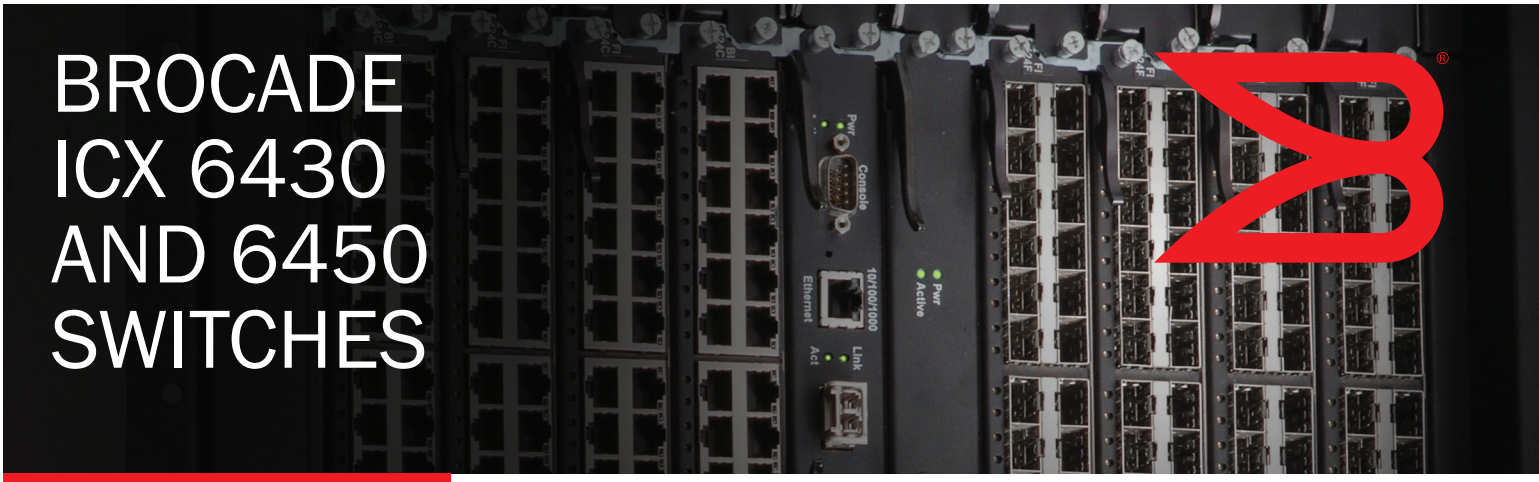
BROCADE ICX 6430 AND 6450 SWITCHES



ENTERPRISE LAN SWITCHING

Enterprise-Class Stackable Switching at an Entry-Level Price

HIGHLIGHTS

- Offers enterprise-class stackable switching at an entry-level price, allowing organizations to buy what they need now and easily scale as demand grows and new technologies emerge
- Delivers unprecedented feature/price value for enterprise applications, including Unified Communications (UC) and mobility, with 10 Gigabit Ethernet (GbE) and PoE/PoE+
- Provides unmatched availability for low-cost switching with redundant uplink/stacking ports, hitless stacking failover, and configurable power redundancy
- Simplifies network operations and protects investments with Brocade HyperEdge technology[1], enabling single-point network lifecycle management and advanced services sharing across a heterogeneous stack
- Includes the Brocade Assurance Limited Lifetime Warranty and three years of technical support

The Brocade One® strategy helps simplify networking infrastructures through innovative technologies and solutions. The Brocade ICX 6430 and 6450 Switches support this strategy by enabling unmatched simplicity and the best feature/price value while ensuring scalability to meet future needs.

Today's organizations expect their enterprise campus LANs to deliver more services to more users at a lower cost. These services include next-generation business applications as well as anytime, anywhere access for mobile devices. At the same time, campus LANs must be able to scale easily to meet future demands and efficiently evolve within dynamic business environments.

Brocade® ICX® 6430 and 6450 Switches provide enterprise-class stackable LAN switching solutions to meet the growing demands of campus networks. Designed for small to medium-size enterprises, branch offices, and distributed campuses, these intelligent, scalable edge switches deliver enterprise-class functionality at an affordable price—without compromising on performance and reliability. The Brocade ICX 6430 and 6450 are available in 24- and 48-port 10/100/1000 Mbps models and 1 Gigabit Ethernet (GbE) or 10 GbE dual-purpose uplink/stacking ports (see Figure 1)—with or without IEEE 802.3af Power over Ethernet (PoE) and 802.3at Power over Ethernet Plus (PoE+)—to support enterprise edge networking, wireless mobility, and IP communications.

BUILT FOR MAXIMUM COST-EFFICIENCY AND INVESTMENT PROTECTION

With Brocade ICX 6430 and 6450 Switches, organizations can buy only what they need today and easily scale user ports and services as their network requirements evolve. Brocade offers maximum investment protection through flexible software licensing options that bring advanced services and performance to lower-cost ports.

