QFX3100 QFABRIC DIRECTOR

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 Juniper Networks QFX3100 Director provides central control and management services for the QFX3000 QFabric System, allowing the disparate devices to operate and be managed as a single, logical switch. This creates a simplified, single-tier network for the data center.

Product Description

Juniper Networks® QFX3100 QFabric Director serves as the central Routing Engine for the Juniper Networks QFX3000-M and QFX3000-G QFabric™ Systems, providing a single control and management services interface for the QFabric architecture.

Communicating directly with all QFabric Node and QFabric Interconnect devices, the QFX3100 Director builds a global view of the entire QFabric architecture, which can scale to support thousands of server-facing ports. Deployed in clusters, the QFX3100 provides network operators with a single point of visibility, control, provisioning, and management, presenting the entire data center network—built with QFabric Node and QFabric Interconnect devices—as a single switch. This dramatically reduces the operational costs typically associated with managing the complexities of today's data center networks.
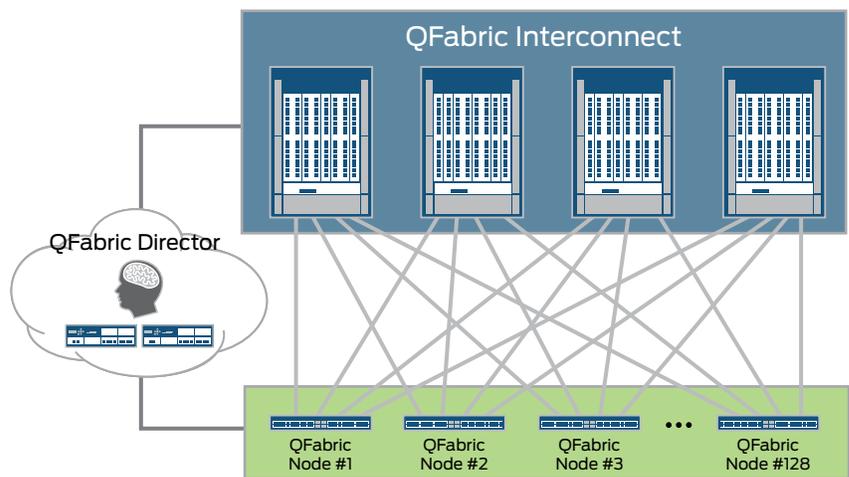

Figure 1: A QFabric System with QFabric Director cluster, QFabric Interconnect systems, and QFabric Nodes

QFabric Architecture

By delivering a single-tier solution for the data center, the QFabric architecture combines the performance and simplicity of a single switch with the scale and resiliency of a network to enable any-to-any connectivity while lowering capital, management, and operational expenses.

QFabric technology 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.

Features and Benefits

A QFX3100 Director cluster enables a QFabric architecture to scale to thousands of customer-facing or business ports. In addition to imposing control plane scalability, the QFX3100 also ensures reliability and high availability at multiple levels when deployed in clusters for redundancy. In a QFabric Director cluster, QFX3100 devices are connected directly to each other as well as to the larger fabric composed of QFabric Interconnects and QFabric Nodes via a control plane Ethernet network consisting of two independent Juniper Networks EX4200 Ethernet Switches deployed in a Virtual Chassis configuration. Should one of the QFX3100s fail, the other ensures continuity of fabric operations.

The Director includes a front panel LCD screen for reporting device status at a glance or for performing device configuration via a menu-driven screen. A console port for out-of-band management and a USB drive for file storage are also available.

Additional front panel slots support redundant 2 TB hard drives for providing extra processing power. The two disk drives mirror data using RAID technology, providing for data redundancy on the Director. The QFX3100s synchronize the data stored, ensuring further availability in the event of a failure.

The Director also includes two front panel slots that support 4x1GbE interfaces for connecting to the QFabric solution's Ethernet control plane. On the back panel, the QFX3100 includes redundant, hot-swappable 560 watt AC power supplies and redundant, hot-swappable fans. Internally, the QFX3100 includes a 2.1 GHz dual Intel Quad-Core processor with 36 GB DRAM.

