

# Brocade G610 Technical Specifications

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# Brocade G610 Technical Specifications

This document highlights the features and specifications for the Brocade G610 switch.

## System specifications

| System component     | Description                                                                                                     |
|----------------------|-----------------------------------------------------------------------------------------------------------------|
| Enclosure            | 1U, nonport-side intake airflow, port-side power inlet                                                          |
| Power inlet          | C13; power from port side                                                                                       |
| Power supplies       | Single, fixed power supply                                                                                      |
| Fans                 | Four built-in fans                                                                                              |
| Cooling              | Nonport-side to the port side                                                                                   |
| System architecture  | Nonblocking shared memory switch                                                                                |
| System processors    | Freescale T1022E CPU                                                                                            |
| Port-to-port latency | <900 nanoseconds with no contention (destination port is free) including FEC using cut-through frame switching. |

## Fibre Channel

| System component             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fibre Channel ports          | <p>24 SFP+ ports (8-port increments through capacity-based Ports on Demand (PoD) licenses) that support any combination of Short Wavelength (SWL) and Long Wavelength (LWL) or Extended Long Wavelength (ELWL) optical media.</p> <p>The SFP+ ports are capable of auto-negotiating to 4, 8, 16, or 32 Gbps speed depending on the SFP+ model and the minimum supported speed of the optical transceiver at the other end of the link.</p> <ul style="list-style-type: none"><li>• 4-, 8-, and 16-Gbps performance is enabled by 16-Gbps SFP+ transceivers provided the other end of the connection has a minimum of 4 Gbps speed set on the port.</li><li>• 8-, 16-, and 32-Gbps performance is enabled by 32-Gbps SFP+ transceivers provided the other end of the connection has a minimum of 8 Gbps speed set on the port.</li></ul> <p><b>NOTE</b><br/>2-, 4-, and 8-Gbps transceivers are not supported.</p> |
| ANSI Fibre Channel protocol  | Fibre Channel Physical and Signaling Interface standard (FC-PH)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Modes of operation           | Fibre Channel Class 2 and Class 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Fabric initialization        | Complies with FC-SW-3 Rev. 6.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| FCIP (IP over Fibre Channel) | Complies with FC-IP 2.3 of FCA profile                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Port Status                  | Bicolor LED (amber/green)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## Other

| System component         | Description                                   |
|--------------------------|-----------------------------------------------|
| Serial console port      | One three-wire (Tx, Rx, Gnd) UART serial port |
| Ethernet management port | One 1000Base-X / 100Base-TX port / 10Base-T   |
| USB port                 | One external USB port                         |

## LEDs

| System component           | Description                                                                                               |
|----------------------------|-----------------------------------------------------------------------------------------------------------|
| System power LED           | One green system power status LED (upper) on the left side.                                               |
| System status LED          | One bicolor (green/amber) system status LED (lower) on the left side.                                     |
| Ethernet port link LED     | One link LED on the left of the RJ45 connector. This glows green for 1000 Mbps and amber for 100/10 Mbps. |
| Ethernet port activity LED | One green activity LED on the right of the RJ45 connector.                                                |
| FC port status LED         | 24 bicolor (green/amber) port status LEDs. There is one LED for each SFP+ port on the switch.             |

### NOTE

All the LEDs are on the port-side view of the device.

## Weight and physical dimensions

Empty weight refers to the device with built-in power supply and fan assemblies but no SFP+ or QSFP transceivers.

| Height      | Width        | Depth        | Weight (empty) | Weight (fully loaded) |
|-------------|--------------|--------------|----------------|-----------------------|
| 4.29 cm     | 42.88 cm     | 30.64 cm     | 4.2 kg         | 5.75 kg               |
| 1.69 inches | 16.88 inches | 12.06 inches | 9.30 lb        | 12.65 lb              |

## Environmental requirements

| Condition                          | Operational                                                   | Non-operational                        |
|------------------------------------|---------------------------------------------------------------|----------------------------------------|
| Ambient temperature                | 0°C to 40°C (32°F to 104°F)                                   | -25°C to 70°C (-13°F to 158°F)         |
| Relative humidity (non-condensing) | 10% to 85% at 40°C (104°F)                                    | 10% to 90% (Non-condensing)            |
| Altitude (above sea level)         | 0 to 3000 m (9,842 feet)                                      | 0 to 12000 m (39,370 feet)             |
| Shock                              | 20.0 G, 6 ms, half-sine wave                                  | 33.0 G, 11 ms, half-sine wave, 3G Axis |
| Vibration                          | 0.5 G sine, 0.4 gms random, 5 - 500 Hz                        | 2.0 G sine, 1.1 gms random, 5 - 500 Hz |
| Airflow                            | Maximum: 54.5 cmh (32.1 cfm)<br>Nominal: 36.35 cmh (21.4 cfm) | N/A                                    |
| Heat dissipation                   | Refer to the Power consumption sections.                      | N/A                                    |
| Operating noise                    | Maximum: 64 dBA<br>Normal: 57 dBA                             | N/A                                    |

## Power supply specifications

| Maximum output power rating (DC) | Input voltage                                   | Input line frequency                     | Maximum input current | Maximum inrush current |
|----------------------------------|-------------------------------------------------|------------------------------------------|-----------------------|------------------------|
| 150 W                            | 100 - 240 VAC (nominal)<br>90 - 264 VAC (range) | 50/60 Hz (nominal)<br>47 - 63 Hz (range) | 2.2 A                 | 50 A                   |

