Brocade/ITSS IT-661 Specification/Model Comparisons

Includes NET Health & Technical Support

Built and Configured for IT Data and IP Video Applications

	24 or 48 RJ-45 Ports		24 SFP Ports	24 or 48 PoE+ Ports	
	IT-24661	**IT-48661**	**IT-24F661**	**IT-24P661**	**IT-48P661**
Switching capacity *(data rate, full duplex)*	528 Gbps	576 Gbps	528 Gbps	528 Gbps	576 Gbps
Forwarding capacity *(data rate, full duplex)*	396 Mpps *(wire speed)*	432 Mpps *(wire speed)*	396 Mpps *(wire speed)*	396 Mpps *(wire speed)*	432 Mpps *(wire speed)*
Stacking bandwidth *(data rate, full duplex)*	320 Gbps	320 Gbps	320 Gbps	320 Gbps	320 Gbps
10/100/1000 Mbps RJ-45 ports	24	48	n/a	24	48
100/1000 Mbps SFP ports	n/a	n/a	24	n/a	n/a
Dual-mode 1/10 GbE SFP/SFP+ ports *(10 GbE SFP+ optional upgrade license)*	8	8	8	8	8
40 Gbps QSFP stacking ports	4	4	4	4	4
PoE Power Budget *(two power supplies)*	n/a	n/a	n/a	1500 W	1500 W
Maximum PoE Class 3 ports	n/a	n/a	n/a	24 *(one power supply)*	48 *(one power supply)*
Maximum PoE+ ports	n/a	n/a	n/a	24 *(one power supply)*	48 *(two power supplies)*
Redundant/load-sharing; hot-swappable power supplies *(second optional)*	2×250 W	2×250 W	2×250 W	2×1000 W	2×1000 W
Weight *(one power supply/one fan tray)*	6.42 kg (14.15 lb)	6.78 kg (14.95 lb)	6.69 kg (14.75 lb)	7.10 kg (15.65 lb)	7.46 kg (16.45 lb)
Dimensions	429 mm (16.880 in.) W x 406.4 mm (16.00 in.) D x 44 mm (1.732 in.) H - 1RU				
Airflow	Front to back (reversible)				

System Architecture

Connector options

- 10/100/1000 ports: RJ-45
- 1 Gbps SFP ports: SX, LX, LHA, LHB, 1000Base-BX, CWDM
- 10 Gbps SFP+ ports: Direct-attached copper (Twinax), SR, LR
- Stacking ports: 40 GbE QSFP for use with direct-attached 1 meter or 5 meter stacking cable
- Out-of-band Ethernet management: 10/100/1000 Mbps RJ-45

	• Console management: RJ-45 serial
Maximum MAC addresses	• 32,000
Maximum VLANs	• 4096
Maximum STP (spanning trees)	• 254
Maximum routes (in hardware)	• 16,000
Trunking	• Maximum ports per trunk: 8 • Maximum trunk groups: 124
Maximum jumbo frame size	• 9000 bytes
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) • Link Fault Signaling (LFS) • MAC Address Locking; Port Security • MAC-Layer Filtering • MAC Learning Disable • MLD Snooping (v1/v2) • Multi-device Authentication • Per-VLAN Spanning Tree (PVST/PVST+/PVRST) • Port-based Access Control Lists • 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)
Base Layer 3 routing	• IPv4 and IPv6 static routes • Host routes

	• Virtual Interfaces • Routed Interfaces • Route-only Support • Routing Between Directly Connected Subnets
Premium Layer 3 routing	• ECMP • L3/L4 ACLs RIP v1/v2 announce • OSPF v2, OSPF v3 (IPv6) • PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv4 multicast routing functionality) • PBR • RIP v1/v2, RIPng (IPv6) • Virtual Route Redundancy Protocol (VRRP) • VRRP-E, VRRP-E (IPv6) • VRRPv3 (IPv6)
Advanced Layer 3 routing	• BGP
Metro features	• Metro-Ring Protocol (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 • 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 • 802.3at Power over Ethernet • 802.3u 100 Base-TX

- 802.3x Flow Control
- 802.3z 1000Base-SX/LX
- 802.3 MAU MIB (RFC 2239)
- 802.3ba 40Gbps Ethernet
- 802.1AE - MACsec (HW Capable)
- 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 hot swappable internal 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
- Protected link groups
- Hot insertion and removal of stacked units

