The Aurora 820 switch installation guide

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Chapter 1. Introduction

This guide is to assist the reader with the most basic form of installation and cable connection to our switches. As there is more than one switch in the Aurora series, the actual port placement might slightly differ, however, the installation and connection logic are the same for all Netberg switches.

Package Contents:

- One Netberg Aurora Switch

- Two AC power cords.

- One console cable.

- One pair of frontal rack-mount ears.

If any of the above mention items was not found inside the package contents of this switch or are damaged in any way, contact your reseller immediately.

1.1. Intended Application Uses

This product was evaluated as Information Technology Equipment (ITE), which may be installed in offices, schools, computer rooms, and similar commercial type locations. Other than an ITE application, this product's suitability for different product categories and environments (such as medical, industrial, residential, alarm systems, and test equipment) may require further evaluation.

Chapter 2. Hardware Installation

2.1. Installation Guidelines

This section will discuss the hardware installation guidelines that administrators must follow in order to properly and safely install this switch into the appropriate environment.

2.2. Installation into a Rack

The switch can be secured in a standard 19"(1U) rack using the provided mounting ears. The following section will explain how to install the rack-mount ears onto the switch and then mount the switch into a standard 1U rack-mount unit.

1. Use the supplied screws to attach a mounting ear to each side of the Switch.

2. Align the holes in the mounting ear with the holes in the rack.

3. Insert and tighten screws through each of the mounting ears.

Figure 2.1. Front ears installation
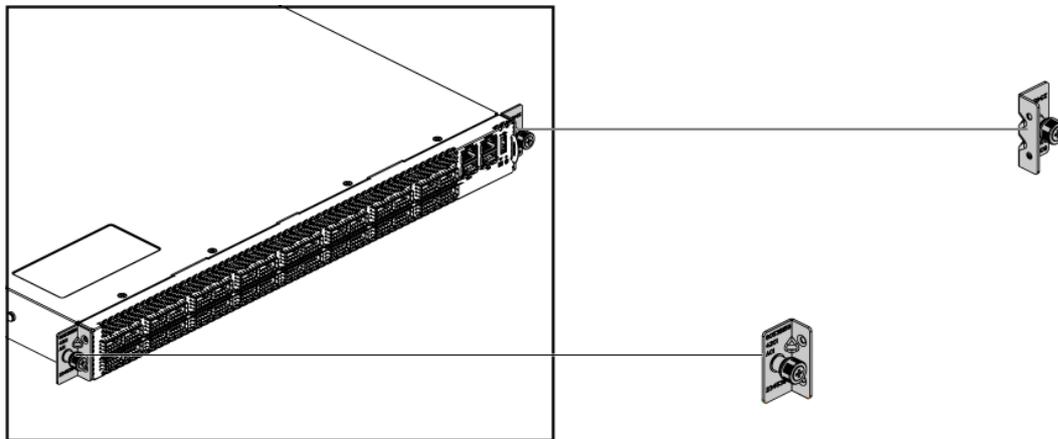
Two individuals are recommended to install the switch. One individual should position the switch in the rack, while the other secures it using the rack screws.

Illustrations are for reference purposes only. Actual cabinet posts may differ.

2.3. Rail Kit Installation

2.3.1. An optional rail kit installation directions.

1. Push the tab in the direction as indicated to detach the inner rail from the slide.

Figure 2.2. Detaching the Inner Rail
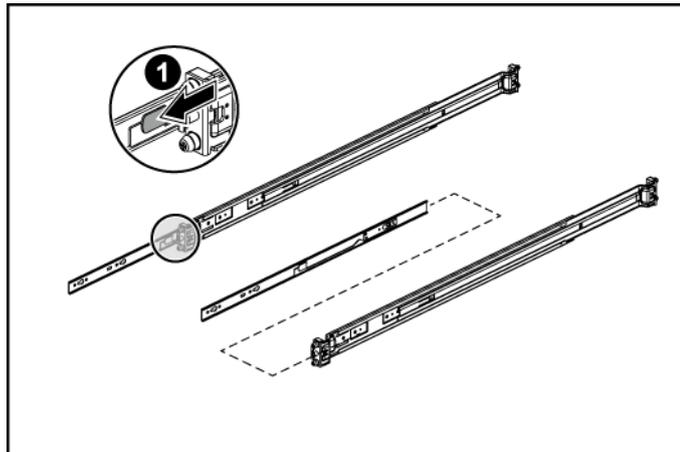
2. Align the inner rail to the retaining posts on the side of the switch.

