

Brocade ICX 7450 Switch Technical Specifications

© 2016, Brocade Communications Systems, Inc. All Rights Reserved.

Brocade, Brocade Assurance, the B-wing symbol, ClearLink, DCX, Fabric OS, HyperEdge, ICX, MLX, MyBrocade, OpenScript, VCS, VDX, Vplane, and Vyatta are registered trademarks, and Fabric Vision is a trademark 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 others.

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.

The authors and Brocade Communications Systems, Inc. assume no liability or responsibility to any person or entity with respect to the accuracy of this document or any loss, cost, liability, or damages arising from the information contained herein or the computer programs that accompany it.

The product described by this document may contain open source software covered by the GNU General Public License or other open source license agreements. To find out which open source software is included in Brocade products, view the licensing terms applicable to the open source software, and obtain a copy of the programming source code, please visit <http://www.brocade.com/support/oscd>.

Contents

Brocade ICX 7450 Switch Technical Specifications.....	5
System specifications.....	5
Ethernet.....	5
LEDs.....	6
Other.....	6
Weight and physical dimensions.....	6
Environmental requirements.....	7
Power supply specifications (per PSU).....	7
Power consumption (typical configuration).....	8
Power consumption (maximum configuration).....	8
Power consumption (modules).....	9
Data port specifications (Ethernet).....	10
Serial port specifications (pinout mini-USB).....	11
Serial port specifications (pinout RJ-45).....	11
Serial port specifications (protocol).....	11
Memory specifications.....	12
Regulatory compliance (EMC).....	12
Regulatory compliance (safety).....	12
Regulatory compliance (environmental).....	12

Brocade ICX 7450 Switch Technical Specifications

This document highlights the features and specifications for the Brocade ICX 7450 Switch.

System specifications

System component	Description
Enclosure	Stackable up to 12 switches per stack, chassis-mountable in a standard 2 or 4-post rack
Power supplies	Dual redundant, hot-swappable power supplies supported with 250 W AC intake or exhaust airflow for non-PoE switches, and 1000 W AC with intake or exhaust airflow for PoE switches. Shipping bundle has one power supply and one fan unit.
Fans	One dual redundant, hot-swappable fan unit with intake or exhaust airflow
Cooling	Forced-air cooling; front-to-back or back-to-front
System architecture	<p>Nonblocking shared memory switch</p> <p>ICX 7450-24: 24 1-GbE RJ-45 ports, four 10-GbE SFP+ Uplink/Stacking ports, two 40-GbE QSFP+ stacking ports, one power supply, and one fan unit</p> <p>ICX 7450-24P: 24 1-GbE RJ-45 ports (supporting PoE, PoE+, High PoE, PoH), four 10-GbE SFP+ Uplink/Stacking ports, two 40-GbE QSFP+ stacking ports, one power supply, and one fan unit</p> <p>ICX7450-32ZP: 24 1-GbE RJ-45 ports, 8 2.5-GbE RJ-45 ports (supporting PoE, PoE+, High PoE, PoH), four 10-GbE SFP+ Uplink/Stacking ports, two 40-GbE QSFP+ stacking ports, one power supply, and one fan unit.</p> <p>ICX 7450-48: 48 1-GbE RJ-45 ports, four 10-GbE SFP+ Uplink/Stacking ports, two 40-GbE QSFP+ stacking ports, one power supply, and one fan unit</p> <p>ICX 7450-48P: 48 1-GbE RJ-45 ports (supporting PoE, PoE+, High PoE, PoH), four 10-GbE SFP+ Uplink/Stacking ports, two 40-GbE QSFP+ stacking ports, one power supply, and one fan unit.</p> <p>ICX 7450-48F: Eight 1-GbE SFP ports, four 10-GbE SFP+ Uplink/Stacking ports, two 40-GbE QSFP+ stacking ports, one power supply, and one fan unit</p>
System processors	BCM56548 with dual-core ARM Cortex A9 processor running at 1 GHz

Ethernet

These are standard modules for shipping bundles. For ICX 7450-24/24P/32ZP/48/48P/48F non-bundled switches, expansion modules need to be ordered separately.

