

HP BLc Intel[®] 4X QDR InfiniBand Switch Hardware Installation Guide for HP c-Class BladeSystems

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1 Preparing for Installation

Audience

This document is intended for HP service representatives and other persons trained to install hardware options in HP BladeSystem configurations. Such persons are expected to understand the hazards of working in this environment and to take suitable precautions to minimize danger to themselves and others.

Documentation Resources

You can download the documentation for components referenced in this installation guide from the HP BladeSystem Technical Resources website:

<http://h71028.www7.hp.com/enterprise/cache/499697-0-0-0-121.html>

The following related documents can also be found at the above website:

- HP BLc HP BLc Intel® 4X QDR InfiniBand Switch Hardware Installation Guide User Guide
- HP BLc HP BLc Intel® 4X QDR InfiniBand Switch Hardware Installation Guide CLI Reference Guide

Check the HP BladeSystem Technical Resources website frequently for updates.

Kit Contents

The kit contains the following items:

- An HP BLc Intel® 4X QDR InfiniBand Switch for HP c-Class BladeSystems (505958-B21)
- An optional InfiniBand Switch Management Module (505959-B21) for the HP BLc Intel® 4X QDR InfiniBand Switch for HP c-Class BladeSystems

See [Figure 1](#).

- This hardware installation document
- Warranty documentation

 **NOTE:** This kit does not include any subnet manager software, InfiniBand cables, or cable management brackets. You must install the Intel® True Scale Fabric Suite Fabric Manager on this switch, a subnet manager on a host node, or install an internally managed InfiniBand interconnect to manage the InfiniBand fabric. You must also order InfiniBand cables and cable management brackets separately.

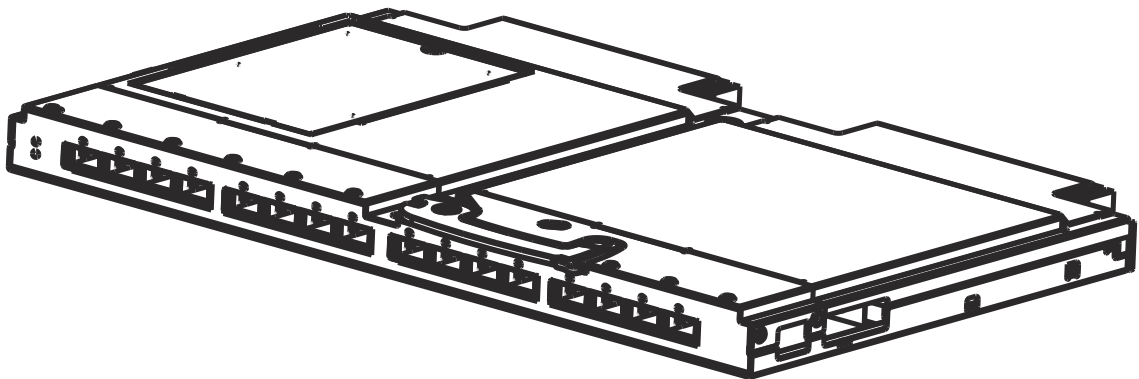


Figure 1 HP BLc Intel® 4X QDR InfiniBand Managed Switch

Additional Information

Mezzanine card installation determines bay assignments for interconnect module installation. For more information on the association between the mezzanine connector and the interconnect bays, see the following documentation:

- *HP BladeSystem c7000 Enclosure Setup and Installation Guide*
- *HP BladeSystem c3000 Enclosure Setup and Installation Guide*
- *HP BLc Intel® 4X QDR InfiniBand Switch Cable Management Kit Installation Guide*

For specific port connections for each server blade, see the *HP BladeSystem Onboard Administrator User Guide*. Connections differ by blade type. The information in this guide explains cabling between an HP BLc Intel® 4X QDR InfiniBand Managed Switch and the network switches.

The HP Onboard Administrator screen example (see [Figure 2](#)) is a reference for port mapping.

