IBM b-type y-series Ethernet switches

A powerful, scalable, and flexible solution for data center and enterprise campus network access

Highlights

- Convergence ready—power next-generation devices through a single cable with high-bandwidth data delivery

- Highly flexible—pay-as-you-grow expansion utilizing IronStack technology delivers a 384-port logical switch

- Proven reliability—tested for interoperability with IBM systems technology

- Simplified deployment—increase operational efficiency with industry-standard CLI and automated management tools

- Fully featured—includes layer 3 routing functionality with no additional licensing required

- Superior scalability—supports higher numbers of routes, addresses and VLANs compared to products in class

Powerful, scalable, flexible network access

IBM Ethernet Switch B24Y (4002BY2), B48Y (4002BY4), and B24Y (4002CY2) provide new levels of performance, scalability, and flexibility required to support today's dynamic network infrastructures. Featuring advanced capabilities, these switches deliver performance and intelligence to the network access layer in a compact 1 RU form factor, helping reduce infrastructure and administrative costs.

Available in 24-port and 48-port models, these wire-speed and non-blocking switches are available with Power over Ethernet Plus (PoE+) to deliver up to 30 watts of power to edge devices, enabling next-generation campus applications. PoE+ models can utilize built-in 16 Gbps stacking ports, enabling organizations to stack up to eight switches into a single logical switch with up to 384 ports. These features enable progressive, scalable growth within an enterprise campus environment.

The IBM b-type y-series utilizes an industry-standard CLI requiring minimal training and the ability to reuse scripts for increased operational efficiencies. Supporting a wide range of industry standards and protocols, the switch easily integrates into existing network environments and is designed for simplified and uniform deployment in an enterprise campus environment. Fully tested with IBM systems technology and backed by the IBM brand, network planners can be assured of the highest levels of quality and continual innovation when deploying an IBM b-type y-series switch.

Built for next-generation campus convergence

The IBM b-type y-series PoE+ models (4002BY2, 4002BY4) can deliver both power and data across network connections, providing a single-cable solution for campus edge devices such as Voice over IP (VoIP) phones, video surveillance cameras, and wireless access points (see Figure 1). The switches are compatible with industry-standard VoIP equipment as well as legacy IP phones.
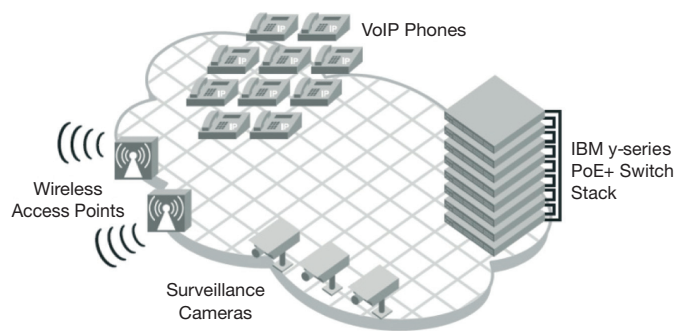

Figure 1: IBM b-type y-series PoE+ models deliver converged power and data to end devices.

These switches support the emerging PoE Plus standard (802.3at) to provide up to 30 watts of power to each device. This high-powered solution simplifies wiring for next-generation solutions such as videoconferencing phones, pan/tilt surveillance cameras, and 802.11n wireless access points. The PoE capability reduces the number of power receptacles and power adaptors while increasing reliability and wiring flexibility.

The 24-port PoE+ model can supply full Class 3 (15.4 watts) or full PoE+ (30 watts) power to every port, and the 48-port model can supply full Class 3 power to every port or full PoE+ power to 26 ports. The switches can power a combination of PoE and PoE+ devices while staying within the switches' 820-watt power budget.

IBM b-type y-series Ethernet switches are offered in 24-port and 48-port stackable models for robust growth

Plug-and-play operations for powered devices

These switches support the IEEE 802.1AB Link Layer Discovery Protocol (LLDP) and ANSI TIA 1057 Link Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED) standards that enable organizations to deploy interoperable multivendor solutions for unified communications.

