DATA SHEET

Brocade ICX 7750 Switch

HIGHLIGHTS

- Provides unprecedented stacking density and performance with up to 12 switches per stack and up to 5.76 Tbps of aggregated stacking bandwidth, limiting inter-switch bottlenecks and supporting large-scale distributed chassis deployments

- Enables single point of management across the campus through a distributed chassis architecture supporting long-distance stacking and new Brocade Campus Fabric technology

- Offers industry-leading 10/40 GbE port density and flexibility in a 1U form factor with up to 32×40 GbE or 96×10 GbE ports per unit, saving valuable rack space and power in wiring closets

- Provides chassis-class high availability with up to 12 full-duplex 40 Gbps stacking ports per switch, hitless stacking failover, and hot-swappable power supplies and fan assemblies

- Delivers superior value by incorporating enterprise-grade advanced features such as BGP, Multi-Chassis Trunking (MCT), and Virtual Routing and Forwarding (VRF)

- Provides OpenFlow support in true hybrid port mode, enabling Software-Defined Networking (SDN) for programmatic control of network data flows

10/40 GbE Distributed Chassis Switch for Campus Aggregation/Core

Today's enterprise network core and aggregation layers are quickly moving to 10 and 40 Gigabit Ethernet (GbE) switching as enterprises rapidly adopt applications such as High-Definition (HD) video, Bring Your Own Device (BYOD), and Virtual Desktop Infrastructure (VDI), which drive the need for resilient, high-bandwidth access networks. To meet these challenges, campus network solutions must provide better performance, port density, reliability, security, Quality of Service (QoS), and Total Cost of Ownership (TCO).

The Brocade® ICX® 7750 Switch delivers industry-leading 10/40 GbE port density, advanced high-availability capabilities, and flexible stacking architecture, making it the most robust Brocade aggregation and core distributed chassis switch offering for enterprise LANs. In addition to rich Layer 3 features, the Brocade ICX 7750 scales to 12-unit distributed-chassis stacking or Multi-Chassis Trunking (MCT) and is an integral part of Brocade Campus Fabric technology.

Today's data centers are also expanding as the demand for data and storage continues to grow exponentially. Moreover, requirements such as application convergence, non-stop operation, scalability, high availability, and power efficiency are placing even greater demands on the network infrastructure.

Part of the Brocade ICX family of Ethernet switches for campus LAN and classic Ethernet data center environments, the Brocade ICX 7750 Switch is a 1U high-performance, high-availability, and market-leading-density 10/40 GbE solution that meets the needs of business-sensitive campus deployments and classic Ethernet data center environments. With industry-leading price/performance and a low-latency, cut-through, non-blocking architecture, the Brocade ICX 7750 provides a cost-effective, robust solution for the most demanding deployments.

BROCADE CAMPUS FABRIC TECHNOLOGY

Brocade Campus Fabric technology brings campus networks into the modern era to better support seamless wireless mobility, security, and ease of application deployment. This innovative technology collapses multiple network layers into a single logical switch, flattening the network and eliminating deployment complexity while simplifying network management and reducing operating costs.

Brocade Campus Fabric technology enables organizations to build networks that deliver:

- **Consolidated management:** *Reduces unnecessary network layers to create large management domains that eliminate individual switch touch points, reducing maintenance time and costs.*

- **Shared network services:** *Allows premium and entry-level switches to mesh together into a single logical switch and share advanced Layer 2/3 services, delivering lower price-per-port functionality without compromising performance.*

- **Scale-out networking:** *Integrates high-performance, fixed form-factor switches to create a single distributed logical switch that is independent of physical location and allows organizations to add ports whenever and wherever needed across the campus without adding complexity.*
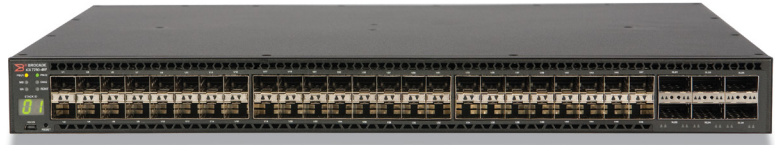

Figure 1. The Brocade ICX 7750-48F features 48 1/10 GbE SFP+ ports and 6 40 GbE QSFP+ ports that can each be split into 4×10 GbE SFP+ ports. The front panel also displays the unit stacking ID.

Figure 2. The Brocade ICX 7750-48C features 48 10GBASE-T ports and 6 40 GbE QSFP+ ports that can each be split into 4×10 GbE SFP+ ports.

Figure 3. The Brocade ICX 7750-26Q features 26 40 GbE QSFP+ ports that can be split into as many as 96 10 GbE SFP+ ports.

Brocade Campus Fabric Technology: Extending Options and Scalability

Brocade Campus Fabric technology, offered for Brocade ICX 7250*, 7450, and 7750 Switches, extends network options and scalability. It integrates premium Brocade ICX 7750, midrange Brocade ICX 7450, and entry-level Brocade ICX 7250 Switches, collapsing network access, aggregation, and core layers into a single logical switch. This logical device shares network services while reducing management touch points and network hops through a single-layer design spanning the entire campus network. These powerful deployments deliver equivalent or better functionality than large, rigid modular chassis systems, but with significantly lower costs and smaller carbon footprints.