System component	Description	Maximum ports supported
40 GbE QSFP+ ports	One 40-GbE QSFP+ stacking or uplink port	3 (slot 2-4) for ICX 7450-24/24P 2 (slot 3-4) for ICX 7450-48/48P/48F/32ZP
10 GbE SFP+ ports	Four 10-GbE SFP+ uplink or stacking ports	12 (slot 2-4)
10 GbE copper ports (optional modules)	Four 10G RJ-45 uplink ports	12 (slot 2-4)
1 GbE SFP ports (optional modules)	Four 1G SFP uplink ports	4 (slot 2)
1 GbE RJ-45 front panel ports	24 1-GbE RJ-45 ports for ICX 7450-24/24P	24/48 (slot 1)

System component	Description	Maximum ports supported
	48 1-GbE RJ-45 ports for ICX 7450-48/48P	
1 GbE SFP front panel ports	48 1-GbE SFP for ICX 7450-48F	48 (slot 1)
Ethernet management port	One RJ-45 port with 10/100/1000 Mbps auto-negotiating capability	N/A

LEDs

System component	Description
Switch status and management	Five LED states to indicate switch status (green and amber) Three LED states to indicate power supply status (green and amber) Four LED states for diagnostics (green and amber) Six LED states to indicate stacking-relates status (green and amber) Five LED states to indicate module and module power status (green and amber)
Ports	28 LED states to indicate the port status (green and amber)

Other

System component	Description
Serial cable	Mini-USB to RJ-45
RJ-45 to DB9 adapter	1
AC power cord, power clip	For ICX 7450-24-E, 24P-E, 32-ZP, 48-E, 48P-E and 48F-E units

Weight and physical dimensions

With one power supply, one fan assembly, two stacking modules, and one 10-GbE media module.

Model	Height	Width	Depth	Weight (with basic modules)	Fully loaded weight (no transceivers)
ICX 7450-24	4.37 cm	40.00 cm	39.37 cm	6.40 kg	8.57 kg
	1.72 inches	17.32 inches	15.50 inches	14.11 lb	18.89 lb
ICX 7450-24P	4.37 cm	40.00 cm	39.37 cm	6.90 kg	9.02 kg
	1.72 inches	17.32 inches	15.50 inches	15.21 lb	19.89 lb
ICX 7450-32ZP	4.37 cm	40.00 cm	39.37 cm	7.14 kg	8.91 kg
	1.72 inches	17.32 inches	15.50 inches	16.05 lb	19.69 lb
ICX 7450-48	4.37 cm	40.00 cm	39.37 cm	6.50 kg	8.74 kg
	1.72 inches	17.32 inches	15.50 inches	14.33 lb	19.2 lb
ICX 7450-48P	4.37 cm	40.00 cm	39.37 cm	7.10 kg	9.21 kg
	1.72 inches	17.32 inches	15.50 inches	15.65 lb	20.30 lb
ICX 7450-48F	4.37 cm	40.00 cm	39.37 cm	6.80 kg	8.94 kg
	1.72 inches	17.32 inches	15.50 inches	14.99 lb	19.71 lb

Environmental requirements

Condition	Operational	Non-operational
Ambient temperature	-5°C to 50°C (23°F to 122°F) NOTE Maximum operation temperature of 50 °C applies to sea level and decreases by 1°C for every 1000 feet altitude increase per NEBS rule. If Back-to-Front air flow is chosen and only a single fan is in service, maximum operation temperature decreases by 5°C.	-40°C to 70°C (-40°F to 158°F)
Relative humidity (non-condensing)	10% to 90% at 50°C (122°F)	5% to 95% at 70°C (158°F)
Altitude (above sea level)	0 to 3,048m (10,000 ft)	0 to 12,000 m (39,370 ft)
Shock	20 G, 11 ms, half-sine wave	33 G, 11 ms, half-sine wave
Vibration	1 G sine, 0.4 grms random, 5-500 Hz	2.4 G sine, 1.1 grms random, 5-500 Hz
Airflow	Nominal: 5-7 cfm; Maximum: 17-20 cfm	N/A
Heat dissipation (+/- 5%)	NOTE Refer to "Power consumption (typical configuration)" and "Power consumption (maximum configuration)" for detailed information on heat dissipation.	N/A
Operating noise	ICX 7450-24-E: 46 dBA ICX 7450-24P-E: 49 dBA ICX 7450-32ZP: unknown dBA ICX 7450-48-E: 47 dBA ICX 7450-48P-E: 49 dBA ICX 7450-48F-E: 46 dBA	N/A
MTBF @ 25°C	ICX 7450-24-E: 399,973 Hours ICX 7450-24P-E: 317,719 Hours ICX 7450-32ZP: unknown Hours ICX 7450-48-E: 376,635 Hours ICX 7450-48P-E: 297,862 Hours ICX 7450-48F-E: 330,154 Hours	N/A

Power supply specifications (per PSU)