Configuring IP endpoints such as VoIP phones can be a complex task requiring manual and time-consuming configuration. LLDP and LLDP-MED address this challenge, providing a standard, open method for configuring, discovering, and managing network infrastructure. The LLDP protocols help reduce operational costs by simplifying and automating network operations. For example, LLDP-MED provides an open protocol for configuring Quality of Service (QoS), security policies, Virtual LAN (VLAN) assignments, PoE power levels, and service priorities.

Increased flexibility and scalability

The IBM b-type y-series PoE+ models (4002BY2, 4002BY4) include two dedicated 16 Gbps stacking ports, providing simple and robust expandability for future growth at the network edge.

Leveraging IronStack technology, up to eight switches can be stacked into a single logical switch with up to 384 ports (see Figure 2). This stacked switch has only a single IP address, simplifying management by reducing the number

of domains by 8:1. When new members are added to the stack, they automatically inherit the stack's existing configuration file, enabling true plug-and-play network expansion.
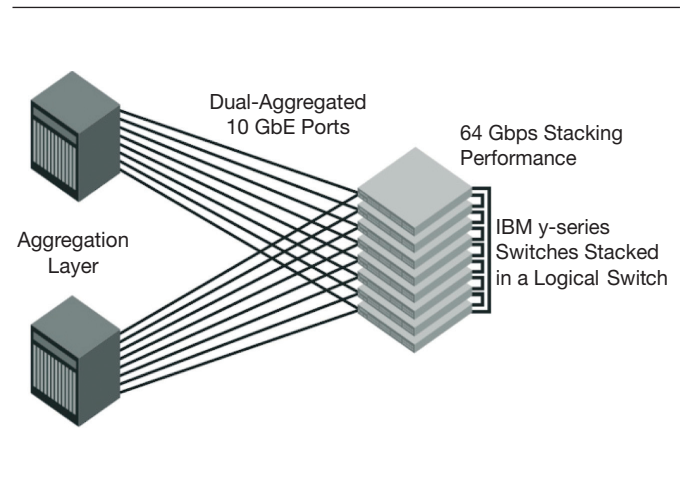

Figure 2: IBM b-type y-series switches can be stacked into a single logical switch and then redundantly connected to the aggregation layer using aggregated 10 Gbps ports.

Throughout the stack, there is 64 Gbps of switching bandwidth between stack members, essentially eliminating the need to work around inter-switch bottlenecks.

On the 4002CY2 model, two 10 GbE ports on the optional four-port interface module can be used to unify a group of top-of-rack switches, providing a high-speed connection for server-to-server communication while significantly reducing network management (see Figure 3).
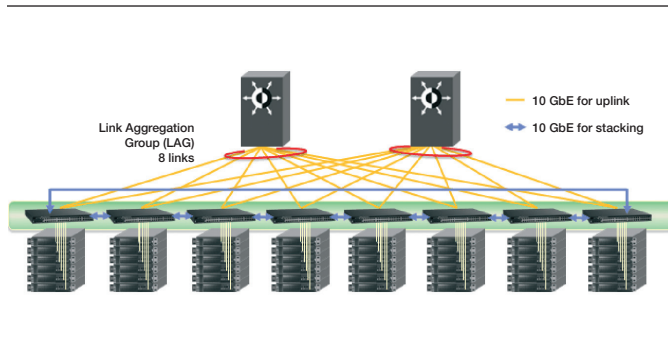
Figure 3: The four-port 10 GbE module (4002CY2 model, optional) enables end-to-end, near-non-oversubscribed GbE performance throughout the data center network.

Organizations can trunk up to eight 10 GbE ports from different members of the stack to optimize performance and availability, providing up to 80 Gbps of bandwidth between the horizontal stack and aggregation or core layers. All IBM b-type y-series switches can interoperate in a stack with each other.