Brocade ICX switches support a Distributed Chassis deployment model that uses standards-based optics and cabling interface connections to help ensure maximum distance between campus switches—up to 80 km—and minimum cabling costs—up to 50 percent less than incumbent solutions. This gives organizations the flexibility to deliver ports wherever they are needed on campus at a fraction of the cost. The Distributed Chassis design future-proofs campus networks by allowing networks to easily and cost-effectively expand in scale and capabilities.

* Support on the Brocade ICX 7250 to be available in a future release.

Leading-Edge Flexibility and Reliability

The Brocade ICX 7750 provides a highly flexible 10/40 GbE aggregation solution that offers the highest levels of reliability and port density available in a 1U form factor. The Brocade ICX 7750 is available in three models: the Brocade ICX 7750-48F, 7750-48C, and 7750-26Q. The Brocade ICX 7750-48F and 7750-48C both offer 48 10 GbE ports (SFP+ and 10GBASE-T, respectively) and up to 12 40 GbE ports (six optional) (see Figures 1 and 2). The Brocade ICX 7750-26Q offers up to 32 40 GbE QSFP+ ports (six optional) (see Figure 3).

All models support stacking, which allows organizations to buy only the ports they need now and expand later by adding switches to the stack where and when they are needed. This eliminates the need for a forklift upgrade and helps avoid provisioning an underutilized, centralized chassis. In addition, the Brocade ICX 7750 supports redundant, hot-swappable AC or DC power supplies and fans, reversible airflow, and advanced software.

Distributed Chassis Architecture for Ultimate Flexibility

The Brocade ICX 7750 Switch redefines the economics of enterprise networking by delivering a unique 10/40 GbE campus aggregation solution in a fixed form factor and new levels of performance, availability, and flexibility. It provides the capabilities of a chassis with the flexibility and cost-effectiveness of a stackable switch.

Figure 4. Up to 12 Brocade ICX 7750 Switches can be stacked using up to 12 standard full-duplex 40 Gbps QSFP+ ports per switch, providing up to 5.76 Tbps of aggregated stacking bandwidth.

Figure 5. The Brocade ICX 7750 features hot-swappable redundant power supplies (1+1) and fans (3+1), and an optional 6 40 GbE ports module that can be used for stacking or as additional 40 GbE data ports.

The Brocade ICX 7750 delivers wire-speed, non-blocking performance across all ports to support latency-sensitive applications such as real-time voice/video streaming and Virtual Desktop Infrastructure (VDI). Up to 12 Brocade ICX 7750 Switches can be stacked together using up to 12 full-duplex 40 Gbps standard QSFP+ stacking ports that provide an unprecedented maximum of 5.76 Tbps of aggregated stacking bandwidth with full redundancy, eliminating inter-switch bottlenecks (see Figure 4).

High Availability with Hitless Failover

Organizations can count on Brocade ICX 7750 Switches to deliver continuous availability for an optimized user experience. Brocade stacking technology helps provide high availability, performing real-time state synchronization across the stack and enabling instantaneous hitless failover to a standby controller in the unlikely event of a failure of the master stack controller. Organizations also can use hot-insertion/removal of stack members to avoid interrupting service when adding a switch to increase the capacity of a stack or replacing a switch that needs servicing. These features provide another level of availability for the campus wiring closet in a compact form factor. Additional design features include intake and exhaust temperature sensors and fan spin detection to quickly identify abnormal or failed operating conditions—helping to minimize mean time to repair.

Increased Reliability through Redundancy and Intelligence

The Brocade ICX 7750 includes dual-internal redundant power supplies. These power supplies are hot-swappable and load-sharing with auto-sensing and auto-switching capabilities, which are critical for power redundancy and deployment flexibility (see Figure 5).

The hot-swappable power supplies (1+1) and fan assembly (3+1) allow organizations to replace components without service disruption. In addition, several high-availability and fault-detection features help in failover of critical data flows, enhancing overall system availability and reliability. Organizations can use Brocade Network Advisor and sFlow-based network monitoring and trending to proactively monitor risk areas and optimize network resources. Brocade Multi-Chassis Trunking (MCT) supports dual homing of wiring closet access switches, or servers in a rack, to two Brocade ICX 7750 stacks in an MCT peer group, eliminating the risk of a single point of failure. In conjunction with MCT, VRRP-E (the Brocade extension to VRRP for MCT) provides redundancy and sub-second failover for both Layer 2 and Layer 3. For metro or campus deployments in a ring topology, the Brocade Metro Ring Protocol (MRP-I and MRP-II) prevents Layer 2 loops and enables faster re-convergence than Spanning Tree Protocol (STP) with sub-second failover.

