



- | | | | |
|---|--------------------------------|---|-----------------------|
| 1 | Chassis 1 (DCX-4S) | 5 | ICL connector (ICL 1) |
| 2 | Core switch blades (CR4S-8) | 6 | ICL connector (ICL 0) |
| 3 | Control processor blades (CP8) | 7 | ICL cables |
| 4 | Port blades | 8 | Chassis 2 (DCX) |

FIGURE 32 ICL cable connections between a DCX-4S and a DCX

5 RRP: Inter-chassis link (ICL) cables

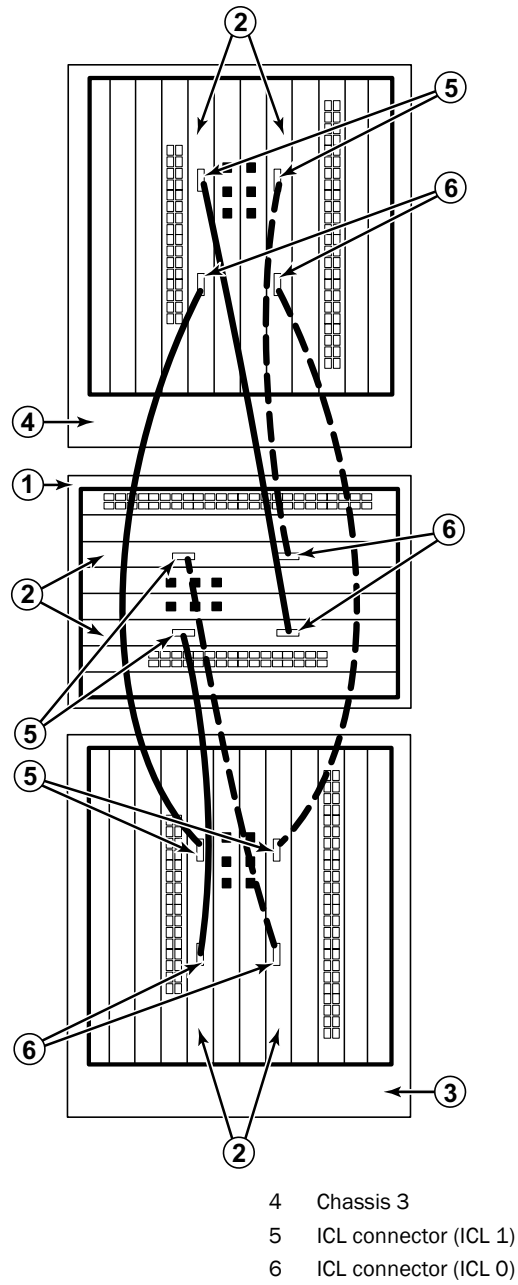
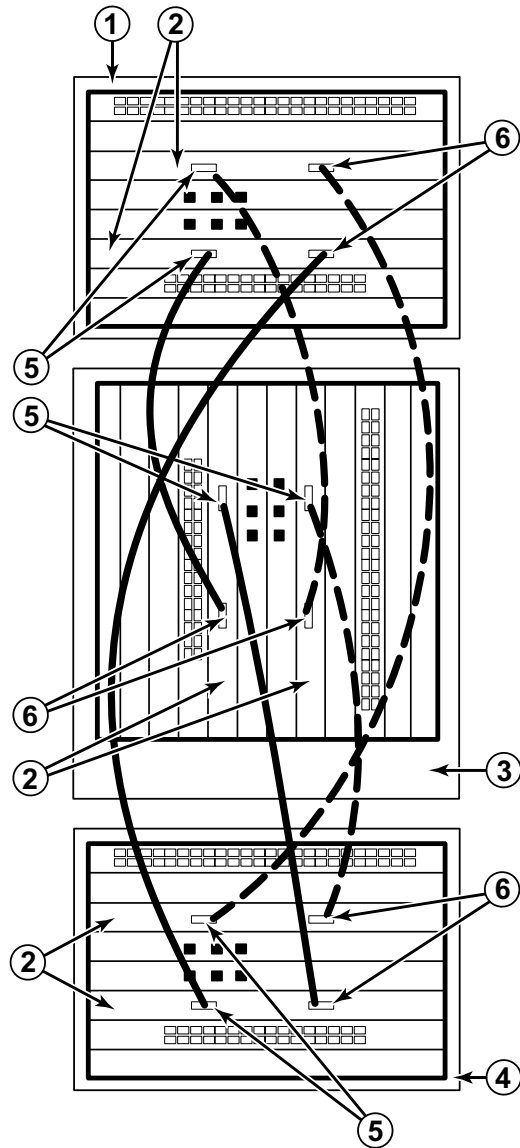


FIGURE 33 3-way ICL cable connections



- | | |
|----------------------|-------------------------|
| 1 Chassis 1 | 4 Chassis 3 |
| 2 Core switch blades | 5 ICL connector (ICL 1) |
| 3 Chassis 2 | 6 ICL connector (ICL 0) |

FIGURE 34 3-way ICL cable connections

The same general configuration applies regardless of which backbone chassis are used. To keep all three chassis in the same rack, any combination of DCX and DCX-4S backbones can be used *except* three DCX chassis.

NOTE

For clarity, the two “sets” of cables are drawn differently in [Figure 33](#) and [Figure 34](#). Also note that one set is connected to only the blades in the “low order” slots (slot 3 in the DCX-4S and slot 5 in the DCX) and the other set is connected to the blades in the “high order” slots (slot 5 in the DCX-4S and slot 8 in the DCX). Keeping the sets apart in this manner minimizes the cable confusion.

RRP: PowerConnect B-DCX-4S chassis

This section describes how to remove and replace the PowerConnect B-DCX-4S chassis (with its backplane). The basic steps are:

1. [Verifying need for replacement](#)
2. [Recording critical PowerConnect B-DCX-4S and SAN information](#)
3. [Disconnecting from the network and fabric](#)
4. [Removing components from the chassis](#)
5. [Installing the replacement chassis](#)
6. [Installing components into the new chassis](#)
7. [Verifying correct operation of system](#)
8. [Reconnecting the system to the network and fabric](#)
9. [Verifying correct configuration of the fabric](#)

NOTE

The PowerConnect B-DCX-4S must be removed from the fabric and powered off to perform this procedure. Contact your support provider if you have any questions about whether the chassis requires replacement.

Time required

The chassis replacement takes approximately 3 hours.

Items required

The following items are required for the chassis replacement:

- Electrostatic discharge (ESD) grounding strap
- ESD grounding pads for protecting all blades and WWN cards
- Serial cable and workstation computer with a terminal emulator application (such as HyperTerminal for Windows systems or TIP for Solaris systems), required only if serial console session used
- Pallet jack or hydraulic or assisted lift that raises a minimum of 55 in. (140 cm) and carries a minimum of 250 lb (113 kg)
- A surface to place the old chassis on, such as a second lift or the pallet originally provided with the old chassis
- #2 Phillips screwdriver

Verifying need for replacement

Verify that replacement of the chassis is necessary. Ensure that the components are firmly seated when troubleshooting, and contact your support provider with any questions about whether the chassis should be replaced.

Any of the following events might indicate the need to replace the chassis:

- Visible mechanical damage to the chassis, including damage to sheet metal or card guides that prevents correct installation of a blade.
- Bent or damaged connectors on the backplane (the surface inside the chassis to which the blades connect).
- One or more components (such as a power supply, blower assembly, port blade, control processor blade (CP8), core switch blade (CR4S-8), or WWN card) do not function properly even after the component was replaced.
- The **psShow** or **fanShow** commands continue to show a faulty component even though the component was replaced.
- The **slotShow** command continues to show a faulty control processor (CP8), core switch (CR4S-8), or port blade even though the blade was replaced.

Recording critical PowerConnect B-DCX-4S and SAN information

All commands must be entered from a CLI session (Telnet or serial) to the active CP blade unless otherwise indicated.

NOTE

Run **supportshow** which includes most of the information in [Table 13](#) and more. The customer should record the location of the .txt files, which are created by the customer in this procedure and are not called out in the **supportShow** results.

For detailed information about Fabric OS commands, refer to the Fabric OS Command Reference. Use a checklist ([Table 13](#)) to ensure that all required information is recorded.

TABLE 13 Critical information checklist

Configuration information
Location of "config-switch.txt" file
Location of "config-miscinfo.txt" file
IP address, subnet mask
WWN for PowerConnect B-DCX-4S
SAN profile
Location of "SANbefor.txt" file
Notes regarding nsshow output
Notes regarding nsallshow output
Notes regarding switchshow output
Notes regarding fabricshow output

TABLE 13 Critical information checklist (Continued)

Output from supportshow command
Location of "spptshow.txt" file
Notes regarding supportshow output
Information about the new chassis
New Factory Serial Num
New Serial Num (if available)

1. Open a Telnet session and log in to the PowerConnect B-DCX-4S as **admin**. The default password is **password**. Enable the logging function on your Telnet or serial console connection.
2. Back up the current configuration.

NOTE

If you are using the virtual fabric feature, you should run **configupload -vf** before running the configupload command in order to save the logical switch configuration.

- Enter **configUpload -all**; then, enter the requested information at the prompts.
This command uploads the PowerConnect B-DCX-4S configuration to the customer-defined FTP server, making it available for downloading. For more information about this command, refer to the *Fabric OS Command Reference*.

```
switch:admin> configupload
Protocol (scp or ftp) [ftp]: ftp
Server Name or IP Address [host]: 123.123.123.123
User Name [user]: Admin24
File Name [config.txt]: config-switch0.txt
Password: xxxxxxxx
Upload complete
switch:admin>
```

- Alternatively, you can save the configuration file to a Brocade USB.
3. Record the PowerConnect B-DCX-4S values on a workstation ([step 4](#) through [step 9](#)).
 4. Record the WWN value: Enter **wwn**; then, copy the command output into a file named "config-miscinfo.txt".

```
switch:admin> wwn
10:00:00:60:69:00:00:0a
```

5. Record the IP address information.

Enter **ipAddrShow -sw**; then, copy the command output into the "config-miscinfo.txt" file.

```
switch:admin> ipaddrshow

SWITCH
Ethernet IP Address: 10.32.50.12
Ethernet Subnetmask: 255.55.0.0
Fibre Channel IP Address: 1.2.3.4
Fibre Channel Subnetmask: 255.255.255.0
```



```

CP0
Ethernet IP Address: 10.32.50.10
Ethernet Subnetmask: 255.55.0.0
HostName : cp0
Gateway Address: 10.32.40.1

CP1
Ethernet IP Address: 10.32.50.11
Ethernet Subnetmask: 255.55.0.0
HostName : cp1
Gateway Address: 10.32.40.1

Backplane IP address of CP0 : 10.0.0.4
Backplane IP address of CP1 : 10.0.0.5
switch:admin>switch:admin>

```

6. Display and record the manufacturer serial numbers.

Enter **chassisShow**; then, copy the command output into the “config-miscinfo.txt” file.

