Advanced IBM Ethernet switches for today's network infrastructure

IBM Ethernet Switch c-series

IBM c-series Ethernet switches

Highlights

- ***Compact 1 RU Layer 3 switch that is purpose-built for advanced Ethernet applications***
- ***Wire-speed, non-blocking performance available in both Hybrid Fiber (HF) and RJ45 models***
- ***Full Layer 2 switching capabilities facilitate network resiliency***
- ***Base Layer 3 capabilities enable routed topologies to the network edge***
- ***Available Full Layer 3 or Metro Edge upgrade enables maximum scalability or deployment into metro networks***
- ***MEF 9 and MEF 14 certified***

Network planners today must expand and extend the range of services offered further into the edge of the network. This requires extending the intelligence and high-touch processing capabilities to the network edge. Further, there's a need to flexibly define and easily manage customer services in an intuitive manner. The expanding role of the converged network makes quality of service (QoS), resiliency and security crucial to the success of many rollouts.

Whether deployed from a central or remote location, availability of space often determines the feasibility of deploying new equipment and services within any environment. To meet these challenges, IBM® c-series Ethernet switches are purpose-built to offer flexible, resilient, secure and advanced services in a compact form factor.

IBM c-series Ethernet switches are compact 1 RU, multi-service edge/aggregation switches with a powerful set of capabilities that combine performance with rich functionality at the network edge. These switches offer network planners a broad set of high-performance IPv4 Full Layer 2 and Base Layer 3 functionalities with flexible software upgrade options in the same device, and come in four models:

- *IBM Ethernet Switch B48C: 48x 10/100/1000 Mbps Ethernet RJ45 ports including 4x 100/1000 MbE combination SFP ports (4002-C4A; 4002AC4) or 48x 100/1000 Mbps Ethernet hybrid fiber SFP ports (4002-C4B; 4002BC4)*
- *IBM Ethernet Switch B50C: 48x 10/100/1000 Mbps Ethernet RJ45 ports and 2x 10 Gbps Ethernet XFP uplink ports (4002-C5A; 4002AC5) or 48x 100/1000 Mbps Ethernet hybrid fiber SFP ports and 2x 10 Gbps Ethernet XFP uplink ports (4002-C5B; 4002BC5)*

In a converged network, these switches help optimize traffic flows with advanced Quality of Service including port and ACL-based traffic policies, Strict Priority (SP), Weighted Fair Queuing (WFQ), and mixed SP and WFQ scheduling, and Layer 2 multicast IGMP v1/v2/v3 and PIM-SM snooping support. In addition, Virtual Switch Redundancy Protocol (VSRP), IEEE 802.3ad Link Aggregation (LACP), and Virtual Switch Redundancy Protocol (VRRP/VRRP-E) capabilities make these switches ideally suited for building a tolerant and resilient network infrastructure.

An optional Metro Edge software upgrade gives users the flexibility to include support for Provider Bridges (IEEE 802.1ad), Provider Backbone Bridges (IEEE 802.1ah) functionalities in the same device. Also included is support for Ethernet Service Instance (ESI) framework for managing customer instances, and Connectivity Fault Management (IEEE 802.1ag) for rapid troubleshooting of Carrier Ethernet services. These capabilities address a diverse set of applications in metro edge networks, ISP networks, mobile backhaul networks, data centers, large enterprises, government networks, and education and research.

Data center networks and edge/aggregation routing within ISP networks often require a compact Layer 3 switch with sufficient scalability in IPv4 routes. Advanced hardware-based routing technology ensures secure and robust wire-speed routing performance. An optional Full Layer 3 software upgrade expands the capabilities of the switch to include RIPv1/v2, OSPFv2, IS-IS, and BGP-4 with Graceful Restart helper mode for both OSPF and BGP. With the high growth of video, multicast has become a means to optimize content delivery to wider audiences. To meet these needs, these switches can also support IPv4 multicast routing protocols including IGMP v1/v2v3, PIM-DM, PIM-SM, PIM-SSM, and MSDP.

IBM c-series Ethernet switches contain a broad range of proven security capabilities, including support for both inbound and outbound ACLs, ACL logging, advanced Layer 2 control such as BPDU guard/root guard, limits for broadcast/unknown unicast/multicast and more. Receive ACLs assist in placing controls on unwanted traffic targeted toward the control plane. Additionally, using tools such as ACL-based traffic policers, ACL-based sFlow®, and ACL-based mirroring, malicious traffic can be easily identified and preventive measures taken in the network.