3. Push the inner rail in the direction as indicated until it clicks into place with the retaining posts.

Figure 2.3. Attaching Inner Rail to the Switch
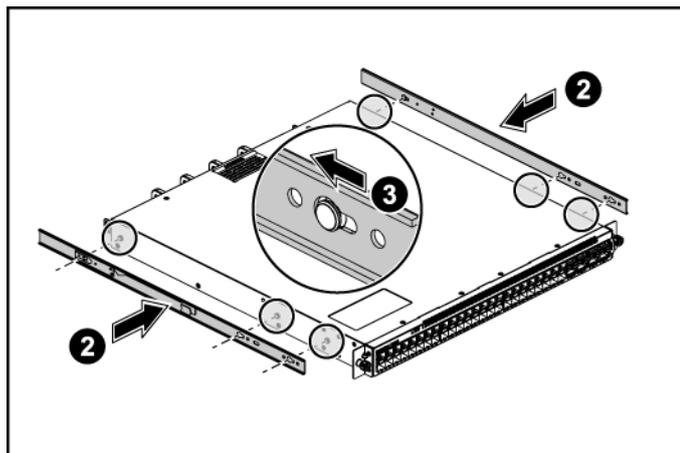
4. Press the retaining clip on the rear end as indicated.

5. Attach the outer rail to the rack on the rear end, and lock it by releasing the clip till it clicks into place with rack.

Figure 2.4. Attaching Outer Rail on the Rear to the Rack
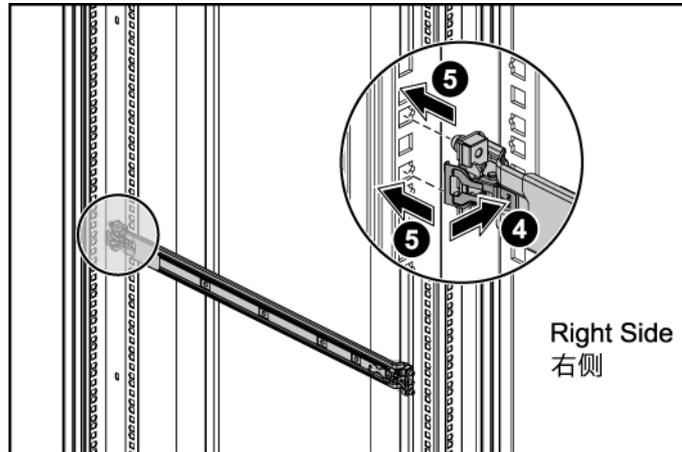
6. Press the retaining clip on the front end as indicated.

7. Attach the outer rail to the rack on the front end, and lock it by releasing the clip till it clicks into place with rack.

Figure 2.5. Attaching Outer Rail on the Front to the Rack
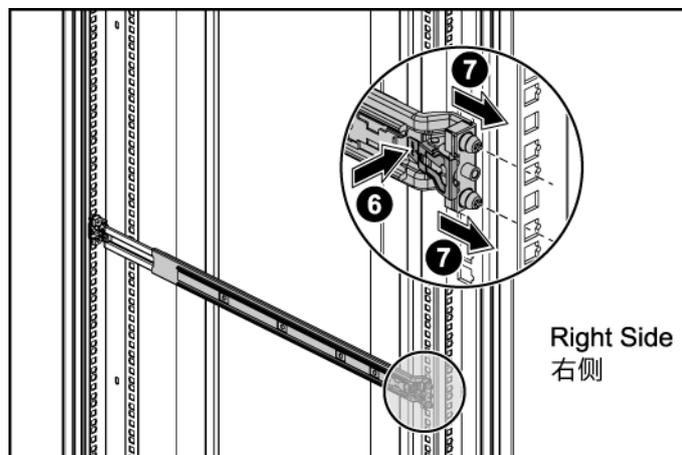
8. Completed the rail installation on both sides. Align the rail and push the switch into the rack.

Figure 2.6. Pushing Switch into the Rack
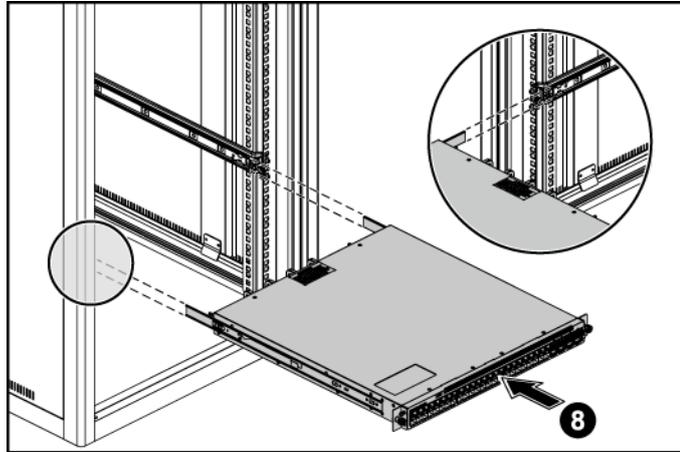
9. Tighten screws on both sides to lock switch on the rack.