Management

Management and control

- 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 support
- 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 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 • Support for Multiple Syslog Servers
Embedded security	• 802.1X Accounting • MAC Authentication • 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
Secure management	• Authentication, Authorization, and Accounting (AAA) • Advanced Encryption Standard (AES) with SSHv2 • RADIUS/TACACS/TACACS+ • Secure Copy (SCP) • Secure Shell (SSHv2) • Username/Password • Web authentication
Environment	
Temperature	• Operating temperature: 0° to 45°C • Storage temperature: –25° to 70°C
Humidity	• Relative humidity: 5% to 95%, non-condensing
Altitude	• Storage altitude: 10,000 ft (3000 m) maximum
Acoustic	• From 39.6 dB (24 ports, one fan, one power supply) to 48.7 dB (48 ports, two fans, two power supplies)
Power	
Power supplies	• Up to two internal, redundant, field-replaceable, load-sharing AC power supplies with dedicated system and PoE power
Power inlet	• C13
Input voltage	• Typical 100 to 240 VAC
Input line frequency	• 50 to 60 Hz

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

Brocade NET Health

Brocade NET Health is an easy-to-use network discovery, audit, and health checking application for Brocade network switches. It is available at no cost to all Brocade customers and partners.

A Powerful but Easy-to-Use Tool

Brocade NET Health is a powerful, free-of-charge tool that helps you automate the process of optimizing your Brocade networks rather than having to manually track all the devices. Designed to run efficiently and provide easy-to-understand reports, this tool enables you to:

- Capture a point-in-time snapshot of your network environment with minimal effort
- Audit your network to easily track changes
- Check health parameters of your Brocade switches
- Make more proactive decisions to optimize your network

How Brocade NET Health Works

To run Brocade NET Health, you need a workstation with IP access and user credentials for the devices you want to audit. The tool's interaction with the devices is non-intrusive, and data collection takes approximately two to five minutes per device. (Brocade NET Health version 1.0 uses http, telnet, and ssh ports.)

For greater efficiency, you can schedule audits to run in the background. All audits are cumulative, in that multiple collection agents at different sites can be aggregated into a single file/report.

Download the Tool

Download the latest version of Brocade NET Health.

Upload Your .NETHealth File

The result of running the Brocade NET Health tool is a generated .NETHealth audit file.

To get the full diagnostics for the audit, you can e-mail the .NETHealth file as an attachment to NETHealthFileUpload@brocade.com. Or you can submit the file via the upload page.

After Brocade processes your file, you will receive an e-mail with instructions to download the final report from your secure MyBrocade or Brocade Partner Network account. If you do not have a MyBrocade or Partner Network account, Brocade NET Health will automatically register you for access. *Please allow five business days to get your report.*

Provide Feedback and Request New Features

Brocade NET Health provides a framework for discovery and reporting that is designed for continual enhancement. If you have any feedback or requests for enhancements, send them to NetHealthAdmin@brocade.com.

Warranty

Warranty Category	Products Covered	Hardware Warranty Duration	Hardware Coverage	Software Warranty Duration	Software Coverage	Exclusion
Standard Limited Warranty	IP & SAN	13 months from ship	Return to Factory 30 day turn around	90 days from ship	Substantial conformance to published specifications & media replacement	None
Host Bus	Host Bus	36 months	Advanced	36 months	24x7 phone & email	None

Adaptor & Converged Network Adapter Warranty	Adaptor & Converged Network Adapter (HBAs & CNAs)	from ship	Hardware Replacement	from ship	support, lifetime access to updates	
Limited Lifetime Warranty	EIF, FES, FLS, FGS, FESX	5 years from ship	Return to Factory 30 day turn around	90 days from ship	Substantial conformance to published specifications & media replacement	Power supply, fan, removable optics, LEDs[2]
Brocade Assurance Limited Lifetime Warranty[3]	FC, SX800/1600, IT-661, IT-643, IT-645	Life of product[1] Initial registered end user only	Advanced Hardware Replacement (Next Business Day where available)	Life of product[1] Initial registered end user only	Software defect repairs and software maintenance updates through the product end of support date. Knowledge portal access.	Removable optics, LEDs[2]
	FW & TI-24X				Software defect repairs for firmware release current at time of purchase only. Knowledge portal access.	
Stand Alone Software Warranty	Stand Alone Software	Not Applicable	Not Applicable	90 days from ship	Substantial conformance to published specifications & media replacement	None

* For informational purposes only. Terms and conditions apply. Brocade branded products only.

[1] Covered through product end of support date

[2] Subject to Brocade's Standard Limited Warranty

[3] Applies only to Brocade branded FC, IT-661, IT-643, IT-645, FW and TI products purchased on or after October 1, 2009 or FI-SX800/1600 chassis and SX-FI modules purchased on or after July 1, 2010. Brocade branded FCX, FWS and TI products purchased prior to October 1, 2009 or FI-SX800/1600 chassis and SX-FI modules purchased prior to July 1, 2010 are covered under Brocade's Standard Limited Warranty.