

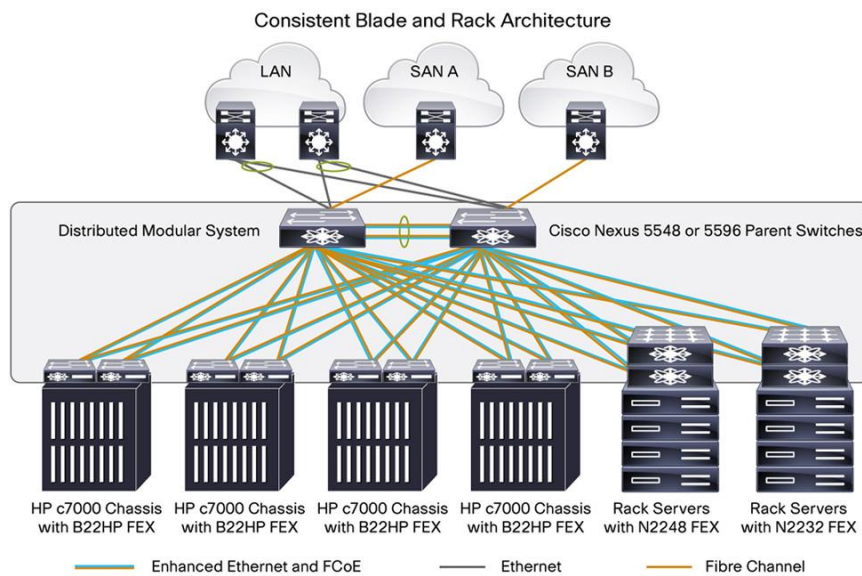
# Cisco Nexus B22 Blade Fabric Extender

## Product Overview

The Cisco Nexus<sup>®</sup> B22 Blade Fabric Extender is designed to simplify data center server access architecture and operations in environments in which third-party blade servers are used. The Cisco Nexus B22, together with the Cisco Nexus 2000 Series Fabric Extenders, Cisco<sup>®</sup> Adapter Fabric Extender (Adapter FEX), and Cisco Data Center Virtual Machine Fabric Extender (VM-FEX), is part of the Cisco Fabric Extender (FEX) portfolio, which provides a highly scalable unified server access platform supporting 100 Megabit to 10 Gigabit Ethernet over fiber and copper, rack and blade form factors, and IEEE Data Center Bridging (DCB) protocol. The platform offers excellent support for the integration of third-party blade chassis into a Cisco Unified Fabric.

The Cisco Nexus B22 Blade Fabric Extender behaves like a remote line card for a parent Cisco Nexus switch, together forming a distributed modular system. This architecture simplifies data center access operations and architecture by combining the management simplicity of a single high-density access switch with the cabling simplicity of integrated blade switches and top-of-rack (ToR) access switches (Figure 1).

**Figure 1.** Cisco Nexus Fabric Extenders Provide Highly Scalable Unified Server Access Connectivity



The Cisco Nexus B22 provides the following main benefits:

- Highly scalable, consistent server access: The distributed modular system creates a scalable server access environment with no reliance on Spanning Tree Protocol, providing consistency between blade and rack servers.
- Simplified operations: One single point of management and policy enforcement using upstream Cisco Nexus switches eases the commissioning and decommissioning of blades through zero-touch installation and automatic configuration of fabric extenders.

- Increased business benefits: Consolidation, cabling reduction, investment protection through feature inheritance from the parent switch, and the capability to add functions without the need for a major equipment upgrade of server-attached infrastructure all contribute to reduced operating expenses (OpEx) and capital expenditures (CapEx).

Each member of the Cisco Nexus B22 platform transparently integrates into the I/O module slot of a third-party blade chassis, drawing both power and cooling from the blade chassis itself.

The Cisco Nexus B22 provides two types of ports:

- Ports for blade server attachment (host interfaces)
- Uplink ports (fabric interfaces)

Fabric interfaces, located on the front of the Cisco Nexus B22 module, are for connectivity to the upstream parent Cisco Nexus switch.

The Cisco Nexus B22 comes in four models. Figure 2 shows the Cisco Nexus B22 Blade Fabric Extender for HP. Figure 3 shows the Cisco Nexus B22 Blade Fabric Extender for Fujitsu. Figure 4 show the Cisco Nexus B22 Blade Fabric Extender for Dell. Figure 5 shows the Cisco Nexus B22 Blade Fabric Extender for IBM.

**Figure 2.** Cisco Nexus B22 Blade Fabric Extender for HP



**Figure 3.** Cisco Nexus B22 Blade Fabric Extender for Fujitsu



**Figure 4.** Cisco Nexus B22 Blade Fabric Extender for Dell



**Figure 5.** Cisco Nexus B22 Blade Fabric Extender IBM



Table 1 lists the Cisco Nexus B22 Blade Fabric Extenders. Cisco Nexus B22 Blade Fabric Extenders and Cisco Nexus 2000 Series Fabric Extenders can be mixed and matched to a parent switch to provide a variety of connectivity options, as shown in Table 2.