## Power consumption (typical configuration)

| @100 VAC input                     | @200 VAC input                     | @48 VDC input | Notes                                                                                                                             |
|------------------------------------|------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 0.62 A<br>63.15 W<br>215.54 BTU/hr | 0.33 A<br>61.40 W<br>209.56 BTU/hr | N/A           | Fully configured all ports with 25% traffic rate, max port speed at 32G, fans at nominal speed, and input power +/- 5% tolerance. |

## Power consumption (maximum configuration)

| @100 VAC input                     | @200 VAC input                     | @48 VDC input | Notes                                                                                                                           |
|------------------------------------|------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------|
| 0.75 A<br>76.52 W<br>261.17 BTU/hr | 0.39 A<br>74.40 W<br>253.93 BTU/hr | N/A           | Fully configured all ports with 100% traffic rate, max port speed at 32G, fans at high speed, and input power +/- 5% tolerance. |

## Power consumption (idle configuration)

| @100 VAC input                     | @200 VAC input                     | @48 VDC input | Notes                                                                                                                            |
|------------------------------------|------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------|
| 0.55 A<br>55.83 W<br>190.55 BTU/hr | 0.30 A<br>54.30 W<br>185.33 BTU/hr | N/A           | All optics loaded but not initialized and the system completed boot up, fans at nominal speed, and input power +/- 5% tolerance. |

## Data port specifications (Fibre Channel)

| Port Numbers | Media Type                        | Description                                                                                                                                                                                                                            |
|--------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 to 23      | 16- or 32-Gbps SFP+ optical ports | Switch mode (default): 8-, 16-, and 24-port configurations (8-port increments through Ports on Demand [PoD] licenses); can be an F_Port, N_Port, or E_Port.<br><br>Brocade Access Gateway default port mapping: 16 F_Ports, 8 N_Ports. |

## Fibre Channel data transmission ranges

| Port speed (Gbps) | Cable size (microns) | Short wavelength (SWL)                                                   | Long wavelength (LWL) | Extended long wavelength (ELWL) |
|-------------------|----------------------|--------------------------------------------------------------------------|-----------------------|---------------------------------|
| 4                 | 50                   | 150 m (492 ft) (OM2)<br>380 m (1,264 ft) (OM3)<br>400 m (1,312 ft) (OM4) | N/A                   | N/A                             |
|                   | 62.5                 | 70 m (229 ft)                                                            | N/A                   | N/A                             |
|                   | 9                    | N/A                                                                      | 30 km (18.6 miles)    | N/A                             |
| 8                 | 50                   | 50 m (164 ft) (OM2)<br>150 m (492 ft) (OM3)<br>190 m (623 ft) (OM4)      | N/A                   | N/A                             |
|                   | 62.5                 | 21 m (68 ft)                                                             | N/A                   | N/A                             |

| Port speed (Gbps) | Cable size (microns) | Short wavelength (SWL)                                              | Long wavelength (LWL)                   | Extended long wavelength (ELWL) |
|-------------------|----------------------|---------------------------------------------------------------------|-----------------------------------------|---------------------------------|
| 16                | 9                    | N/A                                                                 | 10 km (6.2 miles)<br>25 km (15.5 miles) | N/A                             |
|                   | 50                   | 35 m (115 ft) (OM2)<br>100 m (328 ft) (OM3)<br>125 m (410 ft) (OM4) | N/A                                     | N/A                             |
|                   | 62.5                 | 15 m (49 ft)                                                        | N/A                                     | N/A                             |
|                   | 9                    | N/A                                                                 | 10 km (6.2 miles)<br>25 km (15.5 miles) | N/A                             |
| 32                | 50                   | 70 m (230 ft) (OM3)<br>100 m (328 ft) (OM4)                         | N/A                                     | N/A                             |
|                   | 62.5                 | N/A                                                                 | N/A                                     | N/A                             |
|                   | 9                    | N/A                                                                 | 10 km (6.2 miles)                       | N/A                             |

## Serial port specifications (pinout RJ-45)

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

### NOTE

These specifications are for connectors on Brocade platforms only.

## Serial port specifications (protocol)

| Parameter    | Value                               |
|--------------|-------------------------------------|
| Baud         | 9600                                |
| Data bits    | 8                                   |
| Parity       | None                                |
| Flow control | None (must be disabled at the host) |
| Stop bits    | 1                                   |

## Memory specifications

| Memory      | Type                                                               | Size         |
|-------------|--------------------------------------------------------------------|--------------|
| Main Memory | DDR3L SDRAM with 8-bit ECC, SODIMM package, operating at 1200 MT/s | 2 GB, 64-bit |
| Boot Flash  | Parallel NOR flash embedded memory                                 | 8 MB         |
| eUSB Module | -                                                                  | 2 GB         |

## Regulatory compliance (EMC)

- FCC Part 15, Subpart B
- EN 55024
- EN 55032
- ICES-003
- VCCI
- EN 300 386
- CNS 13438
- KN 32
- KN 35
- TCVN 7189 / TCVN 7317
- EN 61000-3-2
- EN 61000-3-3
- 51318.24-99
- GB 9254
- CISPR 22
- 2014/30/EU

## Regulatory compliance (safety)

- EN/UL 60825
- EN/UL/CSA/IEC 60950-1
- GB 4943.1
- CNS 14336-1
- 2014/35/EU
- 51318.22-99

## 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).