NETIRON XMR 4000, 8000, 16000, 32000

HIGHLIGHTS

▶ *4-, 8-, 16-, and 32-slot high-end IPv4/IPv6/MPLS multi-service routers*

▶ *Terabit-scale architecture offering up to 3 Tbps data capacity and 2 Bpps per system*

▶ *Highly resilient architecture with redundant management modules, switch fabrics, power supplies, fans, and hitless failover*

▶ *Up to 128 10 Gigabit Ethernet / 640 Gigabit Ethernet ports per system, and up to 256 10 Gigabit Ethernet/1,280 Gigabit Ethernet ports in a standard 7-foot rack*

▶ *Wire-speed IPv4, IPv6, and MPLS routing featuring Foundry's unique FDR technology*

▶ *Comprehensive suite of IPv4 and IPv6 unicast and multicast routing protocols*

▶ *High-capacity MPLS L3/L2 VPNs and IP over MPLS routing*

▶ *Enables Virtual Routing in non-MPLS environments via Multi-VRF*

▶ *SONET/SDH interoperability with 10 Gigabit Ethernet WAN PHY*

IPV4/IPV6/MPLS MULTI-SERVICE ROUTERS

Overview

Today's Service Providers face a number of challenges that require a new breed of solutions in order to ensure successful and profitable operation. Service Providers operate in an environment of fierce competition that continues to drive service pricing down. A smooth introduction of new, reliable, and scalable services poses a challenge to many Service Providers, yet, is crucial to expanding the subscriber base, and improving subscriber retention. Adding to these challenges is an exponential growth trend in Internet traffic that continues to erode network capacities. Furthermore, ensuring and increasing profitability are key goals for any Service Provider, which presents the additional challenges of controlling Capital Expenditures (CapEx) and Operational Expenditures (OpEx).

Foundry's NetIron XMR Series routers are built to effectively address all these hurdles by offering the state-of-the-art in hardware and software design. Based on a superior terabit-scale architecture that includes Foundry's cutting-edge fifth generation network processors, this series comprises the industry's most powerful, high density IPv4/IPv6/MPLS multi-service routers. To enable the deployment of scalable, high value, and profitable services, the NetIron XMR Series offers highly versatile, cost-efficient solutions for Internet routing, Metro core, large scale IP backbones, and IP carrier's carrier transport.

The NetIron XMR Series includes the 4-slot NetIron XMR 4000 (4 RU), 8-slot NetIron XMR 8000 (7 RU), the 16-slot NetIron XMR 16000 (14 RU), and the 32-slot NetIron XMR 32000 (21 RU). The series offers industry-leading port capacity and density with up to 128 10 Gigabit Ethernet/640 Gigabit Ethernet ports per system, and up to 256 10 Gigabit Ethernet/ 1,280 Gigabit Ethernet ports in a standard 7-foot rack.

The NetIron XMR Series is designed from the ground up for high performance and scalability to address the needs of the most demanding ISP, Internet data center, metro service provider, and multi-service operator applications. All routers in the series feature wire-speed, low latency, and low jitter routing for IPv4, IPv6, MPLS, and MPLS VPN services, and

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they support both edge and core service provider deployments. For metropolitan area networks (MANs), the NetIron XMR Series is capable of wire-speed, low latency, and low jitter Layer 2 switching to allow for cost-efficient and seamless integration with Layer 2 MANs or Layer 2 MAN access layers without compromising performance.

Designed for high-end routing applications, the NetIron XMR Series features Foundry Direct Routing (FDR) technology for full Forwarding Information Base (FIB) programming in hardware, together with hardware-based wire-speed access control lists (ACLs) and policy-based routing (PBR) for robust, high performance IPv4, IPv6, and Layer 3 VPN routing. Complementary to FDR is a full suite of unicast and multicast routing protocols for both IPv4 and IPv6. Supported IPv4 protocols include RIP, OSPF, IS-IS, BGP4, PIM-DM, PIM-SM, IGMP, BGP-MP for multicast, and MSDP. Supported IPv6 protocols include RIPng, OSPFv3, BGP-MP for IPv6 (BGP4+), PIM-SSM, and MLD. Building on this solid routing architecture, the NetIron XMR routers also provide dual-stack IPv4/IPv6 wire-speed routing to facilitate a seamless migration to IPv6 without sacrificing performance.

A comprehensive set of path calculation and signaling capabilities using OSPF-TE, RSVP-TE, CSPF, and LDP allows the creation of both traffic engineered and non traffic engineered infrastructures. Within either infrastructure, the NetIron XMR Series supports IP over MPLS as well as MPLS VPN applications. The NetIron XMR Series supports all three popular MPLS VPN services, Virtual Leased Line (VLL), LDP-Based Virtual Private LAN Service (VPLS), and BGP/MPLS VPN as per RFC 2547bis, on all ports at wire-speed.