“Factory Serial Num” and “Serial Num” are listed under “Chassis/WWN Unit 1.” If the current WWN cards are the original cards, the factory serial number listed is the same as the chassis serial number.

```

switch:admin> chassisshow

Chassis Backplane Revision: 1F

SW BLADE Slot: 1
Header Version:          2
Power Consume Factor:    -50
Factory Part Num:        60-0001532-03
Factory Serial Num:      KP000000195
Manufacture:             Day:  1  Month:  1  Year: 2007
Update:                  Day: 14  Month:  3  Year: 2012
Time Alive:              187 days
Time Awake:              3 days

<output truncated>

CHASSIS/WWN Unit: 1      (in same assembly as WWN Unit: 2)
Header Version:          2
Power Consume Factor:    -3
Factory Part Num:        60-0001501-07
Factory Serial Num:      FT02X805BE2
Manufacture:             Day: 26  Month:  3  Year: 2007
Update:                  Day: 14  Month:  3  Year: 2009
Time Alive:              207 days
Time Awake:              3 days

<output truncated>

switch:admin>

```

7. Create a SAN “profile” by entering and recording the information provided by the following commands:

- nsShow
- nsAllShow

- switchShow
- fabricShow

Copy the command output into a text file named “SANbefor.txt”. After the PowerConnect B-DCX-4S is restored to the fabric, this information can be used to verify that no unintentional changes have occurred to the fabric.

```
switch:admin> nsshow
Enter Pid COS PortName NodeName TTL
<output truncated>

switch:admin> nsallshow
12 Nx_Ports in the Fabric
<output truncated>

switch:admin> switchshow
switchName: switch
<output truncated>

switch:admin> fabricshow
Switch ID Worldwide Name Enet IP Addr FC IP Addr Name
<output truncated>

switch:admin>
```

8. Enter **supportShow**; then, copy the command output into a text file named “sptshow.txt”.

NOTE

The **supportShow** command has a very long output and time for completion. It may last 20 minutes or longer depending on the size of the SAN.

This file provides a backup of all the information that might be required by Technical Support. The information can be used after the PowerConnect B-DCX-4S is restored to the fabric, to verify that no unintentional changes have occurred to the fabric.

```
switch:admin> supportshow
version: 6.2.0
<output truncated>

switch:admin>
```

9. Record the cable connections between the PowerConnect B-DCX-4S and the target device and ports ([Table 14](#)).

Disconnecting from the network and fabric

1. Shut down the PowerConnect B-DCX-4S using the **sysShutdown** command.

```
switch:admin> sysshutdown
This command will shutdown the operating systems on your switch.
You are required to power-cycle the switch in order to restore operation.
Are you sure you want to shutdown the switch [y/n]?y
HA is disabled
Stopping blade 1
Shutting down the blade....
Stopping blade 2
Shutting down the blade....
```

```
Stopping blade 8
Shutting down the blade....

Broadcast message from root (pts/1) Tue Jul 18 14:23:06 2008...

The system is going down for system halt NOW !!
```

**DANGER**

Turn off the power switches and disconnect the power cords (D006)

2. Power off the chassis by flipping all AC power switches to “0”. (Power supply Status LED should turn off.)
3. Remove the power cords from the power supplies and the power outlets.
4. Label the cables connected to all blades and record the connections in [Table 14](#).
5. Remove the chassis door (“[RRP: Chassis door](#)”).
6. Disconnect the cables from the port blades and set them aside. The SFP or XFP transceivers can be left in the port blades or removed.
7. Disconnect all cables from the CP8 and CR4S-8 blades.
8. Disconnect any ICL cables.

Removing components from the chassis

ATTENTION

Follow ESD precautions (“[ESD precautions](#)”).

1. Remove the cable management fingers (“[RRP: Vertical cable management fingers](#)”).
2. Remove the port, application, and encryption blades or filler panels (“[RRP: Port, application, and encryption blades](#)” and “[RRP: Blade filler panel](#)”).
3. Remove the core switch blades (CR4S-8) (“[RRP: Core switch blade \(CR4S-8\)](#)”).
4. Remove the control processor blades (CP8) (“[RRP: Control processor blade \(CP8\)](#)”).
5. Remove the power supplies or filler panels (“[RRP: Power supply](#)”).
6. Remove the blower assemblies (“[RRP: Blower assembly](#)”).
7. Remove the WWN bezel (logo plate) and WWN cards (“[RRP: WWN card](#)”).

Installing the replacement chassis

**CAUTION**

Use safe lifting practices when moving the product. (C015)

NOTE

A fully populated PowerConnect B-DCX-4S (four FC8-48 port cards, 192 ports) weighs approximately 68 kg (150 lbs) and requires a hydraulic or assisted lift to install it.

NOTE

If the PowerConnect B-DCX-4S is installed in a cabinet, ensure that the cabinet is balanced and secured mechanically and that the removal and installation procedure will not compromise cabinet stability.

1. If the chassis is in a cabinet, remove it from the cabinet, remove the rack mount hardware, and save the hardware for use with the new chassis.
 2. Place the chassis on a lift or on the shipping pallet provided with the original chassis.
 3. Unpack the new chassis:
 - a. Cut the bands that encircle the packaging.
 - b. Remove the lid and the kits and foam from the top of the chassis.
 - c. Lift the cardboard box off the chassis and remove the plastic bag from around the chassis. Save the packing materials for use when returning the old chassis.
 - d. Leave the chassis on top of the plastic shipping tray if the chassis must be transported to the installation location.
-

NOTE

The PowerConnect B-DCX-4S packaging does not incorporate wood pallet and pallet brackets. The chassis sits on top of plastic shipping tray.

4. Use a pallet jack or other assisted lift to transport the new chassis to the installation area. Doorways must be wider than 91 cm (36 in.) to accommodate the chassis on the pallet.
 5. Use a lift to raise the chassis to the correct level. If installing the chassis in a cabinet, follow the instructions provided by the rack kit manufacturer.
-

Installing components into the new chassis

ATTENTION

Follow ESD precautions ([“ESD precautions”](#)).

1. Replace the WWN bezel (logo plate) and WWN cards ([“RRP: WWN card”](#)).
2. Replace the blower assemblies ([“RRP: Blower assembly”](#)).
3. Replace the power supplies or filler panels ([“RRP: Power supply”](#)).
4. Replace the control processor blades (CP8) ([“RRP: Control processor blade \(CP8\)”](#)).
5. Replace the core switch blades (CR4S-8) ([“RRP: Core switch blade \(CR4S-8\)”](#)).
6. If ICL cables are not used, insert EMI plugs in the ICL sockets in the core switch blades (CR4S-8).
7. Replace the blades or filler panels ([“RRP: Port, application, and encryption blades”](#) and [“RRP: Blade filler panel”](#)).

8. Replace the cable management fingers (“RRP: Vertical cable management fingers”).
9. Connect the power cords to the power supplies and the power outlets.
10. Replace the chassis door (“RRP: Chassis door”).
11. Power-on the PowerConnect B-DCX-4S (“Powering on the PowerConnect B-DCX-4S”).

The PowerConnect B-DCX-4S performs a power-on self-test (POST). The POST takes a minimum of three minutes and is complete when LED activity returns to standard state.

12. Verify that the PowerConnect B-DCX-4S is powered on and POST is complete (all power LED indicators on the port, control processor, and core switch blades should be a steady green).
13. Verify that all components are functioning correctly by checking their LEDs. If the LEDs do not indicate correct operation, try reinstalling the corresponding component.

Downloading the configuration

Once the chassis and its various components have been reassembled and powered back on, use the **configDownload** command to restore the original configuration. The **configDownload** command can be entered through a Telnet or serial session, but the PowerConnect B-DCX-4S must have an Ethernet connection to the server name or IP of the host for the download process to complete. For more information, refer to the **help configdownload** command or the *Fabric OS Command Reference*.

1. Log in to the PowerConnect B-DCX-4S as admin:

```
switch:admin> login
login: admin
password: xxxxxxxx
switch:admin>
```

NOTE

If you are using the virtual fabric feature, you should run **configdownload -vf** before running the **configdownload** command in order to restore the logical switch configuration.

2. Enter **configDownload** command.

```
switch:admin> configdownload -all
Server Name or IP Address [host]: 123.123.123.123
User Name [None]: Admin24
File Name [config.txt]: config-switch.txt
Password: xxxxxxxx
download complete
switch:admin>
```

3. Reboot the DCX-4S.

Verifying correct operation of system

1. Log in to the PowerConnect B-DCX-4S as admin:

```
switch:admin> login
login: admin
password: xxxxxxxx
switch:admin>
```

2. Enter the **slotShow -m** command and verify that all the installed cards are detected and that their status is operational (enabled).

```
switch:admin> slotShow -m

Slot   Blade Type   ID   Model Name   Status
-----
      1   SW BLADE    51   FC8-48      ENABLED
      2   UNKNOWN
      3   CORE BLADE  46   CR4S-8      ENABLED
      4   CP BLADE    50   CP8         ENABLED
      5   CP BLADE    50   CP8         ENABLED
      6   CORE BLADE  46   CR4S-8      ENABLED
      7   AP BLADE    75   FX8-24      ENABLED
      8   SW BLADE    51   FC8-48      ENABLED

switch:admin>
```

3. Verify that the PowerConnect B-DCX-4S is functioning correctly by typing **switchShow** or **switchStatusShow**.

This **switchShow** command displays PowerConnect B-DCX-4S and port status information.

```
switch:admin> switchshow
switchName:      switch
switchType:      62.1
switchState:     Online
switchMode:      Native
switchRole:      Subordinate
switchDomain:    11
switchId:        fffc0b
switchWwn:       10:00:00:05:1e:39:59:67
zoning:          OFF
switchBeacon:    OFF
blade3 Beacon:   OFF
blade5 Beacon:   OFF
blade8 Beacon:   OFF
blade10Beacon:  OFF

Index  Slot  Port  Address      Media  Speed  State  Proto
=====
32     3     0     0b2000      id     N4     Online  L-Port 5 public
33     3     1     0b2100      ___    N8     No_Module
34     3     2     0b2200      ___    N8     No_Module
35     3     3     0b2300      ___    N8     No_Module
36     3     4     0b2400      id     N4     Online  F-Port
10:00:00:00:c9:51:00:2d
37     3     5     0b2500      ___    N8     No_Module

switch:admin>
```

4. Verify that all the IP address information is correct by typing **ipAddrShow** and checking the results against the IP information recorded in the “config-miscinfo.txt” file.

```
switch:admin> ipaddrshow
```

```
SWITCH
Ethernet IP Address: 10.32.50.12
Ethernet Subnetmask: 255.55.0.0
Fibre Channel IP Address: 1.2.3.4
Fibre Channel Subnetmask: 255.255.255.0

CP0
Ethernet IP Address: 10.32.50.10
Ethernet Subnetmask: 255.55.0.0
HostName : cp0
Gateway Address: 10.32.40.1

CP1
Ethernet IP Address: 10.32.50.11
Ethernet Subnetmask: 255.55.0.0
HostName : cp1
Gateway Address: 10.32.40.1

Backplane IP address of CP0 : 10.0.0.4
Backplane IP address of CP1 : 10.0.0.5
switch:admin>switch:admin>
```

Reconnecting the system to the network and fabric

See the cable routing information recorded in [Table 14](#) for the following steps.