**Table 1.** Cisco Nexus B22 Fabric Extender Models

Model	Description
Cisco Nexus B22HP Fabric Extender (blade fabric extender for HP)	16 x 1/10GBASE-KR internal host interfaces and 8 x 10 Gigabit Ethernet fabric interfaces (Enhanced Small Form-Factor Pluggable [SFP+])
Cisco Nexus B22IBM Fabric Extender (blade fabric extender for IBM)	14 x 1/10GBASE-KR internal host interfaces and 8 x 10 Gigabit Ethernet fabric interfaces (SFP+)
Cisco Nexus B22F Fabric Extender (blade fabric extender for Fujitsu)	16 x 10GBASE-KR internal host interfaces and 8 x 10 Gigabit Ethernet fabric interfaces (SFP+)
Cisco Nexus B22DELL Fabric Extender (blade fabric extender for Dell)	16 x 1/10GBASE-KR internal host interfaces and 8 x 10 Gigabit Ethernet fabric interfaces (SFP+)

**Table 2.** Cisco Nexus B22 Blade Fabric Extender Parent Switch Support Matrix

Cisco Nexus Parent Switch	Cisco Nexus 5000 Series Switches	Cisco Nexus 6000 Series Switches	Cisco Nexus 7000 Series Switches
Cisco Nexus blade fabric extender models	Cisco Nexus B22HP Cisco Nexus B22F Cisco Nexus B22DELL Cisco Nexus B22IBM	Cisco Nexus B22HP Cisco Nexus B22F Cisco Nexus B22DELL Cisco Nexus B22IBM	Cisco Nexus B22HP
Cisco Nexus parent switch model or line card	<ul style="list-style-type: none"> <li>Cisco Nexus 5010 or 5020 Switch for Cisco Nexus B22HP and B22F</li> <li>Cisco Nexus 5548P Switch</li> <li>Cisco Nexus 5548UP Switch</li> <li>Cisco Nexus 5596UP Switch</li> </ul>	<ul style="list-style-type: none"> <li>Cisco Nexus 6001 Series Switch</li> <li>Cisco Nexus 6004 Series Switch</li> </ul>	Line Cards Supported: <ul style="list-style-type: none"> <li>N7K-M132XP-12, N7K-M132XP-12L, N7K-M224XP-23L, N7K-F248XP-25, N7K-F248XP-25E</li> </ul>

Cisco Nexus Parent Switch	Cisco Nexus 5000 Series Switches	Cisco Nexus 6000 Series Switches	Cisco Nexus 7000 Series Switches
<b>Scalability</b>	<ul style="list-style-type: none"> <li>Up to 24 fabric extenders per Cisco Nexus 5548P, 5548UP, and 5596UP Switch (16 fabric extenders for Layer 3 configurations)</li> <li>Up to 12 fabric extenders per Cisco Nexus 5010 and 5020 Switch</li> </ul>	<ul style="list-style-type: none"> <li>Up to 48 fabric extenders for Layer 2 configurations</li> <li>Up to 24 fabric extenders for Layer 3 configurations</li> </ul>	<ul style="list-style-type: none"> <li>Up to 32 fabric extenders for SUP1/SUP2 configurations</li> <li>Up to 64 fabric extenders for SUP2E configurations</li> </ul>

## Features and Benefits

- Highly scalable, consistent access layer: Today's data centers must have massive scalability to manage the combination of an increasing number of blade servers and a higher demand for bandwidth from each server. The Cisco Nexus B22 increases the scalability of the blade access layer to accommodate both sets of demands without increasing management points within the network.
  - Massive scalability: A deployment of Cisco Nexus B22 Blade Fabric Extenders and Cisco Nexus 2000 Series Fabric Extenders connected to a Cisco Nexus parent switch supports highly scalable 1 and 10 Gigabit Ethernet environments under a single managed entity. Scalability limits are shown in Table 2, in the Scalability row.
  - Layer 2 dependability: Reliance on Spanning Tree Protocol is eliminated between the fabric extender and the parent switch, thus enabling a large, multipath, loop-free topology. Use of a single management entity to support a large server domain allows policy to be enforced more efficiently and enhances Layer 2 data center access scalability. Use of the virtual PortChannel (vPC) feature allows fast convergence and effective utilization of bandwidth in Layer 2 environments.
  - Consistent server access architecture: When mixed with the Cisco Nexus 2000 Series, the Cisco Nexus B22 provides a highly consistent server access architecture supporting 1 to 10 Gigabit Ethernet blade server connections and 100 Megabit to 10 Gigabit Ethernet rack server connections over both fiber and copper, supporting unified fabric and the IEEE DCB protocol.
- Simplified operations: The Cisco Nexus B22 simplifies operations and management.
  - Single point of management: Cisco Nexus B22 Blade Fabric Extenders are remote line cards for a Cisco Nexus parent switch. All device configurations are managed on the Cisco Nexus parent switch, and configuration information is downloaded to the Cisco Nexus B22 using in-band communication.
  - Software maintenance simplification: The Cisco Nexus B22 software is embedded in the Cisco Nexus parent switch software. The fabric extender is a "plug-and-play" device that automatically downloads the software image from the Cisco Nexus parent switch in the same way that a line card downloads software from the supervisor engine in a modular chassis. In-Service Software Upgrade (ISSU) on the fabric extenders provides the capability to perform transparent software upgrades, reducing downtime and allowing customers to integrate the newest features and functions with little or no impact on network operation for Ethernet, storage, and converged network environments.
  - Switch feature consistency across a large number of servers: The Cisco Nexus B22 forwards all traffic to the parent Cisco Nexus switch over 10 Gigabit Ethernet fabric uplinks. Passing all traffic to the parent switch allows traffic to be switched according to policies established on the parent Cisco Nexus switch with a single point of management. Standardizing on the Cisco Nexus switches for both blade and rack servers allows data centers to support the same switch features across the entire access layer with a single point of management.