SDN-Enabled Programmatic Control of the Network

Software-Defined Networking (SDN) is a powerful new network paradigm designed for the world's most demanding networking environments and promises breakthrough levels of customization, scale, and efficiency. The Brocade ICX 7750 enables SDN by supporting the OpenFlow 1.0 and 1.3 protocols, which allow communication between an OpenFlow controller and an OpenFlow-enabled switch. Using this approach, organizations can control their networks programmatically, transforming the network into a platform for innovation through new network applications and services. The Brocade ICX 7750 delivers OpenFlow in true hybrid port mode. With Brocade hybrid port mode, organizations can simultaneously deploy traditional Layer 2/3 forwarding with OpenFlow on the same port. This unique capability provides a pragmatic path to SDN by enabling network administrators to progressively integrate OpenFlow into existing networks, giving them the programmatic control offered by SDN for specific flows while the remaining traffic is forwarded as before. Brocade ICX 7750 hardware support for OpenFlow enables organizations to apply these capabilities at line rate in 10 GbE and 40 GbE networks.

Greener Campus and Data Center Networks with Lower TCO

As application data and storage requirements continue to rise exponentially, demand for higher port density and bandwidth grows, along with the number of network devices and power consumption. Organizations seeking to reduce TCO need solutions that can provide higher scalability and density per rack unit, thereby reducing power consumption and heat dissipation.

The Brocade ICX 7750 addresses those needs with a state-of-the-art ASIC, reversible airflow, automatic fan-speed control, and power-efficient optics to ensure the most efficient use of power and cooling. For low-cost, low-latency, and low-energy-consuming cabling within and between the racks, the Brocade ICX 7750 supports SFP+ direct-attached copper cables at up to 5 meters. For switch-to-switch connectivity, the Brocade ICX 7750 supports low-power-consuming SFP+ and 40GBASE-SR4 QSFP+ optical transceivers at up to 100 meters. In high-port-density deployments, these features save significant operating costs.

Superior ROI and Investment Protection

The Brocade ICX 7750 combines strategic performance, availability, and scalability advantages with investment protection for existing LAN environments. It utilizes the same Brocade FastIron® operating system used by other Brocade Ethernet/IP products. This helps ensure full forward and backward compatibility among the product family while simplifying software maintenance and field upgrades.

Moreover, the use of the same industry-standard Command Line Interface (CLI), common to all Brocade ICX switches, eliminates the need for staff retraining. As a result, the Brocade ICX 7750 enables organizations to better leverage their current training, tools, devices, and processes.

Simplified, Standards-based Management

Deploying more switches in a data center infrastructure can increase overall network performance, but it can also prevent organizations from gaining a complete view of network capacity, bandwidth consumption, utilization, and overall health.

To overcome this challenge, the Brocade ICX 7750 utilizes sFlow, a unique solution that helps simplify network management and monitoring. By providing real-time visibility into the network, sFlow helps organizations effectively manage transactions flowing throughout the network. This open standards-based approach integrates with a wide range of management, monitoring, and trending utilities. For example, organizations can use Brocade Network Advisor to manage all Brocade data center Ethernet/IP switches and routers, including Brocade VDX® switches, Brocade ICX switches, Brocade FCX Series switches, Brocade ADX® Series application delivery switches, and Brocade MLXe core routers.

The Brocade ICX 7750 also supports the IEEE 802.1AB LLDP standard, enabling organizations to build open, converged, and advanced multivendor networks. LLDP greatly simplifies and enhances network management, asset management, and network troubleshooting.

With the resulting insight, organizations can quickly and accurately review overall data center operations, identifyhot spots, and quickly diagnose and troubleshoot issues before they develop into widespread problems. The Brocade ICX 7750 also provides accurate SNMP/RMON statistics to Brocade Network Advisor, reducing the administrative burden normally associated with proactive network management, design, and capacity planning.

Purpose-built Feature Set

The Brocade ICX 7750 combines a wide range of unique features to help organizations overcome the most challenging business requirements.

Industry-Leading Advanced Layer 2 and Layer 3 Features

To provide self-healing topologies in Layer 2 configurations, the Brocade ICX 7750 supports industry-standard Ethernet protocols, including multiple varieties of STP and link aggregation as well as optic-, link-, and switch-level fault detection and correction features. The advanced Layer 2 and Layer 3 feature set is leveraged from Brocade FastIron switches that have been field-proven in enterprise and data center networks for more than a decade. With rich Layer 3 features enabled, organizations can utilize the Brocade ICX 7750 in multiple applications.

Data Protection through Robust Security

Security is a critical requirement in today's data centers and branch offices, and the Brocade ICX 7750 provides robust security through a wide range of advanced features. Organizations can use both regular and extended Access Control Lists (ACLs) to control access to and through data center networks.

Organizations can use control policies that permit or deny traffic based on a wide variety of identification characteristics—such as source/destination MAC addresses, source/destination IP addresses, TCP/UDP ports/sockets, and well-known port numbers—further protecting and restricting network access. In addition, for maximum security the Brocade ICX 7750 also leverages 802.1x security, MAC authentication, port MAC security, and MAC filter enhancements.