Interface options

Each switch has an open interface module slot to support high-bandwidth connectivity to the aggregation or core layers, or extended stacking over long distances. The PoE+ models (4002BY2, 4002BY4) can accept an optional two-port 10 GbE XFP module. With dedicated stacking ports for scalability within the rack, the optional 10 Gigabit Ethernet (GbE) ports are freed up for high-speed connectivity to the aggregation or core layers—providing maximum flexibility in a compact campus access switch.

On the non-PoE+ model (4002CY2) an optional 10 GbE module containing four SFP+ ports is available. Utilizing the SFP+ port form factor enables higher density, more flexible cabling options, and better energy efficiency. The ability to use short-range and long-range optics, along with copper Twinax cables, supports flexible and cost-effective network architectures.

This allows up to 40 Gbps of bandwidth to be aggregated using industry-standard LACP to look like a single logical link to the aggregation or core layers of the network or be used to connect to bandwidth-hungry servers. As a result, organizations can deploy highly utilized networks and avoid congestion during peak hours.

Each of the PoE+ model comes with four 100/1000 MbE SFP Combo ports to provide the flexibility to enable connectivity of extended distances. Optical 1 Gbps connectivity on the non-PoE+ model can be achieved through an optional four-port 100/1000 MbE interface module which also act as Combo ports.

These SFP Combo ports (1F - 4F) are shared with the first four RJ-45 ports (1 - 4) allowing you to either use the SFP or RJ-45 port. This allows you to use transceivers to extend connectivity to a site up to 70 km away.

Reduced power consumption

In today's rapidly growing business environments, organizations need to minimize power consumption throughout the entire IT infrastructure. These switches are designed to intelligently manage power usage, extending network "green" initiatives.

Power to campus devices is automatically negotiated using the LLDP-MED protocol, providing the powered devices with exactly the amount of power they need. If devices go into sleep mode, they can request less power from the network, minimizing power usage in the campus environment.

At as low as 1.22 watts/Gbps, the IBM b-type y-series consume minimal power for the performance and functionality they provide.

High reliability in a compact form factor

All IBM b-type switches including the y-series have been tested for interoperability with IBM systems technology. This allows organizations to quickly deploy proven solutions and scale out faster while minimizing business interruptions.

These switches optionally contain dual hot-swappable, load-sharing, redundant power supplies. The modular design also has a hot-swappable fan assembly. These features provide another level of availability in demanding environments.

The non-PoE+ model (4002CY2) also feature non-port (back) to port-side (front) airflow improving the mounting flexibility in a server rack while adhering to the cooling guidelines of the data center.

Additional design features include intake and exhaust temperature sensors and fan spin detection to aid in fast identification of abnormal or failed operating conditions to help minimize mean time to repair.

Comprehensive enterprise-class security

These switches utilize the Brocade® IronWare® operating system, providing a rich security suite for Layer 2 and Layer 3 services, Network Access Control (NAC), and Denial of Service (DoS) protection. IronWare security features include protection against TCP SYN and ICMP DoS attacks, Spanning Tree Root Guard and BPDU Guard to protect network spanning tree operations, and broadcast and multicast packet rate limiting. Additional security features including dynamic ARP inspection and DHCP snooping to protect against address spoofing and man-in-the-middle attacks.

Organizations can rely on key features such as multi-device port authentication and 802.1X authentication with dynamic policy assignment to control network access and perform targeted authorization on a per-user level. In addition, these switches support enhanced Media Access Control (MAC) policies with the ability to deny traffic to and from MAC addresses on a per-VLAN basis. This powerful tool helps organizations control access policies per endpoint device.

Standards-based NAC also facilitates best-in-class solutions for authenticating network users and validating the security posture of connecting devices. Support for policy-controlled MAC-based VLANs provides additional control of network access, enabling policy-controlled assignments of devices to Layer 2 VLANs.

