BROCADE NETIRON MLX-4, MLX-8, MLX-16, MLX-32

HIGH-PERFORMANCE CARRIER ETHERNET

Multi-Service IP/MPLS Aggregation Routers

HIGHLIGHTS

- 4-, 8-, 16-, 32-slot IPv4/IPv6/MPLS/VRF enabled metro routers

- Advanced Metro Ethernet Layer 2 services

- Wire-speed IPv4, IPv6, and MPLS routing featuring Brocade Direct Routing (BDR) technology

- Virtual Routing in non-MPLS environments via Multi-VRF

- Industry-leading port density for Carrier Ethernet and POS

- Fully distributed, non-blocking architecture with up to 3.2 Tbps data capacity (~2 billion pps) per system

- Carrier-grade Quality of Service for enabling converged multi-play networks

- High availability design offering redundant management modules, switch fabrics, power supplies, fans, hitless failover, and hitless software upgrades

- Flexible SONET/SDH support via either native POS interfaces or 10-GbE WAN PHY

- Ideal for a wide range of advanced applications in Metropolitan Area Networks (MANs), Internet edge/ aggregation routing, high-security data centers, large-enterprise core, and high performance computing (HPC)

Network planners today have to ensure that the chosen solution provides the right mix of functionality and high performance while reducing the total cost of ownership (TCO). In addition, a solid, future-proof network design needs to cope with the rapid pace of technology change. The increasing role of the converged network makes high availability and Quality of Service (QoS) crucial to the success of many of today's rollouts. When selecting equipment, planners also need to have peace of mind that added features can be enabled without the need to purchase additional hardware or software.

The Brocade® NetIron® MLX Series of switching routers is designed to meet all these requirements and more. Built with state-of-the- art, fifth-generation, network-processor-based architecture and Terabit-scale switch fabrics, the Brocade NetIron

MLX Series routers offer network planners a rich set of high-performance IPv4, IPv6, MPLS, and Multi-VRF capabilities as well as advanced Layer 2 switching capabilities. These advanced switching routers offer a wide range of capabilities that address the diverse needs of environments ranging from metro networks, ISPs, data centers, large enterprises, government networks, education/research, and high performance computing (HPC).

The Brocade NetIron MLX Series includes the 4-slot NetIron MLX-4, 8-slot NetIron MLX-8, 16-slot NetIron MLX-16, and the 32-slot NetIron MLX-32. The series offers industry-leading port capacity and density with up to 128 10-GbE, 640 1-GbE, 64 OC-192, or 256 OC-48 ports in a single system.

BROCADE

Designed to enable reliable converged infrastructures and support mission-critical applications, the NetIron MLX Series features an advanced N+1 redundant switch fabric architecture for very high availability. The architecture ensures that the system continues to operate at peak performance even in the case of a switch fabric card failure. In the highly unlikely case of additional fabric failures, this advanced architecture allows the system to continue to operate in a graceful degradation mode where the system tunes its performance to the remaining fabric capacity. The redundant fabric architecture is complemented by comprehensive hardware redundancy for the management modules, power supplies, and cooling system. In addition, the Multi-Service IronWare operating system, powering the NetIron MLX Series, offers hitless management failover with BGP and OSPF graceful restart capabilities, as well as hitless (in-service) software upgrades for further enhancing both system availability and overall network availability.

A comprehensive suite of advanced traffic management and QoS functions enables the deployment of triple-play service provider networks and converged enterprise networks supporting voice, video, and data. The NetIron MLX Series offers advanced bandwidth control capabilities with two rate three color traffic policers that provide committed bandwidth to users and/or applications. The NetIron MLX switching routers also offer advanced packet marking, prioritization, queuing, and scheduling with Weighted Random Early Discard (WRED) congestion management for optimal and granular control of bandwidth utilization throughout the network.

