IBM Ethernet Router m-series advanced switching routers for today's network infrastructure

Table of contents
1 At a glance
2 Key prerequisites
2 Planned availability dates
2 Description
7 Product number
9 Publications
10 Services
10 Technical information
13 Terms and conditions
16 Pricing
16 Announcement countries
17 Corrections

At a glance

IBM® Ethernet Router m-series routers are powerful enablers of advanced converged enterprise backbones. They are designed to feature high port density, high performance, and scalable design, with:

- Service provider grade IPv4, IPv6, MPLS, and Multi-Virtual Routing and Forwarding (VRF)-enabled metro routing
- Advanced and scalable Metro Ethernet Layer 2 services
- Up to 64 10 GbE, 320 1 GbE, or 128 OC-12/48 user ports
- Redundant, high availability architecture

Overview

IBM Ethernet Router m-series family of routers are high-performance switching routers designed to deliver:

- Four, eight, or sixteen slot models for deployment versatility
- High-performance IPv4, IPv6, Multiprotocol Label Switching (MPLS), and Multi-Virtual Routing and Forwarding (VRF) capabilities along with advanced Layer 2 switching services
- A fully distributed, non-blocking architecture with up to 3.2 Tbps data capacity and 2 Bpps per system

IBM Ethernet Router m-series family includes:

- Four slot IBM Ethernet Router B04M (4003-M04)
- Eight slot IBM Ethernet Router B08M (4003-M08)
- Sixteen slot IBM Ethernet Router B16M (4003-M16)

IBM Ethernet Router m-series routers are well suited for a wide range of advanced applications in Metropolitan Area Networks (MANs), Internet edge and aggregation routing, high-security data centers, large-enterprise core, and high performance computing (HPC). These models are designed to:

- Offer carrier-grade quality of service (QoS) for enabling converged triple-play (voice, video, and data) networks
- Deliver wire-speed performance for IPv4, IPv6, and MPLS routing and switching, combined with advanced packet processing and traffic management capabilities
• Enable reliable converged infrastructures and support mission-critical applications
• Support comprehensive hardware-based security and policies

Combining the right mix of functionality and high performance while reducing the total cost of ownership (TCO), IBM Ethernet Router m-series routers are designed to provide a solid, resilient network design to cope with the rapid pace of the technology evolution. Deployment of IBM Ethernet Router m-series routers can help:

• Provide low power consumption and heat dissipation
• Incorporate high router density and compact size, yielding significant savings for network operators, including savings on power, cooling, and rack space costs
• Enable 10 Gbps Ethernet routing with switching capabilities with a variety of form factors, capacities, and interface options to meet the expanding needs of service providers and high-end enterprises

**Key prerequisites**

Multi-Service IronWare operating system level R4.0.00b, or later.

For a list of supported servers, refer to the Hardware requirements section.

**Planned availability dates**

May 15, 2009

• US and Canada
• All European, Middle Eastern, and African countries except Croatia and Russia
• All Latin American countries except Argentina
• All Asia Pacific countries except China and Taiwan

July 15, 2009

• Croatia, Russia, Argentina, China, and Taiwan

**Description**

IBM Ethernet Router m-series family of routers are designed to help address the needs of a wide range of networking environments and is well suited for high-density demanding deployments. IBM Ethernet Routers m-series routers include the four slot IBM Ethernet Router B04M (4003-M04), eight slot IBM Ethernet Router B08M (4003-M08), and sixteen slot IBM Ethernet Router B16M (4003-M16) models. These routers offer high port capacity and density, based on the number of available slots, with up to 64 10 GbE, 320 1 GbE, or 128 OC-12/48 ports.
Designed to enable reliable converged infrastructures and support mission-critical applications, IBM Ethernet Router m-series routers feature advanced n+1 redundant switch fabric architecture for high availability. The architecture is designed to help the system to operate at peak performance even in the case of a switch fabric card failure. In the case of fabric failures, this advanced architecture can allow 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 hardware redundancy for the management modules, power supplies, and cooling system. In addition, the Multi-Service IronWare operating system offers hitless management failover with Border Gateway Protocol (BGP) and Open Shortest Path First (OSPF) graceful restart capabilities, as well as hitless (in-service) software upgrades for further enhancing both system availability and overall network availability.