Traffic monitoring and lawful intercept

Organizations might need to set up lawful traffic intercept due to today's heightened security environment. For example, in the United States, the Communications Assistance for Law Enforcement Act (CALEA) requires them to be able to intercept and replicate data traffic directed to a particular user, subnet, port, and so on. This capability is particularly essential in networks implementing VoIP phones. These switches provide the capability to meet this requirement through Access Control List (ACL)-based mirroring, MAC filter-based mirroring, and VLAN-based mirroring.

Threat detection and mitigation

Support for embedded hardware-based sFlow traffic sampling extends monitoring and security out to the network edge. This unique and powerful closed-loop threat mitigation solution uses best-of-breed intrusion detection systems to inspect traffic samples for possible network attacks.

In response to a detected attack, third-party applications such as Brocade IronView Network Manager (INM) can automatically apply a security policy to the compromised port, stopping network attacks in real time without administrator intervention.

Full Layer 3 capabilities

Layer 3 functionality enhances the capability of these switches as a versatile network solution. Organizations can use Layer 3 features such as IPv4 OSPF and RIP routing, policy-based routing, Virtual Router Redundancy Protocol (VRRP), and Dynamic Host Configuration Protocol (DHCP) Relay. Complexity can be removed from the network by utilizing Layer 3 capabilities supported in the base software of every IBM b-type y-series switch.

Additionally, support for IGMP (v1, v2, and v3), IGMP Proxy, PIM-SM, PIM-SSM, and PIM-DM multicast routing optimizes network utilization and traffic routing for multicast applications. PIM snooping and Passive Multicast Router Insertion (PMRI) can be combined, ensuring multicast distribution in Layer 2 networks.

For example, data-rich applications such as video distribution require scalable multicast services from end to end. Support for Internet Group Management Protocol (IGMP) and Protocol-Independent Multicast (PIM) snooping improve bandwidth utilization in Layer 2 networks by restricting multicast flows to only the switch ports that have multicast receivers. These features prevent unnecessary traffic from being sent to servers, freeing up resources.

Metro features connecting buildings and campuses

Because these switches contain Metropolitan Area Network (MAN) features, organizations can use them to connect a distributed enterprise. In this type of environment, switches provide rich services using MRP (v1 and v2) for building resilient ring-based topologies, VLAN stacking, and advanced multicast capabilities—including IGMP v1/v2/v3 and Multicast Listener Discovery (MLD) v1/v2 snooping for controlling multicast traffic for high-bandwidth content delivery.

Network resiliency through fault detection

Layer 2 features such as Virtual Switch Redundancy Protocol (VSRP), Metro-Ring Protocol (MRP) v1 and v2, Rapid Spanning Tree Protocol (RSTP), protected link groups, 802.3ad Link Aggregation, and trunk groups provide alternate paths for traffic in the event of a link failure. Subsecond fault detection utilizing Link Fault Signaling (LFS) and Remote Fault Notification (RFN) helps ensure fast fault detection and recovery.

Enhanced spanning tree features such as Root Guard and BPDU Guard prevent rogue hijacking of a spanning tree root and maintain a contention- and loop-free environment, especially during dynamic network deployments. In addition, these switches support port loop detection on edge ports that do not have spanning tree enabled. This capability protects the network from broadcast storms and other anomalies that can result from Layer 1 or Layer 2 loopbacks on Ethernet cables or endpoints.

UniDirectional Link Detection (UDLD) monitors a link between two switches and brings down the ports on both ends of the link if the link fails at any point between the two devices.

Additional stability features such as port flap dampening, single-link Link Aggregation Control Protocol (LACP), and port loop detection, are also supported.

Simplified, secure management based on open standards

The b-type y-series switches provide simplified, standards-based management capabilities that help organizations reduce administrative time and effort while securing their networks.

These switches utilize an industry-standard Command Line Interface (CLI) that allows organizations to minimize training time and increase operational efficiency.

