

About This Guide

This guide provides step-by-step instructions for installing the hardware and performing the initial software configuration of the N9550-32D switch. After completing the installation and basic configuration procedures covered in this guide, you could refer to the PicOS® documentation for information about further software configuration.

1. N9550-32D Overview

1.1 System Overview

The N9550-32D is a next-generation, fixed-configuration spine-and-leaf switch. It supports flexible, cost-effective, high-density 400GbE, 200GbE and 100GbE interfaces for server and intra-fabric connectivity.

The switch offers an advanced L2, L3 feature. For large public cloud providers, the switch supports very large, dense, and fast 400GbE IP fabrics. Delivering 25.6 Tbps (bidirectional) of bandwidth, it is optimally designed for spine-and-leaf deployments in enterprise, HPC, service provider, and cloud data centers.

1.1.1 Benefits of the N9550-32D

- Industry-leading wire speed — N9550-32D switch offers 400-Gbps wire speed.
- Include advanced PicOS® features — RoCEv2, PFC, ECN, DLB and MLAG.
- High-performance packet processing and local storage — Powered by Broadcom BCM56980 Tomahawk 3 with 64GB SSD.
- Support for channelization — Using breakout cables, the 400G port splits into 4x 100G, as well as splitting into 2x 200G, increasing the total number of 100GbE ports per switch to 128 and 200GbE ports per switch to 64.
- Reduces compute-intensive workloads for hyperscale cloud and high-performance computing (HPC) data centers. Examples of these compute-intensive workloads include AI, machine learning, deep learning applications, and storage disaggregation workloads such as Non-Volatile Express over Fabrics (NVMe over Fabrics).
- Enables data center re-architecture with flattened pods that slash switch hop latency.
- Enables a fast response by demanding applications, such as those encountered in financial exchanges by reducing intracluster switch latency.
- Saves you energy costs by highly reducing power consumption per Gbps of network traffic passing through the switch.
- Provides an extensive roadmap to new features and functions, such as:
 - Comprehensive Remote Direct Memory Access over Converged Ethernet version 2 (RoCEv2)
 - Advanced congestion control and flow-aware traffic scheduling
 - Support for container networking and segment routing
 - Scale-out load balancing and multipathing
 - Support for advanced network instrumentation adopted by cloud data centers

1.1.2 System Software and Hardware and Software Features

The N9550-32D switch runs the PicOS® operating system and delivers Layer 2 and Layer 3 switching, routing, and security services. Table 1 lists the hardware and software

1.2.1 Chassis Physical Specifications

The N9550-32D switch is a rigid sheet-metal structure that houses all components of the switch. Table 3 shows the physical specifications of the N9550-32D switch model.

Table 3. Physical Specifications of the N9550-32D Switch Model

Model	Height	Width	Depth	Weight
N9550-32D	1.69" (4.3cm)	17.25" (43.8cm)	21.1" (53.6cm) excluding fan and power supply handles	28.2 lbs (12.8kg) two power supplies and fans installed

1.2.2 Field-Replaceable Units

Field-replaceable units (FRUs) are components that you can replace at your site. The FRUs in N9550-32D switch are hot-removable and hot-insertable: You can remove and replace them without powering off the switch or disrupting switch functions. The N9550-32D switch has the following FRUs:

- Power supplies
- Fan modules
- Transceivers

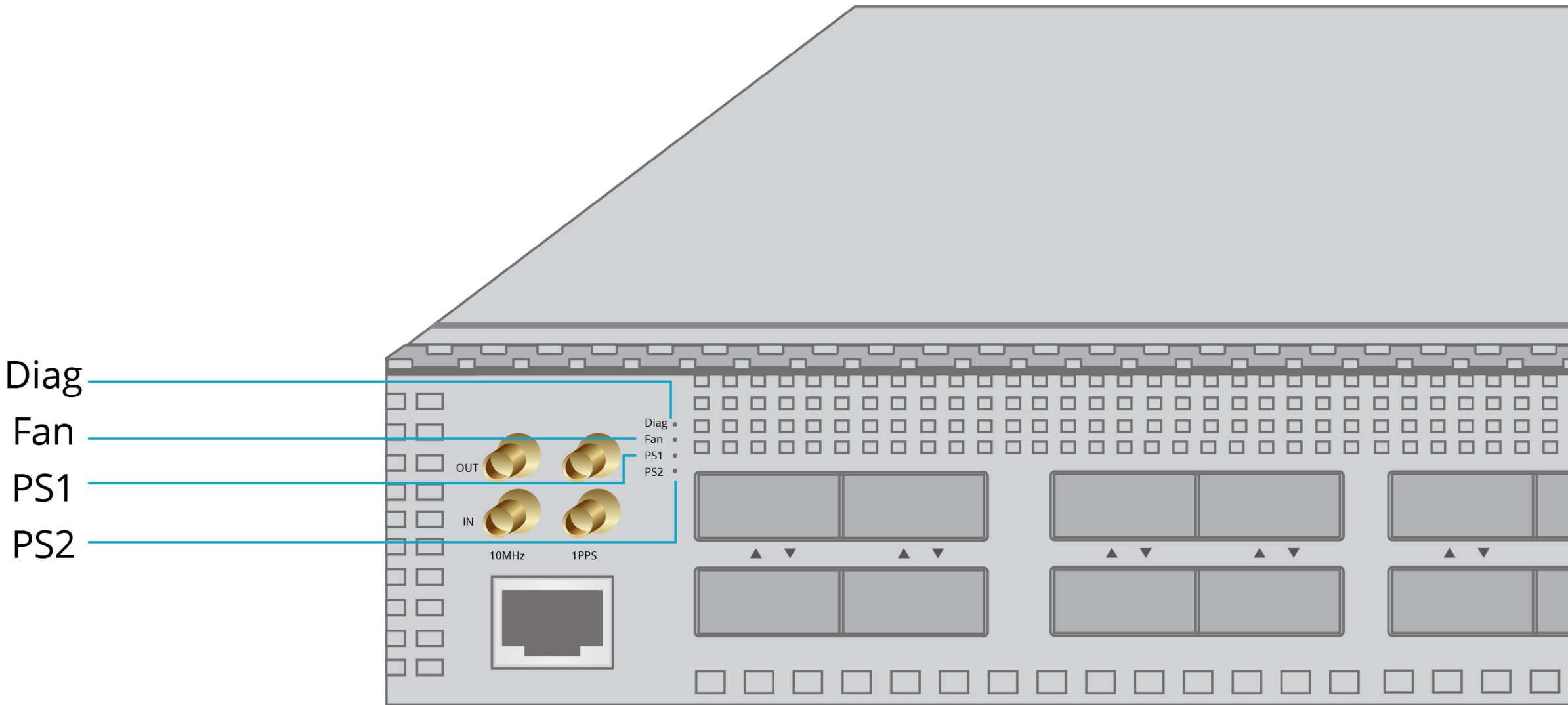
Note: Transceivers are not part of the shipping configuration. If you want to purchase any of these components, you must order them separately.

1.2.3 Chassis Status LEDs

The front panel of the N9550-32D switch features four chassis status LEDs labeled Diagnosis, PS1, PS2 and FAN (see Figure 4).

Table 4 describes the chassis LEDs on the N9550-32D switch, its color and states, and the states they indicate.

Figure 4. Chassis status LEDs



LED Label	Color	State and Description
Diag	Solid Green	All OK, CLI prompt available.
	Blinking Green	Boot-up in progress.
	Solid Amber	System self-diagnostic test has detected a fault (Fan, thermal or any interface fault.).
FAN	Solid Green	System FAN operates normally.
	Solid Amber	Fan tray present buy system FAN is fault.
	OFF	System OFF.
PS1	Solid Green	This power is operating normally.
	Solid Amber	PWR present but not power on or this power is fault.
	OFF	Power supply is not present.
PS2	Solid Green	This power is operating normally.
	Solid Amber	PWR present but not power on or this power is fault.
	OFF	Power supply is not present.

1.2.4 LEDs on the Management Port

The N9550-32D switch has a RJ-45 management port on the front panel.

The figure below shows the location of the management port on the N9550-32D and the LED on the port (see Figure 4). The LED indicates link activity of the port.

Table 5 describes the LED on the management port on N9550-32D switch.