Figure 2.7. Installing Switch into the Rack
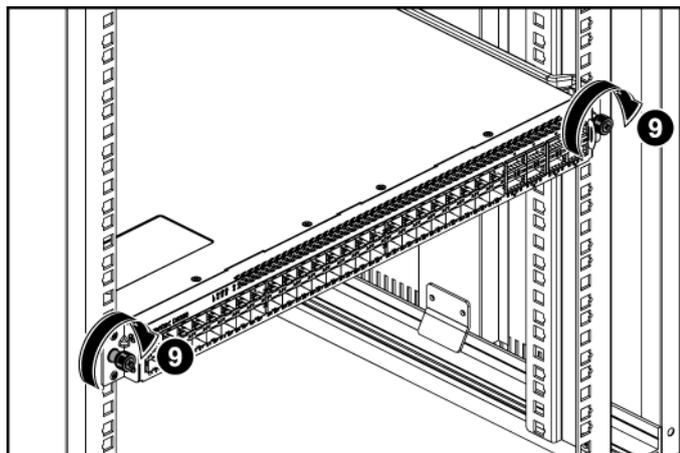
2.3.2. To remove the switch from the rack

1. Push the tabs on both sides of the inner rails in the direction as indicated.

2. Remove the switch out of the rack.

Figure 2.8. Removing Switch from the Rack
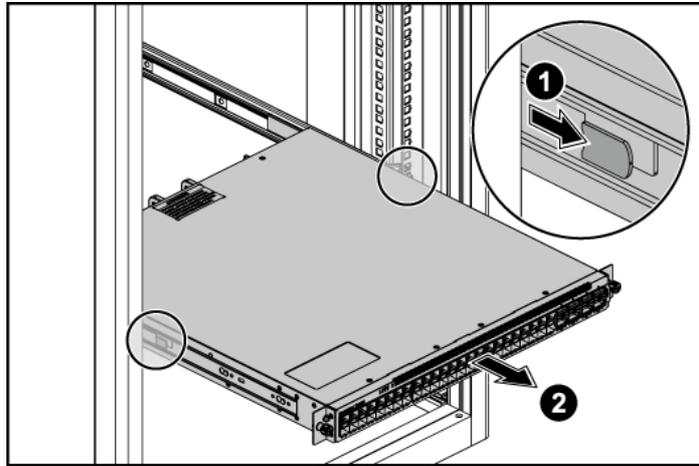
2.4. Installing Transceivers and Cables into the Switch Ports

Figure 2.9. Transceivers and cables
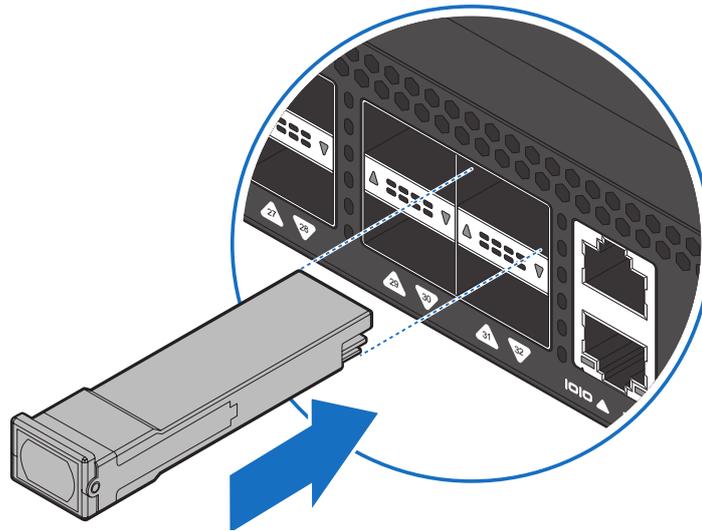
2.4.1. QSFP-DD Port Connection

QSFP-DD ports which support 400G/per port or fan out to 4x100G by using the fan-out DAC cable.

1. Slide the QSFP-DD module into a QSFP-DD port.

 Ensure the QSFP-DD module is positioned correctly before installing it into the port.

2. Push completely until the module locks into place.

3. Repeat the above procedures to install additional QSFP modules.

The QSFP-DD port LED lights green when the network link is established.

2.5. Fan Modules

This product contains six system fan modules which are located at the rear of the chassis.

The location of the system fan modules is shown below:

Figure 2.10. Fan modules location
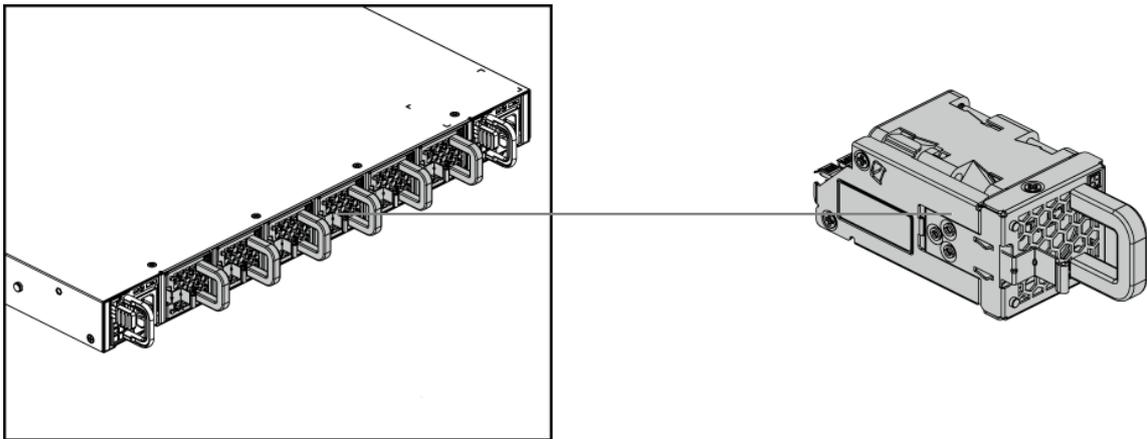
The fan module is a field replaceable unit and can be replaced during operations as long as the remaining modules are installed and operating.