1. Connect the CP blades to the local area network:
 - a. Insert the appropriate Ethernet cables into each Ethernet port.
 - b. Connect the other ends to an Ethernet 10/100 Base-T LAN, if not already connected.

NOTE

The PowerConnect B-DCX-4S can be accessed by remote connection using any of the available management tools, such as Telnet or Web Tools. Ensure that the PowerConnect B-DCX-4S is not modified using other connections during the rest of this procedure.

2. Reconnect the transceivers and cables to the port blades:

NOTE

The ports and cables used in trunking groups must meet specific requirements. For a list of these requirements, refer to the *Fabric OS Administrator's Guide*.

- a. Position one of the transceivers so that the key is oriented correctly to the port and insert the transceiver into the port until it is firmly seated and the latching mechanism clicks.
- b. Select the cable that corresponds to the port and position it so that the key (the ridge on one side of the cable connector) is aligned with the slot in the transceiver; then, insert the cable into the transceiver until the latching mechanism clicks.
- c. Repeat [step a](#) and [step b](#) for the remaining ports.

ATTENTION

Do not route cables in front of the air exhaust vent (located on the upper port side of the chassis).

- d. Organize the cables as required.

Verifying correct configuration of the fabric

Copying the command outputs from this section into a file is recommended.

1. Create an “after” SAN profile by entering the following commands and copying the output to a text file named “SANafter.txt”:

- nsShow
- nsAllShow
- switchShow
- fabricShow
- lscfg --show (if using the virtual fabric feature)

```
switch:admin> nsshow
Type Pid    COS    PortName NodeName TTL(sec)
N    020f00;    3;10:00:00:01:73:00:29:46;10:00:00:01:73:00:29:46; na
    Fabric Port Name: 20:0f:00:60:69:90:03:f0
<output truncated>
```

```
switch:admin> nsallshow
{
  020f00 021fda 021fdc 021fe0 021fe1
  5 Nx_Ports in the Fabric}
```

```
switch:admin> switchshow
switchName: rsl8-st03-dcx-01
<output truncated>
```

```
switch:admin> fabricshow
Switch ID Worldwide Name Enet IP Addr FC IP Addr Name
<output truncated>
```

```
switch:admin>lscfg --show
Created switches: 128(ds) 1 2(bs)
Port  0  1  2  3  4  5  6  7  8  9
-----
FID   1 | 1 | 1 | 1 | 1 | 128 | 128 | 128 | 128 | 128 |
<output truncated>
```

```
switch:admin>
```

2. Determine any differences between the information in the “SANafter.txt” file and the information in the “SANbefor.txt” file created earlier. In particular, look for differences in the following:
 - Device types
 - Number of devices
 - ISL and port states
 - Number of switches in the fabric
3. Resolve any issues or unintentional changes to the PowerConnect B-DCX-4S or fabric.
 - If there are any mechanical problems, try reseating the associated component.

- If the configuration information is not correct for the PowerConnect B-DCX-4S, modify as required.
- If other issues exist, contact your support provider.

Cable routing table

Table 14 is a 48-port template for a cable-routing table. Expand the table for the number of ports in the PowerConnect B-DCX-4S.

TABLE 14 Cable routing table for PowerConnect B-DCX-4S (48 ports shown)

Slot/port		Cable labels		Connected device	Slot/port of device
Slot	Port	Switch end	Device end		
	0				
	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
	18				
	19				
	20				
	21				
	22				
	23				
	24				
	25				
	26				
	27				

TABLE 14 Cable routing table for PowerConnect B-DCX-4S (48 ports shown) (Continued)

Slot/port		Cable labels		Connected device	Slot/port of device
Slot	Port	Switch end	Device end		
	28				
	29				
	30				
	31				
	32				
	33				
	34				
	35				
	36				
	37				
	38				
	39				
	40				
	41				
	42				
	43				
	44				
	45				
	46				
	47				

Specifications

In this appendix

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• System architecture	86
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General specifications

The PowerConnect B-DCX-4S is compliant with United States and International safety and EMC (Electromagnetic Compatibility) standards. [Table 15](#) lists the general specifications for the PowerConnect B-DCX-4S.

TABLE 15 General specifications

Specification	Description
Configurable port types	F_Port, FL_Port, E_Port, VEX_Port, VE_Port, EX_Port, and M_Port
System architecture	Nonblocking shared memory
System processor	FreeScale 8548, 1.2 GHz
ANSI Fibre Channel protocol	FC-PH (Fibre Channel Physical and Signalling Interface standard)
Modes of operation	Fibre Channel Class 2, Class 3, and Class F
Fabric initialization	Complies with FC-SW 5.0
FC-IP (IP over Fibre Channel)	Complies with FC-IP 2.3 of the FCA profile
Aggregate I/O bandwidth	3 Tbps per chassis
Port to port latency	Less than 2 microseconds with no contention (destination port is free)
Routing capacity	A minimum aggregate routing capacity of four million frames per second (for Class 2, Class 3, and Class F frames in a 64-port switch)

System architecture

Table 16 describes the system architecture of the PowerConnect B-DCX-4S.

TABLE 16 System architecture

Fibre Channel Ports	Up to 192 ports, universal (E_Port, F_Port, FL_Port, EX_Port, and M_Port)
Control Processor	Redundant (active/standby) control processor modules
Scalability	Full fabric architecture: 239 switches maximum
Performance	1.063 Gbps line speed, full duplex 2.125 Gbps line speed, full duplex 4.25 Gbps line speed, full duplex 8.50 Gbps line speed, full duplex 10.51875 Gbps line speed, full duplex (with FC10-6 blade) Autosensing of 1, 2, 4, and 8 Gbps port speeds optionally programmable to fixed port speed, speed matching between 1, 2, 4, and 8 Gbps port speeds. Range depends on use of 4 Gbps or 8 Gbps SFPs
ISL Trunking	Can use up to 8 ports in a trunk group to form a 64 Gbps trunk
Aggregate bandwidth	3 Tbps per chassis
Switch latency	FC8-16 blade: <2.1 µsec any port to any port at 8 Gbps, cut-through routing. FC8-32 blade: <2.1 µsec any port to any port at 8 Gbps, cut-through routing. FC8-48 blade: <2.1 µsec any port to any port at 8 Gbps, cut-through routing. FA4-18 blade: <3.6 µsec any port to any port at 4 Gbps, cut-through routing. FR4-18i blade: <3.6 µsec any port to any port at 4 Gbps, cut-through routing. FX8-24 blade; <700 ns any port to any port at 8 Gbps, cut-through routing. FFCOE10-24 blade - CEE to CEE (different ASIC) and FCoE to FC: <5 µsec any port to any port at 10 Gbps, cut-through routing.
Maximum frame size	2112-byte payload
Frame buffers	2048 per ASIC, dynamically allocated
Classes of service	Class 2, Class 3, Class F (interswitch frames)

TABLE 16 System architecture (Continued)

Port types	<p>The FC8-16 and FC8-32 supports these port types:</p> <ul style="list-style-type: none"> - FL_Port, F_Port, E_Port, and M_Port <p>FC8-48 supports these port types:</p> <ul style="list-style-type: none"> - E_Port, F_Port, and M_Port <p>FC10-6 supports this port type:</p> <ul style="list-style-type: none"> - E_Port and M_Port <p>FA4-18 supports these port types:</p> <ul style="list-style-type: none"> - FL_Port, F_Port, E_Port, and M_Port <p>FR4-18i supports these port types:</p> <ul style="list-style-type: none"> - FL_Port, F_Port, E_Port, M_Port, VE_Port, EX_Port, and VEX_Port <p>FS8-18 supports these port types:</p> <ul style="list-style-type: none"> - FL_Port, F_Port, E_Port, EX_Port, and M_Port <p>FX8-24 supports these port types:</p> <ul style="list-style-type: none"> - F_Port, FL_Port, E_Port, and Ex_Port on FC - VE_Port on GbE <p>FCOE10-24 supports these port types:</p> <ul style="list-style-type: none"> - VF_Port <p>NOTE: Self-discovery is based on switch type (U_Port) with an optional port type control.</p>
Data traffic types	Fabric switches supporting unicast, multicast (255 groups), and broadcast
Media types	<p>4Gb: FC8-16, -32, and -48; FR4-18i; FA4-18; and FS8-18 blades require Brocade hot-pluggable, Small Form-factor Pluggable (SFP), LC connector; 4Gb Short-Wavelength Laser (SWL); 4Gb Long-Wavelength Laser (LWL); 4Gb Extended Long-Wavelength Laser (ELWL)</p> <p>8Gb: FC8-16, -32, and -48; and FS8-18 blades require Brocade hot-pluggable SFP, LC connector; 8Gb SWL</p> <p>10Gb: FC10-6 blades utilize non-Brocade hot-pluggable, 10Gb Small Form Factor Pluggable (XFP), LC connector; 10Gb SWL; 10Gb LWL</p> <p>1 GbE: FX8-24 can use Brocade-branded 4Gb SFP</p> <p>10GbE: FCOE10-24 blades use Brocade-branded SFP+ transceivers, either short-reach (SR) or long-reach (LR).</p> <p>Distance subject to fiber-optic cable and port speed</p>
Fabric Services	<p>Advanced Performance Monitoring; Adaptive Networking (Ingress Rate Limiting, Traffic Isolation, QoS); BB credit recovery; Brocade Advanced Zoning (default zoning, port/WWN zoning, broadcast zoning); Dynamic Path Selection (DPS); Extended Fabrics; Fabric Watch; FDMI; Frame Redirection; FSPF; Integrated Routing (FR4-18i SAN Extension blade not required for routing); IPFC; ISL Trunking; Management Server; N_Port Trunking; NPV; NTP v3; Port Fencing; Registered State Change Notification (RSCN); Reliable Commit Service (RCS); Simple Name Server (SNS); Top Talkers; Virtual Fabrics (Logical Switch, Logical Fabric)</p>
Inter-chassis linking (ICL)	Chassis-to-chassis linkage through connectors on the core switch blade (CR4S-8)

System size and weight

The weight of the PowerConnect B-DCX-4S can vary considerably depending on the combination of blades installed. Use [Table 17](#) and [Table 18](#) to determine the weight of the PowerConnect B-DCX-4S with your combination of port and application blades.