A suite of advanced traffic management and quality of service (QoS) functions supports the deployment of triple-play service provider networks and converged enterprise networks supporting voice, video, and data. IBM Ethernet Router m-series routers offer advanced bandwidth control capabilities providing committed bandwidth to users or applications. These switching routers also offer advanced packet marking, prioritization, queuing, and scheduling with Weighted Random Early Discard (WRED) congestion management for granular control of bandwidth utilization throughout the network.

IBM Ethernet Router m-series routers offer network planners high-performance IPv4, IPv6, MPLS, and Multi-VRF capabilities along with Layer 2 switching capabilities, which can help address the diverse needs of environments ranging from metro networks, ISPs, data centers, large enterprises, government networks, education and research, and high performance computing (HPC).

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

Complementing the 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 Ethernet 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 and aggregation routing, IBM Ethernet Router m-series routers offer operators secure and robust routing with dual stack IPv4 and IPv6 wire-speed routing performance. These switching routers offer capacities up to 512,000 IPv4 routes in the hardware Forwarding Information Based (FIB), and up to 1 million BGP routes in the BGP Routing Information Base (RIB), thereby enabling high-performance, scalable, and cost-effective Internet edge and aggregation deployments.

IBM Ethernet Router m-series routers are a powerful enabler of advanced converged enterprise backbones. Featuring state-of-the-art QoS and wire-speed unicast and multicast routing for IPv4 and IPv6, the routers can help enable the efficient rollout of converged backbones, providing reliable transport of VoIP, video services, and mission-critical data. Virtual routing via Multi-VRF allows enterprises to create multiple security zones and simplified VPNs for different applications and business units, while streamlining overall network management. Additionally, the router’s 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. Hardware-based security and policies are supported, including Layer 3 and Layer 2 ACLs, granular ACL accounting, hardware-based packet filtering and policy-based routing (PBR), unicast reverse path forwarding (uRPF), receive ACLs, and extensive sFlow Layer 207 traffic monitoring for IPv4, IPv6, and MPLS services.

For large-scale high-performance cluster computing, the 1 GbE and 10 GbE port densities of IBM Ethernet Router m-series routers support 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 provides ample capacity for bandwidth-intensive applications. By combining high data capacity with ultra-low latency, IBM Ethernet Router m-series routers can help accelerate application performance in high performance computing clusters.

**Optional features**

The four slot IBM Ethernet Router B04M (4003-M04), eight slot IBM Ethernet Router B08M (4003-M08), and sixteen slot IBM Ethernet Router B16M (4003-M16) models are available with a number of selectable options. Various Interface Modules can be installed in each slot, providing flexible connectivity options. Base models do not include any Interface Modules, and it is recommended to order at least one to provide connectivity. You are not required to populate all ports with transceivers, but ports can only be used with the IBM supplied transceivers specified in this document.

All base models include a single Management Module. The base IBM Ethernet Router B04M (4003-M04) includes one ac power supply and two Switch Fabric Modules. The base IBM Ethernet Router B08M (4003-M08) includes two ac power supplies and two Switch Fabric Modules. The base IBM Ethernet Router B16M includes four ac power supplies and three Switch Fabric Modules. One additional Management Module and one additional Switch Fabric Module and additional power supplies can be ordered with the systems to provide redundancy.

**Management Module (#1701):** The Management Module controls the IBM Ethernet Router B04M, IBM Ethernet Router B08M, and IBM Ethernet Router B16M hardware components, runs the networking protocols, and provides the Real Time Operating System (RTOS). Each chassis requires one management module and can accept a second one for redundancy. Each management module contains two PCMCIA slots (requires #8710 for usage), a console port, and a 10/100/1000 Ethernet port for management.

**4-slot Switch Fabric Module (#1702):** The 4-slot Switch Fabric Module for the IBM Ethernet Router B04M switches user packets from one interface module installed in a chassis to another. The IBM Ethernet Router B04M chassis accommodates three switch fabric modules with two required and one redundant for a fully-loaded system.

**8/16-slot Switch Fabric Module (#1703):** The 8/16-slot Switch Fabric Module for the IBM Ethernet Router B08M and IBM Ethernet Router B16M switches user packets from one interface module installed in the chassis to another. The IBM Ethernet Router B08M accommodates three switch fabric modules with two required and one redundant for a fully loaded system. The IBM Ethernet Router B16M accommodates four switch fabric modules with three required and one redundant for a fully loaded system.