[1] *Brocade HyperEdge technology is planned to be available for purchase in the first half of 2013.*

BROCADE

In particular, Brocade HyperEdge™ technology will allow premium switch features and services to be shared with entry-level switches across heterogeneous switch stacks. The Brocade ICX switches also are hardware-capable for easy software implementation (software available in a future release) of emerging security (IEEE 802.1AE MACSec) and energy savings (IEEE 802.3az EEE) standards, helping to protect today's investments while supporting tomorrow's needs.

Brocade ICX 6430 and 6450 Switches come with three years of technical support from the Brocade Technical Assistance Center and software maintenance updates. With these capabilities, organizations gain peace of mind while freeing up IT budget and resources to grow their businesses.

AUTOMATED DEPLOYMENT AND MANAGEMENT

Brocade ICX 6430 and 6450 Switches help simplify network deployment and management by enabling auto-discovery of new Brocade ICX switches within the stack. IT organizations can auto-configure switches using pre-set instructions on the network. To further simplify management, these stacked switches collectively utilize only a single IP address and offer transparent forwarding across the stack.

By embedding sFlow capabilities into the Brocade ICX 6450, Brocade delivers an "always-on" monitoring technology that operates with wire-speed performance. sFlow dramatically reduces implementation complexity compared to traditional network monitoring solutions that rely on mirrored ports, probes, and line-tap technologies. With HyperEdge technology, further automation will be available with single-point network lifecycle management for campus LANs—including initialization, maintenance, troubleshooting, and upgrades. This type of capability will enable network managers to push campus-wide common policies out to the network edge with a single CLI command, minimizing the chance of human error and enhancing compliance enforcement.

HIGH AVAILABILITY AND RESILIENCY

Brocade Ethernet switch stacking technology helps IT organizations meet growing user demand by delivering high availability through real-time state synchronization across the stack and instantaneous hitless failover support. In addition, organizations can use hot-insertion and removal of stack members to avoid interrupting network service when adding or replacing a switch. High-performance Link Aggregation Groups (LAGs) increase 10 GbE uplink bandwidth and redundancy to the core, giving users uninterrupted high performance to support the most demanding applications. Brocade ICX 6430 and 6450 Switches also offer an external power supply for added resiliency and increased PoE/PoE+ port availability (see Figure 2).

STACKING TECHNOLOGY FOR THE MOST DEMANDING CAMPUS LAN ENVIRONMENTS

Brocade Ethernet switch stacking technology makes it possible to stack up to eight Brocade ICX 6450 Switches into a single logical switch, providing simple and robust expandability for future growth at the network edge. This stacked switch has only a single IP address to simplify management and offers transparent forwarding across a pool of up to 384 1 GbE ports and 32 10 GbE ports. When new switches join the stack, they automatically inherit the stack's existing configuration file, enabling true plug-and-play network expansion. Flexible licensing of 1 GbE to 10 GbE ports for uplink and stacking allows organizations to optimize network performance based on specific requirements. Brocade stacking technology also delivers high availability, enabling instantaneous hitless failover to a standby stack controller if the master stack controller fails. In addition, organizations can use hot-insertion and removal of stack members to avoid interrupting network services.

For networks with lower bandwidth requirements, the Brocade ICX 6430 offers the same rugged stacking capability at a reduced price, providing a lower-density solution of up to 192 1 GbE access ports with 16 1 GbE uplink and stacking ports, and a maximum stack height of four switches.

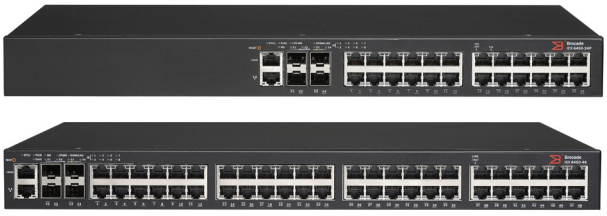


Figure 1.

Brocade ICX 6450 Switches support four dual-mode 1 GbE/10 GbE SFP/SFP+ ports for uplink and stacking, and up to 48 1 GbE RJ-45 ports. Brocade ICX 6430 Switches support four 1 GbE SFP ports for uplink and stacking to provide a cost-optimized solution for lower-traffic networks.

Built to Power Next-Generation Edge Devices

The Brocade ICX 6430 and 6450 can deliver both PoE power and data across network connections, providing a single-cable solution for the latest edge devices (see Figure 3). Brocade ICX switches are compatible with industry-standard Voice over IP (VoIP) equipment as well as legacy IP phones. In addition, they support the PoE+ standard (IEEE 802.3at) to provide up to Class 4 (30 watts) power to each device. This high-powered solution simplifies wiring for next-generation edge devices, such as video conferencing and VoIP phones, surveillance cameras, and 802.11n wireless Access Points (APs). The PoE capability reduces the number of power receptacles and power adapters while increasing reliability and wiring flexibility. The Brocade ICX 6450 can provide PoE power to all ports and PoE+ (30 watts) to all ports when an external power supply is deployed.

Plug-and-Play Operations for Powered Devices

Brocade ICX 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 (UC). Configuring IP endpoints such as VoIP phones can be a complex task, requiring manual and time-consuming configuration. LLDP and LLDP-MED provide a standard, open method for configuring, discovering, and managing network infrastructure.