A System blade and FRU weights

TABLE 17 System size and weight

System	Size and weight
Width	43.74 cm (17.22 in.)
Height	35.6 cm (14.0 in./8U) 40.0 cm (15.75 in./9U) with Port Side Exhaust Kit
Depth	61.29 cm (24.09 in.)
Depth (with door)	73.20 cm (28.82 in.)
PowerConnect B-DCX-4S: 192-port configuration with four FC8-48 port blades	68 kg (150 lb.)
Empty chassis:	25.76 kg (56.8 lb.)
<ul style="list-style-type: none"> • No blades • No CPs • No CRs • No power supplies • No fan assemblies 	

System blade and FRU weights

Table 18 lists the weights of the compatible blades and FRUs.

TABLE 18 System FRU weights

FRU	Weight
CP blade (CP8)	3.0 kg (6.6 lb.)
CR blade (CR4S-8)	3.27 kg (7.2 lb.)
FC8-16 port blade	3.0 kg (6.6 lb.) without media
FC8-32 port blade	3.27 kg (7.2 lb.) without media
FC8-48 port blade	3.36 kg (7.4 lb.) without media
FC10-6 port blade	3.1 kg (6.8 lb) without media
FA4-18 application blade	3.36 kg (7.4 lb) without media
FR4-18i application blade	3.36 kg (7.4 lb) without media
FS8-18 encryption blade	5.5 kg (12.0 lb) without media
FX8-24 extension blade	4.2 kg (9.2 lb) without media
FCOE10-24 FCoE blade	3.72 kg (8.2 lb) without media
Port card filler panel	1.5 kg (3.2 lb)
Power supply	2.45 kg (5.4 lb.)
Blower assembly	5.73 kg (12.6 lb.)
WWN bezel	0.3 kg (0.6 lb)
Vertical cable management fingers	0.45 kg (1.0 lb.)
Chassis door	2.09 kg (4.6 lb.)

Facility requirements

The facility where the PowerConnect B-DCX-4S is in use must meet the following requirements to provide for correct operation:

- Adequate supply circuit, line fusing, and wire size, as specified by the electrical rating on the chassis nameplate.
- An air flow of at least 250 cubic feet per minute (425 cubic meters per hour) in the immediate vicinity of the PowerConnect B-DCX-4S.
- Electrical interference less than the levels stated in the standards listed in [Table 15](#).
- The environmental specifications listed in [Table 19](#).
- The power specifications listed in [Table 20](#).

Furthermore, if the PowerConnect B-DCX-4S will be installed in an EIA rack, ensure the following:

- All equipment installed in the rack has a reliable branch circuit ground connection, and does not rely on a connection to a branch circuit, such as a power strip.
- The rack is balanced and mechanically secured to provide stability in the event of an earthquake.
- Additional equipment does not exceed the rack’s weight limits.

Environmental requirements

[Table 19](#) lists the environmental operating ranges for the PowerConnect B-DCX-4S. The requirements for non-operating conditions are also provided for acceptable storage and transportation environments.

TABLE 19 Environmental requirements

Condition	Acceptable range during operation	Acceptable range during nonoperation
Ambient temperature	0° to 40° C outside switch (32° to 104° F)	-25° to +70° C outside switch (-13° to 158° F)
Humidity	10% to 85% RH noncondensing, at 40° Celsius, with maximum gradient of 10% per hour	10% to 90% RH noncondensing, at 70° Celsius
Altitude	Up to 3 km (10,000 ft.) above sea level	0 to 12 km (40,000 ft.) above sea level
Shock	20G, 6ms duration, half-sine wave	33G, 11ms duration, half-sine wave
Vibration	0.5G p-p, 5-500 Hz at 1.0 octave/minute	2.0G p-p, 5-500 Hz at 1.0 octave/minute
Air flow	250 cu ft/min. (425 cu m/hr)	None required
Heat dissipation	753 Watts or 2570 BTU/hr (Four FC8-48 blades, two CP8 blades, and two CR4S-8 blades)	Not applicable

NOTE

The 0° to 40° Celsius range applies to the ambient air temperature at the air intake vents on the nonport side of the PowerConnect B-DCX-4S.

The temperature inside the PowerConnect B-DCX-4S can be up to 75° Celsius during operation. If the internal temperature range exceeds the operating ranges of the components, the LEDs, error messages, and Fabric Watch alerts will indicate a problem. Use the **tempShow** command or Fabric Watch commands to view temperature status.

Fibre Channel port specifications

The Fibre Channel ports in the PowerConnect B-DCX-4S support full duplex link speeds at 10, 8, 4, 2, or 1 Gbps inbound and outbound, automatically negotiating to the highest common speed of all devices connected to the port.

The ports are compatible with optical SWL (short wavelength: approximately 850 nm), optical LWL (long wavelength: approximately 1310 nm), and Extended Long Wavelength (ELWL) laser transmitter SFPs and XFPs (FC10-6 only) (approximately 1550 nm). The strength of the signal is determined by the type of SFP or XFP in use.

The ports are universal and self-configuring, capable of becoming F_Ports (fabric ports), FL_Ports (fabric loop enabled), or E_Ports (expansion ports).

The ports meet all required safety standards. For a listing of these standards, see [“Regulatory compliance”](#).

Power specifications

The power subsystem is a redundant +48V DC power distribution system with a provision for up to two 2000-watt, 48V DC bulk power supplies. Two bulk power supplies produce the intermediate distribution voltage in the distributed power system.

The power specifications in [Table 20](#) are calculated for fully loaded systems with two power supplies, four FC8-48 port blades, two CP8 blades, two CR4S-8 blades, and two blower assemblies. The use of application and/or encryption blades will consume additional power.

If the option is available, 220 VAC is recommended and a greener and more efficient alternative.

NOTE

If any of the following blades are used, 220 VAC is required:
FS8-18, FX8-24, FCOE10-24.

TABLE 20 Power specifications

Specification	Value
Voltage	Range: 85 - 264 VAC Auto-volt, Nominal: 100 to 240 VAC
Power supply output (each)	Low line (85- 132 VAC), 1000W; High line (180 - 264 VAC), 2000W
Input frequency	Range: 47-63 Hz; Nominal: 50 - 60 Hz

TABLE 20 Power specifications (Continued)

Specification	Value
AC inrush	Maximum 20A peak
System power consumption	AC power consumption is configuration-specific. A system with four FC8-48 port blades (loaded with 1W SFPs), two CP8 blades, two CR4S-8 blades, and two blower assemblies consumes 841W.

The power supply requirements for blades in the DCX-4S chassis are shown in [Table 21](#).

TABLE 21 Power supply requirements

Blades	Type of Blade	DCX-4S @110 VAC (redundant configuration)	DCX-4S @200-240 VAC (redundant configuration)	Comments
FC4-16 FC4-32 FC4-48 FC8-16 FC8-32	Port blade	2 power supplies	2 power supplies	
FC10-6 FC8-48	Port blade	Not supported	2 power supplies	
FR14-18i FC4-16IP FA4-18	Intelligent blade	Not supported	2 power supplies	
FS8-18 FX8-24 FCOE10-24	Intelligent blade	Not supported	2 power supplies	For DCX-4S with any number of FS8-18 blades, 2 220 VAC power supplies are required for redundancy.

Power cords

The types of power cords provided with the PowerConnect B-DCX-4S are specific to the country where it is installed. For each of these types of power cords ([Table 22](#)), the end that connects to the PowerConnect B-DCX-4S has an IEC 60320/C19 cable connector. The AC power receptacles on each power supply are equipped with IEC 60320/C20 power connectors.

In order to connect to a power strip already installed in a cabinet, the C20, 20A-250V, 12 AWG power cord is required.

To order a power cord, contact your PowerConnect B-DCX-4S supplier.

A Power cords

TABLE 22 Power cord types (international)

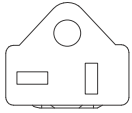

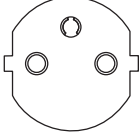
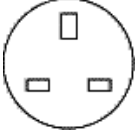


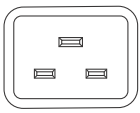
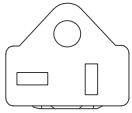

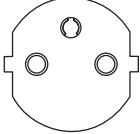
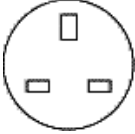


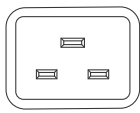
Country	Plug style						
	NEMA 5-20P 125V only USA, Canada, Mexico, other locations	NEMA L6-20 USA, Canada, Mexico, other locations	CEE-7/7 “Schuko” Continental Europe	BS-1363A	AS 3112 Australia/New Zealand	IEC-60309 32A-6h, 230V~	C20 20A-250V 12 AWG connect to in-cabinet power strip only All locations
							
Argentina						X	X
Australia					X		X
Austria			X				X
Bahrain				X			X
Belgium			X				X
Brazil	X	X					X
Chile			X				X
China, People's Rep.					X		X
Czech, Rep. of			X				X
Denmark						X	X
Egypt						X	X
England						X	X
Finland						X	X
France			X				X
Germany			X				X
Greece			X				X
Hong Kong				X			X
Hungary				X			X
India						X	X
Indonesia			X				X
Ireland, North				X			X
Ireland, South				X			X
Israel				X			X
Italy						X	X
Japan	X	X					X
Korea, South			X				X

TABLE 22 Power cord types (international) (Continued)

Country	Plug style						
	NEMA 5-20P 125V only USA, Canada, Mexico, other locations	NEMA L6-20 USA, Canada, Mexico, other locations	CEE-7/7 “Schuko” Continental Europe	BS-1363A	AS 3112 Australia/New Zealand	IEC-60309 32A-6h, 230V~	C20 20A-250V 12 AWG connect to in-cabinet power strip only All locations
							
Malaysia			Alternate			Recommended	X
Mexico	X	X					X
Monaco			X				X
Netherlands			X				X
New Zealand					X		X
Norway						X	X
Poland			X				X
Portugal			X				X
Puerto Rico	X	X					X
Russia			X				X
Saudi Arabia			X				X
Scotland						X	X
Singapore				X			X
South Africa				X			X
Spain			X				X
Sweden						X	X
Switzerland						X	X
Taiwan	X	X					X
Turkey			X				X
United Arab Emirate			X				X
United Kingdom						X	X
United States	X	X					X
Venezuela	X	X					X
Yugoslavia			X				X

Power-cord notice



CAUTION

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

Power-cord notice (Japan, Denan)



注意 - 添付の電源コードを他の装置や用途に使用しない
 添付の電源コードは本装置に接続し、使用することを目的として設計され、その安全性が確認されているものです。決して他の装置や用途に使用しないでください。火災や感電の原因となる恐れがあります。

ATTENTION

Never use the power cord packed with your equipment for other products.