Each Brocade NetIron MLX switching router has the lowest power consumption and heat dissipation among routers in its class. The leading density of each router in this series and its small form factor yields significant real estate savings for network operators. These unique aspects of the series yield significant savings on power, cooling, and rack space costs, thereby reducing the overall operating expenditures (OpEx)

ADVANCED CAPABILITIES FOR A BROAD RANGE OF APPLICATIONS

The NetIron MLX metro switching routers offer an ideal suite of Layer 2 Metro Ethernet technologies for today's metropolitan service providers. The NetIron MLX Series enables advanced Layer 2 Metro Ethernet services based on IEEE 802.1Q, Rapid Spanning Tree Protocol (RSTP), proprietary Metro Ring Protocol (MRP), and Virtual Switch Redundancy Protocol (VSRP). The metro routers offer unique scalability for Layer 2 metro applications with a capacity of up to 1 million MAC addresses per system.

Complementing Layer 2 Metro Ethernet capabilities is a powerful suite of MPLS capabilities and services, including MPLS-TE, Fast Reroute (FRR), MPLS Virtual Leased Line (VLL), Virtual Private LAN Service (VPLS), and BGP/MPLS VPNs (MPLS L3VPNs). This unique combination of advanced services allows operators to combine the simplicity and cost-efficiency of Layer 2 with the granular control and high availability of MPLS. In addition, this rich set of Layer 2 and MPLS-based capabilities facilitates the creation of scalable resilient services compliant with the Metro Ethernet Forum (MEF) specifications for Ethernet Private Line (EPL), Ethernet Virtual Private Line (EVPL), and Ethernet LAN (E-LAN).

For Internet edge/aggregation routing, the NetIron MLX Series includes advanced hardware-based routing technology, Brocade Direct Routing (BDR). BDR offers operators secure and robust routing with dual stack IPv4/IPv6 wire-speed routing performance. The NetIron MLX switching routers offer capacities up to 512,000 IPv4 routes in the hardware Forwarding Information Based (FIB), and up to 2 million BGP routes in the BGP Routing Information Base (RIB), thereby enabling high-performance, scalable, and cost-effective Internet edge/aggregation deployments.

The Brocade NetIron MLX Series is a powerful enabler of advanced converged enterprise backbones. Featuring state-of-the-art QoS and wire-speed unicast/multicast routing for IPv4 and IPv6, the routers enable the efficient rollout of converged backbones, providing reliable transport of Voice over IP (VoIP), video services, and mission-critical data. Virtual routing via Multi-VRF allows enterprises to create multiple security zones and simplified VPNs for the different applications and business units, while streamlining overall network management. Additionally, the routers' intrinsic wire-speed sFlow capability provides scalable network-wide monitoring of flows for enhancing security via malicious traffic detection and intrusion detection, as well as for proactive management of network bandwidth through traffic trend analysis and capacity upgrade planning.

For large-scale high-performance cluster computing, the superior 1-GbE and 10-GbE port densities of the NetIron MLX Series are vital to cluster implementations. These clusters constitute the backbone of many cutting-edge applications such as advanced simulation, motion-picture special effects, and large-scale data acquisition in physics research facilities. The state-of-the-art Clos switch fabric architecture in the NetIron MLX Series provides ample capacity for bandwidth-intensive applications.

By combining superior data capacity with ultra-low latency, the NetIron MLX Series accelerates application performance in high-performance computing clusters, thereby increasing processing power and productivity.

KEY FEATURES

Service provider grade IPv4/IPv6/MPLS/Multi-VRF enabled metro routers

4-, 8-, 16-, and 32-slot systems for maximum deployment versatility

Up to 2 billion pps routing performance with non-blocking 3.2 Tbps data capacity

Ideal fit for high-density demanding deployments:

- 128 10 Gigabit Ethernet/640 Gigabit Ethernet ports per system
- 64 OC-192/256 OC-48 ports per system

Advanced and scalable Metro Ethernet Layer 2 services:

- Super Aggregated VLANs (Q-in-Q)
- Comprehensive set of Layer 2 control protocols: MRP, VSRP, RSTP, MSTP
- IEEE 802.1ad Provider Bridges*

MEF 9 and MEF 14 certified for offering Carrier Ethernet services

Industry leading 320 Gbps link aggregation capability for aggregating up to 32 10GbE/OC-192 links in provider backbones