**2-port 10 GbE Module (#1710) and 4-port 10 GbE Module (#1711):** The 2-port (#1710) and 4-port (#1711) 10 GbE interface modules allow the IBM Ethernet Router B04M, IBM Ethernet Router B08M, and IBM Ethernet Router B16M to connect to other network devices at a fixed speed of 10 Gbps. Each physical port requires a qualified XFP transceiver for connectivity.

**20-port FE/GE (100/1000) Module (#1712):** The 20-port 100/1000 interface module allows the IBM Ethernet Router B04M, IBM Ethernet Router B08M, and IBM Ethernet Router B16M to connect to other network devices at an auto-negotiated speed.
speed of 100 Mbps or 1 Gbps. Each physical port requires a qualified SFP transceiver for connectivity.

**20-port RJ-45 10/100/1000 Copper Module (#1713):** The 20-port 10/100/1000 Copper interface module allows the IBM Ethernet Router B04M, IBM Ethernet Router B08M, and IBM Ethernet Router B16M to connect to other network devices at an auto-sensing and auto-negotiated speed of 10 Mbps, 100 Mbps, or 1 Gbps. Each physical port provides connectivity through an RJ-45 connector.

**2-port OC-12/48 POS/SDH Interface Module (#1752), 4-port OC-12/48 POS/SDH Interface Module (#1753), 8-port OC-12/48 POS/SDH Interface Module (#1754):** The 2-port (#1752), 4-port (#1753), and 8-port (#1754) OC-12/48 POS/SDH Interface Modules allow the IBM Ethernet Router B04M, IBM Ethernet Router B08M, and IBM Ethernet Router B16M to support both Packet over SONET (POS) and Packet over SDH. Each interface module has two (#1752), four (#1753), or eight (#1754) ports, which require a qualified SFP optical transceiver for connectivity and can be configured to support OC-12 or OC-48 speeds. Two in and two out RJ-48 connectors on each module provide a BITS external clock source and propagates a common clock source (Line or BITS) among POS modules.

**Transceivers**

You must install an SFP or XFP transceiver into each Gigabit Ethernet and 10 Gigabit Ethernet SFP or XFP port you want to use. Only IBM supplied transceivers can be used to populate the ports on these products.

**XFP Transceiver 10GB Copper 15m CX4 (#2101):** Provides passive 10 Gbps XFP capable of 15 m over appropriate CX4-grade copper cables.

**XFP Transceiver 850nm 300m MMF (#2110):** Provides 10 Gbps Short-Reach XFP capable of 300 m over multimode fiber with optical monitoring capabilities.

**XFP Transceiver 1310nm 10Km SMF (#2111):** Provides 10 Gbps Long-Reach XFP capable of 10 km over single-mode fiber with optical monitoring capabilities.

**XFP Transceiver 1550nm 40Km SMF (#2112):** Provides 10 Gbps Extended Reach XFP capable of 40 km over single-mode fiber with optical monitoring capabilities.

**SFP Transceiver 1GE Copper RJ-45 (#2202):** Provides passive 1 Gbps SFP capable of 100 m over CAT5 or higher cabling with copper RJ-45 connector.

**SFP Transceiver 100MbE MMF w/OM (#2216):** Provides 100 Mbps Short-Reach SFP capable of 2 km over multimode fiber with optical monitoring capabilities.

**SFP Transceiver 1GE SX MMF w/OM (#2211):** Provides 1 Gbps Short-Reach SFP capable of 550 m over multimode fiber with optical monitoring capabilities.

**SFP Transceiver 1GE LX SMF w/OM (#2212):** Provides 1 Gbps Long-Reach SFP capable of 10 km over single-mode fiber with optical monitoring capabilities.

**SFP Transceiver 1GE LHA SMF w/OM (#2213):** Provides 1 Gbps Long-Reach SFP capable of 70 km over single-mode fiber with optical monitoring capabilities.

**SFP Transceiver OC-12 SR-1/IR-1 500 m MMF (#2701):** Provides Packet over SONET/SDH OC-12 (STM-4) Short-Reach and Intermediate-Reach SFP capable of 500 m over multimode fiber with optical monitoring capabilities.

**SFP Transceiver OC-12 SR-1/IR-1 15 km SMF (#2702):** Provides POS and Packet over SDH OC-12 (STM-4) Short-Reach and Intermediate-Reach SFP capable of 15 km over single-mode fiber with optical monitoring capabilities.