Data transmission ranges

Table 23 provides the data transmission ranges for different cable types and port speeds.

NOTE

The full range of 1, 2, 4, 8, and 10 Gbps can only be achieved by a combination of 4 Gbps SFP (1, 2, and 4 Gbps), 8 Gbps SFP+ (2, 4, and 8 Gbps), and 10 Gbps XFP transceivers.

TABLE 23 Supported optics, speeds, cables, and distances

Transceiver type	Form factor	Speed	Multimedia (62.5 um) (OM1)	Multimedia (50 um) (OM2)	Multimedia (50 um) (OM3)	Single Mode Media (9 um)
SW	SFP	1 Gbps	300 m	500 m	860 m	N/A
	SFP/SFP+	2 Gbps	150 m	300 m	500 m	N/A
	SFP/SFP+	4 Gbps	70 m	150 m	380 m	N/A
	SFP+	8 Gbps	21 m	50 m	150 m	N/A
	XFP	10 Gbps	N/A	N/A	300 m	N/A
LW	SFP	2 Gbps	N/A	N/A	N/A	30 km
	SFP	4 Gbps	N/A	N/A	N/A	30 km
	SFP+	8 Gbps	N/A	N/A	N/A	N/A

TABLE 23 Supported optics, speeds, cables, and distances (Continued)

Transceiver type	Form factor	Speed	Multimedia (62.5 um) (OM1)	Multimedia (50 um) (OM2)	Multimedia (50 um) (OM3)	Single Mode Media (9 um)
	XFP	10 Gbps	N/A	N/A	N/A	10 km
ELWL	XFP	10 Gbps	N/A	N/A	N/A	40 km

Regulatory compliance

This section describes the regulatory compliance requirements for the Product Name. It contains:

- “[FCC warning \(US only\)](#)” on page 95
- “[KCC statement \(Republic of Korea\)](#)” on page 95
- “[VCCI statement \(Japan\)](#)” on page 95
- “[BSMI statement \(Taiwan\)](#)” on page 96
- “[CE statement](#)” on page 96
- “[Canadian requirements](#)” on page 96
- “[Laser compliance](#)” on page 96
- “[Regulatory compliance standards](#)” on page 97

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.

KCC 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 (Japan)

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 action.

A Regulatory compliance

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要求されることがあります。

BSMI statement (Taiwan)

The BSMI Statement is applicable to the power supplies.

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。

CE statement

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 product 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 2004/108/EEC
- Low Voltage Directive (LVD) 73/23/EEC and the Complementary Directive 93/68/EEC
- EN55022:2006 (European Emissions Requirements)
- EN55024:1998, +A1:2001 and +A2:2003 (European Immunity Requirements)
- EN61000-3-2:2006/IEC61000-3-2:2006 (European and Japanese Harmonics Spec)
- EN61000-3-3:1995, +A1:2001 and +A2:2005

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.

Use only optical transceivers that are qualified by Brocade Communications Systems, Inc. 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.

Regulatory compliance standards

Table 24 lists the regulatory compliance standards for which the PowerConnect B-DCX-4S is certified.

TABLE 24 Regulatory compliance standards

Country	Standards		Agency Certifications and Markings	
	Safety	EMC	Safety	EMC
United States	Bi-Nat UL/CSA 60950-1 1st Ed or latest	ANSI C63.4	cCSAus	FCC Class A and Statement
Canada	Bi-Nat UL/CSA 60950-1 1st Ed or latest	ICES-003 Class A	cCSAus	ICES A and Statement
Japan		CISPR22 and JEIDA (Harmonics)		VCCI-A and Statement
European Union	EN60950-1 or latest	EN55022 and EN55024	TUV-GS, N	CE marking
Australia, New Zealand		EN55022 or CISPR22 or AS/NZS CISPR22		C-Tick mark
Argentina	IEC60950-1 or latest		"S" mark	
Russia	IEC60950-1 or latest	51318.22-99 and 51318.24.99 or latest	GOST mark	GOST mark
Korea		KN22 and KN24		KCC mark Class A
China (PS only)	GB4943-2001 and GB9254-1998 or latest	GB17625.1-2003 or latest	CQC logo	CQC logo
Taiwan (PS only)	CNS 14336(94) or latest	CNS 13438(95) or latest	BSMI mark	BSMI mark

Environmental regulation compliance

This section describes the China RoHS environmental regulatory compliance requirements for the PowerConnect B-DCX-4S.

China RoHS

The contents included in this section are per the requirements of the People's Republic of China-Management Methods for Controlling Pollution by Electronic Information products.

遵守环境法规

中国 **RoHS**

本节中包含的内容都遵守了中华人民共和国《电子信息产品污染控制管理办法》的要求。

Environmental Protection Use Period (EPUP) Disclaimer

In no event do the EPUP logos shown on the product and FRUs alter or expand that warranty that Brocade provides with respect to its products as set forth in the applicable contract between Brocade and its customer. Brocade hereby disclaims all other warranties and representations with respect to the information contained on this CD including the implied warranties of merchantability, fitness for a particular purposes and non-infringement.



The EPUP assumes that the product will be used under normal conditions in accordance with the operating manual of the product.

环保使用期限 (EPUP) 免责声明:

EPUP 标志不会出现在产品和 FRU 的改装产品中, 也不会对 Brocade 所提供的相关产品保修条款 (该保修条款在 Brocade 及其客户间达成的适用合同中列出) 进行增补。对于此 CD 上包含的相关信息, 如适销性、针对特定用途的适用性和非侵权性的暗示保证, Brocade 在此郑重声明本公司对于与上述信息相关的所有其他保证和陈述概不负责。EPUP 假设在“产品操作手册”中注明的常规条件下使用该产品。

China RoHS hazardous substances/toxic substances (HS/TS) concentration chart

In accordance with China's Management Measures on the Control of Pollution caused by Electronic Information products (Decree No. 39 by the Ministry of Information Industry), the following information is provided regarding the names and concentration level of hazardous substances (HS) which may be contained in this product.

Name of the Component	Hazardous/Toxic Substance/Elements					
	Lead (PB)	Mercury (Hg)	Cadmium (CD)	Hexavalent Chromium (CR6+)	Polybrominated Biphenyl (PBB)	Polybrominated Diphenyl Ether (PBDE)
Fiber Channel Switch	X	O	O	O	O	O
Fan , Blower assemblies	X	O	O	O	O	O
PCBA cards	X	O	O	O	O	O
Host Bus Adapter (HBA)	X	O	O	O	O	O
USB Flash Drive	O	O	O	O	O	O
Power Supply kit	X	O	O	O	O	O
SFPs (optical cable connectors) 	X	O	O	O	O	O
Sheet Metal	X	O	O	O	O	O
Chassis Assembly	X	O	O	O	O	O
Mechanical brackets & Slides	X	O	O	O	O	O
Slot Filler	X	O	O	O	O	O
Cable management tray	X	O	O	O	O	O
Cable Comb	O	O	O	O	O	O
Cables and power cords 	O	O	O	O	O	O
Replacement Doors	X	O	O	O	O	O
Software / Documentation CDs	O	O	O	O	O	O

X indicates that the concentration of such hazardous/toxic substance in all the units of homogeneous material of such component is higher than the SJ/T11363-2006 Requirements for Concentration Limits.

O indicates that no such substances are used or that the concentration is within the aforementioned limits.

CHINA ROHS 有害物质/有毒物质(HS/TS)限量列表

有毒与有害物质或元素的名称及含量

根据中国的<<电子信息产品污染控制管理办法>> (信息产业部第 39 号令), 本公司提供以下有关产品中可能含有的有害物质(HS)的名称及含量水平的信息。

主要部件名称	有害/有毒物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
光纤通道交换机	X	O	O	O	O	O
风扇/冷却组装件	X	O	O	O	O	O
线路板部件	X	O	O	O	O	O
主机总线适配器 (HBA)	X	O	O	O	O	O
USB 闪存器	O	O	O	O	O	O
电源	X	O	O	O	O	O
 SFP (光纤接头)	X	O	O	O	O	O
钣金件	X	O	O	O	O	O
机箱部件	X	O	O	O	O	O
机械支架及滑轨	X	O	O	O	O	O
插槽填充物	X	O	O	O	O	O
电缆整理盘	X	O	O	O	O	O
梳状线缆	O	O	O	O	O	O
 线束及电源线	O	O	O	O	O	O
替换门	X	O	O	O	O	O
软件/文档光盘	O	O	O	O	O	O

X 表示此类部件内同质材料中的有害/有毒含量高于 SJ/T 11363-2006 的限量要求。

O 表示未使用此类物质或其含量低于上述限量要求。

Application and Encryption Blades

In this appendix

• FA4-18 blade	101
• FR4-18i blade	101
• FS8-18 blade	102
• FX8-24 blade	102
• FCOE10-24 blade	104

FA4-18 blade

The FA4-18 blade has 16 physical Fibre Channel SFP ports supporting the Fibre Channel Application Services, and two physical Gigabit 10/100/1000 BaseT Ethernet copper ports supporting blade management.

The FA4-18 blade is intended as a platform for Fibre Channel Application Services and blade management. Refer to the *Fabric OS Administrator's Guide* for information on configuring these features.

FR4-18i blade

The FR4-18i blade has 16 physical Fibre Channel SFP ports supporting the Fibre Channel Routing Services, and two physical Gigabit Ethernet (GbE) SFP ports supporting the Fibre Channel Over IP (FCIP) feature. It operates with the Brocade Fabric Operating System and can communicate with another FR4-18i or a PowerConnect B-7500 for both Fibre Channel Routing services and FCIP, or a PowerConnect B-AP7420 for Fibre Channel Routing Services.