Wire-speed dual stack IPv4/IPv6 routing

Wire-speed Provider Edge (PE) and Provider core (P) Label Switching Routers

Industry-leading performance for MPLS services providing several service choices: IP over MPLS, Virtual Leased Line (VLL), Virtual Private LAN Service (VPLS), BGP/MPLS VPN, and Multi-VRF

High performance, robust routing via Brocade Direct Routing (BDR) for complete, distributed programming of the Forwarding Information Base (FIB) in hardware

Full suite of unicast and multicast IPv4 and IPv6 routing protocols:

- Supported IPv4 protocols include RIP, OSPF, BGP-4, IS-IS, PIM-DM, PIM-SM/SSM, IGMP, BGP-MP for multicast, MSDP, and Anycast RP
- Supported IPv6 protocols include RIPng, OSPFv3, IS-IS for IPv6, BGP-MP for IPv6 (BGP4+), PIM-SM/SSM, and MLD

Comprehensive MPLS signaling and path-calculation algorithms for both traffic-engineered and non-traffic-engineered applications:

- OSPF-TE, IS-IS-TE, RSVP-TE, CSPF
- MPLS FRR and Hot Standby paths for traffic protection
- LDP

Secure Multi-VRF routing for supporting Virtual Routing applications over non-MPLS backbones

Industry-leading scalability up to:**

- 2 million IPv4 BGP routes and up to 256 BGP peers
- 512K IPv4 routes in hardware (FIB)
- 112K IPv6 routes in hardware (FIB)
- 400 BGP/MPLS VPNs and up to 256K VPN routes
- 8K VLLs per system
- 4K VPLS instances and up to 256K VPLS MACs
- 4094 VLANs, and up to 1 million MAC addresses

Partial support
** Scalability limits dependent on configured system parameters, system profile selected, and routing database complexity.

KEY FEATURES CONTINUED

Superior high-availability design:
- Redundant management modules
- Redundant switch fabrics
- Redundant power supplies and cooling system
- Hitless Layer 3 and Layer 2 failover with OSPF and BGP graceful restart
- Hitless (in-service) software upgrades leveraging graceful restart

Advanced QoS:
- Inbound and outbound two rate three color traffic policers with accounting
- 8 distinct priority levels
- WRED support for congestion management and precedence dropping (tunable via configuration)
- Supports hybrid queue servicing disciplines: mixed Strict Priority and Weighted Fair Queuing

Comprehensive hardware-based security and policies:
- Layer 3 and Layer 2 ACLs (both inbound and outbound)
- Granular ACL accounting (both inbound and outbound)
- Hardware-based packet filtering
- Hardware-based policy-based routing (PBR)
- Unicast Reverse Path Forwarding (uRPF)
- Receive ACLs
- Extensive sFlow Layer 2-7 traffic monitoring for IPv4, IPv6, and MPLS services

Combine both Carrier Ethernet and powerful Packet over SONET/SDH:
- MEF 9 and MEF 14 certified for offering Carrier Ethernet services
- Flexible set of POS interfaces with carrier class timing offering internal stratum 3, loop, line, and BITS timing support

BROCADE NETIRON MLX SERIES AT A GLANCE

Features	NetIron MLX-4	NetIron MLX-8	NetIron MLX-16	NetIron MLX-32
Interface Slots	4	8	16	32
Switch Fabric Capacity	960 Gbps	1.92 Tbps	3.84 Tbps	7.68 Tbps
Data Forwarding Capacity	400 Gbps	800 Gbps	1.6 Tbps	3.2 Tbps
Packet Routing Performance				
Full Duplex	240 million pps	480 million pps	~1 billion pps	~2 billion pps
Total	480 million pps	960 million pps	~2 billion pps	~4 billion pps
Switch Fabric Redundancy	2+1	2+1	3+1	7+1
Max 10-GbE Ports	16	32	64	128
Max 1-GbE Ports	80	160	320	640
Max OC-192 (STM-64) Ports	8	16	32	64
Max OC-48 (STM-16) Ports	32	64	128	256
Height (inches/rack units)	6.96''/4RU	12.21''/7RU	24.47''/14RU	57.71''/33RU
Power Supply Redundancy	M+N	M+N	M+N	M+N
Air Flow	Side to side	Side to side	Front to back	Front to back