The LLDP protocols also 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.

Figure 2.

The optional Brocade ICX 6400-EPS1500 is an external power supply source to provide additional power to the Brocade ICX switches (except the Brocade ICX 6430-24). It also can be used for system power redundancy and increased PoE/PoE+ power budget to enable additional PoE/PoE+ ports. Each Brocade ICX 6400-EPS1500 can connect up to three Brocade ICX 6430 and 6450 Switches.

BROCADE HYPEREDGE TECHNOLOGY

Brocade HyperEdge technology helps IT organizations effortlessly create efficient networks to support next-generation campus applications while reducing complexity and costs and protecting investments. HyperEdge technology is planned to be available for purchase as a software license for HyperEdge-ready Brocade products.

HyperEdge technology enables organizations to build networks that are:

- **Automated:** By pooling together high-performance and entry-level switches into a unified management domain, HyperEdge technology eliminates the need to provision, configure, and manage each switch individually, simplifying network deployment.
- **Efficient:** By eliminating the need to run Spanning Tree Protocol (STP) between HyperEdge-enabled switches, HyperEdge technology helps optimize network performance and resource utilization. Network resiliency is also enhanced thanks to multipathing and simplified issue identification and troubleshooting.
- **Cost-effective:** HyperEdge technology enables the propagation of advanced features and services from premium switches to entry-level switches. This enables significant cost savings by allowing IT organizations to purchase only what they need today and add intelligent services as the business evolves. It also assures unmatched investment protection as premium switches can be added to existing sets of entry-level switches to upgrade services across all ports.

Cost-Optimized Cooling Options

The Brocade ICX 6430 48-port and Brocade ICX 6450 24- and 48-port switches offer industry-standard side-to-back airflow with quiet fans at less than 40 dB (except the Brocade ICX 6450-48P). The Brocade ICX 6430-24 is available in a fanless model, helping to minimize sound and costs for deployments where users are present, such as classrooms and open office environments.

Basic Layer 3 Capabilities

Brocade ICX 6450 Switches offer an upgrade option to bring Layer 3 capabilities to the network edge, reducing complexity and enhancing the reliability of enterprise networks.

Data Center ToR Server Connectivity

The Brocade ICX 6430 and 6450 are designed to fit in server racks by consuming only one rack unit. In data center environments where most servers are 1 GbE-capable, the Brocade ICX 6430 and 6450 provide a compact and cost-effective 1 GbE Top-of-Rack (ToR) switch by simply connecting the 1 GbE Network Interface Cards (NICs) in the servers to the Brocade ICX 6430 and 6450 1 GbE ports (see Figure 4). This configuration uses 10 GbE links (Brocade ICX 6450) or 1 GbE links (Brocade ICX 6430) to connect to Brocade ICX data center aggregation switches.

SIMPLIFIED, SECURE STANDARDS-BASED MANAGEMENT AND MONITORING

Brocade ICX 6430 and 6450 Switches provide simplified, standards-based management capabilities that help organizations reduce administrative time and effort while securing their networks.

sFlow-based "Always-On" Network Monitoring

sFlow is a standards-based network export protocol (RFC 3176) that addresses many of the challenges that network managers face today. By embedding sFlow into the Brocade ICX 6450 Switches, Brocade delivers an "always-on" technology that operates with wire-speed performance. sFlow dramatically reduces implementation costs compared to traditional network monitoring solutions that rely on mirrored ports, probes, and line-tap technologies. Moreover, sFlow gives organizations a full, enterprise-wide monitoring capability for every port in the network.

Simplified Deployment with Auto-Configuration

Brocade ICX 6430 and 6450 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 without requiring a highly trained network engineer onsite. When the switches power up, they automatically receive an IP address and configuration from DHCP and Trivial File Transport Protocol (TFTP) servers. At this time, the switches can also automatically receive a software update to be at the same code revision as currently installed switches.

Open-Standards Management

Brocade ICX 6430 and 6450 Switches include an industry-standard Command Line Interface (CLI) and support Secure Shell (SSHv2), Secure Copy (SCP), and SNMPv3 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 secure operator access. Embedded Web management is also provided through a GUI-based device interface, and organizations can use Brocade Network Advisor to achieve full device and network management visibility.