Power supply model	Maximum output power rating (DC)	Input voltage	Input line frequency	Maximum input current	Input line protection	Maximum inrush current
AC RPS15-E	250 W	100-240 VAC	50-60Hz	4 A	Fuses	35 A
AC RPS15-I	250 W	100-240 VAC	50-60Hz	4 A	Fuses	35 A

Power supply model	Maximum output power rating (DC)	Input voltage	Input line frequency	Maximum input current	Input line protection	Maximum inrush current
AC RPS16-E	1000 W	100-240 VAC	50-60Hz	11.8 A	Fuses	35 A
AC RPS16-I	1000 W	100-240 VAC	50-60Hz	11.8 A	Fuses	35 A

Power consumption (typical configuration)

All 1-Gbps and two 10-Gbps ports are linked up, loading with 10% traffic rate, and no PoE load. Two fan FRUs, 4x10GC ports are linked up, and no stacking module. Fans at nominal speed.

ICX7450-32ZP: 24 1-Gbps ports and eight 2.5-Gbps ports. Slot1: Empty, Slot2: 4x10GF, Slot3: 4x10GF ports are linked UP, loading with 10% traffic rate. Two fans at nominal speed.

Model name (Input power +/- 5 %)	@100 VAC input	@200 VAC input	@-48 VDC	Minimum number of power supplies	Notes
ICX 7450-24	88.5 W	87.6 W	80.6 W	1 x 250 W AC	1 PSU
	302 BTU/hr	299 BTU/hr	276 BTU/hr	1 x 510 W DC	
	100.1 W	99.2 W	85.3 W	1 x 250 W AC	2 PSUs
	342 BTU/hr	339 BTU/hr	291 BTU/hr	1 x 510 W DC	
ICX 7450-24P	95.3 W	94.1 W	82.6 W	1 x 1000 W AC	1 PSU,
	325 BTU/hr	321 BTU/hr	282 BTU/hr	1 x 510 W DC	no PoE load
	112.9 W	111.7 W	87.58 W	1 x 1000 W AC	2 PSUs,
	386 BTU/hr	381 BTU/hr	291 BTU/hr	1 x 510 W DC	no PoE load
ICX 7450-32ZP	120.46 W	118.59 W	105.27 W	118.59 W	110.4 W
	411.14 BTU/hr	404.76 BTU/hr	359.29 BTU/hr	404.76 BTU/hr	376.8 BTU/hr
	130.57 W	128.32 W	109.31 W	132.71 W	114.31 W
	445.65 BTU/hr	437.97 BTU/hr	373.08 BTU/hr	452.95 BTU/hr	390.15 BTU/hr
ICX 7450-48	117.6 W	115.9 W	107.6 W	1 x 250 W AC	1 PSU
	402 BTU/hr	442 BTU/hr	367 BTU/hr	1 x 510 W DC	
	129.4 W	128.4 W	115.94 W	1 x 250 W AC	2 PSUs
	451 BTU/hr	438 BTU/hr	396 BTU/hr	1 x 510 W DC	
ICX 7450-48P	129.7 W	143 W	115.1 W	1 x 1000 W AC	1 PSU,
	443 BTU/hr	488 BTU/hr	393 BTU/hr	1 x 510 W DC	no PoE load
	128.2 W	141.1 W	118.82 W	1 x 1000 W AC	2 PSUs,
	438 BTU/hr	482 BTU/hr	406 BTU/hr	1 x 510 W DC	no PoE load
ICX 7450-48F	141.4 W	139.6 W	129.2 W	1 x 250 W AC	1 PSU
	420 BTU/hr	477 BTU/hr	441 BTU/hr	1 x 510 W DC	
	152.8 W	151.6 W	132.78 W	1 x 250 W AC	2 PSUs
	522 BTU/hr	518 BTU/hr	474 BTU/hr	1 x 510 W DC	

Power consumption (maximum configuration)

All 1-Gbps and two 10-Gbps ports are linked up, loading with 100% traffic rate, and 100% PoE load. Two fan FRUs, 4x10GC ports are linked up, and no stacking module. Fans at high speed.

ICX7450-32ZP: 24 1-Gbps ports and eight 2.5Gbps ports. Slot1: Empty, Slot2: 4x10GF, Slot3: 4x10GF are linked UP, 100% traffic and PoE load.