- Tenfold reduction in management points: The number of management points is significantly less than when discrete switches are used in the blade chassis. A traditional 12-blade chassis design using a discrete, redundant pair of Gigabit Ethernet blade switches has 24 management points. The equivalent architecture using the Cisco Nexus B22 has only 2 management points: a tenfold reduction in management complexity.
- Business benefits: The Cisco Nexus B22 offers a number of benefits to enhance the overall business.
  - Cost-effective 10 Gigabit Ethernet solution: The Cisco Nexus B22 is an excellent platform for migration from 1 Gigabit Ethernet to 10 Gigabit Ethernet. Scalable 10 Gigabit Ethernet provides 10 times the bandwidth for approximately twice the price of 1 Gigabit Ethernet.
  - Consolidation: The Cisco Nexus B22 protects investment into the future, supporting evolving data center needs by providing an easy migration path to low-latency 10 Gigabit Ethernet, high-performance computing (HPC), virtual machine-aware networks. In addition, the combination of the Cisco Nexus 5000 Series and the Cisco Nexus B22 provides a unified network fabric that supports LAN and SAN consolidation. Another benefit of the Cisco fabric extender architecture is the capability to collapse data center access and aggregation layers into one single layer.
  - Investment protection: The Cisco Nexus B22 Blade Fabric Extenders can be mixed and matched with Cisco Nexus 2000 Series Fabric Extenders under a common parent Cisco Nexus switch. New functions can be derived from upstream Cisco Nexus switches, resulting in the capability to add new functions without the need for a major equipment upgrade.
  - Cabling reduction with unified fabric: The Cisco Nexus B22 can pass Ethernet and Fibre Channel over Ethernet (FCoE) traffic over the same set of uplinks onto the Cisco Nexus fabric, reducing the total number of uplinks required.
  - The Cisco Nexus B22 supports an optimal cabling strategy that simplifies network operations and prepares for future technologies. Low-cost connections of up to 10 meters to the Cisco Nexus parent switch can be made with copper Twinax cable, and longer connections of up to 100 meters can use the Cisco Fabric Extender Transceiver (FET). Standard 10-Gbps optics such as short reach (SR) and long reach (LR) are also supported for distances greater than 100 meters.
  - Effective bandwidth utilization: Today' blade servers are typically dual-homed to the network. Through vPC feature support, each server can bond its network adapters together into a 20-Gbps or higher PortChannel, achieving both high bandwidth and link redundancy.
  - Reduced power and cooling: Cost-effective 10 Gigabit Ethernet solutions, optimal cabling, device consolidation, and efficient bandwidth utilization all contribute to a significant reduction in power and cooling needs in the data center.