The Brocade ICX 7750 implements hardware-based ACL, so security does not adversely affect switching performance. In addition, the Brocade ICX 7750 provides hardware-based protection against Distributed Denial of
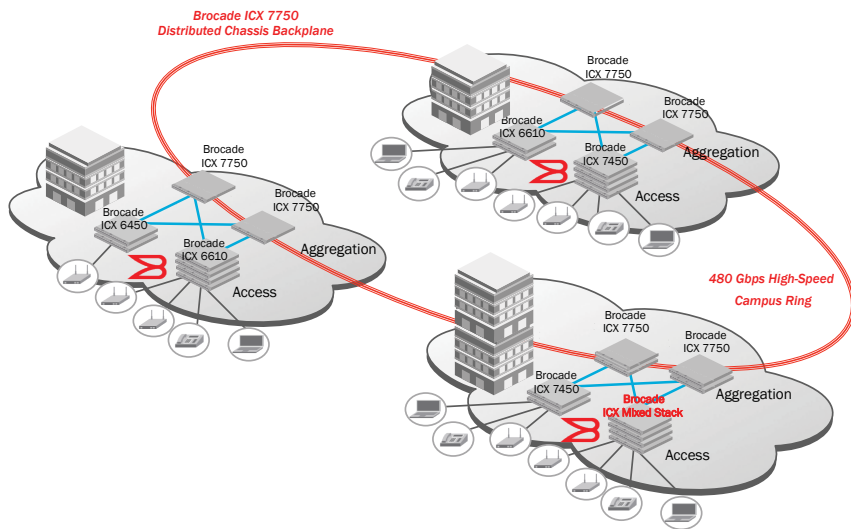
Figure 6. The stackable Brocade ICX 7750 is ideal for deployment as a cost-effective, high-performance solution, forming a single campus-wide ring and combining the aggregation and core layers in a single logical device.

Service (DDoS) attacks (ICMP flood and TCP SYN) as well as hardware-based private VLAN attacks—with no impact on CPU utilization. Also, BPDU Guard and Root Guard prevent rogue hijacking of the spanning tree root and maintain a contention-free—and loop-free—environment, especially during dynamic network deployments.

Advanced QoS to Improve Data Traffic Integrity

The Brocade ICX 7750 offers superior QoS features designed to ensure high-reliability services throughout the data center. It can identify, mark, classify, reclassify, and manage traffic based on specific criteria. This enables organizations to classify bandwidth-critical application traffic, discriminating among various traffic flows and enforcing bandwidth policies.

After the traffic is classified, organizations have complete control over the method the system uses to service the queues: Weighted Round Robin (WRR), Strict Priority (SP), or a mix of both. For granular control to regulate bandwidth utilization, the Brocade ICX 7750 can also perform ingress rate limiting and egress rate shaping.

Multicast-based Applications

The use of video, financial, and other one-to-many applications requires support for scalable multicast services. The Brocade ICX 7750 supports IGMPv1/2/3, PIM-SM/SSM/DM, MSDP, Anycast RP, and PIM and IGMP/MLD Snooping for optimized multicast forwarding. In addition, the Brocade ICX 7750 provides storm-control features to contain and intelligently switch rather than broadcast multicast traffic.

Key Solution Areas

The Brocade ICX 7750 provides a high-performance, cost-effective solution for many types of campus and data center environments, including 10/40 GbE core and aggregation of campus access switches, Top-of-Rack (ToR) server connectivity, and HPC environments.

Campus Aggregation for Enterprise Networks

The Brocade ICX 7750 provides the necessary advanced Layer 2 and Layer 3 features, high 10/40 GbE port density, and high-availability capabilities to be deployed as a campus aggregation solution. A stack of Brocade ICX 7750 Switches interconnected with 40 GbE links makes a cost-effective, highly available campus aggregation solution.

Collapsed Campus Aggregation/ Core

Traditional three-tier network design, with "big-box" chassis at the aggregation and core layers, requires a significant up-front investment and offers limited deployment flexibility and future-proofing. In contrast, a distributed "multi-box" architecture at the aggregation and core layers can deliver much greater scalability and future-proofing with an easier "upgrade as you go" model. This type of architecture enables network architects to add capacity exactly where it is needed in the network, unlike a big-box chassis approach, with all ports located in the same closet.

Thanks to rapid technology evolution and innovative thinking, Brocade is able to offer the first stackable solution for campus aggregation and small core that delivers higher performance and port density than a traditional midsize chassis, while offering the same level of reliability and availability. Brocade long-distance stacking technology enables a ring of Brocade ICX 7750 Switches interconnected with 40 GbE stacking links and separated by up to 10 km each to be used as a combined aggregation and core layer for a midsize campus (see Figure 6).

Data Center ToR Server Connectivity

The Brocade ICX 7750 is designed to fit in server racks, and it consumes only one rack unit. To simplify cabling, the 10 GbE Network Interface Cards (NICs) in the servers connect to the Brocade ICX 7750 10 GbE ports by using fiber and SFP+ optical transceivers, SFP+ direct-attached copper cable, or standard copper Ethernet twisted pair cables with 10GBASE-T (see Figure 7).