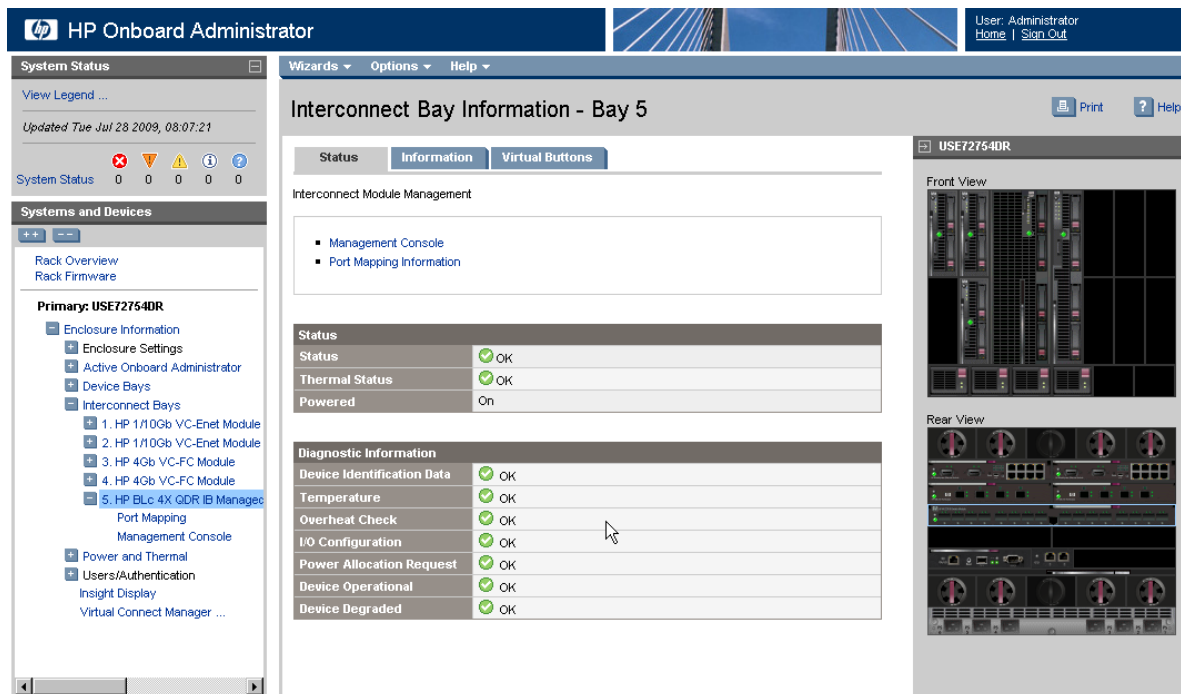


Figure 2 HP Onboard Administrator Screen Example

NOTE: The HP's Onboard Administrator (OA) will not distinguish between a managed switch and a non-managed switch.

You can install up to 16 InfiniBand cables in the uplink ports on an Intel® BLc 4X QDR InfiniBand Switch. An external subnet manager (not included with a Intel® BLc 4X QDR InfiniBand Switch) manages the topology for the InfiniBand fabric.

Connectors

Figure 3 shows the Quad Small Form-factor Pluggable (QSFP) connector ports and Table 1 describes the connectors on the front panel of the Intel® BLc 4X QDR InfiniBand Switch.

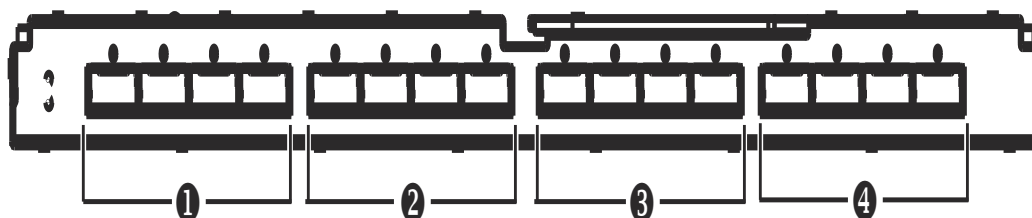


Figure 3 Intel® BLc 4X QDR InfiniBand Switch Connector Ports

Table 1 Intel® BLc 4X QDR InfiniBand Switch Connector Ports

Item Number	Description
1	Uplink connectors, ports 1-4
2	Uplink connectors, ports 5-8
3	Uplink connectors, ports 9-12
4	Uplink connectors, ports 13-16

Indicators

Figure 4 shows the Indicators and Table 2 describes the indicators on the front panel of an Intel® BLc 4X QDR InfiniBand Switch.