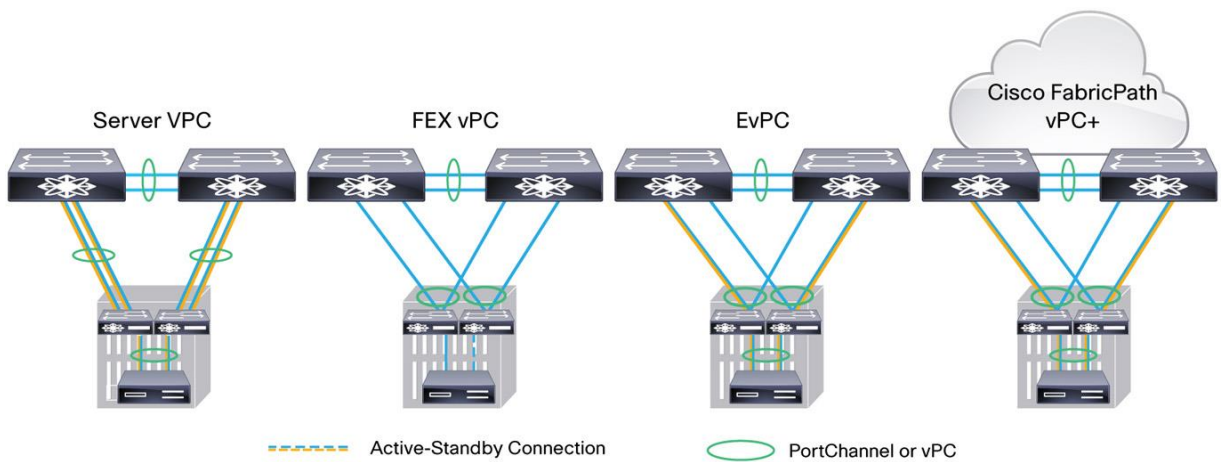
## Cisco Nexus B22 Deployment Scenarios

The Cisco Nexus B22 can be used in conjunction with a Cisco Nexus parent switch in four main design scenarios (shown in Figure 6):

- Server vPC: In this deployment scenario, access-layer redundancy is achieved through redundant server connections to two fabric extenders, using vPC and active-active server network interface card (NIC) teaming.
- Fabric extender vPC (FEX vPC): In this deployment scenario, access-layer redundancy is achieved through redundant connections between the Cisco Nexus B22 Blade Fabric Extenders and the Cisco Nexus parent switches using vPC.

- Enhanced vPC (EvPC): In this deployment scenario, access-layer redundancy is achieved in two ways: through redundant connections between the Cisco Nexus B22 Blade Fabric Extenders and the Cisco Nexus parent switches using vPC, and through redundant server connections to two fabric extenders using vPC and active-active server NIC teaming.
- vPC+: In this deployment scenario, access-layer redundancy is achieved through server vPC, FEX vPC, and EvPC. In addition, a vPC+ domain allows the Cisco Nexus parent switch and the fabric extenders to be viewed as a single virtual switch in a Cisco FabricPath network.

**Figure 6.** Cisco Nexus B22 Design Scenarios, from Left to Right: Server vPC, Fabric Extender vPC, Enhanced vPC, and vPC+



## Product Specifications

Tables 3 and 4 provide product specifications for the Cisco Nexus B22. Table 5 lists standards support, and Table 6 lists feature support.

**Table 3.** Cisco Nexus B22 Fabric Extender Product Specifications

Description	Cisco Nexus B22HP	Cisco Nexus B22F	Cisco Nexus B22IBM	Cisco Nexus B22DELL
<b>Supported blade chassis</b>	<ul style="list-style-type: none"> <li>• HP BladeSystem c3000 enclosure</li> <li>• HP BladeSystem c7000 enclosure</li> </ul>	<ul style="list-style-type: none"> <li>• Fujitsu PRIMERGY BX400 enclosure</li> <li>• Fujitsu PRIMERGY BX900 enclosure</li> </ul>	<ul style="list-style-type: none"> <li>• IBM Flex System</li> </ul>	<ul style="list-style-type: none"> <li>• Dell PowerEdge M1000e blade enclosure</li> </ul>
<b>Fabric extender host interfaces</b>	16	16	14	16
<b>Fabric extender host interface type</b>	1/10GBASE-KR internal midplane connections	10GBASE-KR internal midplane connections	10GBASE-KR internal midplane connections	1/10GBASE-KR internal midplane connections
<b>Fabric extender fabric interfaces</b>	8	8	8	8