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Product characteristics	
Product numbers	IBM Ethernet Switch B48C: 4002-C4A and 4002AC4 (copper), 4002-C4B and 4002BC4 (fiber) IBM Ethernet Switch B50C: 4002-C5A and 4002AC5 (copper), 4002-C5B and 4002BC5 (fiber)
Interface type	• 10/100/1000 Mbps Ethernet port with RJ45 connector • 100/1000 Mbps Ethernet port with SFP connector • 10 Gbps Ethernet port with XFP connector
Optical transceivers	Choice of SFP (Small Form-factor Pluggable) transceivers for 100/1000 Mbps Ethernet ports with SFP connector and optical monitoring capabilities: • 1000BASE-T SFP Copper, 1 Gbps up to 100 m over CAT5 or higher cabling, RJ-45 connector • 1000BASE-SX 850 nm SFP optic, 1 Gbps up to 550 m over multi-mode fiber, LC connector • 1000BASE-LX 1310 nm SFP optic, 1 Gbps up to 10 km over single-mode fiber, LC connector • 1000BASE-LHA 1550 nm SFP optic, 1 Gbps up to 70 km over single-mode fiber, LC connector • 100BASE-FX 1310 nm SFP optic, 100 Mbps up to 2 km over multi-mode fiber, LC connector (no optical monitoring capability) Choice of XFP transceivers for 10 Gbps Ethernet ports with XFP connector and optical monitoring included: • 10GBASE-SR 850 nm XFP optic, 10 Gbps up to 300 m over multi-mode fiber, LC connector • 10GBASE-LR 1310 nm XFP optic, 10 Gbps up to 10 km over single-mode fiber, LC connector • 10GBASE-ER 1550 nm XFP optic, 10 Gbps up to 40 km over single-mode fiber, LC connector • 10GBASE-CX4 XFP copper, 10 Gbps up to 15 m over CX4 grade copper, CX4 connector
Power supplies	2x 500 W power supplies supported for 1+1 redundancy
Hot-swappable components	SFP/XFP transceivers, power supplies
Non-rack support	Yes
Operating systems supported	Brocade® Multi-Service IronWare® R03.8.00 or greater in all c-series systems
Fiber optic cable	Fiber optic cables are required and are available in various lengths in single-mode and multi-mode formats
Power cords	Power cords are not included and must be specified at time of order.
Warranty	One year; warranty service upgrades are available

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Optional features	• Full Layer 3 Premium Activation • Metro Edge Premium Activation
Physical characteristics	
Height	4.4 cm (1 RU)
Width	44.3 cm
Depth	44.8 cm
Weight (fully loaded)	B48C = 7.5 kg B50C = 8.0 kg
Maximum AC power consumption (W) [100 - 240 VAC]	B48C (C) = 205 W B50C (C) = 255 W B48C (F) = 245 W B50C (F) = 295 W
Maximum thermal output (BTU/HR)	B48C (C) = 700 BTU/Hr B50C (C) = 870 BTU/Hr B48C (F) = 836 BTU/Hr B50C (F) = 1,007 BTU/Hr
Technical specifications	
Performance	**Packet Routing Performance (Total)** B48C (Copper) and B48C (Fibre) = 71 Mpps B50C (Copper) and B50C (Fibre) = 101 Mpps
Data forwarding capacity	**Data Forwarding Capacity** B48C (Copper) and B48C (Fibre) = 96 Gbps B50C (Copper) and B50C (Fibre) = 136 Gbps
Standards compliance	• IEEE 802.3 10Base-T • IEEE 802.3u 100Base-TX, 100Base-FX, 100Base-LX • IEEE 802.3z 1000Base-SX/LX • IEEE 802.3ab 1000Base-T • 802.3 CSMA/CD Access Method and Physical Layer Specifications • 802.3ae 10 Gbps 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 • 802.1x Port-based Network Access Control • 802.1ad Provider Bridges • 802.1ah Provider Backbone Bridges • 802.1ag Connectivity Fault Management (CFM)

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MEF specifications	• MEF 2 Requirements and Framework for Ethernet Service Protection • MEF 4 Metro Ethernet Network Architecture Framework Part 1: Generic Framework • MEF 6.1 Metro Ethernet Services Definitions Phase 2 • MEF 9 Abstract Test Suite for Ethernet Services at the UNI • MEF 10.1 Ethernet Services Attributes Phase 2 • MEF 11 User Network Interface (UNI) Requirements and Framework • MEF 12 Metro Ethernet Network Architecture Framework Part 2: Ethernet Services Layer • MEF 13 User Network Interface (UNI) Type 1 Implementation Agreement • MEF 14 Abstract Test Suite for Traffic Management Phase 1 • MEF 15 Requirements for Management of Metro Ethernet Phase 1 Network Elements • MEF 17 Service OAM Framework and Requirements (partial) • MEF 19 Abstract Test Suite for UNI Type 1
RFC compliance	***BGPv4*** • RFC 4271 BGPv4 • RFC 1745 OSPF Interactions • RFC 1997 Communities and 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 ***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 compliance

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

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)

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RFC compliance	***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
System Management	• IronView® Network Manager (INM) Web-based Graphical User Interface (GUI) • Embedded Web Management GUI • Industry Standard Command Line Interface (CLI) • SNMP v1, v2c, v3 • RMON • IBM Tivoli® Netcool®/OMNIbus
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

For more information

To learn more about IBM c-series Ethernet switches, please contact your IBM marketing representative or IBM Business Partner, or visit:
ibm.com/storage/ethernet/

Additionally, IBM Global Financing can tailor financing solutions to your specific IT needs. For more information on great rates, flexible payment plans and loans, and asset buyback and disposal, visit:
ibm.com/financing

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