



QFX3008-I QFABRIC INTERCONNECT

Product Overview

The Juniper Networks QFabric System is composed of three separate but integrated components—the QFX3500/QFX3600 QFabric Nodes, the QFX3600-I/QFX3008-I QFabric Interconnect, and the QFX3100 QFabric Director. These components work together to create a single, high-performance QFabric architecture for the next generation cloud-ready data center. The QFX3008-I provides the high-speed transport that serves as the backplane of the QFabric System, enabling the data center network to operate and be managed as a single, logical device that lowers capital, management, and operational expenses.

Product Description

Juniper Networks® QFX3008-I QFabric™ Interconnect acts as the backplane of Juniper Networks QFX3000-G QFabric System, connecting all QFabric Node edge devices in a flat, any-to-any topology.

Each QFX3008-I QFabric Interconnect chassis provides full redundancy with dual control boards, eight fabric modules, and redundant power supply modules. Featuring a switching capacity of 10.24 Tbps, the QFX3008-I Interconnect offers eight I/O slots for hosting 16-port 40 Gbps modules, providing data plane connectivity for the Nodes. Each QFabric Node connects to the Interconnect via two or four 40 Gbps interfaces operating over standard OM4 multimode fiber optics. Similar to the fabric inside a chassis-based switch, there are no connections between the Interconnect chassis in the data center; the Interconnect only provides transport between Node devices. Four fully populated Interconnect systems can scale the QFabric architecture to 6,000 customer-facing ports, with an aggregate capacity of 40 Tbps.

The QFX3008-I runs the same Juniper Networks Junos® operating system as other Juniper Networks switches, routers, and security devices. All provisioning and management is conducted via the Juniper Networks QFX3100 QFabric Director.

QFabric Architecture

QFabric technology represents the “1” in Juniper’s 3-2-1 architecture, dramatically reducing complexity in the data center by delivering any-to-any connectivity while lowering capital, management, and operational expenses. Juniper Networks QFabric architecture helps organizations realize the full benefit of their investments in server consolidation, virtualization, service-oriented architecture (SOA), distributed application architectures, and other technologies. The high-performance, non-blocking, and lossless QFabric architecture delivers much lower latency than traditional network architectures—crucial for the high-speed communications that define the modern data center. Rather than fragment network and server capacity like traditional data center networks, QFabric technology implements a single, flexible architecture that enables organizations to achieve cloud-like efficiencies and create a more agile environment.

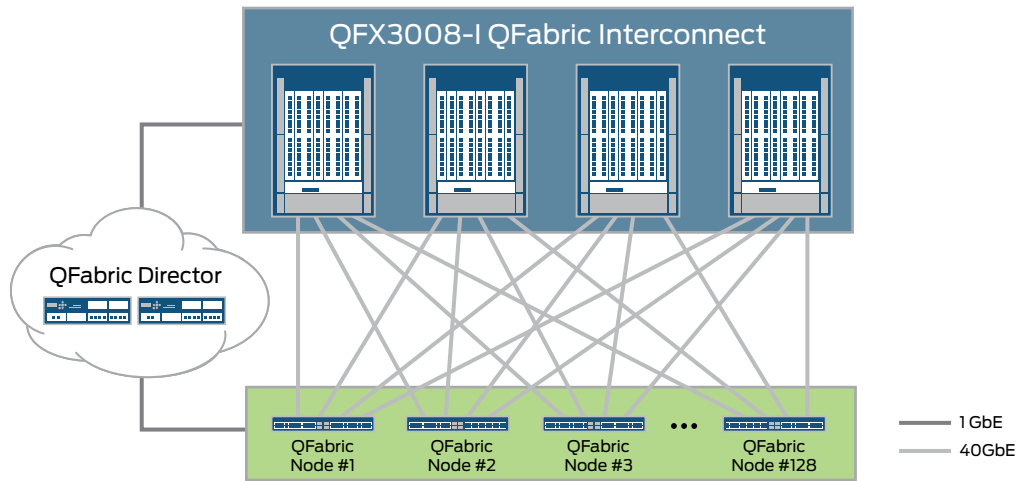
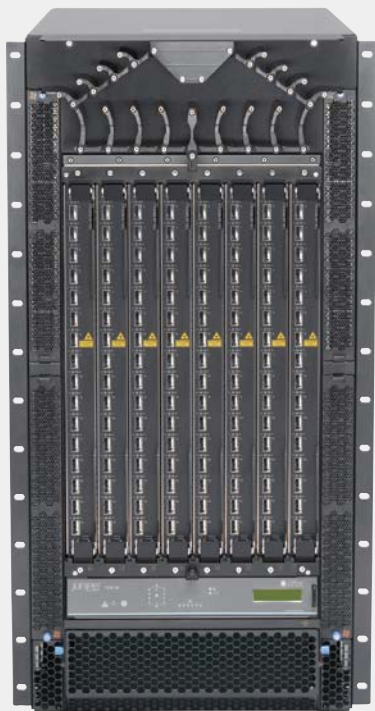