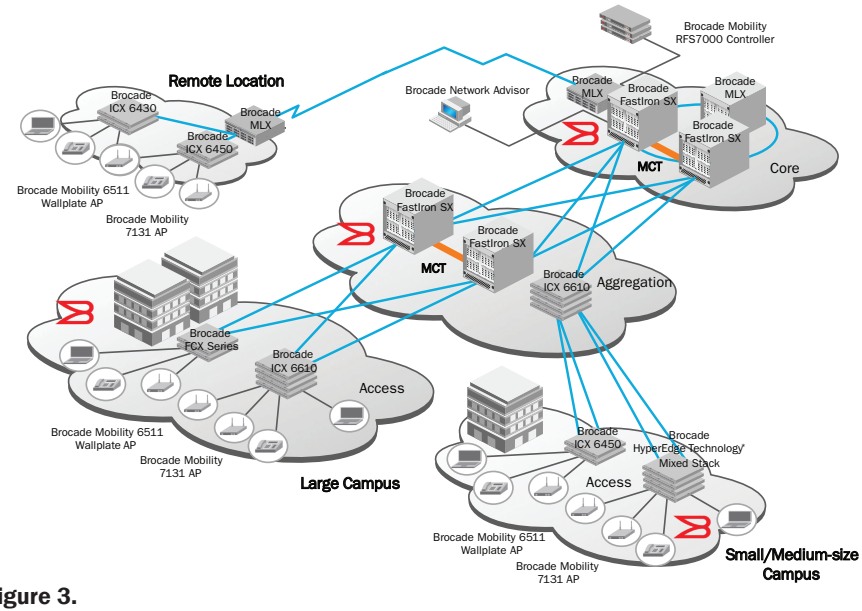


Figure 3.

Brocade ICX 6430 and 6450 Switches are suitable for a wide range of small to medium-size enterprises and branch office deployments at the network access layer.

** Brocade HyperEdge technology is planned to be available for purchase in the first half of 2013.*

Out-of-Band Management

Brocade ICX 6430 and 6450 Switches include a 10/100/1000 Mbps RJ-45 Ethernet port dedicated for out-of-band management, providing a remote path to manage the switches, regardless of the status or configuration of the data ports.

UNIFIED WIRED/WIRELESS NETWORK MANAGEMENT WITH BROCADE NETWORK ADVISOR

Managing enterprise campus networks continues to become more complex due to the growth in services that rely on wired and wireless networks. Services such as Internet, e-mail, video conferencing, real-time collaboration, and distance learning all have specific configuration and management requirements. At the same time, organizations face increasing demand to provide uninterrupted services for high-quality voice and Unified Communications (UC), wireless mobility, and multimedia applications.

To reduce complexity and the time spent managing these environments, the easy-to-use Brocade Network Advisor discovers, manages, and deploys configurations to groups of IP devices. By using the Brocade Network Advisor Device Configuration Manager tool, organizations can configure Virtual LANs (VLANs) within the network, manage wireless access point realms, or execute CLI commands on specific IP devices or groups of IP devices. sFlow-based proactive monitoring is ideal for performing network-wide troubleshooting, generating traffic reports, and gaining visibility into network activity from the edge to the core. Brocade Network Advisor centralizes management of the entire family of Brocade wired and wireless products, including the Brocade ICX switches.

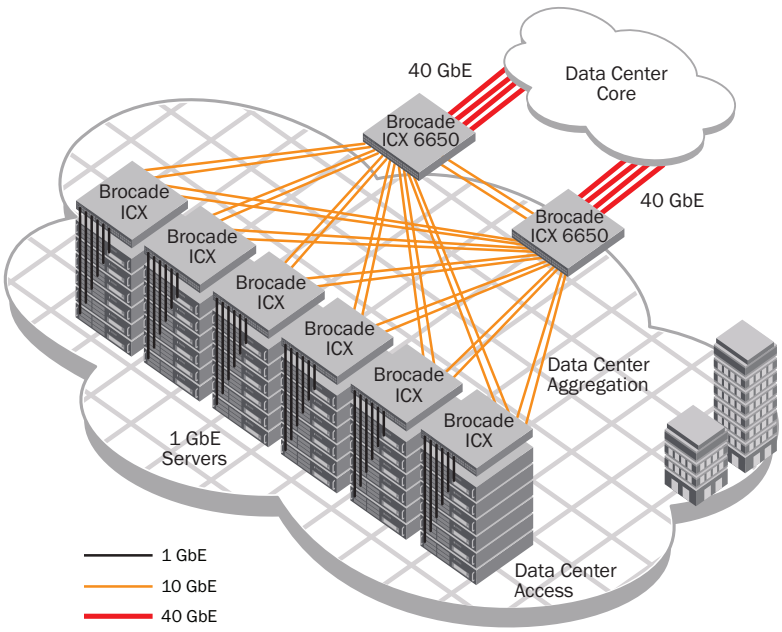


Figure 4.

Brocade ICX 6430 and 6450 Switches provide ToR access while Brocade ICX 6650 Switches provide data center aggregation.

WARRANTY

Brocade ICX 6430 and 6450 Switches are covered by the Brocade Assurance Limited Lifetime Warranty. For details, visit www.brocade.com/warranty.

BEST-IN-CLASS SUPPORT

Brocade ICX 6430 and 6450 Switches are supported by next-business-day advance replacement where available, as well as software defect repairs and maintenance updates. In an effort to further improve service levels and operational efficiency, Brocade includes three years of technical support for Brocade ICX 6430 and 6450 Switches, providing direct access to the Brocade Technical Assistance Center during normal 8×5 business hours.

BROCADE GLOBAL SERVICES

Brocade Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 15 years of expertise in storage, networking, and virtualization, Brocade Global Services delivers world-class professional services, technical support, network monitoring services, and education, enabling organizations to maximize their Brocade investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

CLOUD-OPTIMIZED NETWORK ACQUISITION

Brocade helps organizations easily address their information technology requirements by offering flexible network acquisition and support alternatives to meet their financial needs. Organizations can select from purchase, lease, and Brocade Network Subscription options to align network acquisition with their unique capital requirements and risk profiles. To learn more, visit www.Brocade.com/CapitalSolutions.

