

Brocade SLX 9540 Switch Technical Specifications

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Preface

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Document conventions

The document conventions describe text formatting conventions, command syntax conventions, and important notice formats used in Brocade technical documentation.

Notes, cautions, and warnings

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

NOTE

A Note provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

ATTENTION

An Attention statement indicates a stronger note, for example, to alert you when traffic might be interrupted or the device might reboot.



CAUTION

A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.



DANGER

A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Text formatting conventions

Text formatting conventions such as boldface, italic, or Courier font may be used to highlight specific words or phrases.

| Format | Description |
|--------------------|---|
| bold text | Identifies command names. Identifies keywords and operands. Identifies the names of GUI elements. |
| <i>italic text</i> | Identifies text to enter in the GUI. Identifies emphasis. Identifies variables. |
| Courier font | Identifies document titles. Identifies CLI output. |

| Format | Description |
|--------|-------------------------------------|
| | Identifies command syntax examples. |

Command syntax conventions

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

| Convention | Description |
|--------------------|---|
| bold text | Identifies command names, keywords, and command options. |
| <i>italic text</i> | Identifies a variable. |
| value | In Fibre Channel products, a fixed value provided as input to a command option is printed in plain text, for example, <code>--show WWN</code> . |
| [] | Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets. |
| { x y z } | A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options. In Fibre Channel products, square brackets may be used instead for this purpose. |
| x y | A vertical bar separates mutually exclusive elements. |
| < > | Nonprinting characters, for example, passwords, are enclosed in angle brackets. |
| ... | Repeat the previous element, for example, <code>member[member...]</code> . |
| \ | Indicates a "soft" line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash. |

Brocade resources

Visit the Brocade website to locate related documentation for your product and additional Brocade resources.

White papers, data sheets, and the most recent versions of Brocade software and hardware manuals are available at www.brocade.com. Product documentation for all supported releases is available to registered users at MyBrocade.

Click the **Support** tab and select **Document Library** to access product documentation on MyBrocade or www.brocade.com. You can locate documentation by product or by operating system.

Release notes are bundled with software downloads on MyBrocade. Links to software downloads are available on the MyBrocade landing page and in the Document Library.

Document feedback

Quality is our first concern at Brocade, and we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you. You can provide feedback in two ways:

- Through the online feedback form in the HTML documents posted on www.brocade.com
- By sending your feedback to documentation@brocade.com

Provide the publication title, part number, and as much detail as possible, including the topic heading and page number if applicable, as well as your suggestions for improvement.

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As a Brocade customer, you can contact Brocade Technical Support 24x7 online or by telephone. Brocade OEM customers should contact their OEM/solution provider.

Brocade customers

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If you have purchased Brocade product support directly from Brocade, use one of the following methods to contact the Brocade Technical Assistance Center 24x7.

| Online | Telephone |
|--|--|
| <p>Preferred method of contact for non-urgent issues:</p> <ul style="list-style-type: none"> • Case management through the MyBrocade portal. • Quick Access links to Knowledge Base, Community, Document Library, Software Downloads and Licensing tools | <p>Required for Sev 1-Critical and Sev 2-High issues:</p> <ul style="list-style-type: none"> • Continental US: 1-800-752-8061 • Europe, Middle East, Africa, and Asia Pacific: +800-AT FIBREE (+800 28 34 27 33) • Toll-free numbers are available in many countries. • For areas unable to access a toll-free number: +1-408-333-6061 |

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- Brocade provides backline support for issues that cannot be resolved by the OEM/solution provider.
- Brocade Supplemental Support augments your existing OEM support contract, providing direct access to Brocade expertise. For more information, contact Brocade or your OEM.
- For questions regarding service levels and response times, contact your OEM/solution provider.