**SFP Transceiver OC-12 LR-1 40 km SMF (#2703):** Provides POS and Packet over SDH OC-12 (STM-4) Long-Reach SFP capable of 40 km over single-mode fiber with optical monitoring capabilities.
SFP Transceiver OC-12 LR-2 80 km SMF (#2704): Provides POS and Packet over SDH OC-12 (STM-4) Long Reach SFP capable of 80 km over single-mode fiber with optical monitoring capabilities.

SFP Transceiver OC-48 SR-1 2 km SMF (#2708): Provides POS and Packet over SDH OC-48 (STM-16) Short-Reach SFP capable of 2 km over single-mode fiber with optical monitoring capabilities.

SFP Transceiver OC-48 IR-1 15 km SMF (#2709): Provides POS and Packet over SDH OC-48 (STM-16) Intermediate-Reach SFP capable of 15 km over single-mode fiber with optical monitoring capabilities.

SFP Transceiver OC-48 LR-1 40 km SMF (#2710): Provides POS and Packet over SDH OC-48 (STM-16) Long-Reach SFP capable of 40 km over single-mode fiber with optical monitoring capabilities.

SFP Transceiver OC-48 LR-2 80 km SMF (#2711): Provides POS and Packet over SDH OC-48 (STM-16) Long-Reach SFP capable of 80 km over single-mode fiber with optical monitoring capabilities.

Mid-mount Rack Mount Kit 4-slot (#5900), Mid-mount Rack Mount Kit 8-slot (#5901), Mid-mount Rack Mount Kit 16-slot (#5902): The IBM Ethernet Router B04M and IBM Ethernet Router B08M have fixed front mount brackets. These options (#5900, #5901, #5902) provide additional mounting brackets that can be installed on the chassis to do a mid-mount installation.

4003-M04 Firmware Upgrade Renewal, 1 year (#7099): The initial purchase of an IBM Ethernet Router B04M includes 12 months of firmware upgrade entitlement. This feature provides you with one additional year of renewal for upgrades included in future releases of the IronWare firmware. You are not eligible to access new features and functions without the purchase of this feature.

4003-M08 Firmware Upgrade Renewal, 1 year (#7098): The initial purchase of an IBM Ethernet Router B08M includes 12 months of firmware upgrade entitlement. This feature provides you with one additional year of renewal for upgrades included in future releases of the IronWare firmware. You are not eligible to access new features and functions without the purchase of this feature.

4003-M16 Firmware Upgrade Renewal, 1 year (#7097): The initial purchase of an IBM Ethernet Router B16M includes 12 months of firmware upgrade entitlement. This feature provides you with one additional year of renewal for upgrades included in future releases of the IronWare firmware. You are not eligible to access new features and functions without the purchase of this feature.

1200 W ac power supply 4-slot (#8701): The IBM Ethernet Router B04M accommodates three 1200 W ac power supplies with one required and two redundant. This power supply is hot swappable.

1200 W ac power supply 8/16-slot (#8702): The IBM Ethernet Router B08M accommodates four 1200 W ac Power Supplies with two required and two redundant. The IBM Ethernet Router B16M accommodates eight 1200 W ac power supplies with four required and four redundant. This power supply is hot swappable.

128 MB PCMCIA ATA Flash Memory for Management Modules (#8710): This feature is a specially formatted flash PCMCIA card for the IBM Ethernet Router B04M, IBM Ethernet Router B08M, and IBM Ethernet Router B16M Management Module (#1701). The flash card can store up to 128 MB of system files, including boot images, startup configuration files, and running configuration files. As a result, system management tasks such as copying files between the flash card and flash memory on the Management Module can also be performed.

Accessibility by people with disabilities

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at
### For hardware offerings

The following features support use by people with disabilities: Ports and connectors support connection of industry-standard devices.