BROCADE NETIRON MLX SERIES POWER SPECIFICATIONS

	NETIRON MLX-4	NETIRON MLX-8	NETIRON MLX-16	NETIRON MLX-32
Maximum DC Power Consumption (W)	1,289	2,560	5,191	10,781
Maximum AC Power Consumption (W) (100-240 VAC)	1,289	2,560	5,191	10,781
Maximum Thermal Output (BTU/HR)	4,399	8,737	17,717	36,797

BROCADE NETIRON MLX SERIES PHYSICAL SPECIFICATIONS

	Dimensions		Weight	
NetIron MLX-4	17.45"w x 6.96"h x 22.5"d	44.32w x 17.68h x 57.15d cm	78 lbs	35 kg
NetIron MLX-8	17.45"w x 12.21"h x 22.5"d	44.32w x 31.01h x 57.15d cm	131 lbs	60 kg
NetIron MLX-16	17.45"w x 24.47"h x 25.5"d	44.32w x 62.15h x 64.77d cm	236 lbs	107 kg
NetIron MLX-32	17.45"w x 57.71"h x 24.1"d	44.32w x 146.58h x 61.21d cm	approx 478 lbs	approx 217 kg

BROCADE NETIRON MLX SERIES SPECIFICATIONS

IEEE Compliance

- 802.3-2005 CSMA/CD Access Method and Physical Layer Specifications
- 802.3ab 1000BASE-T
- 802.3ae 10 Gigabit Ethernet
- 802.3x Flow Control
- 802.3ad Link Aggregation
- 802.1Q Virtual Bridged LANs
- 802.1D MAC Bridges
- 802.1w Rapid STP
- 802.1s Multiple Spanning Trees
- 802.1ad Provider Bridges; partial support: port-based and S-tagged service interface
- 802.1ag Connectivity Fault Management (CFM)

RFC Compliance

BGPv4
- RFC 4271 BGPv4
- RFC 1745 OSPF Interactions
- RFC 1997 Communities & Attributes
- RFC 2439 Route Flap Dampening
- RFC 2796 Route Reflection
- RFC 1965 BGP4 Confederations
- RFC 2842 Capability Advertisement
- RFC 2918 Route Refresh Capability
- RFC 1269 Managed Objects for BGP
- RFC 2385 BGP Session Protection via TCP MD5
- RFC 3682 Generalized TTL Security Mechanism, for eBGP Session Protection
- RFC 4273 BGP-4 MIB
- draft-ietf-idr-restart Graceful Restart Mechanism for BGP

OSPF
- RFC 2328 OSPF v2
- RFC 3101 OSPF NSSA
- RFC 1745 OSPF Interactions
- RFC 1765 OSPF Database Overflow
- RFC 1850 OSPF v2 MIB
- RFC 2370 OSPF Opaque LSA Option
- RFC 3630 TE Extensions to OSPF v2
- RFC 3623 Graceful OSPF Restart

IS-IS
- RFC 1195 Routing in TCP/IP and Dual Environments
- RFC 1142 OSI IS-IS Intra-domain Routing Protocol
- RFC 2763 Dynamic Host Name Exchange
- RFC 2966 Domain-wide Prefix Distribution

RIP
- RFC 1058 RIP v1
- RFC 1723 RIP v2
- RFC 1812 RIP Requirements

IPv4 Multicast
- RFC 1122 Host Extensions
- RFC 1112 IGMP
- RFC 2236 IGMP v2
- RFC 3376 IGMP v3
- RFC 3973 PIM-DM
- RFC 2362 PIM-SM
- RFC 2858 BGP-MP
- RFC 3618 MSDP
- RFC 3446 Anycast RP