Figure 1: The QFX3008-I QFabric Interconnects connect QFabric Node edge devices in a QFabric System.

Features and Benefits

Table 1: QFX3008-I Features and Benefits

Features	Benefits
Performance and scale	The QFX3008-I allows for multi-terabit scaling of the QFabric architecture. Each system scales to 10.24 Tbps; four Interconnect systems in a QFabric architecture allow for a 40 Tbps data center fabric, creating an architecture that can accommodate future 40GbE and 100GbE-based data center fabrics.
High availability and redundancy	The QFX3008-I supports multilevel redundancy, including power supplies, fabric modules, control boards, and I/O modules. All I/O module slots receive a fair share of the total fabric bandwidth, ensuring lossless forwarding in the event of a fault. Each QFX3500 Node connects to multiple QFX3008-I Interconnect chassis via two or four 40 Gbps interfaces, allowing for network path redundancy with load balancing of application traffic.
Online insertion and removal of components	The QFX3008-I is a highly available system. Each of the components (I/O modules, fabric modules, control boards, power supplies) can be removed or inserted into the system in a nondisruptive fashion, providing "five 9s" system availability.
Operational enhancements	<ul style="list-style-type: none"> • Front-to-back cooling: Cooling has a major impact on operational expenses. The front-to-back air flow of the Interconnect aligns with the best practices of hot aisle/cold aisle designs for improving data center infrastructure efficiency. • Independent system fans on the Interconnect provide efficient cooling capacity to the entire system. Support for hot swapping of fan trays aids system availability. • The Interconnect cable management system supports cabling requirements on both sides of the switch, contributing to configuration flexibility and allowing easy insertion and removal of cabling for unobstructed provisioning and troubleshooting without disrupting the system. • A front-panel display allows for easy monitoring of alarms as well as system identification for inventory management and maintenance. • A system and line card beacon LED provides ease of operations for identifying and troubleshooting faulty cards and avoiding accidental turnoff or replacement of the wrong part. The beacon LED can be turned on remotely via software.



QFX3008-I QFabric Interconnect

QFX3008-I QFabric Interconnect Specifications

Hardware

Dimensions (W x H x D)

- 17.5 x 36.75 x 32 in (44.45 x 93.34 x 81.28 cm)

Weight

- 675 lb (306.17 kg) fully populated

Power

- Power feed (voltage): 200-240 V AC (single phase); 240 V (three phase)
- Power feed (AMP rating): Single phase 16 A per input; three phase 25.5 A per phase
- Power consumption (fully loaded chassis):
 - Maximum: 6,420 watts
 - Nominal: 4,620 watts

Heat Dissipation

- Maximum: 21,290 BTU (fully loaded chassis)
- Nominal: 15,763 BTU (fully loaded chassis)

Air Flow

- Front to back

Rack Mount Options

- 4-pole rack mount

NEBS Testing and Certification Status

- 2H 2012

I/O Module Options

- 16-port 40GbE QSFP+ module

Approvals

Safety Certifications

- CAN/CSA-C22.2 No. 60950-1 (2007) Information Technology Equipment - Safety
- UL 60950-1 (Second Ed.) Information Technology Equipment - Safety
- EN 60950-1 (2005) Information Technology Equipment - Safety
- IEC 60950-1 (2005) Information Technology Equipment - Safety (All country deviations): CB Scheme report
- EN 60825-1 +A1+A2 (1994) Safety of Laser Products - Part 1: Equipment Classification