<table>
<thead>
<tr>
<th>Description</th>
<th>Machine type</th>
<th>Model</th>
<th>Feature number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Ethernet Router B04M</td>
<td>4003</td>
<td>M04</td>
<td></td>
</tr>
<tr>
<td>Management Module</td>
<td></td>
<td></td>
<td>1701</td>
</tr>
<tr>
<td>4-slot Switch Fabric Module</td>
<td></td>
<td></td>
<td>1702</td>
</tr>
<tr>
<td>2-port 10-GBE Module</td>
<td></td>
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<td>1710</td>
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<tr>
<td>4-port 10-GBE Module</td>
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<tr>
<td>20-port FE/GE (100/1000)</td>
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<td>1712</td>
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<tr>
<td>20-port RJ-45 10/100/1000</td>
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<td>1713</td>
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<tr>
<td>2-port OC-12/48 POS/SDH</td>
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<td>1752</td>
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<td>4-port OC-12/48 POS/SDH</td>
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<tr>
<td>8-port OC-12/48 POS/SDH</td>
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<td>1754</td>
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<tr>
<td>XFP 10GB Copper 15m CX4</td>
<td></td>
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<td>2101</td>
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<tr>
<td>XFP 850nm 300m MMF</td>
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<td>2110</td>
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<td>XFP 1310nm 10km SMF</td>
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<tr>
<td>XFP 1550nm 40km SMF</td>
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<td>2202</td>
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<td>SFP 100Mbe MMF w/OM</td>
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<td>2216</td>
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<td>Mid-mount Rack Kit 4-slot</td>
<td></td>
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<td>2812</td>
</tr>
<tr>
<td>4003-M04 FW Upgrade Renewal</td>
<td></td>
<td></td>
<td>2813</td>
</tr>
<tr>
<td>408MB Flash Memory</td>
<td></td>
<td></td>
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<tr>
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<td></td>
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<td>IBM Ethernet Router B08M</td>
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<td>M08</td>
<td></td>
</tr>
<tr>
<td>Management Module</td>
<td></td>
<td></td>
<td>1701</td>
</tr>
<tr>
<td>8/16-slot Switch Fabric</td>
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<td>M16</td>
<td>1701</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8/16-slot Switch Fabric</td>
<td>1703</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-port 10-Gbe Module</td>
<td>1710</td>
<td></td>
<td></td>
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<td>1711</td>
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<td>20-port FE/GE (100/1000)</td>
<td>1712</td>
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<tr>
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<td>1713</td>
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<tr>
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<td>1752</td>
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<td>1754</td>
<td></td>
<td></td>
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<td>XFP 1550nm 40km SMF</td>
<td>2112</td>
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<td>SFP 1GE Copper Rj-45</td>
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<td>SFP 1GE SX MMF w/OM</td>
<td>2211</td>
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<td>SFP 100Mbe MMF w/OM</td>
<td>2216</td>
<td></td>
<td></td>
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<tr>
<td>SFP OC-12 SR-1/IR-1 500 m MM</td>
<td>2701</td>
<td></td>
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<tr>
<td>SFP OC-12 SR-1/IR-1 15 km SM</td>
<td>2702</td>
<td></td>
<td></td>
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<tr>
<td>SFP OC-12 LR-1 40 km SMF</td>
<td>2703</td>
<td></td>
<td></td>
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<tr>
<td>SFP OC-12 LR-2 80 km SMF</td>
<td>2704</td>
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SFP OC-48 IR-1 15 km SMF 2709
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SFP OC-48 LR-2 80 km SMF 2711
SFP 1GE Copper RJ-45 8-Pack 2801
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SFP 1GE LX SMF w/OM 8-Pack 2812
SFP 1GE LHA SMF w/OM 8-Pack 2813
Mid-mount Rack Kit 16-slot 5902
4003-M16 FW Upgrade Renewal 7097
1200 w ac PS 8/16-slot 8702
128MB Flash Memory 8710
Power Cord US NEMA 5-20P 9600
Power Cord US NEMA 6-15P 9601
Power Cord UK 9602
Power Cord Europe 9603
Power Cord US NEMA 6-20P 9604
Power Cord IEC 60320 9605
Power Cord Nema L6-20P 9606
Power Cord Japan 9608
Power Cord India, UK 9609
Power Cord India, S.Africa 9610
Power Cord China 9611
Power Cord Australia 9612
Power Cord Swiss 9613
Power Cord (China IEC 309) 9614

Model conversions

Not applicable

Feature conversions

Not applicable

Publications

The following publications are shipped with the product.

Additional copies of individual publications are available on the Internet at

http://www.ibm.com/shop/publications/order

<table>
<thead>
<tr>
<th>Title</th>
<th>Order number</th>
<th>Availability date</th>
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<tr>
<td>IBM Ethernet Router m-series Installation and User's Guide</td>
<td>GC27-2235</td>
<td>04/28/09</td>
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The following publication will be available by April 28, 2009. To order, contact your IBM representative.