MAXIMIZING INVESTMENTS

To help optimize technology investments, Brocade and its partners offer complete solutions that include professional services, technical support, and education. For more information, contact a Brocade sales partner or visit www.brocade.com.

BROCADE ICX 6430/6450 FEATURE AND MODEL SPECIFICATIONS

	Brocade ICX 6430				Brocade ICX 6450			
	6430-24	**6430-24P**	**6430-48**	**6430-48P**	**6450-24**	**6450-24P**	**6450-48**	**6450-48P**
10/100/1000 Mbps RJ-45 ports	24	24	48	48	24	24	48	48
1 GbE SFP ports (uplink/stacking)	4	4	4	4				
1/10 GbE SFP/SFP+ ports (uplink/stacking)					4 (Optional 2 port license)	4 (Optional 2 port license)	4 (Optional 2 port license)	4 (Optional 2 port license)
Stacking bandwidth (data rate, full duplex)	4 Gbps	4 Gbps	4 Gbps	4 Gbps	40 Gbps	40 Gbps	40 Gbps	40 Gbps
Units per stack	4	4	4	4	8	8	8	8
Internal AC power supply rating	36 W	525 W	65 W	525 W	65 W	525 W	100 W	880 W
External power supply (redundant power and PoE power)		Optional 525 W	Optional 525 W	Optional 525 W	Optional 525 W	Optional 525 W	Optional 525 W	Optional 525 W × 2
PoE/PoE+ power budget (internal power supply)		390 W		390 W		390 W		780 W
PoE Class 3 ports (internal power supply)		24		24		24		48
PoE+ ports (internal power supply)		12		12		12		24
Max PoE Class 3 ports (with internal and external power supplies)		24		48		24		48
Max PoE+ ports (with internal and external power supplies)		24		24		24		48
Layer 2 base software	Yes	Yes	Yes	Yes	Yes (base Layer 3 with static routes)	Yes (base Layer 3 with static routes)	Yes (base Layer 3 with static routes)	Yes (base Layer 3 with static routes)
Layer 3 routing (RIP, OSPF)					Optional	Optional	Optional	Optional
Switching capacity (data rate, full duplex)	56 Gbps	56 Gbps	104 Gbps	104 Gbps	128 Gbps	128 Gbps	176 Gbps	176 Gbps
Forwarding capacity (data rate, full duplex)	42 Mpps	42 Mpps	77 Mpps	77 Mpps	96 Mpps	96 Mpps	132 Mpps	132 Mpps

BROCADE ICX 6430/6450 SPECIFICATIONS

System Architecture	
Connector options	10/100/1000 Mbps ports: RJ-45 Brocade ICX 6430: 1 Gbps SFP ports for uplink/stacking: SX, LX, TX, LHA, LHB, direct-attached copper cable (Twinax) for stacking Brocade ICX 6450: 1/10 Gbps SFP+ ports for uplink/stacking: USR, SR, LR, ER, LRM, direct-attached copper cable (Twinax) for stacking Out-of-band Ethernet management: 10/100/1000 Mbps RJ-45 Console management: RJ-45 serial External power connector: Redundant system power supply and extended PoE power supply
Maximum MAC addresses	Brocade ICX 6430: 8000 Brocade ICX 6450: 16,000
Maximum VLANs	4096
Maximum STP (spanning trees)	Brocade ICX 6430: 32 Brocade ICX 6450: 253
Maximum routes (in hardware)	Brocade ICX 6450: 12,000 (IPv4) Brocade ICX 6450: 1070 (IPv6)
Trunking	Brocade ICX 6430 Maximum ports per trunk: 8 Maximum trunk groups: 29 Brocade ICX 6450 Maximum ports per trunk: 8 Maximum trunk groups: 124
Priority queues	Brocade ICX 6430: 4 Brocade ICX 6450: 8
Maximum jumbo frame size	9216 bytes
Layer 2 switching	• 802.1s Multiple Spanning Tree • 802.1x Authentication • Auto MDI/MDIX • BPDU Guard, Root Guard • Dual-Mode VLANs • MAC-based VLANs, Dynamic MAC-based VLAN activation • Dynamic VLAN Assignment • Dynamic Voice VLAN Assignment • Fast Port Span • GARP VLAN Registration Protocol • IGMP Snooping (v1/v2/v3) • IGMP Proxy for Static Groups • IGMP v2/v3 Fast Leave • IGMP Tracking • Inter-Packet Gap (IPG) adjustment • Link Fault Signaling (LFS) • MAC Address Locking, MAC Port Security • MAC-Layer Filtering, Filtering on source and destination MAC address • MAC Learning Disable • MLD Snooping (v1/v2) • Multi-device Authentication • Per-VLAN Spanning Tree (PVST/PVST+/PVRST)
Layer 2 switching (Continued)	• Mirroring: Port-based, ACL-based, MAC Filter-based, and VLAN-based • Port Loop Detection • Private VLAN • Protected Link Groups • Protocol VLAN (802.1v), Subnet VLAN • Remote Fault Notification (RFN) • Single-instance Spanning Tree • Single-link LACP • Trunk Groups • Uni-Directional Link Detection (UDLD)
IPv6 support	• Host functionality management • Hardware support for IPv6 • IPv6 static routing (Brocade ICX 6450 only)
Base Layer 3 routing (Brocade ICX 6450)	• IPv4 and IPv6 Static Routes • Port-based Access Control Lists • Host Routes • Virtual Interfaces, up to 255 virtual interfaces • Routed Interfaces • Route-only Support • IP helper • Routing Between Directly Connected Subnets • ECMP • Layer 3/Layer 4 ACLs
Premium Layer 3 routing (Brocade ICX 6450)	• OSPF v2 • RIP v1/v2 • Virtual Route Redundancy Protocol (VRRP) • VRRP-E
Metro features	• Metro-Ring Protocol MRP (v1, v2) • Virtual Switch Redundancy Protocol (VSRP) • VLAN Stacking (Q-in-Q) • VRRP • Topology Groups
Quality of Service (QoS)	• ACL Mapping and Marking of ToS/DSCP • ACL Mapping and Marking of 802.1p • ACL Mapping to Priority Queue • ACL Mapping to ToS/DSCP • Classifying and Limiting Flows Based on TCP Flags • DHCP Relay • DiffServ Support • Honoring DSCP and 802.1p • MAC Address Mapping to Priority Queue • Priority Queue Management using Weighted Round Robin (WRR), • Strict Priority (SP), and a combination of WRR and SP