Electromagnetic Compatibility Certifications

- EN 300 386 V1.4.1 (2008) Telecom Network Equipment - EMC requirements
- EN 55024 +A1+A2 (1998) Information Technology Equipment Immunity Characteristics

EMI

- FCC 47CFR, Part 15 Class A (2009) USA Radiated Emissions
- EN 55022 Class A (2006)+ A1 2007 European Radiated Emissions
- VCCI Class A (2007) Japanese Radiated Emissions
- BSMI CNS 13438 and NCC C6357 Taiwan Radiated Emissions
- AS/NZS CISPR22:2009

Environmental

- IPC 1752 form filled and complete for all ordered AVL parts
- (RoHS) Restriction on Hazardous Substances 5
- (WEEE) Design for Easy Disassembly and Recycling
- (REACH) Registration, Evaluation, Authorization of Chemicals
- Joint Industry Guide Japanese Material Composition Declaration
- Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products (China RoHS)
- Under Directive ErP/125/EC, the regulations below:
 - Reg. 1275/2008/EC applies for products classified as Class B per EN55022.*
 - Reg. 278/2009/EC applies for external power adapter on products classified as Class B per EN55022

Telco

- Common Language Equipment Identifier (CLEI) code

Environmental Ranges

- Operating temperature: 41° through 104° F (5° through 40° C)
- Storage temperature: -40° through 158° F (-40° through 70° C)
- Operating altitude: up to 10,000 ft (3,048 m)
- Non-operating altitude: up to 40,000 ft (12,192 m)Relative humidity operating: 8% to 90% (noncondensing)
- Relative humidity non-operating: 5% to 95% (noncondensing)

Juniper Networks Services and Support

Juniper Networks leads the market in performance-enabling services designed to accelerate, extend, and optimize your high-performance QFabric System. Our services enable you to maximize operational efficiency, reduce costs and minimize risk while achieving a faster time-to-value for your network.

By leveraging best practices from across the industry, you get the maximum levels of QFabric performance, designed and delivered by the world's leading professional QFabric Service experts.

For more information, please visit www.juniper.net/us/en/products-services.

*Note: Standby mode is not appropriate for Juniper networking products which must remain active 24/7.

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at www.juniper.net.

Ordering Information

Model Number	Description
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Base Hardware

QFX3008-CHASA-BASE	QFX3008-I, 8 slots A/C base system with redundant dual control card, eight rear fabric modules, six redundant power supplies
QFX3008-SF16Q	Front card with 16-port QSFP for QFX3008-I

Spares

QFXC08-ACTRAY-C19	A/C power wiring tray (single phase)
QFXC08-ACTRAY-D	A/C power wiring tray (three phase Delta)
QFXC08-ACTRAY-W	A/C power wiring tray (three phase WYE)
QFXC08-CABMAN	Cable management module
QFXC08-DOOR	Front door
QFXC08-CHASA	QFX3008-I chassis, 8 slots A/C
QFXC08-CB4S	Control card with 4x1/10GbE small form-factor pluggable transceiver plus (SFP+) ports
QFXC08-PWRAC-4000	4,000 W A/C PSU
QFXC08-FANT	Top fan tray
QFXC08-FANB	Bottom fan tray
QFXC08-FANS	Side fan tray
QFXC08-FBLNK	Front slot blank cover
QFXC08-FFLTR	Front air filter
QFXC08-SFLTR	Side air filter
QFX3008-SR1	Rear fabric card

Optics and Transceivers

QFX-QSFP-40G-SR4	QSFP+ 40GBASE-SR4 40 Gigabit Optics, 850 nm for up to 150 m transmission on multimode fiber-optic (MMF)
QFX-SFP-1GE-T	SFP 1000BASE-T 10/100/1000 Copper Transceiver Module for up to 100 m transmission on Cat5

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