<table>
<thead>
<tr>
<th>Title</th>
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<tbody>
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IBM Publications Center Portal

http://www.ibm.com/shop/publications/order

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options via credit card. A large number of publications are available online in various file formats, which can currently be downloaded free of charge.
Publications are shipped with the product and have been revised to reflect this announcement. Additional copies of individual publications are available on the Internet at

http://www.ibm.com/shop/publications/order

**Services**

**Global Technology Services**

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an On Demand Business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

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http://www.ibm.com/services/

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

http://www.ibm.com/services/continuity

For details on education offerings related to specific products, visit


Select your country, and then select the product as the category.

**Technical information**

**Specified operating environment**

**Physical specifications**

The IBM Ethernet Router B04M (4003-M04), IBM Ethernet Router B08M (4003-M08), and IBM Ethernet Router B16M (4003-M16) are suitable for installation in a Network Telecommunications facility and where NEC requirements apply. Additionally, it may be installed in either a Common Bonding Network (CBN) or Isolated Bonding Network (IBN). It is not intended for Outside Plant installations (OSP). The models can be mounted in a 19-inch Electronic Industries Association (EIA310-D), two-post Telco rack using front mounting brackets and mounting kit provided.

It is recommended that the IBM Ethernet Router B04M, B08M, and B16M be installed in environments that have minimal dust and airborne contaminants. If these switches and routers are used in environments where dust or other airborne contaminants may be prevalent, air filters should be inspected annually and replaced if needed. Maintaining clean air filters ensures optimal airflow through the machine. Replacement of filters is a customer responsibility. These are not covered under the machine warranty or maintenance agreements. Call your IBM representative for further information.

4003-M04 (1 U)

<table>
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<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Height:</td>
<td>17.7 cm (6.96 in)</td>
</tr>
<tr>
<td>Depth:</td>
<td>521 mm (20.53 in)</td>
</tr>
<tr>
<td>Width:</td>
<td>443 mm (17.45 in)</td>
</tr>
<tr>
<td>System weight:</td>
<td>36 kg (78.5 lb) fully loaded</td>
</tr>
</tbody>
</table>

4003-M08 (1 U)
Height: 31 cm (12.21 in)  
Depth: 533 mm (21 in)  
Width: 443 mm (17.45 in)  
System weight: 60 kg (131 lb) fully loaded

4003-M16 (1 u)

Height: 62.2 cm (24.47 in)  
Depth: 635 mm (25 in)  
Width: 437 mm (17.2 in)  
System weight: 107 kg (236 lb) fully loaded

For installation into non-IBM industry-standard racks, review the installation planning information for any product-specific installation requirements.

**Operating environment**

- Operating temperature: 0 to 40 degrees C (32 to 104 degrees F)
- Humidity operating: 5% to 90%, noncondensing at 40 C (104 F)
- Operating altitude: 0 to 2,012 m (6,600 ft)

**EMC conformance**

- FCC Part 15, Subpart B (Class A)
- EN 55022 (CE mark) (Class A)
- EN 55024 (CE mark) (Immunity) for Information Technology Equipment
- ICES-003 (Canada) (Class A)
- AS/NZ 55022 (Australia) (Class A)
- VCCI (Japan) (Class A)
- EN 61000-3-2
- EN 61000-3-3
- EN 61000-6-1

**Product safety/Country testing/Certification:**

- CAN/CSA-C22.2 No. 60950-1-03/UL60950-1 - First Edition, Safety of Information Technology Equipment
- EN 60825-2 Safety of Laser Products - Part 2: Safety of Optical Fibre Communications Systems
- EN 60950-1:2001\IEC 60950-1 Safety of Information Technology Equipment

The IBM Ethernet products in this announcement are not approved to be sold for connecting to the public telecommunication networks in all countries. IBM continues working to obtain approval to connect to public telecommunication networks in the currently restricted countries. Availability will be announced in the future. At this time, these products are not available in the following countries:

- Algeria
- Anguilla
- Albania
- Aruba
- Bahrain
- Belize
- Botswana
- Brunei
- Burundi
- Cambodia
- Cameroon
- Cape Verde
- Chad
- Argentina
- Fiji
- Gabon
- Gambia (The)
- Gaza Strip
- Ghana
- Gibraltar
- Guatemala
- Haiti
- Guinea
- Guinea-Bissau
- Iceland
- India
- Indonesia
- Iran
- Iraq
- Israel
- Jamaica
- Japan
- Jordan
- Kazakhstan
- Kenya
- Kiribati
- Kuwait
- Lao People's Democratic Republic
- Lesotho
- Liberia
- Libya
- Liechtenstein
- Lesotho
- Lithuania
- Luxembourg
- Macedonia
- Madagascar
- Malawi
- Malaysia
- Maldives
- Mali
- Malta
- Marshall Islands
- Mauritania
- Mauritius
- Mexico
- Micronesia
- Monaco
- Moldova
- Mongolia
- Morocco
- Mozambique
- Myanmar
- Namibia
- Nepal
- Netherlands
- New Caledonia
- New Zealand
- Nicaragua
- Niger
- Nigeria
- Niue
- North Korea
- Oman
- Pakistan
- Palau
- Panama
- Papua New Guinea
- Paraguay
- Peru
- Philippines
- Poland
- Portugal
- Qatar
- Russian Federation
- Rwanda
- Saint Kitts and Nevis
- Saint Lucia
- Saint Vincent and the Grenadines
- Samoa
- Saudi Arabia
- Senegal
- Serbia
- Sierra Leone
- Singapore
- Sint Maarten
- Slovakia
- Slovenia
- Solomon Islands
- Somalia
- South Africa
- South Korea
- Spain
- Sri Lanka
- Sudan
- Suriname
- Swaziland
- Sweden
- Switzerland
- Syrian Arab Republic
- Taiwan
- The former Yugoslav Republic of
- The Gambia
- The Democratic People's Republic of
- The Gambia
- The Maldives
- The United Arab Emirates
- The former Yugoslav Republic of
- Tonga
- Trinidad and Tobago
- Turkey
- Turkmenistan
- Tuvalu
- Ukraine
- United Arab Emirates
- United Kingdom
- United States
- Uruguay
- Uzbekistan
- Vanuatu
- Vietnam
- Venezuela
- Vietnam
- Vietnam
- Yemen
- Zambia
- Zimbabwe
Hardware requirements

Supported servers

The IBM Ethernet Routers B04M, B08M, and B16M are designed to support network connectivity for the following servers:

- IBM Power Systems
- IBM System p® servers
- IBM System i® servers
- IBM System x® servers

Limitations

Notice: Government regulations (such as those prescribed by OSHA or European Community Directives) may govern noise level exposure in the workplace and may apply to you and your system installation. The actual sound pressure levels in your installation depend upon a variety of factors, including the number of racks in the installation; the size, materials, and configuration of the room; the noise levels from other equipment; the room ambient temperature, and employees' location in relation to the equipment. Further, compliance with such government regulations also depends upon a variety of additional factors, including the duration of employees' exposure and whether employees wear hearing protection. IBM recommends that you consult with qualified experts in this field to determine whether you are in compliance with the applicable regulations.

Planning information

Customer responsibilities

Planning information, including customer responsibilities, physical planning, and installability is available in the specific product planning manuals on the following Web site

http://www.ibm.com/systems/networking

You are responsible for downloading or obtaining from IBM, and installing designated machine code (microcode, basic input/output system code (called BIOS), utility programs, device drivers, and diagnostics delivered with an IBM machine) and other software updates in a timely manner from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides. You may request IBM to install machine code changes; however, you may be charged for that service.

Cable orders

The media installed in the chassis require appropriate cables for connectivity. Cables must be supplied by the customer. 10 Gbps optical XFP or 1 Gbps optical SFP transceivers require single-mode fiber (SMF) or multimode fiber (MMF) terminating in a LC connector. Refer to the media description for proper cable type. 10 Gbps copper XFP transceivers require CX4-grade copper cables. 1 Gbps copper SFP transceivers with an RJ-45 jack connector require CAT5 or higher cabling. OC-48 or OC-12 SFP transceivers require single-mode fiber (SMF) for connectivity.

Installability

Hardware installation time for the IBM Ethernet Router B04M (4003-M04), IBM Ethernet Router B08M (4003-M08), and IBM Ethernet router B16M (4003-M16) is estimated at less than two hours.
**Security, auditability, and control**

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

**Global Technology Services**

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings, for the efficient installation, implementation, and/or integration of this product.

**Terms and conditions**

**Volume orders:** Contact your IBM representative.

**Warranty period**

One year

**Warranty service**

If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone, or electronically via an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. If applicable to your product, parts considered Customer Replaceable Units (CRUs) will be provided as part of the machine's standard warranty service.