The FR4-18i blade is intended as a platform for Fibre Channel Routing Services and FCIP. Refer to the *Fabric OS Administrator's Guide* for information on configuring these features.

The FR4-18i blade provides the following features:

- 16 Fibre Channel SFP ports supporting the Fibre Channel Routing Services with link speeds up to 1, 2, or 4 Gbps.
- 2 GbE ports supporting the FCIP and Fibre Channel Routing Services with fixed link speed at 1 Gbps:
 - Each GbE port can support up to eight FCIP tunnels.
 - Each FCIP tunnel is represented and managed as a virtual Fibre Channel E_Port.
 - Fibre Channel Routing Services can be used over the FCIP link.

B FS8-18 blade

- Fabrics connected through FCIP merge if the ports are configured as VE_Ports, and do not merge if they are configured as VEX_Ports. If VE_Ports are used in a Fibre Channel Routing Services backbone fabric configuration, then the backbone fabric merges, but the EX_Port-attached edge fabrics do not merge. For more information refer to the *Fabric OS Administrator's Guide*.

FS8-18 blade

The FS8-18 encryption blade is a high performance 16 port auto-sensing blade with data cryptographic (encryption/decryption) and data compression capabilities designed for enterprises to secure their data against theft or unauthorized use and to compress tape data for maximum utilization of tape media. The encryption blade is a network-based solution that secures data-at-rest for heterogeneous tape drives, disk array LUNs, and virtual tape libraries.

The FS8-18 blade provides the following major features:

- 16 auto-sensing F, FL, E, EX, and M ports at 8 Gbps FC ports
- 16 SFP media interfaces
- Encryption engines
- Key management/generation
- Key management with these hardware interfaces:
 - Two 1000Base copper type media interfaces
 - One smart card interface
- Security supervisor tamper detection and response capability
- CC (Common Criteria) EAL-3 compliant

FX8-24 blade

The FX8-24 blade has 12 external Fibre Channel (FC) SFP ports supporting the Fibre Channel Routing Services and 10 external 1 Gigabit Ethernet (GbE or GE) SFP ports supporting the Fibre Channel Over IP (FCIP) feature. There are also 2 licensable external 10 Gigabit Ethernet (10GbE or 10GE) SFP ports supporting FCIP. It operates with the Brocade Fabric Operating System and can communicate with another FX8-24 or a PowerConnect B-7800 for both Fibre Channel Routing Services and FCIP, or a PowerConnect B-AP7420 for Fibre Channel Routing Services. The GbE ports on the FX8-24 are NOT compatible with the GbE ports on the FR4-18i blade or the PowerConnect B-7500 switch.

NOTE

The port diagram on the front panel uses the abbreviations GE for 1 GbE and 10GE for 10 GbE ports.

The FX8-24 operates in one of three modes: 1) ten 1GbE ports, 2) ten 1GbE ports and one 10 GbE port, or 3) two 10 GbE ports depending on licensing and subsequent configuration of GbE port mode. If operating in 10GbE mode the other end of the circuit must also be an FX8-24 operating in either 10GbE mode or dual mode with the corresponding VE_ports in 10GbE mode. All GbE ports on the blade can be configured to work with either copper or optical SFPs.

The FX8-24 blade is intended as a platform for FCIP and Fibre Channel Routing Services. Refer to the *Fabric OS Administrator's Guide* for information on configuring these features.

The FX8-24 blade provides the following hardware features:

- 12 autosensing FC ports with link speeds of 1, 2, 4 or 8 Gbps.
- Ten GbE ports supporting FCIP with fixed link speed at 1 Gbps:
- Two 10GbE ports (licensable) supporting FCIP with fixed link speed at 10 Gbps.

The FX8-24 blade also provides the following functionality features:

- FCIP.
- Compression (on FC frames before FCIP encapsulation).
- FC Routing (licensable).
- FCIP Trunking (licensable) with network-based failure recovery (failover only) and load balancing.
- Multiple circuits per trunk.
 - Four per trunk through the GbE ports.
 - Ten per trunk through the 10 GbE ports.
- SO-TCP with reorder resistance.
- FastWrite over FCIP.
- Tape pipelining over FCIP.
- FICON XRC emulation and tape pipelining over FCIP (licensable).
- FICON CUP (licensable).
- Virtual E_ports.
- FCIP QoS.
- Support for 200 ms RTT (on a limited number of GbE ports).
- Adaptive Rate Limiting (licensable).
- TCP performance graphing in Web Tools.
- FCIP Tunnels.
 - A maximum of 10 FCIP Tunnels for all GbE ports.
 - Four tunnels maximum per GbE port.
 - Two 10 GbE ports can support up to ten FCIP tunnels each.
 - Each FCIP tunnel is represented and managed as a virtual Fibre Channel E_Port.
 - Fibre Channel Routing Services can be used over the FCIP link.
 - The Link Cost is equal to the sum of all established/low metric (or currently active) circuits' MAX rates in the tunnel.
 - Fabrics connected through FCIP merge if the ports are configured as VE_Ports, and do not merge if they are configured as VEX_Ports. If VE_Ports are used in a Fibre Channel Routing Services backbone fabric configuration, then the backbone fabric merges, but the EX_Port-attached edge fabrics do not merge. For more information refer to the *Fabric OS Administrator's Guide*.
- Up to three FC trunking groups. The three groups are defined as:
 - Trunk group 0: FC ports 0,1
 - Trunk group 1: FC ports 6,7

B FCOE10-24 blade

- Trunk group 2: FC ports 2,3,4,5,8,9,10,11

FCOE10-24 blade

The FCOE10-24 blade has 24 Fibre Channel over Ethernet (FCoE) ports that enables the transmission of FC frames over an Ethernet network via encapsulation in standard Ethernet packets. This is enabled by adherence to Converged Enhanced Ethernet (CEE) standards, a low latency, lossless Ethernet standard. This does not require dedicated Ethernet lines, but rather can make use of existing Ethernet infrastructure to reduce costs.

There are no licensing requirements for functionality on this blade.

Refer to the *Fabric OS Administrator's Guide* for information on configuring these features.

The FCOE10-24 blade provides the following hardware features:

- 24 FCoE ports operating at 10 Gbps
- 32 FC ports operating at 8-Gbps through the backplane
- Hot pluggable
- I2C Management interface through the backplane
- JTAG support
- Blade power and status LEDs
- Link status LEDs per port

The FX8-24 blade also provides the following functionality features:

- FCoE switching
- CEE switching
- Standard L2 Ethernet features
- Standard Ethernet encapsulation
- End of row deployment

Diagnostics and Troubleshooting

In this appendix

- [Introduction](#) 105
- [Obtaining chassis and component status](#) 106
- [Interpreting POST and boot results](#) 106
- [Diagnostics](#) 107
- [Troubleshooting](#) 108

Introduction

For information about troubleshooting the entire fabric, refer to the *Fabric OS Troubleshooting and Diagnostics Guide*.

The PowerConnect B-DCX-4S includes a number of diagnostic aids to assist with troubleshooting, including LEDs on the hardware, commands that display current status, diagnostic tests for hardware and software, and error messages. In addition, a number of managing and monitoring features are available, such as Fabric Manager, Web Tools, Fabric Watch, and Advanced Performance Monitoring.

If the PowerConnect B-DCX-4S does not operate as expected, the following steps can be taken to diagnose the problem:

- Check the LEDs and see the LED tables ([Chapter 4, “Monitor System Components”](#)) for interpretation and recommended actions.
- Review the results of the last POST run by the PowerConnect B-DCX-4S ([“Interpreting POST and boot results”](#)).
- Review the error logs. (Refer to the *Fabric OS Troubleshooting and Diagnostics Guide* for more information).
 - Review RASlog entries.
 - Type the **sensorShow** command to determine the status of the hardware components.
 - Run diagnostic tests ([“Diagnostics”](#)).
 - Reboot the PowerConnect B-DCX-4S or power the entire chassis off and then on ([“Powering off the PowerConnect B-DCX-4S”](#) and [“Powering on the PowerConnect B-DCX-4S”](#)).

If the problem is still unresolved after these steps, contact your support provider. The information required by your support provider is listed under [“Getting technical help”](#).

Obtaining chassis and component status

The CLI commands in [Table 25](#) provide status and environmental information about the chassis and its components. These commands provide information only, and they do not interrupt traffic flow. For more information about these commands, refer to the *Fabric OS Command Reference*.

TABLE 25 Environmental status and maintenance commands

Command	Information displayed
sensorShow	Temperature readings for the port blades
	Temperature readings for the CP blades
	Status and RPM of all operational fans
	Status of all operational power supplies
tempShow	Temperature readings for the port blades
	Temperature readings for the CP blades
psShow	Status of all operational power supplies
fanShow	Status and RPM of all operational fans
chassisShow	Serial number, time awake, and additional information about each component
slotShow	Slot occupancy
errShow errDump	System error log. Refer to the <i>Fabric OS Message Reference</i> for more information on the messages in this log.

Interpreting POST and boot results

The PowerConnect B-DCX-4S performs Power On Self Test (POST) by default each time the chassis is powered on, rebooted, or reset. The PowerConnect B-DCX-4S can be rebooted using the **reboot** (to reboot each CP individually) or **fastBoot** commands. The **fastBoot** command reboots the switches without running POST. If the active CP blade is rebooted, it fails over to the standby CP blade.

POST

To verify that POST has completed without error:

- Verify that all LEDs return to a normal state after POST completes ([Chapter 4, “Monitor System Components”](#)).
If one or more LEDs do not return to a normal state, and this is not due to the PowerConnect B-DCX-4S being set to beacon, refer to the relevant LED table to identify and correct the problem. For port blades and CP and core switch blades, the **slotShow** command can be used to check the status of the slots. For information about turning beaconing on/off, refer to the *Fabric OS Administrator’s Guide*.
- Verify that the switch prompt displays when POST completes.
If it does not display, POST was not successfully completed. Contact the PowerConnect B-DCX-4S supplier for support.
- Review the system error log using the **errShow** or **errDump** commands.

Any errors detected during POST are written to the system log, which is accessible through the **errShow** command. For information about error messages, refer to the *Fabric OS Message Reference*.

POST includes the following steps:

1. Preliminary POST diagnostics are run.
2. Operating system is initialized.
3. Hardware is initialized.
4. Diagnostic tests are run on several functions, including circuitry, port functionality, ability to send and receive frames, all aspects of memory, parity, statistics counters, and serialization.