QFabric solution management via a QFX3100 Director cluster integrates with existing data center management systems through powerful Juniper Networks Junos® SDK as well as the Junoscript and automation framework, which bring significant efficiencies to data center operations.

Junos Operating System

The QFabric family of products run the same reliable and high-performance Juniper Networks Junos operating system that is used by Juniper Networks EX Series Ethernet Switches, Juniper Networks routers, and Juniper Networks SRX Series Services Gateways. By utilizing a common operating system, Juniper delivers a consistent implementation and operation of control plane features across products. To maintain that consistency, Junos OS adheres to a highly disciplined development process, follows a single release track, and employs a highly available modular architecture that prevents isolated failures from bringing down an entire system. These attributes are fundamental to the core value of the software, enabling Junos OS-powered products to be updated simultaneously with the same software release. Features are fully regression tested, making each new releases a superset of the previous version; customers can deploy the software with confidence that existing capabilities will be maintained and operate in the same way.

QFX3100 QFabric Director

QFX3100 QFabric Director Specifications

Hardware

Dimensions (W x H x D)
- 17.5 x 3.5 x 23.75 in (44.45 x 8.89 x 60.33 cm)

Weight
- 41.2 lb (18.69 kg)

Power
- Power feed (voltage): 100-240 V AC (single phase)
- Power feed (AMP rating): 8 A
- Power consumption (maximum): 476 watts
- Power consumption (nominal): 220 watts

Heat Dissipation
- Maximum: 1,624 BTU
- Nominal: 751 BTU

Air Flow
- Front to back

Rack Mount Options
- 4-pole rack mount
- 2-pole mid-mount

Ambient Temperature Range
- 41º through 104º F (5º through 40º C)

Operating Altitude Range
- 10,000 ft (3,048 m)

Operational Mean Time Between Failures
- 96,125 hours

Interfaces
- Dual Ethernet management ports
- USB port
- Console port
- Two I/O slots, each with 4x1GbE ports (RJ-45 or SFP) for connectivity to QFabric control plane Ethernet network

Display and Ports
- LCD panel for system monitoring

Management and Operations
- Role based command-line interface (CLI) management and access
- CLI via console or SSH
- QFabric show and debug commands, statistics
- XML/NETCONF support
- Extended Fabric ping and Fabric traceroute
- Junos OS configuration rescue and rollback
- Junos OS image rollback
- Support for SNMP v1/v2/v3*
- Junoscript automation
- Junos SDK

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. Note: Standby mode not appropriate for Juniper's network products which must remain active 24/7.
- 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: 41º through 104º F (5º through 40º C)
- Storage temperature: -40º through 158º F (-40º through 70º 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**.

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* Roadmap

Ordering Information

Model Number	DESCRIPTION
Base Hardware	
QFX3100-GBE-ACR	QFX3100 base system with redundant AC power supply, dual disk, and network interface cards
QFX3100-GBE-SFP-ACR	QFX3100 base system with redundant AC power supply, dual disks, and SFP network interface cards
Spares	
QFX3100-NM-4GE	Network interface card with 4x10/100/1000BASE-TX for QFX3100 (spare)
QFX3100-NM-4GE-SFP	Network interface card with 4x1GbE SFP for QFX3100 (spare)
QFX3100-PWRAC-560A	560 W power supply A for QFX3100 (spare)
QFX3100-HDD-2TB	2 TB hard drive for QFX3100 (spare)
QFX3100-FANA	Fan module for QFX3100 (spare)
Software License	
QFX3000-JSL-EDGE-FAB	QFX3000 Switch QFabric Node feature license
QFX3000M-JSL-DRCTR-FAB	QFX3000-M System base fabric software
QFX-JSL-DRCTR-ADV1	QFabric advanced feature license for IS-IS, BGP, and IPv6 routing
QFX3008-JSL-DRCTR-FAB	QFX3008 base fabric software
QFX-JSL-DRCTR-FC	QFabric feature license for FCoE-to-FC Gateway
QFX-JSL-DRCTR-FC-C16	QFabric feature license for FCoE-to-FC Gateway—capacity 16

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**.

To purchase Juniper Networks solutions, please contact your Juniper Networks representative at 1-866-298-6428 or authorized reseller.