Figure 4 Intel® BLc 4X QDR InfiniBand Switch Indicators

Table 2 Intel® BLc 4X QDR InfiniBand Switch Indicators

Item Number	Description	Status
1	Module Status	Green = Normal operation Amber = Degraded condition Off = Power off
2	Module locator (UID)	Blue = Module ID selected Off = Module ID not selected
3	Port state	Green = Port is active Off = Port not active

2 Hardware Installation

This chapter contains the following sections:

- "Installing an HP BLc Intel® 4X QDR InfiniBand Managed Switch"
- "Installing InfiniBand Cables in an HP BLc Intel® 4X QDR InfiniBand Managed Switch"
- "Removing an InfiniBand Cable from the HP BLc Intel® 4X QDR InfiniBand Managed Switch"
- "InfiniBand Subnet Management"

Installing an HP BLc Intel® 4X QDR InfiniBand Managed Switch

To install an HP BLc Intel® 4X QDR InfiniBand Managed Switch, follow the steps in the following subsections.

△ **CAUTION:** All panels and doors should be in place and securely fastened while the unit is in operation for proper cooling and for EMI emissions control.

Preparing the Interconnect Module Bay in the HP BladeSystem Enclosure

To prepare the interconnect module bay in an HP BladeSystem enclosure, follow these steps:

1. Remove any devices or blanks.
2. To remove the divider, press the divider release button (see callout 1 in [Figure 5](#)) and slide the divider out of the interconnect module bay (see callout 2 in [Figure 5](#)).

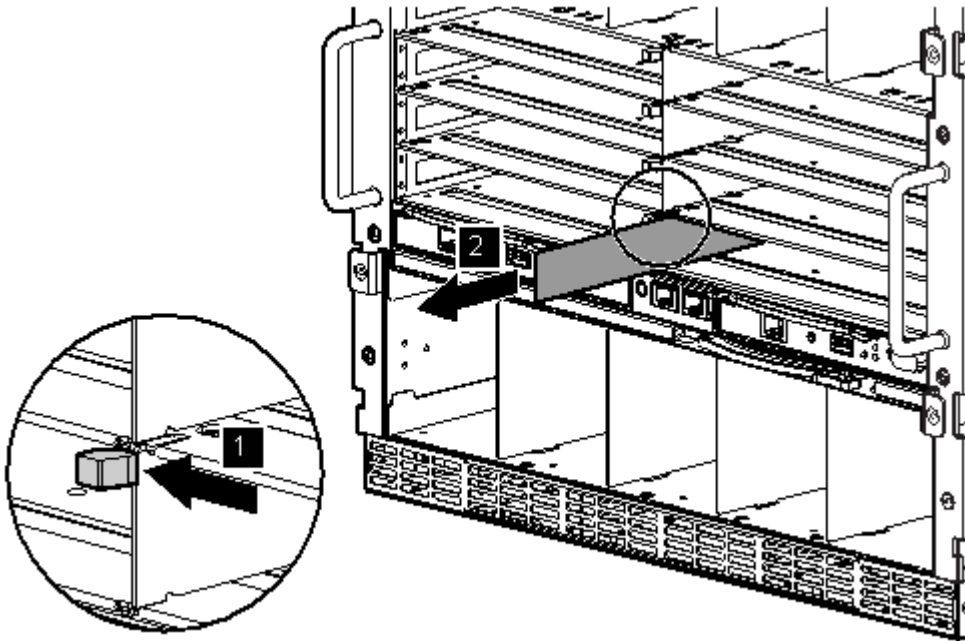


Figure 5 Removing a Divider from the HP BladeSystem Enclosure Interconnect Module Bay

Installing an HP BLc Intel® 4X QDR InfiniBand Managed Switch into an HP BladeSystem Enclosure

To install an HP BLc Intel® 4X QDR InfiniBand Managed Switch into an HP BladeSystem enclosure, follow these steps:

1. Slide the HP BLc Intel® 4X QDR InfiniBand Managed Switch all the way into the HP BladeSystem enclosure (see callout 1 in Figure 6).