For secure access, Secure Shell (SSHv2), Secure Copy (SCP), and SNMPv3 can be used to restrict and encrypt management communications to the system. In addition, support for Terminal Access Controller Access Control System (TACACS/TACACS+) and RADIUS authentication helps ensure proper operator access.

The switches support auto-configuration, simplifying deployment with a truly plug-and-play experience. Organizations can use this feature to automate IP address and feature configuration of the switches without requiring a highly trained network engineer on site. When the switches power up, they automatically receive an IP address and configuration from DHCP and Trivial File Transport Protocol (TFTP) servers.

Organizations that deploy IBM systems can use IBM Systems Director as a holistic fault management platform, unifying these capabilities to a single application. With the ability to discover and proactively monitor the switches, network administrators can be notified of trends and prevent equipment failures before they even occur.

All switches include an RJ-45 Ethernet port dedicated to out-of-band management, providing a remote path to manage the switches, regardless of the status or configuration of the data ports.

Ideal for Ethernet storage traffic

Modern iSCSI Storage Area Network (SAN) environments require a high-performance network to reliably deliver block storage to servers. These switches provide robust performance capabilities to handle servers that are saturating multiple GbE links.

The combination of 10 GbE ports and IronStack technology enables organizations to expand their iSCSI storage environments with no additional management. The switch stack can be connected to a full 10 GbE switch for SAN expansion with 10 Gbps iSCSI storage. In addition, internal redundant power supplies and a swappable fan assembly provide the high-availability features required in shared storage environments.

IBM b-type y-series Ethernet switches at a glance

Product characteristics	
Product Number	IBM Ethernet Switch B24Y (4002BY2) IBM Ethernet Switch B48Y (4002BY4) IBM Ethernet Switch B24Y (4002CY2)
Ports	**IBM Ethernet Switch B24Y (4002BY2)** • 24x 10/100/1000 MbE ports (RJ-45, PoE+) including 4x 100/1000 MbE combination ports (SFP) • 2x 16 Gbps dedicated stacking ports (CX4, can also function as 10 GbE uplinks) • 1x interface module slot **IBM Ethernet Switch B48Y (4002BY4)** • 48x 10/100/1000 MbE ports (RJ-45) including 4x 100/1000 MbE combination ports (SFP) • 2x 16 Gbps dedicated stacking ports (CX4, can also function as 10 GbE uplinks) • 1x interface module slot **IBM Ethernet Switch B24Y (4002CY2)** • 24x 10/100/1000 MbE ports (RJ-45) • 1x interface module slot
Interface modules	• 2-port 10 GbE module (XFP) [4002BY2, 4002BY4] • 4-port 10 GbE module (SFP+) [4002CY2] • 4-port 1 GbE module (SFP, works as Combo ports) [4002CY2]
Interface Types	• 10 Gbps Ethernet ports with XFP or SFP+ connector • 10/100/1000 Mbps Ethernet ports with RJ-45 connector • 100/1000 Mbps Ethernet ports with SFP connector • 16 Gbps ports for stacking or as 10 GbE uplinks with CX4 connector [4002BY2, 4002BY4]
Management Interfaces	• One 10/100/1000 MbE RJ-45 out-of-band management port • One DB9 serial console port (straight through)
Management Methods	SSHv2, Telnet, SNMPv1/v3, Brocade IronView Network Manager (INM) TACACS/TACACS+, RADIUS

