



BROCADE MLX SERIES FREQUENTLY ASKED QUESTIONS

Introduction

Today's network planners are seeking solutions that will enable them to transform their networks to meet the unprecedented bandwidth demands that are a result of user mobility and streaming media. They need a solution that will provide the right mix of scalability, performance, operational simplicity, and cost-effectiveness. The Brocade® MLX® Series of high-performance routers, which includes existing Brocade MLX Routers and Brocade MLXe Core Routers, is designed to meet these requirements and many others.

Built with a state-of-the-art, sixth-generation network processor-based architecture and terabit-scale switch fabrics, the Brocade MLX Series provides a rich set of high-performance IPv4, IPv6, Multiprotocol Label Switching (MPLS), and Software-Defined Networking (SDN) capabilities as well as advanced Layer 2 switching capabilities. As a result, these routers address the diverse needs in environments that include service provider backbones, Metro Ethernet networks, transit/wholesale networks, Internet Service Providers (ISPs), Content Delivery Networks (CDNs), Internet Exchange Points (IXPs), data centers, and distributed enterprises.

For product information, visit: www.brocade.com/mlx.

General Questions and Answers

Q What software component supports the Brocade MLX Series?

A The Brocade NetIron® OS supports the Brocade MLX Series as well as:

- Brocade NetIron CER 2000 Series
- Brocade NetIron CES 2000 Series
- Brocade NetIron XMR Series

Q How many chassis models does the Brocade MLX Series offer?

A The Brocade MLX Series of high-performance routers includes existing Brocade MLX Routers and Brocade MLXe Core Routers, each of which is available in 4-, 8-, 16-, and 32- slot chassis options.

Q What is the Brocade MLXe router?

A The Brocade MLXe router is an enhanced Brocade MLX chassis. It doubles the fabric switching capacity of the chassis from 7.68 Tbps to 15.36 Tbps and provides a next-generation advanced router for service provider and data center networks.

Q Will the Brocade MLXe routers support higher Forwarding Information Base (FIB) scalability than the existing Brocade MLX routers?

A The Brocade MLXe router is a common chassis for both the Brocade MLX and Brocade NetIron XMR modules. The existing NetIron XMR management modules and line modules can be inserted into the Brocade MLXe chassis to achieve the same level of scalability as the NetIron XMR routers.

Q What hardware-level redundancy features are built into the Brocade MLX Series?

A Designed for non-stop networking, all Brocade MLX Series routers feature N+1 switch fabric redundancy, 1+1 management modules, and redundant power supplies and cooling fans.

Q What is the airflow direction for the Brocade MLX Series?

A The Brocade MLXe routers have rear exhaust with front-to-back airflow for the 16- and 32-slot systems, and side-to-back airflow for the 4- and 8-slot systems. The existing Brocade MLX 16- and 32-slot routers have front-to-back airflow while the 4- and 8-slot routers have side-to-side airflow.

Q Which line modules does the Brocade MLX Series support?

A The Brocade MLX Series supports a wide range of Ethernet modules and traditional SONET line modules, including:

- 100 GbE modules (2-port models)
- 40 GbE modules (4-port model)
- 10 GbE modules (24-, 8-, and 4-port models)
- 1 GbE modules (48-, 24-, and 20-port models)
- SONET modules (OC-192 and OC-48)

Q How many 1 GbE and 10 GbE ports are supported on the Brocade MLX Series?

A The 32-slot Brocade MLX Series routers support up to 1536 1 GbE and 768 10 GbE ports that can simultaneously forward IPv4, IPv6, and MPLS packets.

Q How many 40 GbE ports are supported on the Brocade MLX Series?

A The new half-slot 4-port 40 GbE module delivers 128 40 GbE ports on the 32-slot Brocade MLX router.

Q How many ports does the 100 GbE module support?

A The 100 GbE module for the Brocade MLX Series supports two ports. The Brocade MLXe chassis supports up to 32 wire-speed 100 GbE ports while the Brocade MLX and NetIron XMR chassis support up to 16 wire-speed 100 GbE ports.

Q What is the “Ports on Demand” feature supported by the 100 GbE module?

A Organizations that desire a “pay-as-you grow” strategy can obtain a license to use only a single port on the 2-port 100 GbE module. As their bandwidth needs increase, organizations can purchase an additional license to use the second port. In addition, existing Brocade MLX and NetIron XMR chassis support only a single port of 100 GbE. When organizations migrate to the Brocade MLXe chassis, they can reuse the same module and upgrade their licenses to use the second port.

Q What are terabit trunks?