If any servers in the rack have only 1 GbE-capable NICs, organizations can connect them to the same Brocade ICX 7750 Switch by using a 10 GbE port as a 1 GbE port through an SFP or copper port. The Brocade ICX 7750 ToR switch can connect to the data center middle-of-row/end-of-row aggregation chassis with either 10 GbE or 40 GbE, usually through link aggregation.

The Brocade ICX 7750 provides data center ToR access while Brocade MLXe routers provide an aggregation/core solution.

Cost-Effective 10 GbE Aggregation

In data center environments where most servers are 1 GbE-capable, the Brocade ICX 7750 provides a compact and cost-effective 10 GbE aggregation switch. It connects to the data center core through 10 GbE or 40 GbE ports, and it uses 10 GbE links to connect to Brocade ICX ToR switches at the edge of the network (see Figure 8).
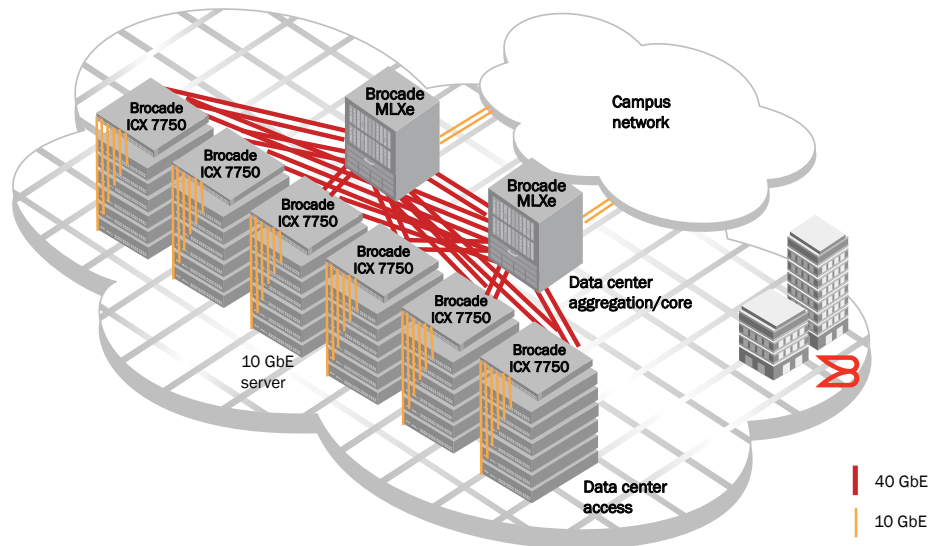

Figure 7. The Brocade ICX 7750 provides data center ToR access while Brocade MLXe routers provide an aggregation/core solution.
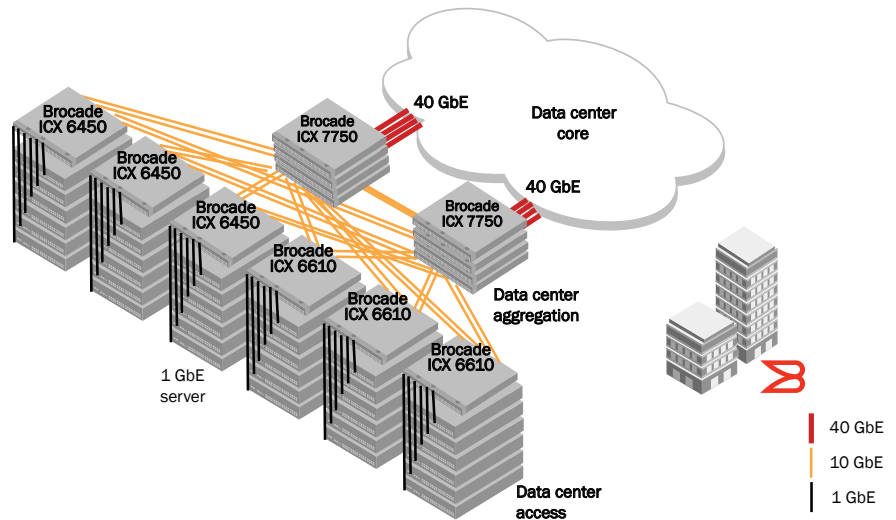

Figure 8. The Brocade ICX 7750 provides data center aggregation with Brocade ICX 6610 and 6450 Switches providing ToR access.