Boot

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

1. Universal port configuration is performed.
2. Links are initialized.
3. Fabric is analyzed. If any ports are connected to other switches, the PowerConnect B-DCX-4S participates in a fabric configuration.
4. The PowerConnect B-DCX-4S obtains a domain ID and assigns port addresses.
5. Unicast routing tables are constructed.
6. Normal port operation is enabled.

Diagnostics

Diagnostic tests are automatically run during POST to check the status of the PowerConnect B-DCX-4S. Any error messages generated during POST are sent to the error logs and to the serial console, if connected.

Diagnostic tests can also be run manually to test and troubleshoot the hardware and the firmware, including internal connections and circuitry, transceivers, and port cables. However, diagnostic tests are generally intended for use by support personnel.

NOTE

Error messages do not necessarily indicate that the PowerConnect B-DCX-4S requires maintenance.

Each diagnostic test can be implemented by entering the related command through a Telnet or serial session. For a list of diagnostic tests and commands, refer to the.

All diagnostic tests are run at link speeds of 1, 2, 4, and 8 Gbps. They might temporarily lock the transmit and receive speeds to a specific speed. Some diagnostic tests require interconnecting the ports to each other or using loopback plugs. If ports are interconnected, the media (cables and transceivers) at each end of the connection must be of the same type. For example, short wavelength media must be connected to short wavelength media, and likewise with long wavelength media and copper media.

For more information about diagnostic tests and how to run them, refer to the *Fabric OS Administrator's Guide* and the *Fabric OS Command Reference*. For information about system error messages (**errShow** or **errDump**), refer to the *Fabric OS Troubleshooting and Diagnostics Guide*.

Troubleshooting

Table 26 provides a list of issues, possible causes, and recommended actions.

TABLE 26 Troubleshooting the PowerConnect B-DCX-4S

Issue	Possible cause	Recommended action
Entire chassis powers off automatically.	Power supplies are inadequate to support the installed components.	Add an additional power supply.
Several or all components are not operating.	One or both power cables may not be connected to a live source.	Ensure that both power cables are connected to live outlets.
	One or both AC power switches might be off.	Ensure that both AC power switches are on (AC switches light up green when on).
Serial connection is faulty or serial port logs have incorrect or missing information.	Serial cable is not connected correctly.	Ensure that the cable is firmly connected to the workstation computer and to the PowerConnect B-DCX-4S.
	Terminal emulator application parameters are not set correctly.	Ensure that the terminal emulator application is configured as follows: 9600 bits per second, 8 databits, no parity, 1 stop bit, no flow control.
	Serial port might be incompatible (only RS-232 is supported).	Ensure that the PowerConnect B-DCX-4S is connected to an RS-232 port. RS-423 serial ports might experience difficulties due to corner-case incompatibilities of the standards.
	Pins on the serial cable or serial port might be damaged.	Remove the cable and inspect the pins on the cable and in the serial port. Do not reinstall if the pins on either component have any visible damage, as this could damage the pins on the other component. Replace the components as required.
CP Ethernet link speed is different than expected or a link cannot be established.	There might be a conflict with the CP Ethernet link speed negotiation set up by the network.	Specify the CP Ethernet link speed by typing the ifModeSet command. For more information about Ethernet connectivity to the PowerConnect B-DCX-4S, refer to the LAN guidelines provided through the MyBrocade Web site.
Configuration data is inaccurate or cannot be accessed.	Chassis was powered off/on while a WWN card was uninstalled or failed.	Install an operational WWN card and power the system off/on again.
	The PowerConnect B-DCX-4S was rebooted while a WWN card was uninstalled or failed.	
Initial set up results in IP address/Domain ID conflict.	The PowerConnect B-DCX-4S was connected to the fabric before being configured.	See Chapter 3, “Log In and Configuration” and the for configuration information.

TABLE 26 Troubleshooting the PowerConnect B-DCX-4S (Continued)

Issue	Possible cause	Recommended action
LEDs on one or more components are changing rapidly or do not indicate a healthy state.	The PowerConnect B-DCX-4S might be booting or running POST.	Verify that boot and POST are complete. The PowerConnect B-DCX-4S requires a minimum of 3 minutes, usually, after power-on to complete POST.
	Beaconing might be on for the entire PowerConnect B-DCX-4S or for individual components.	Determine whether beaconing is on by typing the switchShow command and reviewing the output for the status of switch beaconing and blade beaconing
	Individual components might have failed.	See the LED tables in Chapter 4, "Monitor System Components" for interpretation and recommended actions.
	Pins on the components might be damaged.	Remove the component from the chassis and inspect the pins on the component and inside the chassis. Do not reinstall if pins on either component are damaged, as this could damage pins on other components. Replace the parts as required.
None of the LEDs on a component are on.	Component might not be seated correctly.	Ensure that the PowerConnect B-DCX-4S has power and the component is firmly seated. If the problem continues, enter the sensorShow command to determine the component status. If the component is a CP blade or port blade, enter the slotShow command to determine the status.
	Component might have failed.	Replace the component as necessary.
CP blades are failing over frequently.	A third-party application has a memory leak.	Check application for memory leaks.
	There is excessive serial port activity.	Ensure that the serial port activity remains below the specified level.
	CP blade is attached to an Ethernet with high traffic loads.	Ensure that the Ethernet traffic remains below the specified level
	Chassis is overheated.	Enter the tempshow and sensorShow commands to check internal temperature. If components are overheating, shut down port blades as necessary to return the temperature to the operating range.
One or more port blades have either shut down or failed POST as indicated by the error log.	Blades might be overheated.	Enter the sensorShow command to check the internal temperature readings. If components are overheating, shut down port blades as necessary to return the temperature readings to the operating ranges.
	Blades might be faulty.	Enter the slotShow command to determine status. For more information, enter the diagDisablePost command; then, use the slotPowerOff [slot number] and slotPowerOn [slot number] command. Resolve the source of the problem or replace the blade as required.
	Pins on the blade or the backplane might be damaged.	Remove the blade from the chassis and inspect the pins on the blade and on the backplane inside the slot. Do not reinstall if the pins on either component are damaged, as this could damage pins on other components. Replace the components as required.

TABLE 26 Troubleshooting the PowerConnect B-DCX-4S (Continued)

Issue	Possible cause	Recommended action
An individual component is not operating as expected.	Component may not have power or may not be firmly seated.	Ensure that the component is receiving power (power LED should be on) and the component is firmly seated.
	Pins on the component or the backplane might be damaged.	Remove the component from the chassis and inspect the pins on the blade and inside the chassis. Do not reinstall if the pins on either component are damaged, as this could damage pins on other components. Replace parts as required.
	The component might have failed.	Enter the tempshow and sensorShow commands to determine the component status. If the component is a CP blade or port blade, enter the slotShow command to determine the status. Replace the component as necessary

Port Numbering Template

Print or copy the following templates in this appendix and use them to document the port numbering pattern for the PowerConnect B-DCX-4S. These templates show:

- Port side populated with four FC8-48 port blades, two CR4S-8 blades, and two CP8 blades
- Port side populated with four FC8-32 port blades, two CR4S-8 blades, and two CP8 blades
- Port side populated with four FC8-16 port blades, two CR4S-8 blades, and two CP8 blades
- FC10-6 port blades
- FR4-18i application blades
- FA4-18 application blades
- FS8-18 encryption blades
- FX8-24 extension blade
- FCOE10-24 FCoE blade

The individual blades are shown vertically to make it easier to read the port numbering. Their orientation in the DCX-4S chassis is horizontal.

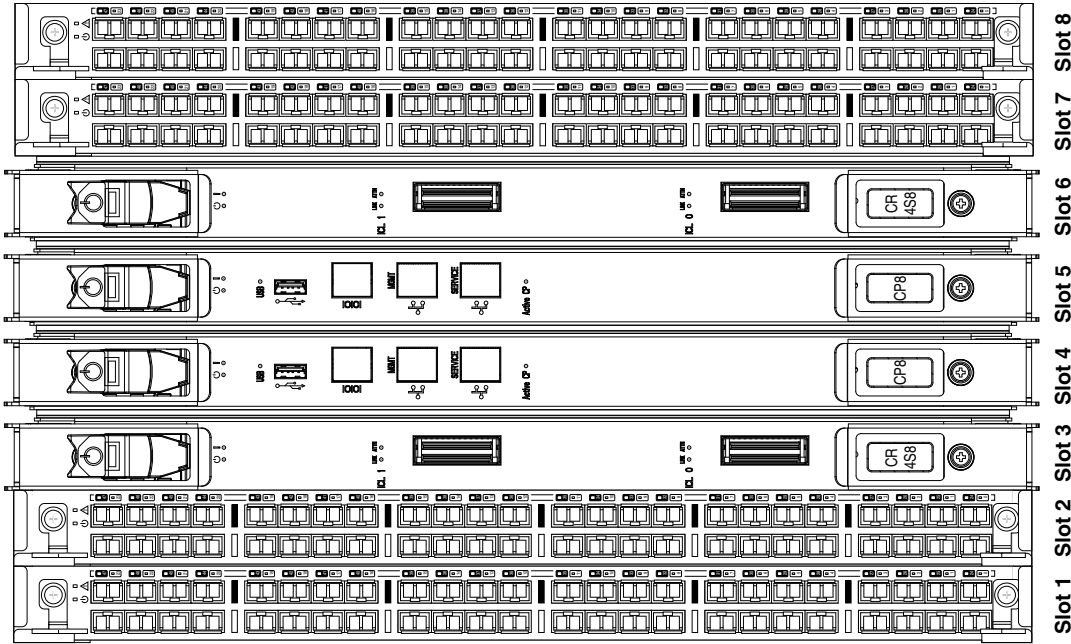


FIGURE 35 Port side populated with four FC8-48 port blades, two CR4S-8 blades, and two CP8 blades