General Protocols
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 783 TFTP
- RFC 826 ARP
- RFC 768 UDP
- RFC 894 IP over Ethernet
- RFC 903 RARP
- RFC 906 TFTP Bootstrap
- RFC 1027 Proxy ARP
- RFC 951 BootP
- RFC 1122 Host Extensions for IP Multicasting
- RFC 1256 IRDP
- RFC 1519 CIDR
- RFC 1542 BootP Extensions
- RFC 1812 Requirements for IPv4 Routers
- RFC 1541 and 1542 DHCP
- RFC 2131 BootP/DHCP Helper
- RFC 3768 VRRP
- RFC 854 TELNET
- RFC 1591 DNS (client)

QoS	• RFC 2475 An Architecture for Differentiated Services • RFC 3246 An Expedited Forwarding PHB • RFC 2597 Assured Forwarding PHB Group • RFC 2698 A Two Rate Three Color Marker
Other	• RFC 1354 IP Forwarding MIB • RFC 2665 Ethernet Interface MIB • RFC 1757 RMON Groups 1,2,3,9 • RFC 2068 HTTP • RFC 2030 SNTP • RFC 2865 RADIUS • RFC 3176 sFlow • RFC 2863 Interfaces Group MIB • Draft-ietf-tcpm-tcpsecure TCP Security • RFC 3704 Ingress Filtering for Multihomed Networks (uRPF) • RFC 2784 Generic Routing Encapsulation (GRE) • draft-ietf-bfd-base Bidirectional Forwarding Detection (BFD) • draft-ietf-bfd-v4v6-1hop BFD for IPv4 and IPv6 (Single Hop); for OSPFv2, OSPFv3, IS-IS
IPv6 Core	• RFC 2460 IPv6 Specification • RFC 2461 IPv6 Neighbor Discovery • RFC 2462 IPv6 Stateless Address Auto-Configuration • RFC 4443 ICMPv6 • RFC 4291 IPv6 Addressing Architecture • RFC 3587 IPv6 Global Unicast Address Format • RFC 2375 IPv6 Multicast Address Assignments • RFC 2464 Transmission of IPv6 over Ethernet Networks • RFC 2711 IPv6 Router Alert Option • RFC 3596 DNS support
IPv6 Routing	• RFC 2080 RIPng for IPv6 • RFC 2740 OSPFv3 for IPv6 • draft-ietf-isis-ipv6 Routing IPv6 with IS-IS • RFC 2545 Use of BGP-MP for IPv6
IPv6 Multicast	• RFC 2710 Multicast Listener Discovery (MLD) for IPv6 • RFC 3810 Multicast Listener Discovery Version 2 for IPv6 • RFC 4604 IGMPv3 & MLDv2 for SSM • draft-ietf-ssm-arch SSM for IP • RFC 2362 PIM-SM • draft-ietf-pim-sm-v2-new; partial support: SSM mode of operation
IPv6 Transitioning	• RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers • RFC 3056 Connection of IPv6 Domains via IPv4 Clouds

MPLS	• RFC 3031 MPLS Architecture • RFC 3032 MPLS Label Stack Encoding • RFC 3036 LDP Specification • RFC 2205 RSVP v1 Functional Specification • RFC 2209 RSVP v1 Message Processing Rules • RFC 3209 RSVP-TE • RFC 3270 MPLS Support of Differentiated Services • RFC 4090 Fast Reroute Extensions to RSVP-TE for LSP Tunnels; partial support: detour style • RFC 3812 MPLS TE MIB • draft-ietf-bfd-mpls BFD for MPLS LSPs (RSVP-TE)
L3VPN	• RFC 2858 Multiprotocol Extensions for BGP-4 • RFC 3107 Carrying Label Information in BGP-4 • RFC 4364 BGP/MPLS IP VPNs • draft-ietf-idr-bgp-ext-communities BGP Extended Communities Attribute • RFC 4576 Using LSA Options Bit to Prevent Looping in BGP/MPLS IP VPNs (DN Bit) • RFC 4577 OSPF as the PE/CE Protocol in BGP/MPLS IP VPNs • draft-ietf-idr-route-filter Cooperative Route Filtering Capability for BGP-4 • RFC 4382 MPLS/BGP Layer 3 VPN MIB
L2VPN and PWE3	• draft-ietf-l2vpn-l2-framework Framework for Layer 2 Virtual Private Networks • draft-ietf-l2vpn-requirements Service Requirements for Layer 2 Provider Provisioned Virtual Private Networks • RFC 4762 VPLS Using LDP Signaling • draft-ietf-pwe3-arch PWE3 Architecture • RFC 4447 Pseudowire Setup and Maintenance using LDP • RFC 4448 Encapsulation Methods for Transport of Ethernet over MPLS Networks • draft-ietf-pwe3-pw-tc-mib Definitions for Textual Conventions and OBJECT-IDENTITIES for Pseudo-Wires Management • draft-ietf-pwe3-pw-mib Pseudo Wire (PW) Management Information Base