Replacing fan modules

1. Press the retaining tab on the system fan module in the direction as indicated.

2. Remove the system fan module out of the chassis.

Figure 2.11. Removing the fan module
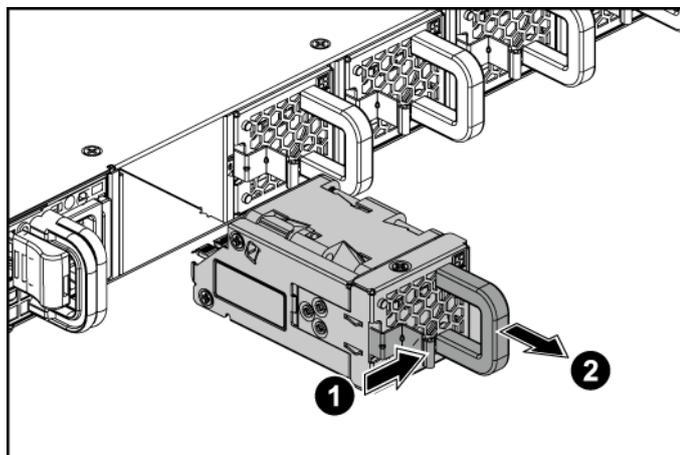
3. Push the system fan module into the system fan module bay until it connects properly with the fan board in the chassis.

Figure 2.12. Inserting the fan module
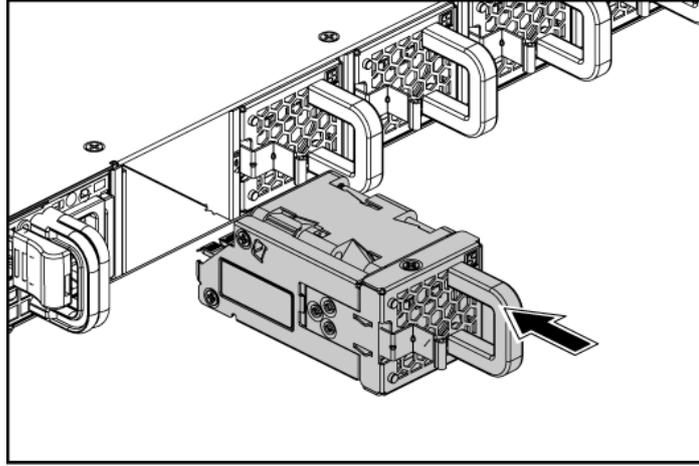
2.6. Power supply

Equipped with two supply modules, the switch can operate with either one or two power supply modules. If the switch uses two power supply modules, you can hot-swap one of the PSU during the operations. Even if one of the two power supplies has failed, or is not in use, do not pull out the power supply from the chassis. This is to prevent hot air being suck back into the chassis from the empty power supply shelf when the system is in operation. Only pull out the bad power supply when the replacement is ready to be installed.

This product is designed with two 1300W power supplies.

Figure 2.13. PSU modules location
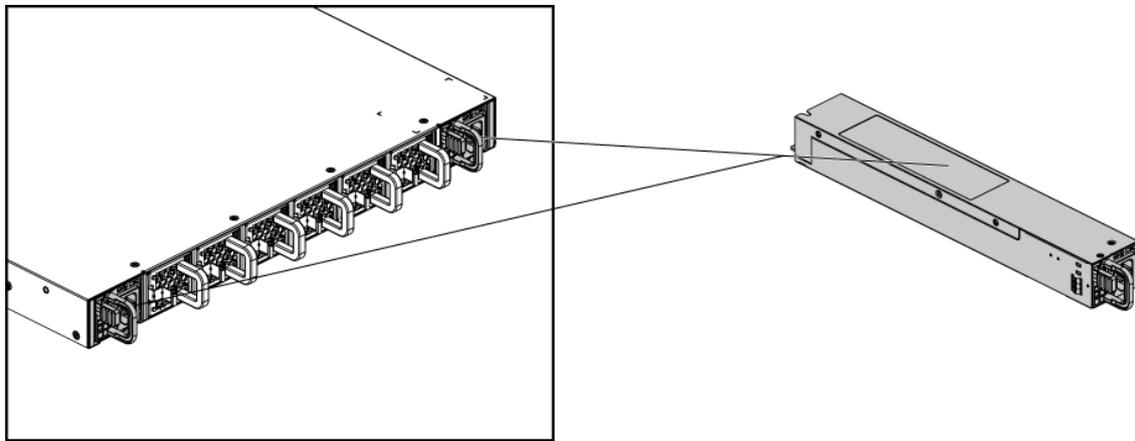
The location of power supplies on the product is shown below:

One PSU is enough for a fully loaded chassis.