Brocade ICX 7750 Feature/Model Comparison

	26 QSFP+ Ports	48 SFP+ Ports	48 10GBASE-T Ports
	Brocade ICX 7750-26Q	Brocade ICX 7750-48F	Brocade ICX 7750-48C
Switching capacity (data rate, full duplex)	2.56 Tbps	1.92 Tbps	1.92 Tbps
Forwarding capacity (data rate, full duplex)	1.90 Bpps	1.44 Bpps	1.44 Bpps
Fixed ports: 1/10 GbE SFP/SFP+		48	
Fixed ports: 1/10GBASE-T RJ45			48
Fixed ports: 40 GbE QSFP+	26	6	6
Modular slots	1	1	1
Modular ports: 40 GbE QSFP+ (max.)	6	6	6
Latency	550 ns	550 ns	40 GbE- 40 GbE: 550 ns 10 GbE -10 GbE: 2.9 µs
Dynamic packet buffer size	12.2 MB	12.2 MB	12.2 MB
Advanced IPv4/v6 Layer 3 routing (RIP, OSPF, BGP)	With license	With license	With license
Aggregated stacking bandwidth	5.76 Tbps	5.76 Tbps	5.76 Tbps
Stacking density (maximum switches in a stack)	12	12	12
Maximum stacking distance (distance between stacked switches)	10 km	10 km	10 km
Power			
Power inlet (AC)	C14		
Input voltage / frequency	AC: 100 to 240 VAC @ 50 to 60 Hz DC: 40 to 60 VDC		
Power supply rated maximum (AC)	2×500 W	2×500 W	2×500 W
Power supply rated maximum (DC)	2×500 W	2×500 W	2×500 W
Switch power utilization[†] (25°C) Typical Maximum	274 W 350 W	250 W 327 W	511 W 586 W
Switch heat dissipation[†] (25°C) Typical Maximum	935 BTU/hr 1,194 BTU/hr	853 BTU/hr 1,116 BTU/hr	1,744 BTU/hr 2,000 BTU/hr
Environment			
Weight (with 2 power supplies, 4 fans, optional 6 ports module, no transceivers)	8.83 kg (19.43 lb)	9.08 kg (19.98 lb)	10.17 kg (22.38 lb)
Dimensions	440 mm (17.323 in.) W 406.4 mm (16 in.) D 43.6 mm (1.730 in.) H; (1U)	440 mm (17.323 in.) W 406.4 mm (16 in.) D 43.6 mm (1.730 in.) H; (1U)	440 mm (17.323 in.) W 431 mm (16.97 in.) D 43.6 mm (1.730 in.) H; (1U)
Acoustics (25°C, ISO 7779)	62 dBA	62 dBA	62 dBA
MTBF (25°C)	364,061 hours	353,967 hours	259,199 hours

[†] Traffic load is based on utilizing all ports.

Brocade ICX 7750 Specifications

Specifications

Connector options	• 100[‡]/1000 Mbps, 10 Gbps 10GBASE-T ports: RJ-45 • 1 Gbps SFP ports: SX, LX, LHA, BXU, BXD • 10 Gbps SFP+ ports: USR, SR, LR, ER, ZR, direct-attached copper cables • 40 Gbps QSFP+ ports: SR4, LR4, LM4, AOC, direct-attached copper cables • Out-of-band Ethernet management: 10/100/1000 Mbps RJ-45 • Console management: mini-USB serial port (Mini-B plug) • Storage: USB port, standard-A plug For the latest information about supported optics, please visit www.brocade.com/optics.
Maximum MAC addresses	96,000 (switch image), 32,000 (router image)
Maximum VLANs	4,096
Maximum STP (spanning trees)	254
Maximum routes (in hardware)	IPv4 routes: up to 128,000 (shared resource) IPv6 routes: up to 7,000 (shared resource) Hosts: up to 32,000 (shared resource)
Trunking	Maximum ports per trunk: 16 Maximum trunk groups: 256 × 8 or 128 × 16
Maximum jumbo frame size	9,216 bytes
QoS priority queues	8 per port
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 • 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 • MAC Learning Disable • MLD Snooping (v1/v2) • Multi-device Authentication • Per-VLAN Spanning Tree (PVST/PVST+/PVRST) • Mirroring—Port-based, ACL-based, MAC Filter-based, and VLAN-based • Port Loop Detection • Private VLAN • Remote Fault Notification (RFN) • Single-instance Spanning Tree • Single-link LACP • Trunk Groups • Uni-Directional Link Detection (UDLD) • MCT (Brocade Multi-Chassis Trunking)

[‡] 100 Mbps will be supported in a future software release.

Brocade ICX 7750 Specifications (Continued)