Packet Over SONET/SDH

- RFC 1661 The Point-to-Point Protocol (PPP)
- RFC 1662 PPP in HDLC-like Framing
- RFC 2615 PPP over SONET/SDH
- RFC 1332 Internet Protocol Control Protocol (IPCP)
- RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP)
- RFC 2472 IPv6 over PPP
- RFC 3592 SONET/SDH Objects
- GR-253-CORE SONET Transport Systems: Common Generic Criteria
- G.707/Y.1322 Network Node Interface for SDH

MEF Certification

- MEF 9 Certified—Abstract Test Suite for Ethernet Services at the UNI
- MEF 14 Certified—Abstract Test Suite for Traffic Management Phase 1

Network Management

- IronView Network Manager (INM) Web-based graphical user interface
- Integrated industry standard Command Line Interface (CLI)
- sFlow (RFC 3176)
- Telnet
- SNMP v1, v2c, v3
- SNMP MIB II
- RMON

Element Security Options

- AAA
- RADIUS
- Secure Shell (SSH v2)
- Secure Copy (SCP v2)
- HTTPs
- TACACS/TACACS+
- Username/Password (Challenge and Response)
- Bi-level Access Mode (Standard and EXEC Level)
- Protection against Denial of Service attacks, such as TCP SYN or Smurf Attacks

Environmental

- Operating Temperature: 0° C to 40° C (32° F to 104° F)
- Relative Humidity: 5% to 90%, @40° C (104° F), non-condensing
- Operating Altitude: 6,600 ft (2,012 m)
- Storage Temperature: -25° C to 70° C (-13° F to 158° F)
- Storage Humidity: 95% maximum relative humidity, non-condensing
- Storage Altitude: 15,000 ft (4,500 m) maximum

Safety Agency Approvals

- CAN/CSA-C22.2 No. 60950-1-3
- UL 60950-1
- IEC 60950-1
- EN 60950-1 Safety of Information Technology Equipment
- EN 60825-1 Safety of Laser Products—Part 1: Equipment Classification, Requirements and User's Guide
- EN 60825-2 Safety of Laser Product—Part 2: Safety of Optical Fibre Communication Systems

Electromagnetic Emission

- ICES-003 Electromagnetic Emission
- FCC Class A
- EN 55022/CISPR-22 Class A/VCCI Class A
- AS/NZS 55022
- EN 61000-3-2 Power Line Harmonics
- EN 61000-3-3 Voltage Fluctuation & Flicker
- EN 61000-6-3 Emission Standard (Supersedes: EN 50081-1)

Immunity

- EN 61000-6-1 Generic Immunity and Susceptibility. Supersedes: EN 50082-1
- EN 55024 Immunity Characteristics. Supersedes:
  - EN 61000-4-2 ESD
  - EN 61000-4-3 Radiated, radio frequency, electromagnetic field
  - EN 61000-4-4 Electrical fast transient
  - EN 61000-4-5 Surge
  - EN 61000-4-6 Conducted disturbances induced by radio-frequency fields
  - EN 61000-4-8 Power frequency magnetic field
  - EN 61000-4-11 Voltage dips and sags