2.6.1. Replacing a PSU

1. Hold the PSU handle and press the release latch to unlock from the switch.

2. Pull the PSU module out of the switch.

Figure 2.14. Removing the PSU module
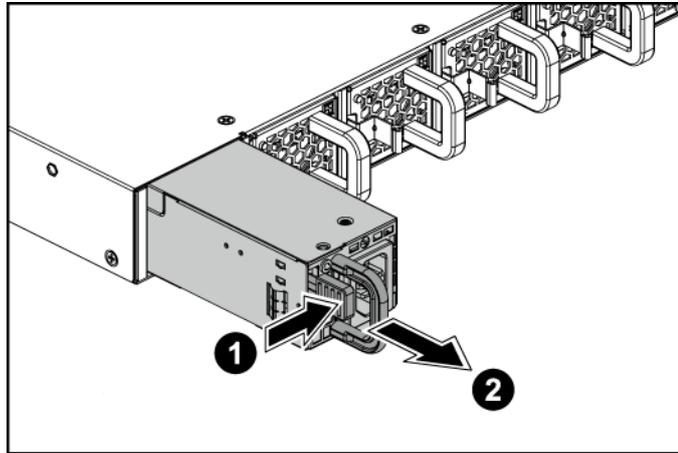
3. Align the PSU with the switch bay.

4. Slide the PSU into the switch and push until it is flush with the bay. The retaining clip should snap.

Figure 2.15. Inserting the PSU module
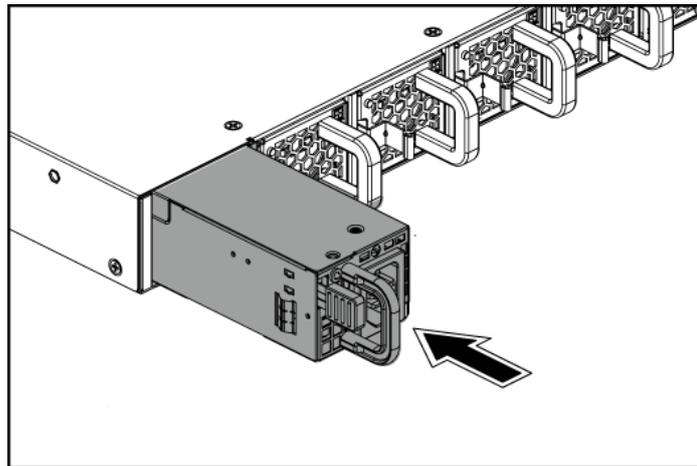
The AC power connector is a standard three-pronged connector. The switch automatically adjusts its power setting to any supply voltage in the range from 100-240 VAC at 50-60 Hz.

2.7. Connect the Power Cable

Connect one end of the AC power cord, included in the package, into the grounded electrical outlet at the site and insert the other end of the AC power cord into the AC power receptacle of the AC power supply module on the back panel of the switch. The switch will automatically adjust the voltage supplied to the voltage needed as this power supply supports any voltage power supply in the range from 100VAC to 240VAC at 50Hz to 60Hz.

The LED indicators on the front panel of the switch should lights green after power-on.
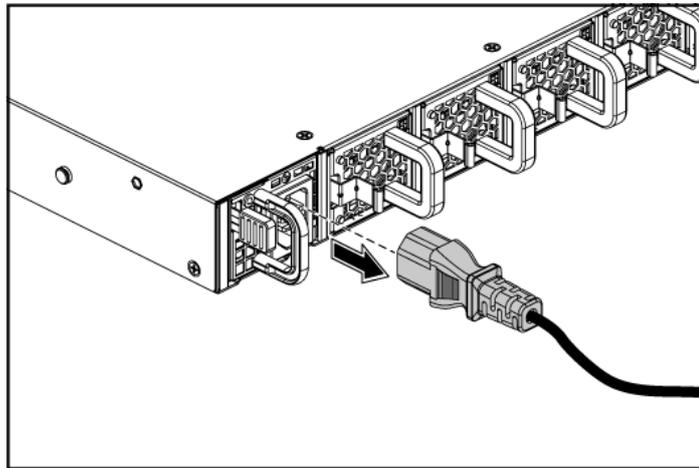
2.8. Grounding the Switch

It is recommended that a compliant system is installed as part of the chassis to reduce or prevent the risk of shock hazards, greatly reduce the risk of equipment damage or reduce the potential of data corruption.

This equipment must be grounded. Do not defeat the ground conductor or operate the equipment without a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

1. Ensure the rack is properly grounded and in compliance with local regulatory guidelines. Ensure that a good electrical connection to the grounding point exists. Remove any paint or material that may prevent good contact.

2. This product is equipped with a three-wire power cable and plug for user safety. Use the power cable with a properly grounded electrical outlet to avoid electric shock.