In addition, the NetIron XMR Series offers Multi-VRF Routing for environments where virtual routing is needed without the complexity of MPLS. Using Multi-VRF Routing, backbone operators can create multiple routing protocol instances that peer with each other in completely virtualized domains while sharing the same physical routers and links. The NetIron XMR Series is able to support overlapping IP address spaces through complete separation of the routing tables. Forwarding plane separation is supported through the use of standard 802.1Q VPN tags.

The NetIron XMR Series is also designed for enabling the evolving multi-service and triple-play infrastructures. Built with an innovative view of Virtual Output Queuing (VOQ) architectures, packet buffering, and packet scheduling, the NetIron XMR routers offer non-blocking packet forwarding and large capabilities for handling severe congestion scenarios. Built on that superior foundation, the NetIron XMR routers deliver a comprehensive suite of QoS mechanisms to enable next-generation architectures. Using the NetIron XMR routers, operators can implement eight distinct traffic classes of prioritization with true performance guarantees. Operators can implement those performance guarantees through the NetIron XMR by choosing from different packet scheduling schemes and tweaking the associated configurable parameters. Additionally, by relying on DSCP Drop Precedence, operators can take advantage of Weighted Random Early Discard (WRED) for differentiated packet dropping in case of congestion within a given traffic class.

With security an increasing concern for today's operators, the NetIron XMR routers offer a powerful set of security mechanisms that allow operators to enhance both infrastructure security and subscriber security. Featuring highly scalable inbound and outbound ACLs, operators can implement security policies for IPv4 and IPv6, as well as Layer 2 through the NetIron XMR Series. These policies can be applied permanently or on demand without impacting normal operations. Receive ACLs further harden platform and infrastructure security, allowing operators to implement strict policies for controlling management traffic and control traffic. To counter IP address spoofing used in many forms of DoS attacks, the NetIron XMR routers offer hardware-based wire-speed Unicast Reverse Path Forwarding (uRPF) for both edge applications (strict mode), and backbone applications (loose mode). The NetIron XMR's uRPF allows the routers to check the packet's source IP address against the routing table to ensure that the packet came from a valid, and expected, source network.

To enable long-haul transport, the NetIron XMR Series optics support distances of up to 80 km for 10 Gigabit Ethernet, and up to 150 km for Gigabit Ethernet. In addition, the NetIron XMR Series allows operators to connect to existing SONET/SDH OC-192/STM-64 infrastructures through 10 Gigabit Ethernet WAN PHY, allowing for cost-efficient transport up to thousands of kilometers.

Key Features

- *Service provider-grade IPv4/IPv6/MPLS multi-service routers*
- *4-, 8-, 16-, and 32-slot systems (4, 7, 14, 21 RU) for maximum deployment versatility*
- *Terabit-scale architecture designed for 10 Gigabit Ethernet and beyond*
- *Performance of competitor multi-chassis routers in a fraction of the rack space*
  - *Up to 2 billion pps routing performance with non-blocking 3 Tbps data capacity*
- *Industry-leading port capacity and density with up to 128 10 Gigabit Ethernet/640 Gigabit Ethernet ports per system, and up to 256 10 Gigabit Ethernet/1,280 Gigabit Ethernet ports in a standard 7-foot rack*
- *Wire-speed dual stack IPv4/IPv6 routing*
- *Wire-speed edge (PE) and core (P) Label Switching Routers*
- *Industry-leading performance for MPLS services providing concurrent IP over MPLS, Virtual Leased Lines (VLLs), Virtual Private LAN Services (VPLSes), and BGP/MPLS VPNs at wire-speed*
- *High performance, robust routing via Foundry Direct Routing (FDR) for complete 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, IGMP, BGP-MP for multicast, and MSDP*
  - *Supported IPv6 protocols include RIPng, OSPFv3, BGP-MP for IPv6 (BGP4+), PIM-SSM, and MLD*
- *Comprehensive MPLS signaling and path calculation algorithms for both traffic engineered and non-traffic engineered applications*
  - *OSPF-TE, RSVP-TE, CSPF*
  - *LDP*
- *Powerful Multi-VRF Routing supports virtual routing applications over non-MPLS backbones*
- *Industry leading scalability*
  - *10 million BGP routes and up to 500 BGP peers*
  - *1 million IPv4 routes in hardware (FIB)*
  - *240,000 IPv6 routes in hardware (FIB)*
  - *2,000 BGP/MPLS VPNs and up to 1 million VPN routes*
  - *16,000 VLLs/VPLSes and up to 1 million VPLS MAC addresses*
  - *4094 VLANs, and up to 2 million MAC addresses*