A Terabit trunks are logical connections formed by aggregating multiple 100 GbE links. The Brocade MLX Series can aggregate up to 16 100 GbE links in a link aggregation group. Using an innovative hashing algorithm, the Brocade MLX Series can support up to 1.6 Tbps of capacity in a single trunk. In addition, the Brocade MLX Series supports 64 10 GbE ports in a single link aggregation group and achieves 640 Gbps of throughput through a single logical connection.

Q How does the software license scheme work for the Brocade MLX Series?

A The entire Brocade MLX Series supports only a single software license, and it includes all the advanced features, such as IPv6, IP Multicast, MPLS, Layer 2 VPN, and Layer 3 VPN.

Q What software features supported by the Brocade MLX Series enable non-stop operations?

A The Brocade Multi-Service IronWare operating system supports Multi-Chassis Trunking (MCT), Border Gateway Protocol (BGP) graceful restart, hitless management failover for Open Shortest Path First (OSPF), and IS-IS and IP multicast Non-Stop Routing (NSR). These features, combined with the hitless (in-service) software upgrade capabilities of the Brocade MLX Series, enable network operators to provide an always-on network.

Q What is MCT and what are its benefits?

A Multi-Chassis Trunking (MCT) is an enhancement of the link aggregation standard that allows bundling of links that end on two separate routers. This feature allows all links to be active, providing sub-second node and link failover while maximizing network utilization and simplifying network design.

Q Is the Brocade MLX Series MEF-certified?

A Yes. The Brocade MLX Series supports the E-Line, E-LAN, and E-TREE services in accordance with the Metro Ethernet Forum (MEF) guidelines. The Brocade MLX Series is certified for MEF 9, MEF 14, and MEF 21. For additional certifications, visit <http://metroethernetforum.org>.

Q Is the Brocade MLX Series IPv6-ready?

A Yes. The Brocade MLX Series supports IPv6, including MP-BGP-4, OSPFv3, IS-IS, and RIPng routing protocols. In addition, the Brocade MLX Series supports hardware forwarding of IPv6 packets and can achieve data forwarding rates of up to 6.4 Tbps.

Q Is the Brocade MLX Series Network Equipment Building System (NEBS) compliant?

A Yes. The Brocade MLX Series is officially NEBS Level-3 certified. With NEBS certification, the Brocade MLX Series meets the stringent safety and emissions requirements of large service providers. NEBS Level-3 certification denotes that the Brocade MLX Series addresses the needs of a “carrier-class” environment and passed strict specifications for fire suppression, thermal margin testing, vibration resistance (earthquakes), airflow patterns, acoustic limits, failover and partial operational requirements (such as chassis fan failures), failure severity levels, and RF emissions and tolerances.

Q What is VToR, and what are its benefits?

A Virtual Top of Rack (VToR) is a networking architecture that combines the benefits of Top of Rack (ToR), middle-of-row, and end-of-row designs. VToR reduces cabling, management overhead, latency, and failure points in the network. At the same time, it increases operational efficiency and reliability. VToR is based on the 48-T module and leverages the rich features and high availability of the Brocade MLX Series to enable high-density 1 GbE connectivity to servers.

Q Does the Brocade MLX Series support OpenFlow?

A Yes. OpenFlow v1.0 is supported in Brocade NetIron 5.5 running on the Brocade MLX Series. OpenFlow is enabled on a per-port basis, so the Brocade MLX Series can be partitioned into OpenFlow ports and non-OpenFlow ports. All Brocade Ethernet modules (1 GbE, 10 GbE, 40 GbE, and 100 GbE) support OpenFlow. OpenFlow is one example of the Software-Defined Networking (SDN) paradigm. For more information on OpenFlow, visit: www.opennetworking.org.

Q Which OpenFlow applications does the Brocade MLX Series support?

A OpenFlow is a programmatic interface to the Brocade MLX Series. OpenFlow itself does not define or mandate any specific application. Applications are supported by the OpenFlow controller in use.

Q Which modules support Hierarchical Quality of Service (H-QoS) on the Brocade MLX Series?

A The 8×10 GbE M modules and the 8×10 GbE X modules support H-QoS in Brocade NetIron 5.5 running on the Brocade MLX Series. H-QoS allows providers to offer improved customer Service Level Agreements (SLAs) and optimizes use of network resources.

Q What services are available for the Brocade MLX Series?

A Brocade Global Services offers a wide range of offerings to help organizations get the most value from their Brocade MLX Series investments. These offerings include Premier Support to maximize network availability and Professional Services to design and implement Brocade solutions.

Learn More

Q How do I learn more about the Brocade MLX Series?

A Contact your Brocade sales representative or Brocade OEM Partner for details. Or visit www.brocade.com/products.

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