IEEE standards compliance	• 802.1AB LLDP/LLDP-MED • 802.1D-2004 MAC Bridging • 802.1p Mapping to Priority Queue • 802.1Q with Tagging • 802.1s Multiple Spanning Tree • 802.1w Rapid Spanning Tree (RSTP) • 802.1x Port-based Network Access Control • 802.3 10BASE-T • 802.3ab 1000BASE-T • 802.3ad Link Aggregation (Dynamic and Static) • 802.3ae 10 Gigabit Ethernet • 802.3af Power over Ethernet • 802.3at Power over Ethernet Plus • 802.3u 100BASE-TX • 802.3x Flow Control • 802.3z 1000BASE-SX/LX • 802.3 MAU MIB (RFC 2239) • 802.1AE- MACsec (HW-capable): Brocade ICX 6450 only • 802.3az-2010 - EEE (HW-capable)
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
High availability	• Redundant external power supply • Layer 3 VRRP protocol redundancy • Real-time state synchronization across the stack • Hitless failover from master to standby stack controller • Protected link groups • Hot insertion and removal of stacked units

Management	
Management and control	• Auto Configuration • Brocade HyperEdge technology (HW-capable) • Configuration Logging • Digital Optical Monitoring (DOM) • Display Log Messages on Multiple Terminals • Embedded Web Management • Embedded DHCP Server • Industry-standard Command Line Interface (CLI) • Key-based activation of optional software features • Integration with HP OpenView for Sun Solaris, HP-UX, IBM AIX, and Windows • Brocade Network Advisor support • MIB Support for MRP, Port Security, MAC Authentication, MAC-based VLANs • Out-of-band Ethernet Management • RFC 783 TFTP • RFC 854 TELNET Client and Server • RFC 951 Bootp • 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 Server and 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 (Brocade ICX 6450 only) • SNTP Simple Network Time Protocol • Multiple Syslog Servers

Embedded security	• 802.1X Accounting • MAC authentication • DHCP snooping • Dynamic ARP inspection • Bi-level Access Mode (Standard and EXEC Level) • EAP pass-through support • Packet filtering on TCP Flags • IEEE 802.1X username export in sFlow • Protection against Denial of Service (DoS) attacks
Secure management	• Authentication, Authorization, and Accounting (AAA) • Advanced Encryption Standard (AES) with SSHv2 • Bi-level Access Mode (Standard and EXEC Level) • RADIUS/TACACS/TACACS+ • Secure Copy (SCP) • Secure Shell (SSHv2) • Username/password • Web authentication

Physical Specifications

Dimensions	• All 24-port models: 1.7 in. (H) × 17.44 in. (W) × 9.45 in. (D) 4.34 cm (H) × 44.3 cm (W) × 24 cm (D) • All 48-port models: 1.7 in. (H) × 17.44 in. (W) × 14.57 in. (D) 4.34 cm (H) × 44.3 cm (W) × 37 cm (D) • ICX6400-EPS1500: 1.7 in. (H) × 17.44 in. (W) × 14.57 in. (D) 4.34 cm (H) × 44.3 cm (W) × 37 cm (D)
Weight	• Brocade ICX 6430-24: 7.58 lb (3.44 kg) • Brocade ICX 6430-24P: 10.08 lb (4.57 kg) • Brocade ICX 6430-48: 11.09 lb (5.03 kg) • Brocade ICX 6430-48P: 13.8 lb (6.26 kg) • Brocade ICX 6450-24: 7.39 lb (3.35 kg) • Brocade ICX 6450-24P: 10.03 lb (4.55 kg) • Brocade ICX 6450-48: 11.07 lb (5.02 kg) • Brocade ICX 6450-48P: 14.11 lb (6.4 kg) • Brocade ICX 6400-EPS1500: 14.85 lb (6.75 kg)