IBM b-type y-series Ethernet switches at a glance

Transceivers	Choice of SFP transceivers with Optical Monitoring (OM) capabilities: • 1000BASE-SX 850 nm SFP optic, 1 Gbps up to 550 m over multimode fiber, duplex LC connector • 1000BASE-LX 1310 nm SFP optic, 1 Gbps up to 10 km over single-mode fiber, duplex LC connector • 1000BASE-LHA 1550 nm SFP optic, 1 Gbps up to 70 km over single-mode fiber, duplex LC connector • 100BASE-FX 1310 nm SFP optic, 100 Mbps up to 2 km over multimode fiber, duplex LC connector • 100BASE-FX-LR 1310 nm SFP optic, 100 Mbps up to 40 km over single-mode fiber, duplex LC connector Choice of XFP transceivers with Optical Monitoring (OM) capabilities: • 10GBASE-SR 850 nm XFP optic, 10 Gbps up to 300 m over multimode fiber, duplex LC connector • 10GBASE-LR 1310 nm XFP optic, 10 Gbps up to 10 km over single-mode fiber, duplex LC connector • 10GBASE-ER 1550 nm XFP optic, 10 Gbps up to 40 km over single-mode fiber, duplex LC connector • 10GBASE-ZR 1550 nm XFP optic, 10 Gbps up to 80 km over single-mode fiber, duplex LC connector • 10GBASE-CX4 XFP copper, 10 Gbps up to 15 m over CX4 grade copper, CX4 connector Choice of SFP+ transceivers with Optical Monitoring (OM) capabilities: • 10GBASE-SR 850 nm SFP+ optic, 10 Gbps up to 300 m over multimode fiber, duplex LC connector • 10GBASE-LR 1310 nm SFP+ optic, 10 Gbps up to 10 km over single-mode fiber, duplex LC connector • Direct-attach Copper (TwinAx) cables, 10 Gbps up to 1, 3, or 5 m (no OM capabilities) Distances supported may vary with type of multimode fiber cable used. For best performance, use 50 micron, OM3 (2000 MHz) multi-mode fiber cable
Power Supplies	B24Y (4002BY2) & B48Y (4002BY4) – 1+1 620 W power supplies supported for +1 redundancy, hot-swappable, load sharing B24Y (4002CY2) – 1+1 210 W power supplies supported for +1 redundancy, hot-swappable, load sharing. Airflow is "Intake" type—Nonport (back) to port (front) side
Fans	1x fan tray supported, hot swappable
Hot-swappable components	Transceivers, power supplies, fan tray
Nonrack support	Yes
Operating systems supported*	Brocade IronWare R7.0.01b or greater
Fiber optic cable	Fiber optic cables are required and are supported in various lengths in single-mode and multimode formats
Power cords	Power cords are not included and must be specified at time of order
Warranty	One-year warranty and support included. Warranty service upgrades are available
Optional features	• Transceivers • 2-port 10 GbE module (XFP) [4002BY2, 4002BY4] • 4-port 10 GbE module (SFP+) [4002CY2] • 4-port 1 GbE module (SFP, works as Combo ports) [4002CY2] • 620 W ac power supply [4002BY2, 4002BY4] • 210 W ac power supply (Intake version) [4002CY2]