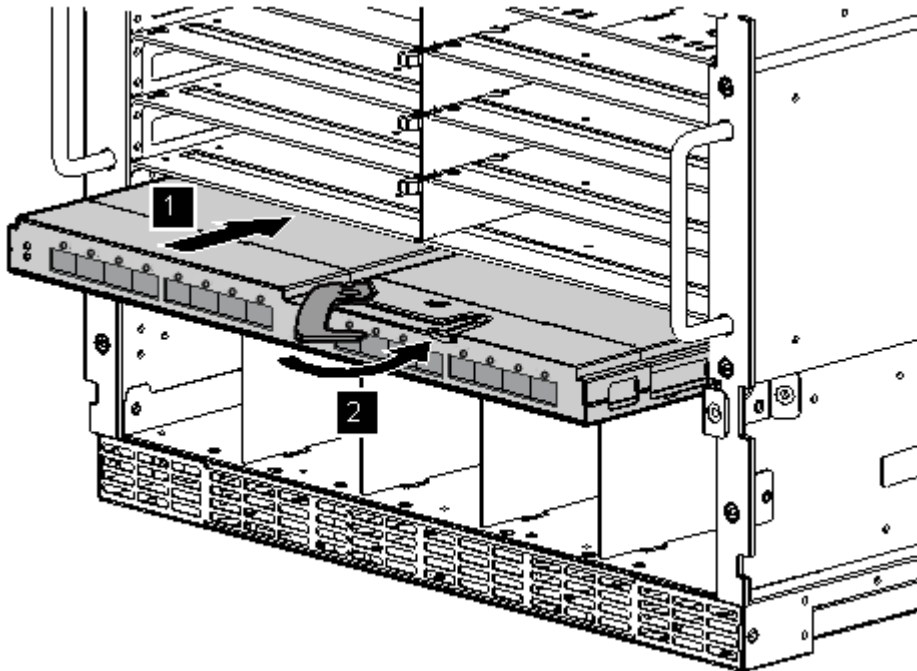


Figure 6 Installing an HP BLc Intel® 4X QDR InfiniBand Managed Switch into an HP BladeSystem Enclosure

2. Push the blade handle in until it is in the locked position (see callout 2 in Figure 6). The blade handle is locked when you cannot pull it back out without pushing the blade handle release.

Installing InfiniBand Cables in an HP BLc Intel® 4X QDR InfiniBand Managed Switch

Figure 7 shows and Table 3 defines an InfiniBand cable with a QSFP connector used with an HP BLc Intel® 4X QDR InfiniBand Managed Switch. QSFP connector to QSFP connector InfiniBand QDR/QDR cables are used to connect multiple HP BLc Intel® 4X QDR InfiniBand Managed Switches together. For more information about supported InfiniBand cables, see the *HP InfiniBand Options for HP ProLiant and Integrity Servers Quickspec* on the HP website:

http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.HTML

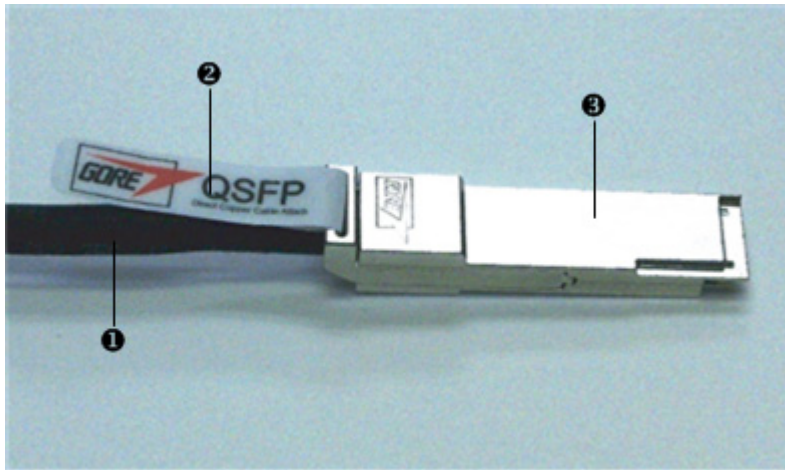


Figure 7 QSFP InfiniBand QDR/QDR Cable

Table 3 QSFP InfiniBand QDR/QDR Cable

Item Number	Description
1	InfiniBand cable
2	QSFP connector release pull tab
3	QSFP connector