Environment Ranges

Temperature	• Operating temperature: 0°C to 45°C / 32°F to 113°F • Storage temperature: −40°C to 70°C / −40°F to 158°F
Humidity	• Relative humidity: 5% to 95%, non-condensing
Storage altitude	• 10,000 ft (3000 m) maximum
Acoustic (25°C)	• Brocade ICX 6430-24: Fanless (ambient) • Brocade ICX 6430-24P: 39.2 dBA • Brocade ICX 6430-48: 37.2 dBA • Brocade ICX 6430-48P: 39.3 dBA • Brocade ICX 6450-24: 37.9 dBA • Brocade ICX 6450-24P: 39.2 dBA • Brocade ICX 6450-48: 37.2 dBA • Brocade ICX 6450-48P: 55.5 dBA • Brocade ICX 6400-EPS1500: 60.9 dBA
Vibration	• IEC 68-2-36, IEC 68-2-6
Shock and drop	• IEC 68-2-27 • IEC 68-2-32
MTBF (25°C, CL: 60%)	• Brocade ICX 6430-24: 1,229,732 hours • Brocade ICX 6430-24P: 505,469 hours • Brocade ICX 6430-48: 748,262 hours • Brocade ICX 6430-48P: 384,288 hours • Brocade ICX 6450-24: 906,243 hours • Brocade ICX 6450-24P: 485,749 hours • Brocade ICX 6450-48: 756,081 hours • Brocade ICX 6450-48P: 397,590 hours • Brocade ICX 6400-EPS1500: 789,923 hours

Power

Power supplies	• Integrated AC power supply for system and PoE power • External 1500 W AC power supply for redundant system power and extended PoE power
Power inlet (Max current rating at 100 V input)	• Brocade ICX 6430-24: 0.9 Amp • Brocade ICX 6430-24P: 6 Amp • Brocade ICX 6430-48: 1.5 Amp • Brocade ICX 6430-48P: 6 Amp • Brocade ICX 6450-24: 1.5 Amp • Brocade ICX 6450-24P: 6 Amp • Brocade ICX 6450-48: 2 Amp • Brocade ICX 6450-48P: 10 Amp • Brocade ICX 6400-EPS1500: 16 Amp
Input voltage	• Universal 100 to 240 VAC
AC power cord current rating	• Brocade ICX 6430 and 6450 switches: 13 Amp, 100 to 240 V • Brocade ICX 6400-EPS1500: 20 Amp, 100 to 240 V
DC power cord current rating	• Brocade ICX 6400-EPS1500: 5.6 Amp at 12 V rail; 6.85 Amp at 54 V rail • Brocade ICX 6400-EPS1500: 3 DC cables included; cable length: 3 feet
Input line frequency	• 50 to 60 Hz
Heat dissipation (no PoE load)	• Brocade ICX 6430-24: 67 BTU/hr • Brocade ICX 6430-24P: 104 BTU/hr • Brocade ICX 6430-48: 128 BTU/hr • Brocade ICX 6430-48P: 132 BTU/hr • Brocade ICX 6450-24: 124 BTU/hr • Brocade ICX 6450-24P: 129 BTU/hr • Brocade ICX 6450-48: 186 BTU/hr • Brocade ICX 6450-48P: 192 BTU/hr

Measured Power Utilization

Models	Idle[2]	5% Throughput[3]	100% Throughput[4]
Brocade ICX 6430-24	7 W	19 W	20 W
Brocade ICX 6430-24P	9 W	391 W	396 W
Brocade ICX 6430-48	15 W	37 W	38 W
Brocade ICX 6430-48P	16 W	401 W	403 W
Brocade ICX 6450-24	20 W	29 W	37 W
Brocade ICX 6450-24P	21 W	395 W	400 W
Brocade ICX 6450-48	30 W	51 W	55 W
Brocade ICX 6450-48P	31 W	771 W	776 W

[2] All ports are disconnected with no PoE load.

[3] 5 percent traffic load on all ports connected with maximum possible PoE loads (if equipped).

[4] 100 percent traffic load on all ports connected with maximum possible PoE loads (if equipped).