Model name (Input power +/- 5 %)	@100 VAC input	@200 VAC input	@-48 VDC	Minimum number of power supplies	Notes
ICX 7450-24	119.7 W 409 BTU/hr	118.5 W 405 BTU/hr	113.8 W 388 BTU/hr	1 x 250 W AC 1 x 510 W DC or 2 x 510 W DC	1 PSU
	134.9 W 461 BTU/hr	133 W 454 BTU/hr	125.24 W 428 BTU/hr	1 x 250 W AC 1 x 510 W DC or 2 x 510 W DC	2 PSUs
ICX 7450-24P	947 W 3232 BTU/hr	919 W 3137 BTU/hr	387.2 W 1322 BTU/hr	1 x 1000 W AC 1 x 510 W DC or 2 x 510 W DC	1 PSU
	1402 W 4785 BTU/hr	1374 W 4690 BTU/hr	669.06 W 2284 BTU/hr	2 x 1000 W AC 1 x 510 W DC or 2 x 510 W DC	2 PSUs required for PoE loading
ICX 7450-32ZP	167.1 W 570.33 BTU/hr	164.06 W 559.95 BTU/hr	145.98 W 498.24 BTU/hr	1 x 1000 W AC 1 x 510 W DC or 2 x 510 W DC	1 PSU
	1853.08 W 6324.71 BTU/hr	1763.55 W 6019.14 BTU/hr	698.79 W 2385.03 BTU/hr	2 x 1000 W AC 1 x 510 W DC or 2 x 510 W DC	2 PSUs required for PoE loading
ICX 7450-48	154.4 W 527 BTU/hr	151.8 W 518 BTU/hr	146.1 W 499 BTU/hr	1 x 250 W AC 1 x 510 W DC or 2 x 510 W DC	1 PSU
	168.8 W 576 BTU/hr	167.4 W 572 BTU/hr	156.68 W 535 BTU/hr	1 x 250 W AC 1 x 510 W DC or 2 x 510 W DC	2 PSUs
ICX 7450-48P	998 W 3406 BTU/hr	958 W 3270 BTU/hr	421.4 W 1438 BTU/hr	1 x 1000 W AC 1 x 510 W DC or 2 x 510 W DC	1 PSU
	1809 W 6174 BTU/hr	1769 W 6038 BTU/hr	704.12 W 2403 BTU/hr	1 x 1000 W AC 1 x 510 W DC or 2 x 510 W DC	2 PSUs required for PoE loading
ICX 7450-48F	178.3 W 609 BTU/hr	175.7 W 606 BTU/hr	167.1 W 570 BTU/hr	1 x 250 W AC 1 x 510 W DC or 2 x 510 W DC	1 PSU
	196.4 W 670 BTU/hr	194.1 W 663 BTU/hr	177.64 W 606 BTU/hr	1 x 250 W AC 1 x 510 W DC or 2 x 510 W DC	2 PSUs

Power consumption (modules)

Module name	Module description	Power consumption
ICX7400-4XIGF	4-port 1 GbE SFP expansion module	Typical = 5.40 W

Module name	Module description	Power consumption
		Maximum = 5.76 W
ICX7400-4X10GF	4-port 1/10 GbE SFP+ expansion module	Typical = 12.96 W Maximum = 15.72 W
ICX7400-4X10GC	4-port 1/10 GbE copper expansion module	Typical = 18.72 W Maximum = 20.76 W
ICX7400-1X40GQ	1-port 40 GbE QSFP+ data uplink/stacking module	Typical = 5.64 W Maximum = 7.38 W
ICX-FAN10-E	Power supply exhaust airflow fan (two fans required if two power supplies are used)	Typical = 4.68 W Maximum = 16.68 W
ICX-FAN10-I	Power supply intake airflow fan (two fans required if two power supplies are used)	Typical = 4.68 W Maximum = 16.68 W

Data port specifications (Ethernet)

This table lists the ports for switch bundles. Other port combinations can be used for non-bundled switches. All the switches also support 10/100M on 1GbE ports. -32ZP supports 100M at 2.5 GbE ports.

Model	Port type	Number (in module)	Description
ICX 7450-24	40 GbE	2 (ICX7400-1X40G Q)	QSFP+ stacking ports, compatible with LR4 or SR4 optical transceivers, or direct attached copper cable
	10 GbE	4 (ICX7400-4X10G C)	SFP+ uplink ports, compatible with ER, LR, LRM, SR, ZR or USR optical transceivers
	1 GbE	24 (slot 1)	RJ-45 ports
ICX 7450-24P	40 GbE	2 (ICX7400-1X40G Q)	QSFP+ stacking ports, 40 Gbps, compatible with LR4 or SR4 optical transceivers, or direct attached copper cable
	10 GbE	4 (ICX7400-4X10G C)	SFP+ uplink ports, compatible with ER, LR, LRM, SR, ZR or USR optical transceivers
	1 GbE	24 (slot 1)	RJ-45 ports with PoE support
ICX 7450-32ZP	40 GbE	2 (ICX7400-1X40G Q)	QSFP+ stacking ports, 40 Gbps, compatible with LR4 or SR4 optical transceivers, or direct attached copper cable
	10 GbE	4 (ICX7400-4X10G C)	SFP+ uplink ports, compatible with ER, LR, LRM, SR, ZR or USR optical transceivers
	2.5 GbE	8 (slot 1)	RJ-45 ports with PoE support
	1 GbE	24 (slot 1)	RJ-45 ports with PoE support
ICX 7450-48	40 GbE	2 (ICX7400-1X40G Q)	QSFP+ stacking ports, compatible with LR4 or SR4 optical transceivers, or direct attached copper cable
	10 GbE	4 (ICX7400-4X10G C)	SFP+ uplink ports, compatible with ER, LR, LRM, SR, ZR or USR optical transceivers