Base Layer 3 IP routing	• IPv4 and IPv6 static routes • ECMP • Port-based Access Control Lists • L3/L4 ACLs • Host routes	• Virtual Interfaces • Routed Interfaces • Route-only Support • Routing Between Directly Connected Subnets
Premium Layer 3 IP routing (with software license)	• IPv4 and IPv6 dynamic routes • RIP v1/v2, RIPng (IPv6) • OSPF v2, OSPF v3 (IPv6) • PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv4/IPv6 multicast routing functionality) • PBR • Virtual Route Redundancy Protocol (VRRP)	• VRRP-E, VRRP-E (IPv6) • VRRPv3 (IPv6) • BGP4, BGP4+ (IPv6) • GRE • IPv6 over IPv4 tunnels • VRF (IPv4 and IPv6)
SDN features	• Support for OpenFlow v1.0 and v1.3 • OpenFlow support with true hybrid port mode • Operates seamlessly under the Brocade SDN Controller • Metro-Ring Protocol (MRP) (v1, v2)	• Virtual Switch Redundancy Protocol (VSRP) • VLAN Stacking (Q-in-Q) • VRRP • Topology Groups
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 • 802.1s Multiple Spanning Tree • 802.1w Rapid Spanning Tree (RSTP) • 802.1x Port-based Network Access Control • 802.3ab 1000Base-T • 802.3ad Link Aggregation (Dynamic and Static) • 802.3ae 10 Gigabit Ethernet	• 802.3u 100Base-TX • 802.3x Flow Control • 802.3z 1000Base-SX/LX • 802.3 MAU MIB (RFC 2239) • 802.3ba 40 Gbps Ethernet • 802.3az-2010 EEE • 802.1Q VLAN Tagging
RFC standards compliance	For a complete list of RFCs supported by the Brocade FastIron® software platform, please visit www.brocade.com/fastIronrfc.	

Brocade ICX 7750 Specifications (Continued)

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 hot-swappable power supplies • Hot-swappable fan trays • L3 VRRP protocol redundancy • Real-time state synchronization across the stack • Hitless failover from master to standby stack controller • Hot insertion and removal of stacked units

Network and Device Management

Management	• Auto Configuration • Configuration Logging • Digital Optical Monitoring • 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 • MIB Support for MRP, Port Security, MAC Authentication, and MAC-based VLANs • Out-of-band Ethernet Management • ERSPAN support for remote troubleshooting and traffic monitoring • 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 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 • SNTP Simple Network Time Protocol • Multiple Syslog Servers
Security	• 802.1X Accounting • MAC Authentication • DHCP snooping • Dynamic ARP inspection • Bi-level Access Mode (Standard and EXEC Level) • EAP pass-through support • IEEE 802.1X username export in sFlow • Protection against Denial of Service (DoS) attacks • Authentication, Authorization, and Accounting (AAA)	• Advanced Encryption Standard (AES) with SSHv2 • RADIUS/TACACS/TACACS+ • Secure Copy (SCP) • Secure Shell (SSHv2) • Username/Password • Web authentication • Change of Authorization (CoA) RFC 5176 • Flexible authentication

Brocade ICX 7750 Specifications (Continued)

Environment	Brocade ICX 7750-26Q and 7750-48F	Brocade ICX 7750-48C
Operating temperature	–5°C to 45°C, 50°C at sea level (0°F to 113°F, 122°F at sea level)	40°C at sea level (0°F to 96°F, 96°F at sea level)
Non-operating temperature	–40°C to 60°C (–40°F to 140°F)	–40°C to 60°C (–40°F to 140°F)
Operating humidity	10% to 90% at 50°C (122°F)	10% to 90% at 40°C (104°F)
Non-operating humidity	10% to 90% at 60°C (140°F)	10% to 90% at 60°C (140°F)
Operating altitude	10,000 ft. (3,000 m) maximum	10,000 ft. (3,000 m) maximum
Non-operating altitude	39,000 ft. (12,000 m) maximum	39,000 ft. (12,000 m) maximum
Compliance/Certification		
Electromagnetic emissions	FCC Class A (Part 15); EN 55022/CISPR-22 Class A; VCCI Class A; ICES-003 Electromagnetic Emission; AS/NZS 55022; EN 61000-3-2 Power Line Harmonics; EN 61000-3-3 Voltage Fluctuation and Flicker; EN 61000-6-3 Emission Standard (supersedes: EN 50081-1)	
Safety	CAN/CSA-C22.2 NO. 60950-1-07; UL 60950-1 Second Edition; IEC 60950-1 Second 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	
Immunity	EN 61000-6-1 Generic Immunity and Susceptibility (supersedes EN 50082-1); EN 55024 Immunity Characteristics (supersedes EN 61000-4-2 ESD); EN 61000-4-3 Radiated, Radio Frequency, Electromagnetic Field; EN 61000-4-4 Electrical Fast Transient; EN 61000-4-5 Surge; EN 61000-4-6 Conducted Disturbances Induced by Radio-Frequency Fields; EN 61000-4-8 Power Frequency Magnetic Field; EN 61000-4-11 Voltage Dips and Sags	
Environmental regulatory compliance	RoHS-compliant (6 of 6); WEEE-compliant	
Vibration	IEC 68-2-36, IEC 68-2-6	
Shock and drop	IEC 68-2-27, IEC 68-2-32	