2.9. Rack-mount Safety Precautions

For your protection, observe the following rack-mount safety precautions when setting up your equipment:

- Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

- Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

- Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

- Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

- Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

- For safety, equipment should always be loaded from the bottom up. That is, install the equipment that will be mounted in the lowest part of the rack first, then the next higher systems, etc.

- To prevent the rack from tipping during equipment installation, the anti-tilt bar on the rack must be deployed.

- The mounting brackets provided must be used to securely mount the device in a rack-mount unit.

2.10. The Warranty VOID Label

There is a warranty VOID label sticked on the chassis cover. When this label is removed or destroyed, the warranty will be void.
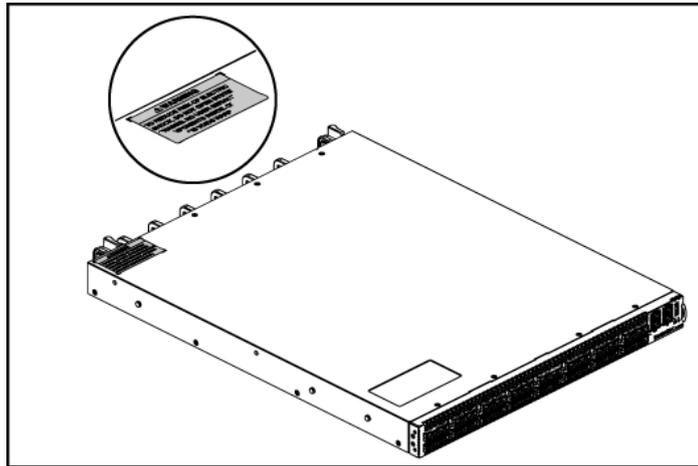
2.11. Console port

The console port is used for setting up and managing the switch via a connection to a console terminal or PC using a terminal emulation program. You can connect the switch to a terminal or PC using the supplied console cable (RJ-45 male to RS-232 female cable) for serial communication.

Below is the console cable wiring specification table:

Table 2.1. Serial port pin definition

Pin#	Signal	Pin#	Signal
1	-	5	GND
2	-	6	RS232_RXD
3	RS232_TXD	7	-
4	GND	8	-

Using the console port, you can perform the following:

• Configure, manage and monitor the switch using the CLI commands

• Manage and monitor network activity by Simple Network Management Protocol (SNMP) management

• Upgrade the firmware

To connect to the console, do the following:

1. Connect the RJ-45 connector to the console port (|o|o) of the switch.

2. Connect the RS-232 end to a terminal or PC.

3. Manage the switch using the CLI commands (refer to the CLI User Manual for more information).

The switch uses the following default settings:

• Baud rate: 115200

• Data width: 8 bits

• Parity: None

• Stop bits: 1

• Flow control: None

Chapter 3. Netberg Aurora 820 switch

The switch chassis is equipped with the following ports:

- 32x 400G QSFP-DD ports supporting an optical transceiver, active optical cables, or direct-attached cable to connect the QSFP-DD port to the hosts

- 2 Management ports enables you to manage the switch operation using an RJ-45 Ethernet cable

- 1 Console port to perform the initial configuration by connecting to a PC with the RJ-45 to DB-9 serial adapter cable

- 1 USB port to load the configuration files or OS from a USB storage device to the switch's flash/SSD memory

- 1 ToD port to sync time

Figure 3.1. Aurora 820 front view
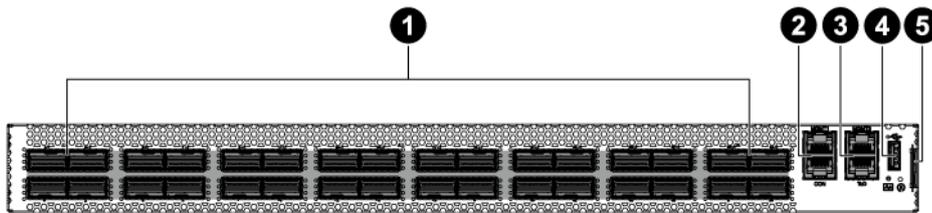
Table 3.1. Front panel features

No	Description
1	32x 400G QSFP-DD Ports (1-32) (Left to Right)
2	Management Port on top, console Port on bottom
3	2nd Management Port on top, TOD Port on Bottom
4	USB Port
5	Pull Tag

Port numbering is shown below:

Figure 3.2. Port numbering
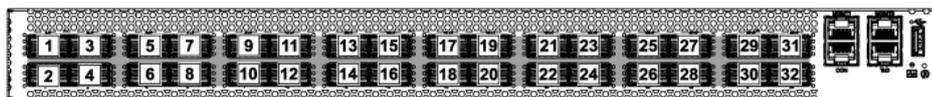
The rear panel of this product contains power supplies, system fans.