Model	Port type	Number (in module)	Description
	1 GbE	48 (slot 1)	RJ-45 ports
ICX 7450-48P	40 GbE	2 (ICX7400-1X40G Q)	QSFP+ stacking ports, compatible with LR4 or SR4 optical transceivers, or direct attached copper cable
	10 GbE	4 (ICX7400-4X10G C)	SFP+ uplink ports, compatible with ER, LR, LRM, SR, ZR or USR optical transceivers
	1 GbE	48 (slot 1)	RJ-45 ports with PoE support
ICX 7450-48-F	40 GbE	2 (ICX7400-1X40G Q)	QSFP+ stacking ports, compatible with LR4 or SR4 optical transceivers, or direct attached copper cable
	10 GbE	4 (ICX7400-4X10G C)	SFP+ uplink ports, compatible with ER, LR, LRM, SR, ZR or USR optical transceivers
	1 GbE	48 (slot 1)	SFP ports, compatible with 100Base-FX IR or LR SFP optic for SMF, 100Base-FX SFP optic MMF, 1000Base-BXD SFP optic SMF, 1000Base-BXU SFP optic SMF, 1000Base-LHA SFP optic SMF, 1000Base-LX SFP optic SMF, 1000Base-SX SFP optic MMF, 1000BASE-TX SFP Copper

Serial port specifications (pinout mini-USB)

Pin	Signal	Description
1	Reserved	Not used
2	UART0_TX	Debug port (data transmitted by ICX)
3	UART0_RX	Console port (data received by ICX)
4	Reserved	Not used
5	GND	Ground

Serial port specifications (pinout RJ-45)

Pin	Signal	Description
1	Not supported	N/A
2	Not supported	N/A
3	UART1_TXD	Transmit data to ICX
4	GND	Logic ground
5	Not supported	N/A
6	UART1_RXD	Receive data from ICX
7	Not supported	N/A
8	Not supported	N/A

Serial port specifications (protocol)

Parameter	Value
Baud	9600

Parameter	Value
Data bits	8
Parity	None
Stop bits	1
Flow control	None

Memory specifications

Memory	Type	Size
Main memory	DDR3	2 GB
Boot Flash	NOR flash	8 MB
Compact Flash	eUSB NAND flash	2 GB
eUSB Drive	USB	2 GB

Regulatory compliance (EMC)

- FCC Part 15, Subpart B (Class A)
- EN 55022 (CE mark) (Class A)
- EN 55024 (CE mark) (Immunity) for Information Technology Equipment
- ICES-003 (Canada) (Class A)
- AS/NZ 55022 (Australia) (Class A)
- VCCI (Japan) (Class A)
- EN 61000-3-2
- EN 61000-3-3
- EN 61000-6-1

Regulatory compliance (safety)

- CAN/CSA-C22.2 No. 60950/UL 60950
- EN 60825 Safety of Laser Products
- EN 60950/IEC 60950 Safety of Information Technology Equipment

Regulatory compliance (environmental)

- 2014/35/EU and 2014/30/EU
- 2011/65/EU – Restriction of the use of certain hazardous substance in electrical and electronic equipment (EU RoHS)
- 2012/19/EU – Waste electrical and electronic equipment (EU WEEE)
- 94/62/EC – packaging and packaging waste (EU)
- 2006/66/EC – batteries and accumulators and waste batteries and accumulators (EU battery directive)

- 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (EU REACH)
- Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 - U.S. Conflict Minerals
- 30/2011/TT-BCT - Vietnam circular
- SJ/T 11363-2006 Requirements for Concentration Limits for Certain Hazardous Substances in EIPs (China)
- SJ/T 11364-2006 Marking for the Control of Pollution Caused by EIPs (China)