Service levels are response-time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country-specific and location-specific information.

**CRUs and On-site Service**

**CRU Service**

IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request. CRUs are designated as being either a Tier 1 or a Tier 2 CRU.

**Tier 1 CRU**

Installation of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.

**Tier 2 CRU**

You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge.

Based upon availability, CRUs will be shipped for next business day (NBD) delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following parts have been designated as Tier 1 CRUs:
• Management module
• Switch Fabric modules
• PCMCIA ATA flash memory
• Transceivers
• Serial cable
• Power cords
• Power supplies
• Grounding kit
• Blank panels for modules and power supplies
• Rack mount kit

**On-site Service**

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

The service level is:

• 9 hours per day, Monday through Friday, excluding public or national holidays, next business day response.

**Warranty service upgrades**

During the warranty period, warranty service upgrades provide an enhanced level of On-site Service for an additional charge. Service levels are response-time objectives and are not guaranteed. Refer to the Warranty services section for additional details.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability.

**On-site Service**

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

The following on-site response-time objectives are available as warranty service upgrades for your machine. Available offerings are:

• 9 hours per day, Monday through Friday, excluding public or national holidays, same business day response. Calls must be received by 12:00 local time in order to qualify for same business day response.
• 24 hours per day, 7 days a week, 6 hour average, same day response.

CRUs may be provided as part of the machine's standard warranty CRU Service, except that you may install a CRU yourself or request IBM installation, at no additional charge, under one of the On-site Service levels specified above. For additional information on the CRU Service, refer to the warranty information.

**Maintenance services options**

If required, IBM provides repair or exchange service depending on the types of maintenance service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response-time objectives and are not guaranteed. The specified level of maintenance service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your
local IBM representative or your reseller for country-specific and location-specific information. The following service selections are available as maintenance options for your machine type.

**On-site Service**
IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Service levels are:

- 9 hours per day, Monday through Friday, excluding public or national holidays, next business day response. Calls must be received by 15:00 local time in order to qualify for next business day response.
- 24 hours per day, 7 days a week, 6 hour average, same day response.

**Additional reference for Europe**
Refer to the following European documents:

- European Announcement Letter ZS03-0150 for IBM Customer Agreement (ICA)
- European Announcement Letter ZS04-0135 for Enterprise Agreement Contract
- European Announcement Letter ZS98-0118 for ServiceSuite™ Contract
- European HW Operations Guide and Service Level Description Table available at http://www-5.ibm.com/services/europe/maintenance/

**Usage plan machine**
No

**IBM hourly service rate classification**
Two

When a type of service involves the exchange of a machine part, the replacement may not be new, but will be in good working order.

**Maintenance service offerings**
This machine is eligible under terms and conditions of IBM ServiceSuite, the IBM Enterprise Service Agreement (ESA), or the IBM Maintenance Agreement. Consult your IBM representative for details.

**Field-installable features**
Yes

**Model conversions**
No

**Machine installation**
Customer setup. Customers are responsible for installation according to the instructions IBM provides with the machine.

**Graduated program license charges apply**
No
**Licensed machine code**

IBM Ethernet Router m-series routers licensed machine code is licensed for use by a customer on the IBM machine for which it was provided under the terms and conditions of the Brocade End User License Agreement, to enable a specific machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement by contacting your IBM representative.

IBM may release changes to the licensed machine code. IBM plans to make the licensed machine code changes available for download from IBM technical support at

http://www.ibm.com/systems/support/networking

If the machine does not function as warranted and your problem can be resolved through your application of downloadable licensed machine code, you are responsible for downloading and installing these designated licensed machine code changes as IBM specifies. If you would prefer, you may request IBM to install the downloadable licensed Machine code changes; however, you may be charged for that service.

**Europe Business Partner terms and conditions**

**Category**

Receive BP base discount Category M.

The products are added to Approval Category M.

For more information, Business Partners should refer to the relevant product exhibits on


**Pricing**

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**Announcement countries**

All European, Middle Eastern and African countries.

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Corrections

(Corrected on September 15, 2009)
Countries deleted from the list of countries located in the Technical information section.

(Corrected on May 14, 2009)
The Product number and Prices sections were revised.

(Corrected on May 12, 2009)
Product availability information added to Operating environment section.