Description	Cisco Nexus B22HP	Cisco Nexus B22F	Cisco Nexus B22IBM	Cisco Nexus B22DELL
<b>Fabric extender fabric interface type</b>	<ul style="list-style-type: none"> <li>Fiber: SFP+ optics (FET-10G, SFP-10G-SR, SFP-10G-LR, and SFP-10G-ER)</li> <li>Copper: 10 Gigabit Ethernet SFP+ passive Twinax copper cables (SFP-H10GB-CU1M, SFP-H10GB-CU3M, and SFP-H10GB-CU5M) and active Twinax copper cables (SFP-H10GB-ACU7M and SFP-H10GB-ACU10M)</li> <li>Copper breakout cables: QSFP-4SFP10G-CU1M, QSFP-4SFP10G-CU3M, QSFP-4SFP10G-CU5M, QSFP-4SFP10G-ACu7M, and QSFP-4SFP10G-ACu10M)</li> <li>Distance between Cisco Nexus B22 Blade Fabric Extender and Cisco Nexus parent switch: Up to 3 km (300m for FCoE traffic)</li> </ul>	<ul style="list-style-type: none"> <li>Fiber: SFP+ optics (FET-10G, SFP-10G-SR, SFP-10G-LR, and SFP-10G-ER)</li> <li>Copper: 10 Gigabit Ethernet SFP+ passive Twinax copper cables (SFP-H10GB-CU1M, SFP-H10GB-CU3M, and SFP-H10GB-CU5M) and active Twinax copper cables (SFP-H10GB-ACU7M and SFP-H10GB-ACU10M)</li> <li>Copper breakout cables: QSFP-4SFP10G-CU1M, QSFP-4SFP10G-CU3M, QSFP-4SFP10G-CU5M, QSFP-4SFP10G-ACu7M, and QSFP-4SFP10G-ACu10M)</li> <li>Distance between Cisco Nexus B22 Blade Fabric Extender and Cisco Nexus parent switch: Up to 3 km (300m for FCoE traffic)</li> </ul>	<ul style="list-style-type: none"> <li>Fiber: SFP+ optics (FET-10G, SFP-10G-SR, SFP-10G-LR, and SFP-10G-ER)</li> <li>Copper: 10 Gigabit Ethernet SFP+ passive Twinax copper cables (SFP-H10GB-CU1M, SFP-H10GB-CU3M, and SFP-H10GB-CU5M) and active Twinax copper cables (SFP-H10GB-ACU7M and SFP-H10GB-ACU10M)</li> <li>Copper breakout cables: QSFP-4SFP10G-CU1M, QSFP-4SFP10G-CU3M, QSFP-4SFP10G-CU5M, QSFP-4SFP10G-ACu7M, and QSFP-4SFP10G-ACu10M)</li> <li>Distance between Cisco Nexus B22 Blade Fabric Extender and Cisco Nexus parent switch: Up to 3 km (300m for FCoE traffic)</li> </ul>	<ul style="list-style-type: none"> <li>Fiber: SFP+ optics (FET-10G, SFP-10G-SR, and SFP-10G-ER)</li> <li>Copper: 10 Gigabit Ethernet SFP+ passive Twinax copper cables (SFP-H10GB-CU1M, SFP-H10GB-CU3M, and SFP-H10GB-CU5M) and active Twinax copper cables (SFP-H10GB-ACU7M and SFP-H10GB-ACU10M)</li> <li>Copper breakout cables: QSFP-4SFP10G-CU1M, QSFP-4SFP10G-CU3M, QSFP-4SFP10G-CU5M, QSFP-4SFP10G-ACu7M, and QSFP-4SFP10G-ACu10M)</li> <li>Distance between Cisco Nexus B22 Blade Fabric Extender and Cisco Nexus parent switch: Up to 3 km (300m for FCoE traffic)</li> </ul>
<b>Fabric speed</b>	80 Gbps in each direction (160-Gbps full duplex)	80 Gbps in each direction (160-Gbps full duplex)	80 Gbps in each direction (160-Gbps full duplex)	80 Gbps in each direction (160-Gbps full duplex)
<b>Oversubscription</b>	2:1	2:1	1.75:1	2:1
<b>Performance</b>	Hardware forwarding at 400 Gbps or 297 million packets per second (mpps)	Hardware forwarding at 400 Gbps or 297 mpps	Hardware forwarding at 400 Gbps or 297 mpps	Hardware forwarding at 400 Gbps or 297 mpps
<b>Supported Cisco Nexus parent switch and version</b>	<p>Cisco Nexus 5000 Series Switches running Cisco NX-OS Software Release 5.0(3)N2(2) and later</p> <p>Cisco Nexus 6000 Series Switches running Cisco NX-OS Software Release 6.0 and later</p> <p>Cisco Nexus 7000 Series Switches running Cisco NX-OS Software Release 6.2(2) and later</p>	<p>Cisco Nexus 5000 Series Switches running Cisco NX-OS Software Release 5.2(1)N1(1) and later</p> <p>Cisco Nexus 6000 Series Switches running Cisco NX-OS Software Release 6.0 and later</p>	<p>Cisco Nexus 5500 platforms running Cisco NX-OS Software Release 6.0(2)N2(1b) and later</p> <p>Cisco Nexus 6000 Series Switches running Cisco NX-OS Software Release 6.0(2)N2(1b) and later</p>	<p>Cisco Nexus 5500 platforms running Cisco NX-OS Software Release 5.2(1)N1(3) and later</p> <p>Cisco Nexus 6000 Series Switches running Cisco NX-OS Software Release 6.0 and later</p>
<b>Dimensions (L x W x D)</b>	10.5 x 7.5 x 1.1 in. (267.7 x 192.79 x 27.94 mm)	10.5 x 7.5 x 1.1 in. (267.7 x 192.79 x 27.94 mm)	15.8 x 11.7 x 1.2	10.73 x 10.04 x 1.16 in. (272.50 x 255.20 x 29.45 mm)
<b>Weight</b>	2.8 lb (1.27 kg)	2.8 lb (1.27 kg)	7 lb(3.2 kg)	4.4 lb (1.9 kg)
<b>Indicator and port specification</b>	<ul style="list-style-type: none"> <li>Health LED</li> <li>Unit identification display (UID) LED (support controlled by or dependent on chassis manager)</li> <li>Port status LEDs: <ul style="list-style-type: none"> <li>Green: Booted and link established</li> <li>Amber: Booted and no transceiver</li> <li>Off (no transceiver): Booting</li> <li>Off (transceiver): No link</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Status LED</li> <li>Identification (ID) LED (support controlled by or dependent on chassis manager)</li> <li>Port status LEDs: <ul style="list-style-type: none"> <li>Green: Booted and link established</li> <li>Amber: Booted and no transceiver</li> <li>Off (no transceiver): Booting</li> <li>Off (transceiver): No link</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Power LED (green)</li> <li>Location LED (blue)</li> <li>Fault LED (amber)</li> <li>Port LEDs (dual) <ul style="list-style-type: none"> <li>Top (amber): Booted and link established</li> </ul> </li> <li>Bottom (green): Booted and no transceiver</li> <li>Top Bottom (no transceiver): Off if booting</li> <li>Top/Bottom (transceiver): Off if no link</li> </ul>	<ul style="list-style-type: none"> <li>Power LED: Green (enabled)</li> <li>Health LED: Blue (booted normal) and flashing amber (fault)</li> <li>Port status LEDs: <ul style="list-style-type: none"> <li>Green: Booted and link established</li> <li>Amber: Booted and no transceiver</li> <li>Off (no transceiver): Booting</li> <li>Off (transceiver): No link</li> </ul> </li> </ul>