Figure 3.3. Aurora 820 rear view
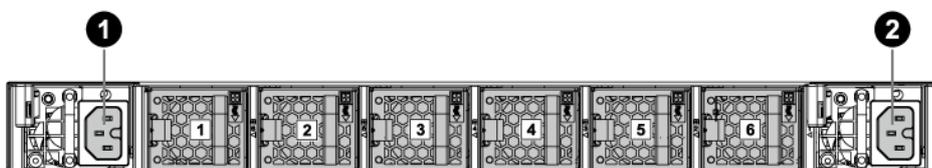
Table 3.2. Rear panel features

No	Description
1	AC Power Socket 2
2	AC Power Socket 1
#1-6	Fans

3.1. Button and System LED Information

This switch is equipped with 400G QSFP-DD port link/activity LEDs (4 per port), and health/status LED indicator, and a reset button on the front panel. These LEDs allow constant monitoring of basic system functions while the switch is operating and provide visual indication of system status.

Figure 3.4. Front Panel Button and LED
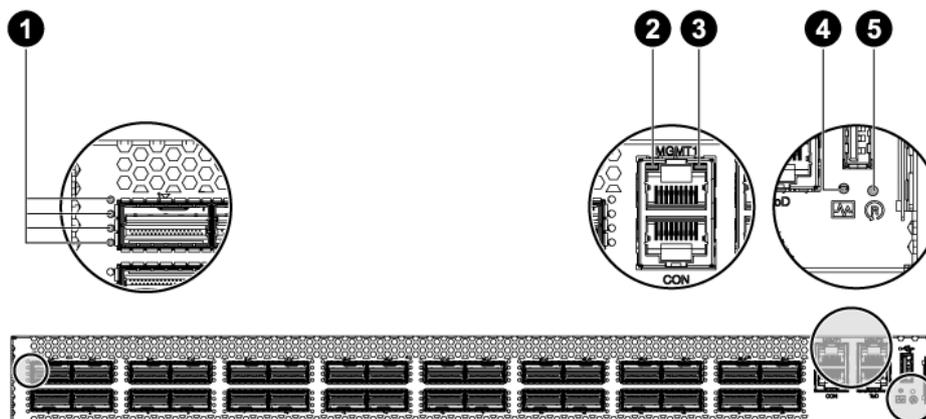
Table 3.3. Front panel features

No	Description
1	Link/Activity LED
2	Management Port Activity LED
3	Management Port Link LED
4	System Health Status LED
5	Reset Button

The back panel of this switch provides the AC power LEDs and fan module LEDs.

Figure 3.5. Rear Panel LED

Table 3.4. Rear panel features

No	Description
1	Power Supply LED 1
2–7	Fan Module Status LED_Green
9–14	Fan Module Status LED_Red
8	Power Supply LED 2

The detailed LED information is shown below:

Table 3.5. LED definition

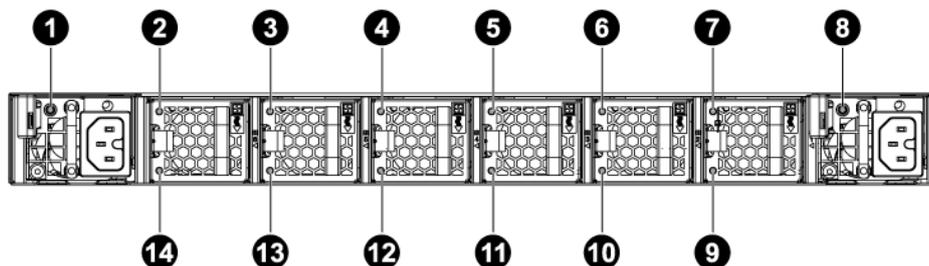|	Function	Color	Status	Description
F **r** **o** **n** **t**	Health/status LED (bi-color)	Green (525nm)	Lit:	Switch ready
			Blinking(0.5Hz):	Bootloader execution
			Blinking (4Hz):	BIOS ready
			Off:	System not powered
		Amber(Green +Red) (TBD nm)	Lit:	One of PSUs unpowered or caution event (ex: one FAN fail in OS)
			Off:	System not powered
		Red (630nm)	Lit:	Thermal trip or critical event (ex: two or more FANs fail in OS)
			Off:	System not powered
	QSFP-DD Status LED-1 (bi-color)	Green (520-535nm)	Lit:	400G link is up 200/100/40G link is up (split out 4-LANES/PORT mode lane 1-4) 100/50G link is up (split out 2-LANES/PORT mode lane 1-2)
			Blinking(2Hz):	400G activity 200/100/40G activity (split out 4-LANES/PORT mode lane 1-4) 100/50G activity (split out 2-LANES/PORT mode lane 1-2)
			Off:	400G link is down 200/100/40G link is down (split out 4-LANES/PORT mode lane 1-4) 100/50G link is down (split out 2-LANES/PORT mode lane 1-2)
		Amber(Green +Red)	Lit:	50/25/10G lane 1 or 2 link is up (split out 1-LANE/PORT mode)
			Blinking(2Hz):	50/25/10G lane 1 or 2 activity (split out 1-LANE/PORT mode)
			Off:	50/25/10G lane 1 and 2 link is down (split out 1-LANE/PORT mode)
		Red (624-638 nm)	Lit:	This port has some error