Regulatory Compliance and Safety Approvals

Electromagnetic compatibility	• FCC Part 15, Subpart B, Class A • ICES-003: 2004 • VCCI—Technical Requirement (V-3/2011.04)/ Class A • EN 55022: 2006+A1: 2007 Class A • EN 61000-3-2: 2006+A1:2009+A2:2009 Class A • EN 61000-3-3: 2008 • EN 61000-6-1: 2007 • EN 61000-6-3: 2007 • EN 55024: 1998+A1:2001+A2:2003 • EN 300 386 (V1.4.1): 2008 • IEC 61000-4-2: 2008 ED. 2.0 • IEC 61000-4-3: 2006+A1:2007+A2:2010 ED. 3.2 • IEC 61000-4-4: 2004+A1:2010 ED. 2.0 • IEC 61000-4-5: 2005 ED. 2.0 • IEC 61000-4-6: 2008 ED. 3.0 • IEC 61000-4-8: 2009 ED. 2.0 • IEC 61000-4-11: 2004 ED. 2.0
Safety	• CAN/CSA-C22.2 NO. 60950-1-07; UL 60950-1 2nd Edition; IEC 60950-1 2nd Edition; EN 60950-1:2006 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
Environmental regulatory compliance	• RoHS-compliant (6 of 6); WEEE-compliant

BROCADE ICX 6430/6450 ORDERING INFORMATION

Part Number	Description
ICX6430-24	24-port 1 GbE switch, 4×1 GbE SFP uplink/stacking ports, fanless
ICX6430-24P	24-port 1 GbE switch PoE+ 390 W, 4×1 GbE SFP uplink/stacking ports
ICX6430-48	48-port 1 GbE switch, 4×1 GbE SFP uplink/stacking ports
ICX6430-48P	48-port 1 GbE switch PoE+ 390 W, 4×1 GbE SFP uplink/stacking ports
ICX6450-24	24-port 1 GbE switch, 2×1 GbE SFP+ (upgradable to 10 GbE) and 2×1 GbE/10 GbE SFP+ uplink/stacking ports
ICX6450-24P	24-port 1 GbE switch PoE+ 390 W, 2×1 GbE SFP+ (upgradable to 10 GbE) and 2×1 GbE/10 GbE SFP+ uplink/stacking ports
ICX6450-48	48-port 1 GbE switch, 2×1 GbE SFP+ (upgradable to 10 GbE) and 2×1 GbE/10 GbE SFP+ uplink/stacking ports
ICX6450-48P	48-port 1 GbE switch PoE+ 780 W, 2×1 GbE SFP+ (upgradable to 10 GbE) and 2×1 GbE/10 GbE SFP+ uplink/stacking ports
Accessories and Options	
ICX6450-PREM-LIC	Brocade ICX 6450 premium license (Layer 3 features)
ICX6450-2X10G-LIC-POD	Brocade ICX 6450 2×10 GbE capacity-based license; upgrade 1 GbE uplink/stacking ports to 1GbE/10 GbE
ICX6400-EPS1500	Brocade ICX 6430/6450 1500 W external power supply for RPS/EPS (connect up to three switches)
ICX6400-RMK	Brocade ICX 6400 two-post rack mount kit, spare
10G-SFPP-TWX-0101	Direct-attached SFP+ copper cable, 1 m, one-pack, stacking cable
10G-SFPP-TWX-0301	Direct-attached SFP+ copper cable, 3 m, one-pack, stacking cable
10G-SFPP-TWX-0501	Direct-attached SFP+ copper cable, 5 m, one-pack, stacking cable
1G-SFP-TWX-0101	Direct-attached 1 Gbps SFP copper cable, 1 m, stacking cable
1G-SFP-TWX-0501	Direct-attached 1 Gbps SFP copper cable, 5 m, stacking cable
10G-SFPP-USR	10GE USR SFP+ optic (LC), target range 100 m over MMF, one-pack
10G-SFPP-SR	10GBASE-SR, SFP+ optic (LC), target range 300 m over MMF
10G-SFPP-LR	10GBASE-LR, SFP+ optic (LC), for up to 10 km over SMF
10G-SFPP-ER	10GBASE-ER SFP+ optic (LC), for up to 40 km over SMF
10G-SFPP-LRM	10GBASE-LRM, 1310 nm SFP+ optic (LC), TAR
E1MG-TX	1000BASE-TX SFP copper, RJ-45 connector
E1MG-SX-OM	1000BASE-SX SFP optic, MMF, LC connector, optical monitoring-capable
E1MG-LX-OM	1000BASE-LX SFP optic, SMF, LC connector, optical monitoring-capable
E1MG-LHA-OM	1000BASE-LHA SFP optic, SMF, LC connector, optical monitoring-capable; 80 km
E1MG-LHB	1000BASE-LHB SFP optic, SMF, LC connector, 150 km maximum reach

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

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

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

© 2012 Brocade Communications Systems, Inc. All Rights Reserved. 11/12 GA-DS-1654-01

ADX, Brocade, Brocade Assurance, Brocade One, the B-wing symbol, DCX, Fabric OS, ICX, MLX, MyBrocade, SAN Health, VCS, and VDX are registered trademarks, and AnyIO, HyperEdge, NET Health, OpenScript, and The Effortless Network are trademarks of Brocade Communications Systems, Inc., in the United States and/or in other countries. Other brands, products, or service names mentioned may be trademarks of their respective owners.

Notice: This document is for informational purposes only and does not set forth any warranty, expressed or implied, concerning any equipment, equipment feature, or service offered or to be offered by Brocade. Brocade reserves the right to make changes to this document at any time, without notice, and assumes no responsibility for its use. This informational document describes features that may not be currently available. Contact a Brocade sales office for information on feature and product availability. Export of technical data contained in this document may require an export license from the United States government.

BROCADE