- *Superior high availability design*
  - *Redundant management modules*
  - *Redundant switch fabrics*
  - *Redundant power supplies and cooling system*
  - *Hitless Layer 3 and Layer 2 failover for non-stop forwarding*
  - *Hitless (in-service) software upgrades*
- *Advanced QoS*
  - *Eight distinct priority levels*
  - *Weighted Random Early Discard (WRED) support for congestion management and precedence dropping (tunable via configuration)*
  - *Support for hybrid queue servicing disciplines: Strict Priority + Weighted Fair Queuing*
- *State-of-the-art policy enforcement and monitoring for enforcing SLAs and implementing security policies*
  - *Two rate three color traffic policers*
  - *Traffic policer accounting*
  - *Layer 3 and Layer 2 ACLs*
  - *Granular ACL accounting*
  - *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*
- *10 Gigabit Ethernet WAN PHY support for cost-efficient SONET/SDH connectivity*

The Series at a Glance

Feature	NetIron XMR 4000	NetIron XMR 8000	NetIron XMR 16000	NetIron XMR 32000
Interface Slots	4	8	16	32
Switch Fabric Capacity	960 Gbps	1.92 Tbps	3.84 Tbps	7.68 Tbps
System Data Switching Capacity	384 Gbps	768 Gbps	1.54 Tbps	3.08 Tbps
Data Switching Capacity per 7-foot Rack	3.84 Tbps	4.6 Tbps	4.6 Tbps	6.16 Tbps
Packet Routing Performance per System	240 million pps	480 million pps	960 million pps	2 billion pps
Packet Routing Performance per 7-foot Rack	2.4 billion pps	2.88 billion pps	2.88 billion pps	4 billion pps
Switch Fabric Redundancy	2+1	2+1	3+1	7+1
Max 10-GbE Ports per System	16	32	64	128
Max 10-GbE Ports per 7-foot Rack	176	192	192	256
Max 1-GbE Ports per System	80	160	320	640
Max 1-GbE Ports per 7-foot Rack	880	960	960	1,280
Height (inches/rack units)	6.96" / 4 RU	12.21" / 7 RU	24.47" / 14 RU	36.75" / 21 RU
Power Supply Redundancy	1+1, 1+2	N+1, 1+1	N+1, 1+1	N+1, 1+1
Air Flow	Side to side	Side to side	Front to back	Side to side

Technical Specifications

IEEE Compliance

– 802.3 CSMA/CD Access Method and Physical Layer Specifications

– 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

RFC Compliance

BGPv4

– RFC 1771 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

– draft-ietf-idr-restart Graceful Restart Mechanism for BGP

OSPF

– RFC 2178 OSPF

– RFC 1583 OSPF v2

– RFC 1587 OSPF NSSA

– RFC 1745 OSPF Interactions

– RFC 1765 OSPF Database Overflow

– RFC 1850 OSPF Traps

– RFC 2154 OSPF w/Digital Signatures (Password, MD-5)

– RFC 2328 OSPF v2

– 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 2763 Dynamic Host Name Exchange

– RFC 2966 Domain-wide Prefix Distribution

RIP

– RFC 1058 RIP v1

– RFC 1723 RIP v2

– RFC 1812 RIP Requirements

IP Multicast

– RFC 1122 Host Extensions

– RFC 1112 IGMP

– RFC 2236 IGMP v2

– PIM-DM v1

– 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 2338 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 2138 RADIUS
- RFC 3176 sFlow
- Draft-ietf-tcpm-tcpsecure TCP Security
- RFC 3074 Ingress Filtering for Multihomed Networks (uRPF)

IPv6 Core
- RFC 2460 IPv6 Specification
- RFC 2461 IPv6 Neighbor Discovery
- RFC 2462 IPv6 Stateless Address Auto-Configuration
- RFC 2463 ICMPv6
- RFC 3513 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
- RFC 2545 Use of BGP-MP for IPv6

IPv6 Multicast
- RFC 2710 Multicast Listener Discovery (MLD) for IPv6
- IETF Draft-vida-mld-v2 Multicast Listener Discovery Version 2 for IPv6
- draft-holbrook-idmr-igmpv3-ssm IGMPv3 & MLDv2 for SSM
- draft-ietf-ssm-arch SSM for IP
- draft-ietf-pim-sm-v2-new (Partial Support) PIM-SM Protocol Specification, SSM Mode of Operation