Function	Color	Status	Description
QSFP-DD Status LED-2 (bi-color)	Green (520-535nm)	Lit:	200/100/40G link is up (split out 4-LANES/PORT mode lane 5-8) 100/50G link is up (split out 2-LANES/PORT mode lane 3-4)
		Blinking(2Hz):	200/100/40G activity (split out 4-LANES/PORT mode lane 5-8) 100/50G activity (split out 2-LANES/PORT mode lane 3-4)
		Off:	200/100/40G link is down (split out 4-LANES/PORT mode lane 5-8) 100/50G link is down (split out 2-LANES/PORT mode lane 3-4)
	Amber(Green +Red)	Lit:	50/25/10G lane 3 or 4 link is up (split out 1-LANE/PORT mode)
		Blinking(2Hz):	50/25/10G lane 3 or 4 activity (split out 1-LANE/PORT mode)
		Off:	50/25/10G lane 3 and 4 link is down (split out 1-LANE/PORT mode)
	Red (624-638 nm)	Lit:	This port has some error
QSFP-DD Status LED-3 (bi-color)	Green (520-535nm)	Lit:	100/50G link is up (split out 2-LANES/PORT mode lane 5-6)
		Blinking(2Hz):	100/50G activity (split out 2-LANES/PORT mode lane 5-6)
		Off:	100/50G link is down (split out 2-LANES/PORT mode lane 5-6)
	Amber(Green +Red)	Lit:	50/25/10G lane 5 or 6 link is up (split out 1-LANE/PORT mode)
		Blinking(2Hz):	50/25/10G lane 5 or 6 activity (split out 1-LANE/PORT mode)
		Off:	50/25/10G lane 5 and 6 link is down (split out 1-LANE/PORT mode)
	Red (624-638 nm)	Lit:	This port has some error
QSFP-DD Status LED-4 (bi-color)	Green (520-535nm)	Lit:	100/50G link is up (split out 2-LANES/PORT mode lane 7-8)
		Blinking(2Hz):	100/50G activity (split out 2-LANES/PORT mode lane 7-8)

	Function	Color	Status	Description
			Off:	100/50G link is down (split out 2-LANES/PORT mode lane 7-8)
		Amber(Green+Red)	Lit:	50/25/10G lane 7 or 8 link is up (split out 1-LANE/PORT mode)
			Blinking(2Hz):	50/25/10G lane 7 or 8 activity (split out 1-LANE/PORT mode)
			Off:	50/25/10G lane 7 and 8 link is down (split out 1-LANE/PORT mode)
		Red (624-638 nm)	Lit:	This port has some error
	Management port Link/ Activity LED	Green (Left side) (570nm)	Blinking(2Hz):	data transmitting/receiving
			Off:	no traffic
		Green (Right side) (570nm)	Lit:	link is up
			Off:	link is down
R e a r	FAN Status LEDs (green/red)	Green (565nm)	Lit:	Fan OK
		Red (627nm)	Lit:	Fan failure
	PSU Status LED (green/Red)	Green	Lit:	PSU full functional(supply P5V standby and P12V)
			Blinking:	PSU is in standby mode(only supply the P5V standby)
			Off:	AC cable is not plugged-in or broken
		Red	Lit	PSU fault
			Blinking(0.5Hz):	PSU's FAN fault
			Off:	PSU does not fault

3.2. Specification

System specification

Ports	• 32x 400GbE QSFP-DD ports in 1 RU • Up to 128x100G port via break-out cables • 2x RJ-45 out-of-band (10/100/1000) management • 1x RJ-45 console (RS232) • 1x USB • 1x ToD
Front IO	• System health/status LED • Reset button
Rear IO	• Fan LEDs • PSU1 status LED • PSU2 status LED
Performance	• Switching silicon: Broadcom BCM56980 12.8Tbps Ethernet Multilayer Switch • Intel® Xeon™ Processor D-1257 • 8GB DDR4 ECC • 128GB SSD
Power	• 1300W 1+1 RPSU 80+ Platinum • 100V-240V AC / 50-60Hz • Typical power - 700W (with optics)
Cooling	• 6 N+1 redundant fans • Front-to-Back airflow
Dimensions (DxWxH)	550 x 440 x 44 mm
Environment	Operating temperature: 0~40°C
Operating humidity	20-90% maximum relative humidity (non-condensing)
Compatible NOS	• Open Network Linux • SONiC • ICOS

3.3. Supported Cables and Transceivers

See the following table for the list of supported cables and transceivers, up to 12W per module (Power Class 6).

Table 3.6. Optics and Cables Support

Interface Type	Range
100GBASE DAC	5m
100GBASE AOC	30m
400G QSFP-DD LR8	150m
400G QSFP-DD SR8	500m
400G QSFP -DD AOC	30m
400G QSFP-DD SR4.2 BiDi	500m
400G QSFP-DD FR8	2km
400G QSFP-DD DR4	500m