IBM b-type y-series Ethernet switches at a glance

Performance	
Packet Forwarding	B24Y (4002BY2) – 114 million packets per second B48Y (4002BY4) – 150 million packets per second B24Y (4002CY2) – 96 million packets per second
Data Forwarding	B24Y (4002BY2) – 152 Gbps B48Y (4002BY4) – 200 Gbps B24Y (4002CY2) – 128 Gbps
Scalability	
Jumbo Frames	9,000 bytes
VLANs	4096
Link aggregation	8 links per group, 32 link groups per switch, supported across stack members
MAC addresses	32,000
ACLs	4,000
ARP entries	64,000
IPv4 routes	16,000
Physical characteristics	
Height	B24Y (4002BY2) – 4.4 cm (1.7 in.) B48Y (4002BY4) – 4.4 cm (1.7 in.) B24Y (4002CY2) – 4.4 cm (1.7 in.)
Width	B24Y (4002BY2) – 44 cm (17.32 in.) B48Y (4002BY4) – 44 cm (17.32 in.) B24Y (4002CY2) – 44 cm (17.32 in.)
Depth	B24Y (4002BY2) – 44 cm (17.32 in.) B48Y (4002BY4) – 44 cm (17.32 in.) B24Y (4002CY2) – 43.5 cm (17.13 in.)
Weight (Fully Loaded)	B24Y (4002BY2) – 4.5 kg (9.9 lbs.) B48Y (4002BY4) – 4.5 kg (9.9 lbs.) B24Y (4002CY2) – 5.35 kg (11.79 lbs.)
Power	
Power (ac)	B24Y (4002BY2) – 107.79 W (power draw with no PoE devices); 509.79 W (power draw with full PoE devices); 1.09 amps @ 100 V ac, 0.58 amps @ 200 V ac B48Y (4002BY4) – 140.94 W (power draw with no PoE devices); 542.94 W (power draw with full PoE devices); 1.72 amps @ 100 V ac, 0.94 amps @ 200 V ac B24Y (4002CY2) – 92.0 W (power draw); 0.9 amps @ 100 V ac, 0.6 amps @ 200 V ac
Input	Input voltage: 100 - 240 V ac Input frequency: 50 - 60 Hz Input current: 3.3 - 7.8 amps [4002BY2, 4002BY4]; 1.2 - 2.8 amps [4002CY2] Inrush current: < 75 amps peak maximum Power inlet: C13
Heat dissipation	B24Y (4002BY2) – 319 BTU/hour B48Y (4002BY4) – 416 BTU/hour B24Y (4002CY2) – 312.8 BTU/hour

IBM b-type y-series Ethernet switches at a glance

Environmental

Temperature	Operating: 0°C to 40°C (32°F to 104°F) Nonoperating: -25°C to 70°C (-23°F to 158°F)
Humidity	Relative: 5% to 90% at 40°C (104°F) noncondensing Nonoperating: 95% maximum relative humidity, noncondensing
Altitude	Operating: Up to 10,000 feet (3,000 meters) Storage: Up to 10,000 feet (3,000 meters)
Acoustic	51 to 63 dB
Airflow	Side to back [4002BY2, 4002BY4]; Nonport (back) to port (front)

Certifications

Electromagnetic Emissions	FCC Class A (Part 15); EN 55022/CISPR-22 Class A; VCCI Class A
Environmental Regulatory Compliance	RoHS compliant (6 of 6); WEEE compliant

Technical Specifications			
IEEE	• 802.1AB LLDP/LLDP-MED • 802.1D-2004 MAC Bridging • 802.1p Mapping to Priority Queue • 802.1s Multiple Spanning Tree • 802.1w Rapid Spanning Tree • 802.1x Port-based Network Access Control • 802.3 10 Base-T • 802.3ab 1000 Base-T • 802.3ad Link Aggregation (Dynamic and Static) • 802.3ae 10 Gigabit Ethernet • 802.3af Power over Ethernet • 802.3ak CX4 • 802.3u 100 Base-TX • 802.3x Flow Control • 802.3z 1000Base-SX/LX • 802.3 MAU MIB (RFC 2239)	Traffic Management	• ACL-based inbound rate limiting and traffic policies • Broadcast, multicast, and unknown unicast rate limiting • Inbound rate limiting per port • Outbound rate limiting per port and per queue	