Description	Cisco Nexus B22HP	Cisco Nexus B22F	Cisco Nexus B22IBM	Cisco Nexus B22DELL
<b>Environment</b>	<ul style="list-style-type: none"> <li>Operating temperature: 50 to 104°F (10 to 40°C)</li> <li>Storage temperature: -40 to 140°F (-40 to 60°C)</li> <li>Humidity: 10 to 95 percent (noncondensing)</li> <li>Altitude: 0 to 10,000 ft (0 to 3000m)</li> </ul>	<ul style="list-style-type: none"> <li>Operating temperature: 50 to 104°F (10 to 40°C)</li> <li>Storage temperature: -40 to 140°F (-40 to 60°C)</li> <li>Humidity: 10 to 95 percent (noncondensing)</li> <li>Altitude: 0 to 10,000 ft (0 to 3000m)</li> </ul>	<ul style="list-style-type: none"> <li>Operating temperature: 50 to 104°F (10 to 40°C)</li> <li>Storage temperature: -40 to 140°F (-40 to 60°C)</li> <li>Humidity: 10 to 95 percent (noncondensing)</li> <li>Altitude: 0 to 10,000 ft (0 to 3000m)</li> </ul>	<ul style="list-style-type: none"> <li>Operating temperature: 50 to 104°F (10 to 40°C)</li> <li>Storage temperature: -40 to 140°F (-40 to 60°C)</li> <li>Humidity: 10 to 95 percent (noncondensing)</li> <li>Altitude: 0 to 10,000 ft (0 to 3000m)</li> </ul>
<b>Power supply</b>	Provided by blade chassis	Provided by blade chassis	Provided by blade chassis	Provided by blade chassis
<b>Fan tray</b>	Provided by blade chassis	Provided by blade chassis	Provided by blade chassis	Provided by blade chassis
<b>Typical operating power</b>	56 watts (W)	56W	56W	56W
<b>Maximum input power</b>	70W	70W	70W	70W
<b>Power specifications</b>	12V @ 6A	12V @ 6A	12V @ 6A	12V @ 6A
<b>Heat dissipation</b>	239 BTU/hour	239 BTU/hour	239 BTU/hour	239 BTU/hour
<b>Predicted mean time between failure (MTBF)</b>	291,523 hours	291,523 hours	291,523 hours	291,523 hours

**Table 4.** Cisco Nexus Fabric Extender Transceiver Specifications

Cisco Fabric Extender Transceiver	Specifications					
	Support Matrix	Form Factor	Cable	Distance	Power	Latency
<b>Cisco Fabric Extender Transceiver (FET-10G)</b>	Supported for fabric links only (Cisco Nexus 2000 Series or B22 to Cisco parent switch) Cisco FET must be connected to another Cisco FET Supported on Cisco Nexus 5000 and 7000 Series Switches fabric links	SFP	Multimode fiber (MMF)	<ul style="list-style-type: none"> <li>25m (OM2)</li> <li>100m (OM3)</li> </ul>	Approximately 1W per transceiver	Approximately 0.1 microsecond