D Port Numbering Template

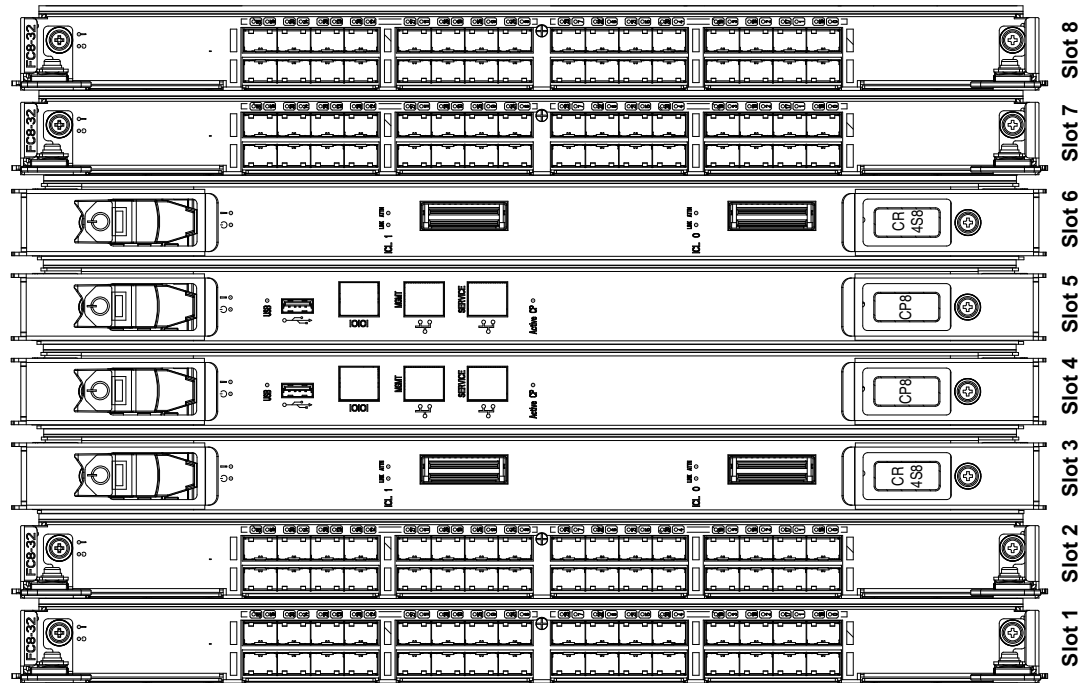


FIGURE 36 Port side populated with four FC8-32 port blades, two CR4S-8 blades, and two CP8 blades

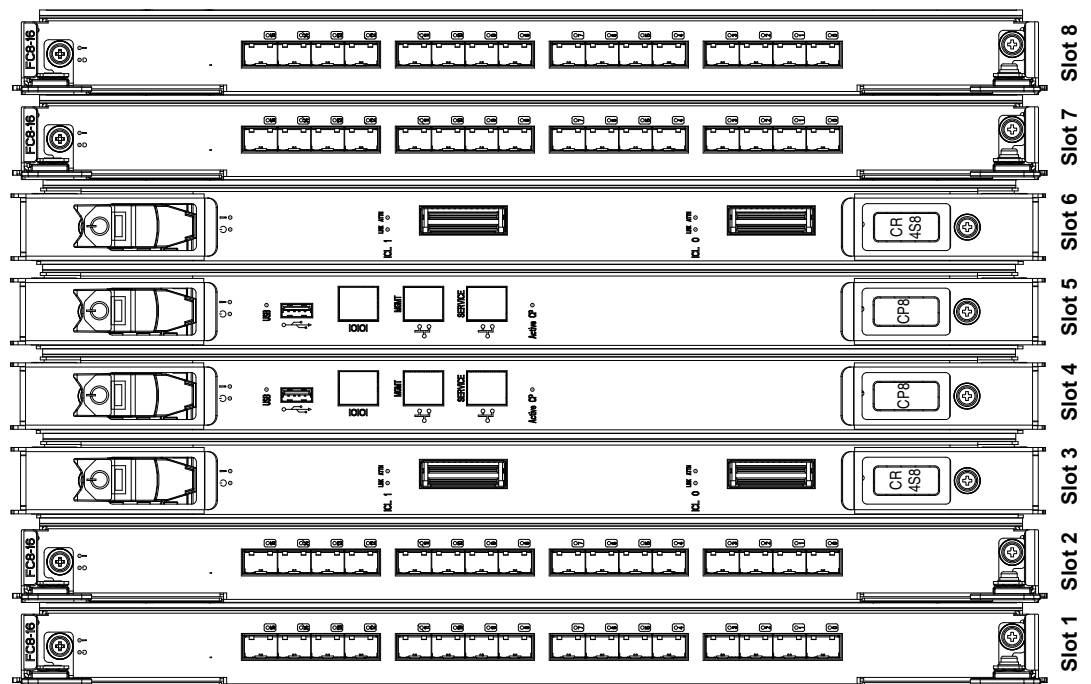


FIGURE 37 Port side populated with four FC8-16 port blades, two CR4S-8 blades, and two CP8 blades

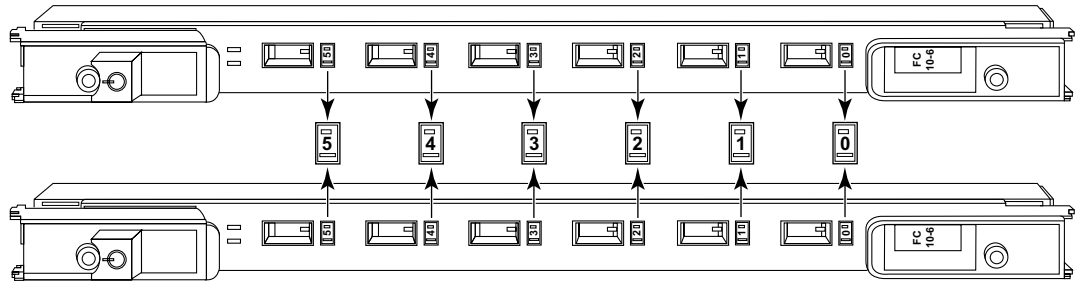


FIGURE 38 FC10-6 port blades

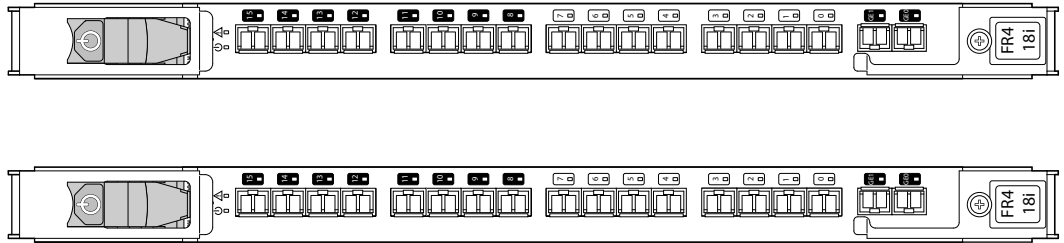


FIGURE 39 FR4-18i application blades

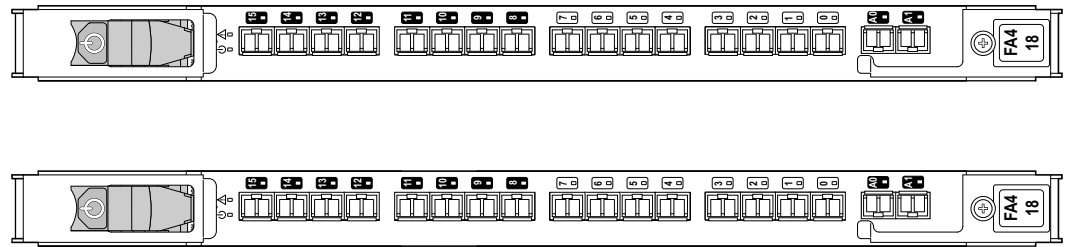


FIGURE 40 FA4-18 application blades

D Port Numbering Template

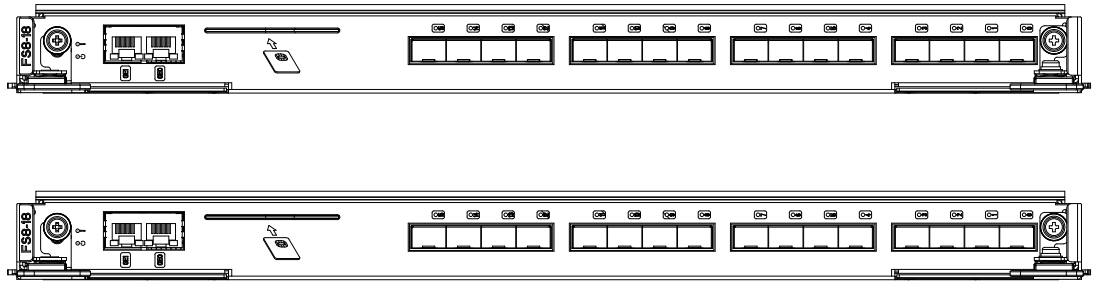
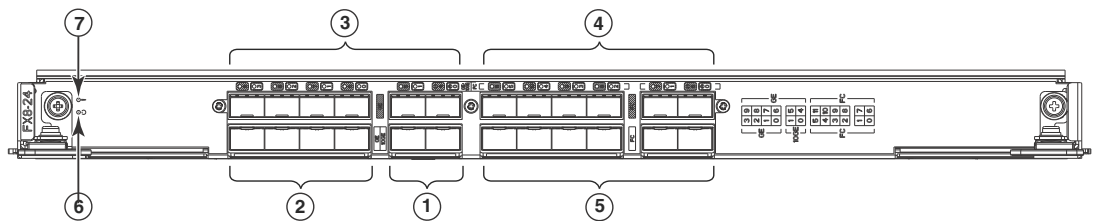
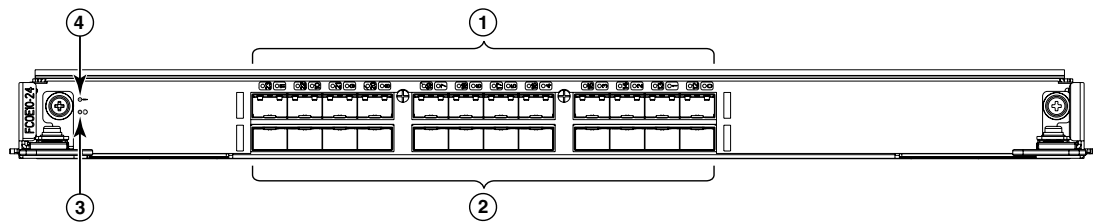


FIGURE 41 FS8-18 encryption blades



- | | | | |
|---|------------------|---|------------------|
| 1 | 10 GbE ports 0-1 | 5 | FC ports 0-5 |
| 2 | 1 GbE ports 0-3 | 6 | Blade Power LED |
| 3 | 1 GbE ports 4-9 | 7 | Blade Status LED |
| 4 | FC ports 6-11 | | |

FIGURE 42 FX8-24 extension blade



- | | | | |
|---|------------------------|---|------------|
| 1 | 10 GbE CEE ports 12-23 | 3 | Power LED |
| 2 | 10 GbE CEE ports 0-11 | 4 | Status LED |

FIGURE 43 FCOE10-24 FCoE blades

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