 **NOTE:** The InfiniBand cables are not included in this kit and must be purchased separately.

When the HP BLc Intel® 4X QDR InfiniBand Managed Switches are connected together with the QSFP to QSFP InfiniBand cables it forms an InfiniBand high-performance network (also referred to as an InfiniBand fabric). For more information about InfiniBand networks, see *InfiniBand support for HP ProLiant and HP Integrity servers* on the HP website:

<http://h20311.www2.hp.com/HPC/cache/595863-0-0-0-121.html>

Installing an InfiniBand Cable in an HP BLc Intel® 4X QDR InfiniBand Managed Switch

To install an InfiniBand cable in an HP BLc Intel® 4X QDR InfiniBand Managed Switch, follow these steps:

1. Align the InfiniBand cable QSFP connector (see callout 1 in [Figure 8](#)) with the HP BLc Intel® 4X QDR InfiniBand Managed Switch port (see callout 2 in [Figure 8](#)).

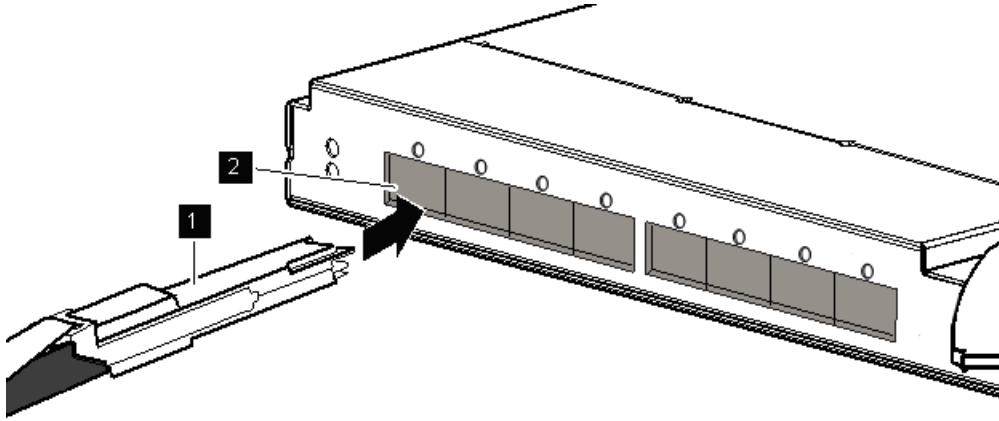


Figure 8 Install InfiniBand Cable in an HP BLc Intel® 4X QDR InfiniBand Managed Switch Port

2. Insert the QSFP connector into the HP BLc Intel® 4X QDR InfiniBand Managed Switch port (see callout 1 in [Figure 9](#)) until it is fully engaged and locked.

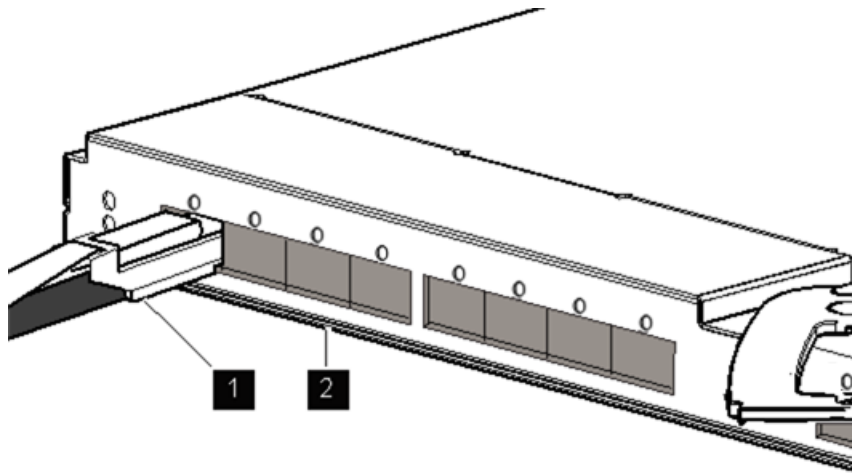


Figure 9 InfiniBand Cable Installed in Port 1 of an HP BLc Intel® 4X QDR InfiniBand Managed Switch