**Table 5.** Cisco Nexus B22 Compliance Information

Specification	Description
<b>Regulatory Compliance</b>	Products should comply with CE Markings according to directives 2004/108/EC and 2006/95/EC.
<b>Safety</b>	<ul style="list-style-type: none"> <li>UL 60950 (NRTL)</li> <li>CAN/CSA-C22.2 No 60950</li> <li>EN 60950</li> <li>IEC 60950</li> <li>TUV/VDE EN 60950 for B22DELL</li> </ul>
<b>EMC: Emissions</b>	<ul style="list-style-type: none"> <li>47CFR Part 15 (CFR 47) Class A</li> <li>AS/NZS CISPR22 Class A</li> <li>CISPR22 Class A</li> <li>EN55022 Class A</li> <li>ICES003 Class A</li> <li>VCCI Class A</li> </ul>



Specification	Description
	<ul style="list-style-type: none"> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> <li>• KN22 Class A</li> <li>• CNS13438 Class A</li> </ul>
<b>EMC: Immunity</b>	<ul style="list-style-type: none"> <li>• EN50082-1</li> <li>• EN61000-6-1</li> <li>• EN55024</li> <li>• CISPR24</li> <li>• KN 61000-4 series</li> </ul>
<b>RoHS</b>	RoHS 6 compliant

Feature support for the Cisco Nexus B22 is derived mainly from the parent switch feature set. Therefore, consult the Cisco Nexus 5000 Series data sheet for a comprehensive list of features supported.

**Table 6.** Feature Support for Cisco Nexus B22

Description	Specification
<b>Layer 2 features</b>	<ul style="list-style-type: none"> <li>• Layer 2 VLAN trunks</li> <li>• IEEE 802.1Q VLAN encapsulation</li> <li>• Cisco EtherChannel technology on uplinks</li> <li>• PortChannel on server ports</li> <li>• Advanced PortChannel hashing</li> <li>• Jumbo frames on all ports (up to 9216 bytes)</li> <li>• Pause frames (priority flow control [PFC] and IEEE 802.3x)</li> <li>• Private VLANs (promiscuous only on uplinks)</li> <li>• Local multicast replication</li> <li>• Autonegotiation to 1 Gigabit Ethernet; full duplex on host interfaces</li> </ul>
<b>Enhanced Ethernet</b>	IEEE DCB
<b>Quality of service (QoS)</b>	<ul style="list-style-type: none"> <li>• Layer 2 IEEE 802.1p (class of service [CoS])</li> <li>• 8 hardware queues per port</li> <li>• Per-port QoS configuration</li> <li>• Local policing</li> <li>• Class-of-service (CoS) trust</li> <li>• Configurable tail-drop threshold</li> <li>• Egress strict-priority queuing</li> <li>• Egress port-based scheduling: Weighted Round Robin (WRR)</li> </ul>
<b>High availability</b>	<ul style="list-style-type: none"> <li>• Uplink traffic management through Cisco EtherChannel hashing or static port pinning</li> <li>• vPCs for dual-homed active-active connectivity across two Cisco Nexus parent switches</li> <li>• vPCs for dual-homed straight-through NIC connectivity across two Cisco Nexus B22 Blade Fabric Extenders</li> <li>• ISSU</li> </ul>
<b>Security</b>	Local classification (256 access control list [ACL] entries)
<b>Management</b>	<ul style="list-style-type: none"> <li>• Fabric extender management using in-band management</li> <li>• UID and health LEDs</li> <li>• Syslog</li> <li>• Simple Network Management Protocol Versions 1, 2, and 3 (SNMP v1, v2, and v3)</li> <li>• Enhanced SNMP MIB support</li> <li>• XML (NETCONF) support</li> <li>• Remote monitoring (RMON)</li> <li>• Cisco Discovery Protocol Versions 1 and 2</li> <li>• Cisco Switched Port Analyzer (SPAN) source on server ports</li> <li>• Power-on self-test (POST)</li> <li>• Cisco Generic Online Diagnostics (GOLD): Ethernet</li> <li>• Comprehensive bootup diagnostic tests</li> <li>• CiscoWorks</li> </ul>

Description	Specification
	<ul style="list-style-type: none"> <li>• Cisco Data Center Network Manager (DCNM); the Cisco Nexus B22 is managed through the parent Cisco Nexus switch using Cisco DCNM and standard SNMP, XML interfaces, and the command-line interface (CLI)</li> </ul>
<b>Configuration MIBs</b>	<ul style="list-style-type: none"> <li>• ENTITY-MIB</li> <li>• IF-MIB</li> <li>• FABRIC-EXTENDER MIB</li> <li>• CISCO-ENTITY-EXT-MIB</li> <li>• CISCO-ENTITY-FRU-CONTROL-MIB</li> <li>• CISCO-ENTITY-SENSOR-MIB</li> <li>• CISCO-ETHERNET-FABRIC-EXTENDER-MIB</li> </ul>
<b>Monitoring MIBs</b>	RMON-MIB
<b>Industry standards</b>	<ul style="list-style-type: none"> <li>• IEEE 802.1p: CoS prioritization</li> <li>• IEEE 802.1Q: VLAN tagging</li> <li>• IEEE 802.3: Ethernet</li> <li>• IEEE 802.3ae: 10 Gigabit Ethernet</li> <li>• IEEE 802.3ap: 10GBASE-KR</li> <li>• SFF 8431 SFP+ support</li> <li>• 10GBASE-SR</li> <li>• 10GBASE-LR</li> <li>• RMON</li> <li>• SFF-8461</li> </ul>