Brocade ICX 7750 Ordering Information

Part Number	Description
Bare Switches and Port Modules	
ICX7750-48F	Brocade ICX 7750 with 48 1/10 GbE SFP+ ports, 6 40 GbE QSFP ports and modular interface slot. No power supplies or fan units (need to be ordered separately). No optics. Requires ICX7750-L3-COE Certificate of Entitlement to use advanced Layer 3 features.
ICX7750-48C	Brocade ICX 7750 with 48 1/10 GbE RJ-45 10GBASE-T ports, 6 40 GbE QSFP ports and modular interface slot. No power supplies or fan units (need to be ordered separately). No optics. Requires ICX7750-L3-COE Certificate of Entitlement to use advanced Layer 3 features.
ICX7750-26Q	Brocade ICX 7750 with 26 40 GbE QSFP ports and modular interface slot. No power supplies or fan units (need to be ordered separately). No optics. Requires ICX7750-L3-COE Certificate of Entitlement to use advanced Layer 3 features.
ICX7750-6Q	Brocade ICX 7750 6 40 GbE QSFP module for use in Brocade ICX7750-48F, 7750-48C, or 7750-26Q
Power Supplies and Fans	
RPS9+I	500 W AC power supply; power-supply-side intake (port-side exhaust) airflow
RPS9+E	500 W AC power supply; power-supply-side exhaust (port-side intake) airflow
RPS9DC+I	500 W DC power supply; power-supply-side intake (port-side exhaust) airflow
RPS9DC+E	500 W DC power supply; power-supply-side exhaust (port-side intake) airflow
ICX7750-FAN-I	Fan kit of 4; fan-side intake (port-side exhaust) airflow
ICX7750-FAN-E	Fan kit of 4; fan-side exhaust (port-side intake) airflow
ICX7750-FAN-I-SINGLE	Fan single unit; fan-side intake (port-side exhaust) airflow
ICX7750-FAN-E-SINGLE	Fan single unit; fan-side exhaust (port-side intake) airflow
Feature Licenses and Accessories	
ICX7750-L3-COE	Certificate of Entitlement to use routing and advanced functionality. Without the Certificate of Entitlement, customers may use base Layer 3 features: VRRP, RIP, and static routes. Other Layer 3 features are considered advanced and require the ICX7750-L3-COE. The Certificate of Entitlement is serialized paper that is not tied to a particular switch; no activation is required.
BR-NTWADV-IP-BASE	Brocade Network Advisor IP management software license for up to 50 devices; re-quired for initial purchase of IP-only management; minimum of one year of support is required.
Optics and Copper Cables	
10Ge-SFPP-AOC-0701	10 GbE SFP+ direct-attached active optical cable, 7 m, 1-pack
10Ge-SFPP-AOC-1001	10 GbE SFP+ direct-attached active optical cable, 10 m, 1-pack
10G-SFPP-USR	10GBASE USR SFP+ optical transceiver, 100 m over MMF LC, 1-pack
10G-SFPP-SR	10GBASE-SR SFP+ optical transceiver, SMF LC
10G-SFPP-LR	10GBASE-LR SFP+ optical transceiver, SMF LC
10G-SFPP-ER	10GBASE-ER SFP+ optic (LC), for up to 40 km over SMF
E1MG-TX	1000BASE-TX SFP copper, RJ-45 connector
E1MG-SX-OM	1000BASE-SX SFP optical transceiver, MMF LC, optical monitoring capable
E1MG-LX-OM	1000BASE-LX SFP optical transceiver, MMF LC, optical monitoring capable
40G-QSFP-LR4	40GBASE-LR4 QSFP+ optic (LC), for up to 10 km over SMF, 1-pack
40G-QSFP-SR4	40GBASE-SR4 QSFP+ optic (MTP 1×8 or 1×12), 100 m over MMF, 1-pack

Optics and Copper Cables (continued)

40G-QSFP-QSFP-C-0101	40 GbE direct-attached QSFP+ to QSFP+ active copper cable, 1 m, 1-pack
40G-QSFP-QSFP-C-0301	40 GbE direct-attached QSFP+ to QSFP+ active copper cable, 3 m, 1-pack
40G-QSFP-QSFP-C-0501	40 GbE direct-attached QSFP+ to QSFP+ active copper cable, 5 m, 1-pack
40G-QSFP-SR4-INT	40GBASE-SR4 QSFP+ optic (MTP 1×8 or 1×12), 100 m over MMF, compatible with 10GBASE-SR, 10 GbE breakout cable, 1-pack
40G-QSFP-4SFP-C-0101	4×10 GbE direct-attached QSFP+ to 4 SFP+ copper breakout cable, 1m, 1-pack
40G-QSFP-4SFP-C-0301	4×10 GbE direct-attached h QSFP+ to 4 SFP+ copper breakout cable, 3m, 1-pack
40G-QSFP-4SFP-C-0501	4×10 GbE direct-attached QSFP+ to 4 SFP+ copper breakout cable, 5m, 1-pack

Warranty

The Brocade ICX 7750 Switch is covered by the Brocade Assurance® Limited Lifetime Warranty. For details, visit www.brocade.com/warranty.

Brocade Global Services

Brocade Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 20 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.

Affordable Acquisition Options

Brocade Capital Solutions helps organizations easily address their IT requirements by offering flexible network acquisition and support alternatives. Organizations can select from purchase, lease, Brocade Network Subscription, and Brocade Subscription Plus options to align network acquisition with their unique capital requirements and risk profiles. To learn more, visit www.brocade.com/capital.

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.

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