You can install up to 16 InfiniBand cables in an HP BLc Intel® 4X QDR InfiniBand Managed Switch. It is not necessary to install the InfiniBand cables in any particular order. However, for the sake of consistency, begin installing the InfiniBand cables in port 1 and continue installing the cables up to port 16.

Removing an InfiniBand Cable from the HP BLc Intel® 4X QDR InfiniBand Managed Switch

To remove an InfiniBand cable from an HP BLc Intel® 4X QDR InfiniBand Managed Switch, pull the QSFP connector release tab (see callout 2 in [Figure 7](#)), which releases the connector while using your other hand to remove the connector from the switch port.

InfiniBand Subnet Management

The HP BLc Intel® 4X QDR InfiniBand Managed Switch has the capability to have the Intel® True Scale Fabric Suite Fabric Manager installed for managing and troubleshooting the switch. All InfiniBand networks require a subnet manager to manage, monitor, and troubleshoot the InfiniBand fabric.

The Intel® Fabric Manager is required for managing and troubleshooting an HP BLc Intel® 4X QDR InfiniBand Managed Switch. A subnet manager can be host-based (installed and run on a host node connected to the InfiniBand fabric). You can also use a switch-based subnet manager when certain managed switches are incorporated into the InfiniBand fabric.

For more information about InfiniBand subnet management, see the InfiniBand interconnect documentation that came with your system or cluster. Also see the *HP InfiniBand Options for HP ProLiant and Integrity Servers Quickspec* on the HP website:

http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.HTML

3 Hardware Removal


Put the HP BladeSystem enclosure into a safe and stable state for component removal and bring the component to an appropriate state for removal. You must ensure that you can reach the component easily and handle it safely.

For more information about removing c-Class components from the c-Class enclosure, see the *HP BladeSystem Enclosure Service and Maintenance Guide*:

<http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00714237/c00714237.pdf>

To remove an HP BLc Intel® 4X QDR InfiniBand Managed Switch, follow these steps:

1. Disconnect and remove each InfiniBand cable until all of the networking ports are unplugged.
When disconnecting the cables, ensure that you do not bend them more than the recommended bend radius. It might be necessary to loosen the releasable cable ties enough to remove the cable from the switch. HP recommends that you do not remove the cables from the releasable cable ties on the c-Class cable management bracket.
2. Remove the cable management bracket, but do not remove the cables from the bracket.
3. Press the switch blade handle release button and slide the switch all the way out of the HP BladeSystem enclosure.

 **NOTE:** HP provides various cable management solutions. Installation and removal of the HP BLc Intel® 4X QDR InfiniBand Managed Switch might depend on which type of cable management bracket is used to support the InfiniBand cables used in your configuration. If you are unsure of the process to remove a switch for service, contact an HP service representative. Also check the HP BladeSystem Technical Resources website frequently for updates to this guide:

<http://h71028.www7.hp.com/enterprise/cache/316735-0-0-0-121.html>

4 Regulatory Compliance

The chapter lists all of the regulatory notices of compliance for the HP BLc Intel® 4X QDR InfiniBand Managed Switch.

Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, this product has been assigned a unique regulatory model number. The regulatory model number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this regulatory model number. The regulatory model number is not the marketing name or model number of the product.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital 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 instructions, may 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 personal expense.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian Notice

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

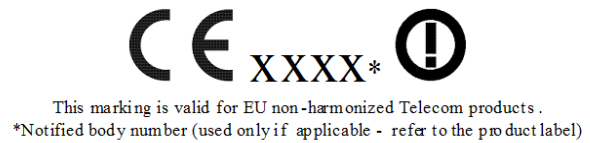
European Union Regulatory Notice

This product complies with the following EU Directives:

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC

Compliance with these directives implies conformity to applicable harmonized European standards (European Norms) which are listed on the EU Declaration of Conformity issued by Hewlett-Packard for this product or product family.