Brocade SLX 9540 Switch Technical Specifications

System specifications

| System component | Description |
|---------------------|---|
| Enclosure | Chassis-mountable on a desktop, or in a standard 2 or 4-post rack kit |
| Power supplies | Dual redundant, hot-swappable power supplies supported with 650 W AC intake or exhaust airflow, or 650 W DC intake or exhaust airflow. |
| Fan assemblies | Six redundant, hot-swappable fan units with intake or exhaust airflow |
| Cooling | Forced-air cooling front-to-back or back-to-front |
| System architecture | Non-blocking shared-memory switch |
| System processors | Control path based on Intel Broadwell-DE. CPU 4-cores, 8-threads running at 2.2 GHz, 35W Data path based on Broadcom DUNE chipsets, Qumran MX (BCM8837x) - Broadcom packet processor and traffic manager |

Ethernet

| System component | Description | Maximum ports supported |
|--------------------------|--|-------------------------|
| QSFP-28 ports | The QSFP-28 ports can support 100GbE/40GbE natively and 10GbE/25GbE through breakout cables. There are 6 x 100GbE ports. | 6 |
| SFP+ ports | The SFP+ ports can support 10GbE/1GbE interfaces. There are 48 x SFP+ ports. | 48 |
| Ethernet management port | RJ-45 port with 10/100/1000 Mbps auto-negotiating capability | 1 |

LEDs

| System component | Description |
|-----------------------|---|
| Interface module LEDs | <ul style="list-style-type: none">Power: Green - Power OK, off - No powerStatus: Green- Status OK, Amber - Error; Off - Unexpected errorLink status (1 LED per physical port): Green (Solid) - Link is up; Green (Blinking) - Link is up and running traffic; Off - No link |
| Power supply LEDs | <ul style="list-style-type: none">LED 1 and LED 2: Steady Green - Input and output voltages are within rangeLED 1: Off and LED 2: Flashing Yellow - Power supply does not have incoming power and is not providing power to the device, or the Input AC voltage is out of range.LED 1: Green and LED 2: Yellow - Output voltage is out of rangeLED 1: Green and LED 2: Flashing Yellow/Green - Over-temperature warning or fan error |
| Fan module LEDs | <ul style="list-style-type: none">Power (Fan) LED: No light (LED is off) - Fan assembly does not have power. Steady green - Fan assembly has power. |

| System component | Description |
|------------------|---|
| | <ul style="list-style-type: none"> Status (Fan) LED: No light (LED is off) - Fan assembly is either healthy or does not have power. Steady amber - Fan assembly is being initialized or has a failure (full or partial). |

Other

| System component | Description |
|---------------------------|--|
| Serial Cable | RJ-45 console cable |
| RJ-45 to DB9 adapter | 1 (RJ-45 port to female DB9 connector) |
| AC power cord, power clip | For both units |

Weight and physical dimensions

The Brocade SLX 9540 switch is 1 RU and 16" in depth.

| Model | Dimensions (with Fan FRU) | Weight (with 6 x Fan FRUs and 2 x PSUs without optics) |
|-------------------|---------------------------|--|
| SLX 9540 Switch | 445 x 43.7 x 451.5 mm | 8.96 Kg (19.712 lbs) |
| Fantray | 42.0 x 41.2 x 94.6 mm | 0.18 Kg (.396 lb.) |
| Power Supply Unit | 54.4 x 40.0 x 236.6 mm | 0.76 Kg (1.672 lbs) |

Environmental requirements

| Condition | Operational | Non-operational |
|------------------------------------|--|---------------------------------------|
| Ambient temperature | -5°C to 50°C (23°F to 122°F) (F2B) -5°C to 55°C (23°F to 131°F) (B2F) with 6 fan assemblies | -40°C to 70°C (-40°F to 158°F) |
| Relative humidity (non-condensing) | 5% to 95% at 50°C (122°F) | 5% to 95% at 70°C (158°F) |
| Altitude (above sea level) | 0 to 3,000 m (9,843 ft) safety -60 to 4,000 m (13,123 ft) operational | 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 | 134 cfm (estimated with 2 power supplies, 6 fan assemblies) | N/A |
| Heat dissipation (worst case) | DC power supply 563 W AC power supply 581 W | N/A |
| Operating noise | 52.6 dBA (6 fan assemblies, 25°C, typical loading) | N/A |
| MTBF (25°C, 60% CL, Telec) | 306,419 hours with DC power supply 327,539 hours with AC power supply | N/A |

Worst case operational temperature is measured at sea level with at least 4 fan assemblies, with maximum power consumption optics modules (5W QSFP28) fully loaded.