IPv6 Transitioning
- RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers

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

L3VPN
- RFC 2858 Multiprotocol Extensions for BGP-4
- RFC 3107 Carrying Label Information in BGP-4
- RFC 4364 BGP/MPLS IPVPNs
- draft-ietf-idr-bgp-ext-communities BGP Extended Communities Attribute
- draft-ietf-l3vpn-ospf-2547 OSPF as the PE/CE Protocol in BGP/MPLS IPVPNs
- draft-ietf-idr-route-filter Cooperative Route Filtering Capability for BGP-4
- RFC 4382 MPLS/BGP Layer 3VPN 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
- draft-ietf-l2vpn-vpls-ldp Virtual Private LAN Services over MPLS
- draft-ietf-pwe3-arch PWE3 Architecture
- draft-ietf-pwe3-ethernet-encap Encapsulation Methods for Transport of Ethernet Frames Over IP/MPLS Networks
- draft-ietf-pwe3-control-protocol Pseudowire Setup and Maintenance using LDP
- 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

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
- HP OpenView for Sun Solaris, HP-UX, IBM AIX, and Windows NT

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 45 °C (32 °F to 104 °F)
- Relative Humidity: 5% to 90%, @45 °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 Products – 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

NetIron XMR Series Power Specifications

	NetIron XMR 4000	NetIron XMR 8000	NetIron XMR 16000	NetIron XMR 32000
Maximum DC Power Consumption (W)	1,384	2,750	5,572	10,377
Maximum AC Power Consumption (W) [100 – 240 VAC]	1,384	2,750	5,572	10,377
Maximum Thermal Output (BTU/HR)	4,724	9,386	19,017	35,418

NetIron XMR Series Power Specifications

	NetIron XMR 4000	NetIron XMR 8000	NetIron XMR 16000	NetIron XMR 32000
Dimensions	17.45"w x 6.96"h x 22.5"d 44.32w x 17.68h x 57.15d cm	17.45"w x 12.21"h x 22.5"d 44.32w x 31.01h x 57.15d cm	17.45"w x 24.47"h x 25.5"d 44.32w x 62.15h x 64.77d cm	17.45"w x 36.75"h x 24.1"d 44.32w x 93.35h x 61.21d cm
Weight (Fully loaded)	78 lbs 35 kg	131 lbs 60 kg	236 lbs 107 kg	approx 300 lbs approx 136 kg

Ordering Information

Part Number	Description
NI–XMR–4–AC	4–slot NetIron XMR 4000 AC system
NI–XMR–8–AC	8–slot NetIron XMR 8000 AC system
NI–XMR–16–AC	16–slot NetIron XMR 16000 AC system
NI–XMR–32–AC	32–slot NetIron XMR 32000 AC system
NI–XMR–4–DC	4–slot NetIron XMR 4000 DC system
NI–XMR–8–DC	8–slot NetIron XMR 8000 DC system
NI–XMR–16–DC	16–slot NetIron XMR 16000 DC system
NI–XMR–32–DC	32–slot NetIron XMR 32000 DC system
NI–XMR–MR	NetIron XMR Series system management module, 2 GB SDRAM, dual PCMCIA slots, EIA/TIA–232 and 10/100/1000 Ethernet ports for out–of–band management
NI–XMR–32–MR	NetIron XMR 32000 system management module, 2 GB SDRAM, dual PCMCIA slots, EIA/TIA–232 and 10/100/1000 Ethernet ports for out–of–band management
NI–X–SF1	NetIron XMR 4–slot system switch fabric module
NI–X–SF3	NetIron XMR 8–/16–slot system switch fabric module
NI–X–32–SF	NetIron XMR 32–slot system switch fabric module
NI–XMR–10Gx4	NetIron XMR Series 4–port 10–GbE module with IPv4/IPv6/MPLS hardware support – requires XFP optics
NI–XMR–10Gx2	NetIron XMR Series 2–port 10–GbE module with IPv4/IPv6/MPLS hardware support – requires XFP optics
NI–XMR–1Gx20–SFP	NetIron XMR Series 20–port FE/GE (100/1000) module with IPv4/IPv6/MPLS hardware support – requires SFP optics
NI–XMR–1Gx20–GC	NetIron XMR Series 20–port 10/100/1000 copper module with IPv4/IPv6/MPLS hardware support
NI–X–ACPWR	NetIron XMR Series AC power supply
NI–X–ACPWR–A	NetIron XMR 4–slot system AC power supply
NI–X–DCPWR	NetIron XMR Series DC power supply
NI–X–DCPWR–A	NetIron XMR 4–slot system DC power supply