TELCO NEBS/ETSI

Designed to meet the following specifications (formal testing under way):
- Telcordia GR-63-CORE NEBS Requirements: Physical Protection
- Telcordia GR-1089-CORE EMC and Electrical Safety
- Telcordia SR-3580 Level 3
- ETSI ETS 300-019 Physical Protection
  - Part 1-1, Class 1.1, Partly Temperature Controlled Storage Locations
  - Part 1-2, Class 2.3, Public Transportation
  - Part 1-3, Class 3.1, Temperature Controlled Locations (Operational)
- ETSI ETS 300-386 EMI/EMC

Power and Grounding

- ETS 300 132-1 Equipment Requirements for AC Power Equipment Derived from DC Sources
- ETS 300 132-2 Equipment Requirements for DC Powered Equipment
- ETS 300 253 Facility Requirements

Physical Design and Mounting

19-inch rack mount supporting racks compliant with:	• ANSI/EIA-310-D • ETS 300 119 • GR-63-CORE Seismic Zone 4

Tabletop

Environmental Regulatory Compliance

- EU 2002/95/EC RoHS (with lead exemption)
- EU 2002/96/EC WEEE

ORDERING INFORMATION

Part Number	Description
NI-MLX-4-AC	4-slot NetIron MLX-4 AC system
NI-MLX-8-AC	8-slot NetIron MLX-8 AC system
NI-MLX-16-AC	16-slot NetIron MLX-16 AC system
NI-MLX-32-AC	32-slot NetIron MLX-32 AC system
NI-MLX-4-DC	4-slot NetIron MLX-4 DC system
NI-MLX-8-DC	8-slot NetIron MLX-8 DC system
NI-MLX-16-DC	16-slot NetIron MLX-16 DC system
NI-MLX-32-DC	32-slot NetIron MLX-32 DC system
NI-MLX-MR	NetIron MLX Series system management module, 1 GB SDRAM, dual PCMCIA slots, EIA/TIA-232 and 10/100/1000 Ethernet ports for out-of-band management
NI-MLX-32-MR	NetIron MLX-32 system management module, 1 GB SDRAM, dual PCMCIA slots, EIA/TIA-232 and 10/100/1000 Ethernet ports for out-of-band management
NI-X-SF1	NetIron XMR/MLX 4-slot system switch fabric module
NI-X-SF3	NetIron XMR/MLX 8-/16-slot system switch fabric module
NI-X-32-SF	NetIron XMR/MLX 32-slot system switch fabric module
NI-MLX-10Gx4	NetIron MLX Series 4-port 10-GbE module with IPv4/IPv6/MPLS hardware support — requires XFP optics
NI-MLX-10Gx2	NetIron MLX Series 2-port 10-GbE module with IPv4/IPv6/MPLS hardware support — requires XFP optics
NI-MLX-1Gx20-SFP	NetIron MLX Series 20-port FE/GE (100/1000) module with IPv4/IPv6/MPLS hardware support — requires SFP optics
NI-MLX-1Gx20-GC	NetIron XMR Series 20-port 10/100/1000 copper module with IPv4/IPv6/MPLS hardware support
NI-X-OC192x2	2-port Packet over SONET (SDH) OC-192 (STM-64) interface module
NI-X-OC192x1	1-port Packet over SONET (SDH) OC-192 (STM-64) interface module
NI-X-OC48x8	8-port Packet over SONET (SDH) OC-12/48 (STM-4/16) interface module
NI-X-OC48x4	4-port Packet over SONET (SDH) OC-12/48 (STM-4/16) interface module
NI-X-OC48x2	2-port Packet over SONET (SDH) OC-12/48 (STM-4/16) interface module

Corporate Headquarters
San Jose, CA USA
T: +1-408-333-8000
info@brocade.com

European Headquarters
Geneva, Switzerland
T: +41-22-799-56-40
emea-info@brocade.com

Asia Pacific Headquarters
Singapore
T: +65-6538-4700
apac-info@brocade.com

BROCADE