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 |
|--------------------|----------------------------------|---------------|----------------------|-----------------------|-----------------------|------------------------|
| BR-ACPWR-650-F | 650 W | 100-240V~ | 50-60Hz | 12 A | Fuses | 35A |
| BR-ACPWR-650-R | 650 W | 100-240V~ | 50-60Hz | 12 A | Fuses | 35A |
| BR-DCPWR-650-F | 650 W | -48 - 60V | - | 13.3 A | Fuses | 40A |
| BR-DCPWR-650-R | 650 W | -48 - 60V | - | 13.3 A | Fuses | 40A |

Power consumption (typical configuration)

All 100-GbE ports are linked up, loading with 10 percent traffic rate. Six fan assemblies. Fans at nominal speed.

| @100 VAC Input (Input power $\pm 5\%$) | @200 VAC Input (Input power $\pm 5\%$) | @-48VDC | Minimum number of power supplies | Notes |
|---|---|---------------------|----------------------------------|------------------|
| 169 W 577 BTU/hr | 166 W 566 BTU/hr | 168 W 573 BTU/hr | 1 x 650 W AC 1 x 650 W DC | 1 power supply |
| 178 W 607 BTU/hr | 176 W 601 BTU/hr | 179 W 611 BTU/hr | 1 x 650 W AC 1 x 650 W DC | 2 power supplies |

Power consumption (maximum configuration)

All 100-GbE ports are linked up, loading with 100 percent traffic rate. Two power supplies and six fan assemblies. Fans at high speed.

| @100 VAC Input (Input power $\pm 5\%$) | @200 VAC Input (Input power $\pm 5\%$) | @-48VDC | Minimum number of power supplies | Notes |
|---|---|-----------------------|----------------------------------|------------------|
| 570 W 1,945 BTU/hr | 544.1 W 1,857 BTU/hr | 552 W 1,884 BTU/hr | 1 x 650 W AC 1 x 650 W DC | 1 power supply |
| 581.2 W 1,983 BTU/hr | 562.4 W 1,919 BTU/hr | 563 W 1,921 BTU/hr | 1 x 650 W AC 1 x 650 W DC | 2 power supplies |

Data port specifications (Ethernet)

| System component | Description | Maximum ports supported |
|--------------------------|--|-------------------------|
| QSFP28 ports | 100 GbE QSFP28 ports | 6 |
| SFP+ ports | The SFP+ ports can support 10GbE/1GbE interfaces. There are 48 x SFP+ ports. | 48 |
| Ethernet management port | RJ-45 port with 10/100/1000 Mbps auto-negotiating capability | 1 |

Serial port specifications (pinout RJ-45)

| Pin | Signal | Description |
|-----|---------------|---------------|
| 1 | Not supported | N/A |
| 2 | Not supported | N/A |
| 3 | RXD | Receive data |
| 4 | GND | Logic ground |
| 5 | Not supported | N/A |
| 6 | TXD | Transmit data |
| 7 | Not supported | N/A |
| 8 | Not supported | N/A |

Serial port specifications (pinout - mini-USB)

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

Serial port specifications (protocol)

| Parameter | Value |
|--------------|-------|
| Baud | 9600 |
| Data bits | 8 |
| Parity | None |
| Stop bits | 1 |
| Flow control | None |

Memory specifications

| Parameter | Type | Size |
|-------------|------------------------|----------------|
| Main memory | DDR4 | 16 GB |
| Boot flash | NOR Flash | 32 MB |
| SSD | M.2 SATA III (2 slots) | 64 GB per slot |

Regulatory compliance (EMC)

- FCC Part 15, Subpart B
- EN 55024
- EM 55032 (CE Mark) (Class A)
- ICES-003
- VCCI
- EN 300 386
- CNS 13438
- KN 32
- KN 35
- TCVN 7189
- EN 61000-3-2
- EN 61000-3-3
- GB 9254
- CISPR 32
- 2014/30/EU
- AS/NZS CISPR32 (Australia) (Class A)

Regulatory compliance (safety)

- EN/UL 60825
- EN/UL/CSA/IEC 60950-1
- GB 4943.1
- CNS 14336-1
- 2014/35/EU

Regulatory compliance (environmental)

- 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).