This compliance is indicated by the following conformity marking placed on the product:



Hewlett-Packard GmbH, HQ-TRE, Herrenberger Strasse 140, 71034 Boeblingen, Germany

The official EU CE declaration of conformity for this device may be found at
<http://www.hp.com/go/certificates>

Japanese Notice

JAPANESE NOTICE

この装置は、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は適切な対策を講ずるよう要求されることがあります。

VCCI-A

Korean Notice

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A Installation of Switch Management Module

This appendix provides the procedures for installing the Switch Management Module. The Switch Management Module is not a Field Replaceable Unit (FRU) and is installed in the managed version of the HP BLc Intel® 4X QDR InfiniBand Managed Switch.

To install the Switch Management Module in an HP BLc Intel® 4X QDR InfiniBand Managed Switch, follow the steps below:

1. Unscrew and remove the screw (see callout 1 in [Figure 10](#)) on the blank cover (see callout 2 in [Figure 10](#)).

Place the screw to the side to be reused.



Figure 10 Location of the Switch Management Module Blank Cover.

2. Remove the blank cover (see callout 2 in [Figure 10](#)) and discard.
3. Insert the Switch Management Module Assembly ([Figure 11](#)) on the switch at the pivot points (see callout 1 in [Figure 12](#)).

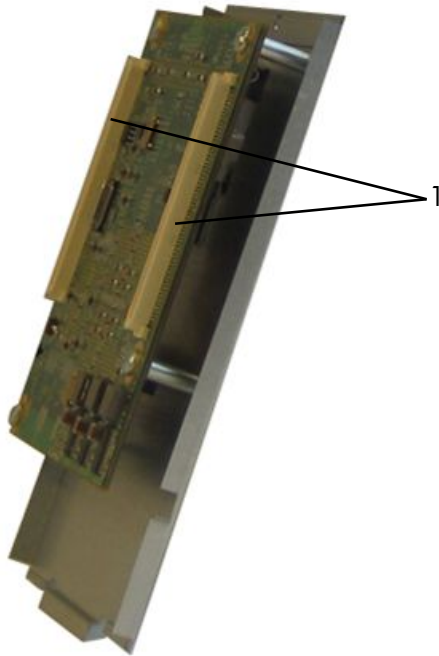


Figure 11 Switch Management Module Assembly

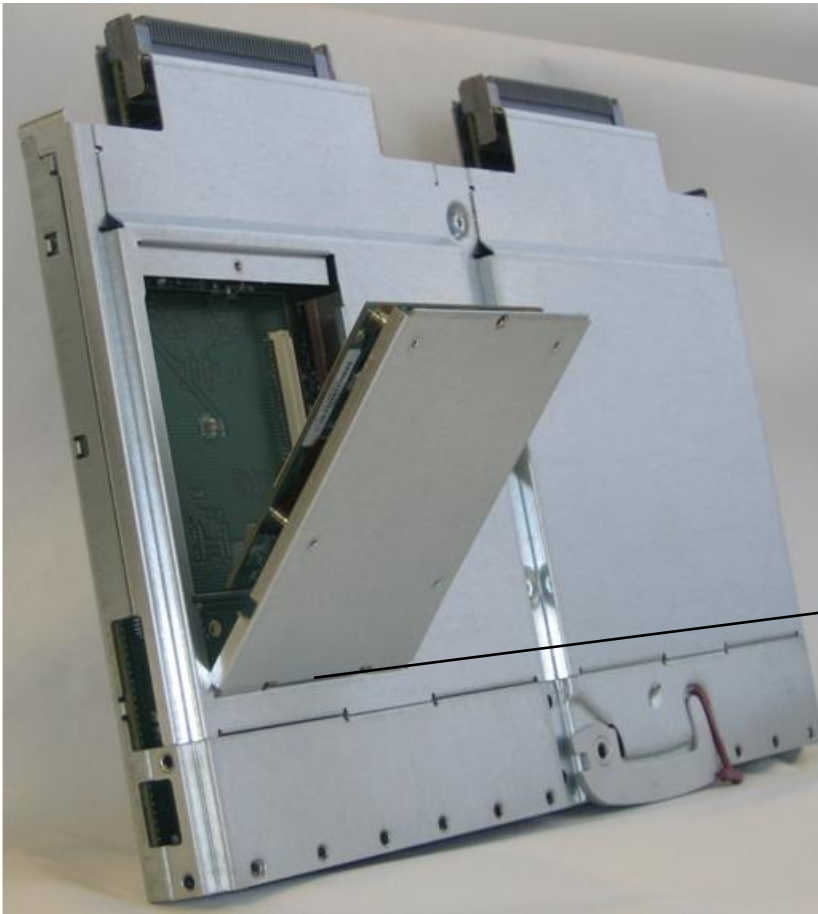


Figure 12 Switch with Switch Management Module

4. Close cover slowly, ensuring that the module connectors (see callout 1 in [Figure 11](#)) connect to the motherboard connectors (see callout 1 in [Figure 13](#)).

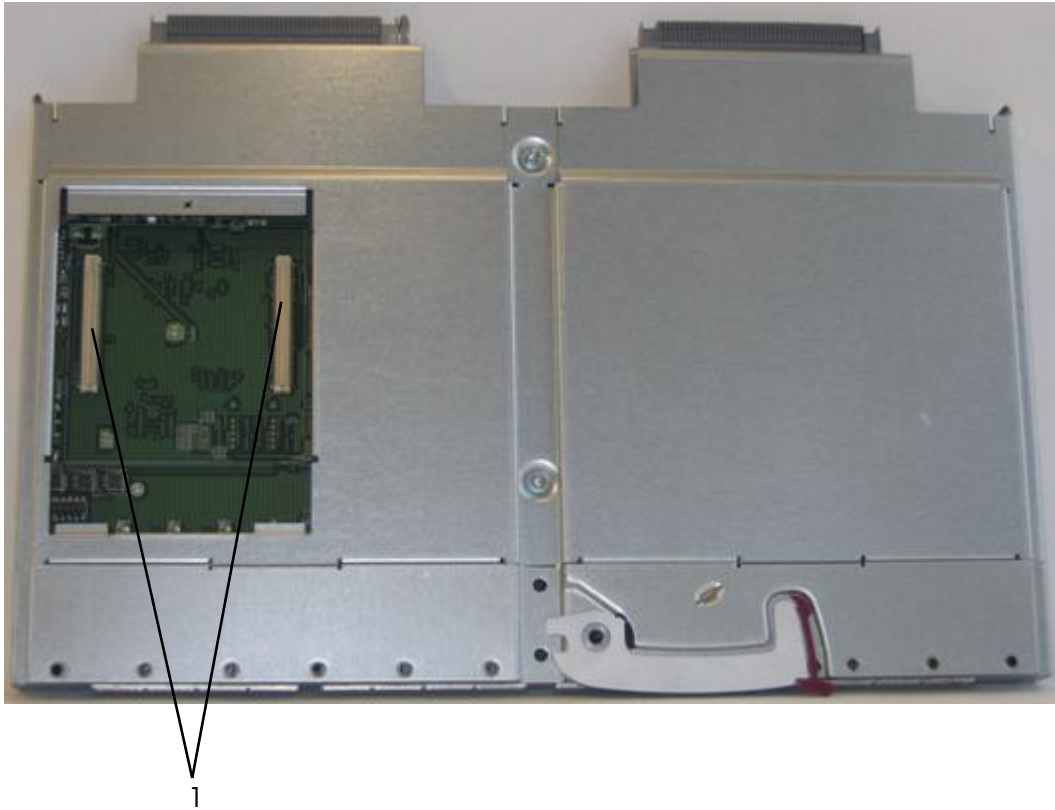


Figure 13 Switch with Switch Management Module Cover Removed

5. Replace the screw that was removed in [step 1](#) (see callout 1 in [Figure 10](#)) and tighten securely.



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