Technical Specifications			
Layer 2 Switching	• 802.1s Multiple Spanning Tree • 802.1x Authentication • Auto MDI/MDIX • BPDU Guard, Root Guard • Dual-Mode VLANs • Dynamic VLAN Assignment • Dynamic Voice VLAN Assignment • Fast Port Span • Flexible Static Multicast MAC Address Configuration • GVRP VLAN Registration Protocol • IGMP Snooping (v1/v2/v3) • Link Fault Signaling (LFS) • MAC Address Locking • MAC-Layer Filtering • MAC Learning Disable; Port Security • MLD Snooping (v1/v2) • Multidevice Authentication • Per VLAN Spanning Tree (PVST/PVST+/PVRST) • PIM–SM Snooping • Policy-controlled MAC-based VLANs • Port-based Access Control Lists • Port-based, ACL-based, MAC Filter-based, and VLAN-based Mirroring • Port Loop Detection • Port Speed Downshift and Selective Autonegotiation • Private VLAN • Private VLANs and Uplink Switch • Protected Link Groups • Protocol VLAN (802.1v), Subnet VLAN • Remote Fault Notification (RFN) • Single-instance Spanning Tree • Single-link LACP • Trunk Groups • Trunk Threshold • Uni-Directional Link Detection (UDLD)	Management	• Autoconfiguration • Configuration Logging • Digital Optical Monitoring • Display Log Messages on Multiple Terminals • Embedded Web Management • Foundry Discovery Protocol (FDP) • Industry-Standard Command Line Interface (CLI) • Integration with HP OpenView for Sun Solaris, HP-UX, IBM AIX®, and Windows® • IronView Network Manager (INM) Version 3.2 or later • MIB Support for MRP, Port Security, MAC Authentication, and MAC-based VLANs • Out-of-band Ethernet Management • RFC 783 TFTP • RFC 854 TELNET Client and Server • RFC 1157 SNMPv1/v2c • RFC 1213 MIB-II • RFC 1493 Bridge MIB • RFC 1516 Repeater MIB • RFC 1573 SNMP MIB II • RFC 1643 Ethernet Interface MIB • RFC 1643 Ethernet MIB • RFC 1724 RIP v1/v2 MIB • RFC 1757 RMON MIB • RFC 2068 Embedded HTTP • RFC 2131 DHCP Relay • RFC 2570 SNMPv3 Intro to Framework • RFC 2571 Architecture for Describing SNMP Framework • RFC 2572 SNMP Message Processing and Dispatching • RFC 2573 SNMPv3 Applications • RFC 2574 SNMPv3 User-based Security Model • RFC 2575 SNMP View-based Access Control Model SNMP • RFC 2818 Embedded HTTPS • RFC 3176 sFlow • SNTP Simple Network Time Protocol • Support for Multiple Syslog Servers

Technical Specifications				
Layer 3 Routing	• ECMP • Host routes • IPv4 static routes • Layer 3/Layer 4 ACLs RIP v1/v2 announce • OSPF v2 • PIM-SM, PIM-SSM, PIM-DM • RIP v1/v2 • Routed interfaces • Route-only support • Routing between directly connected subnets • Virtual interfaces • Virtual Route Redundancy Protocol (VRRP)	Embedded Security	• 802.1x accounting • Bilevel Access Mode (Standard and EXEC Level) • EAP pass-through support • IEEE 802.1X username export in sFlow • Protection against Denial of Service (DOS) attacks	
Metro Features	• Metro-Ring Protocol (v1, v2) • Virtual Switch Redundancy Protocol (VSRP) • VLAN Stacking (Q-in-Q) • VRRP	Secure Management	• Authentication, Authorization, and Accounting (AAA) • Advanced Encryption Standard (AES) with SSHv2 • RADIUS/TACACS/TACACS+ • Secure Copy (SCP) • Secure Shell (SSHv2) • Username/Password	
Quality of Service (QoS)	• ACL Mapping and Marking of ToS/DSCP • ACL Mapping to Priority Queue • ACL Mapping to ToS/DSCP • Adaptive Rate Limiting • Classifying and limiting flows based on TCP flags • DHCP Option 82 • DHCP Relay • DiffServ Support • Honoring DSCP and 802.1p • MAC Address Mapping to Priority Queue • QoS Queue Management using Weighted Round Robin (WRR), Strict Priority (SP), and a combination of WRR and SP			

For more information

To learn more about the IBM Systems Networking b-type family of y-series switches, please contact your IBM marketing representative or IBM Business Partner, or visit:
ibm.com/systems/networking/hardware/b-type/y-series

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 buy-back and disposal, visit: **ibm.com**/financing

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