## Cisco Nexus B22 Ordering Information

Table 7 provides ordering information for transceivers and cables. Please refer to the HP, Fujitsu, Dell, and IBM websites for chassis orderability.

**Table 7.** Ordering Information

Part Number	Description
<b>Transceivers and Cables</b>	
<b>SFP-10G-SR(=)</b>	10GBASE-SR SFP+ Module
<b>SFP-10G-LR(=)</b>	10GBASE-LR SFP+ Module
<b>SFP-10G-ER(=)</b>	10GBASE-ER SFP+ Module
<b>SFP-H10GB-CU1M(=)</b>	10GBASE-CU SFP+ Passive Cable 1 Meter
<b>SFP-H10GB-CU3M(=)</b>	10GBASE-CU SFP+ Passive Cable 3 Meter
<b>SFP-H10GB-CU5M(=)</b>	10GBASE-CU SFP+ Passive Cable 5 Meter
<b>SFP-H10GB-ACU7M(=)</b>	10GBASE-CU SFP+ Active Cable 7 Meter
<b>SFP-H10GB-ACU10M(=)</b>	10GBASE-CU SFP+ Active Cable 10 Meter
<b>40 Gigabit Ethernet Transceivers and Cables</b>	
<b>QSFP-4SFP10G-CU1M</b>	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ direct-attach breakout cable, 1-meter, passive
<b>QSFP-4SFP10G-CU3M</b>	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ direct-attach breakout cable, 3-meter, passive
<b>QSFP-4SFP10G-CU5M</b>	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ direct-attach breakout cable, 5-meter, passive
<b>QSFP-4x10G-AC7M</b>	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ direct-attach breakout cable, 7-meter, active
<b>QSFP-4x10G-AC10M</b>	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ direct-attach breakout cable, 10-meter, active

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## Service and Support

Technical support for the Cisco Nexus B22 Blade Fabric Extender can be obtained from either Cisco or the blade vendor who sold the fabric extender.

- All Cisco Nexus B22 Blade Fabric Extenders: For software configuration or troubleshooting assistance, support is obtained through the vendor providing support for the upstream Cisco Nexus switch. If support is provided by Cisco, for information about obtaining documentation and submitting a service request and other information, see the monthly “What’s New in Cisco Product Documentation,” which also lists all new and revised Cisco technical documentation, at <http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>. Subscribe to “What’s New in Cisco Product Documentation” as an RSS feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service. Cisco currently supports RSS Version 2.0.
- Cisco Nexus B22HP: For hardware replacement of the Cisco Nexus B22HP under warranty, contact Hewlett-Packard. In the United States, for contact options see the Contact HP United States webpage. To contact HP by phone:
  - Call 1-800-HP-INVENT (1-800-474-6836). This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.
  - If you have purchased an HP Care Pack (service upgrade), call 1-800-633-3600. For more information about HP Care Packs, refer to the HP website. In other locations or for the name of the nearest HP authorized reseller, see the Contact HP Worldwide (in English) webpage.
- Cisco Nexus B22F: For hardware troubleshooting or replacement of the Cisco Nexus B22F, contact Fujitsu. Fujitsu support contact information is available at <http://support.ts.fujitsu.com/>, or <http://jp.fujitsu.com/support/> in Japan.
- Cisco Nexus B22DELL: For hardware troubleshooting or replacement of the Cisco Nexus B22DELL, contact Dell. Dell support contact information is available at <http://support.dell.com/>.
- Cisco Nexus B22IBM: For hardware troubleshooting or replacement of the Cisco Nexus B22IBM, contact IBM. IBM support contact information is available at <http://support.ibm.com/>.

## For More Information

- Cisco Nexus B22 Blade Fabric Extenders: <http://www.cisco.com/go/nexusb22>
- Cisco Nexus 2000 Series Fabric Extenders: <http://www.cisco.com/go/nexus2000>
- Cisco Nexus 5000 Series Switches: <http://www.cisco.com/go/nexus5000>
- Cisco Nexus 6000 Series Switches: <http://www.cisco.com/go/nexus6000>
- Cisco Nexus 6000 Series Switches: <http://www.cisco.com/go/nexus7000>
- Cisco NX-OS Software: <http://www.cisco.com/go/nxos>




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