Figure 5. LED on the Management port

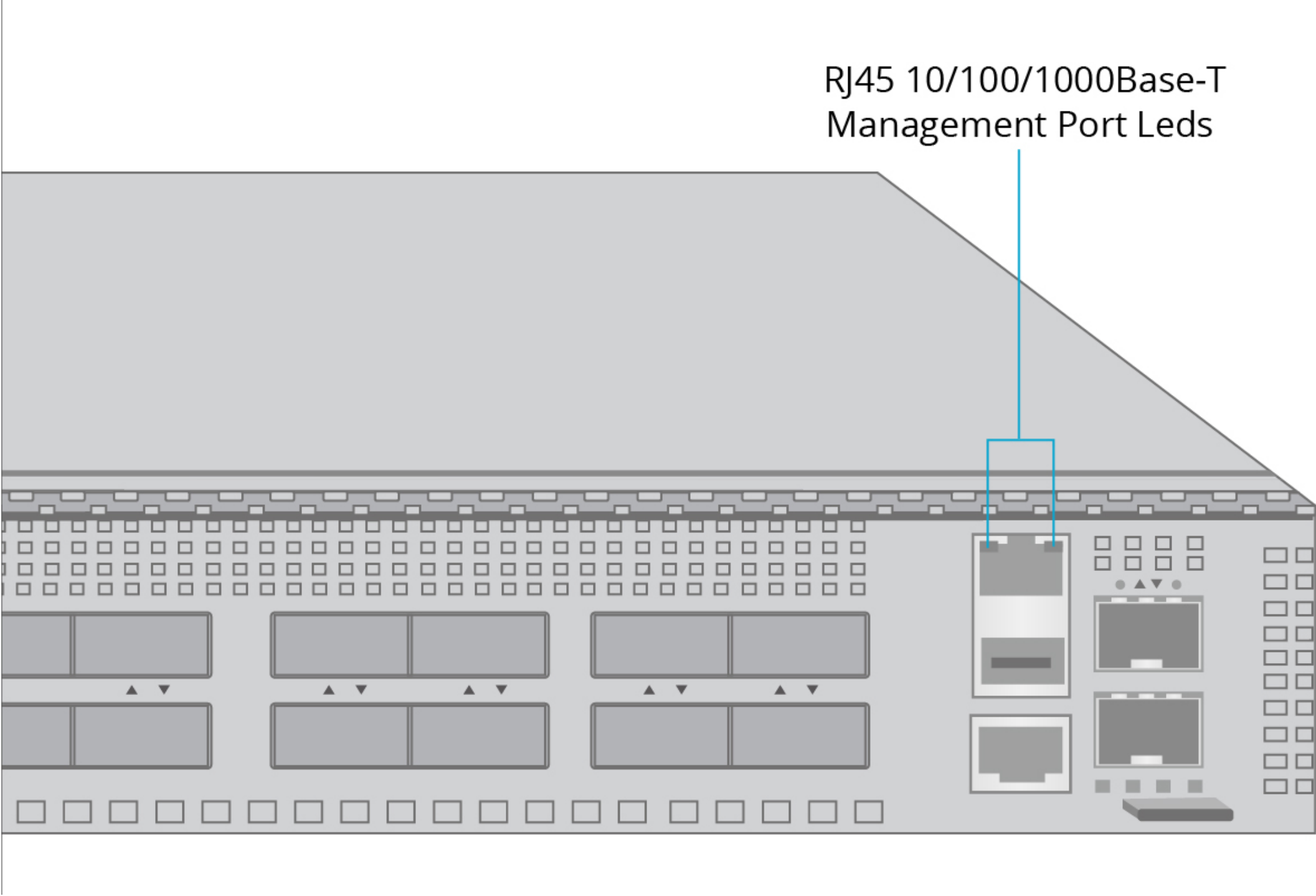


Table 5. LED on the Management Port on N9550-32D

LED Label	Color	State and Description
RJ45 10/100/1000Base-T Management Port	Off	No Link.
	On/Flashing Green	It has a valid link. Flashing indicates activity.

1.2.5 Network Port LEDs

Each QSFP-DD port on N9550-32D switch has four LEDs that show the link activity of the port (see Figure 6).

See Table 6 to learn more about those LEDs.

Figure 6. LEDs on the QSFP-DD ports

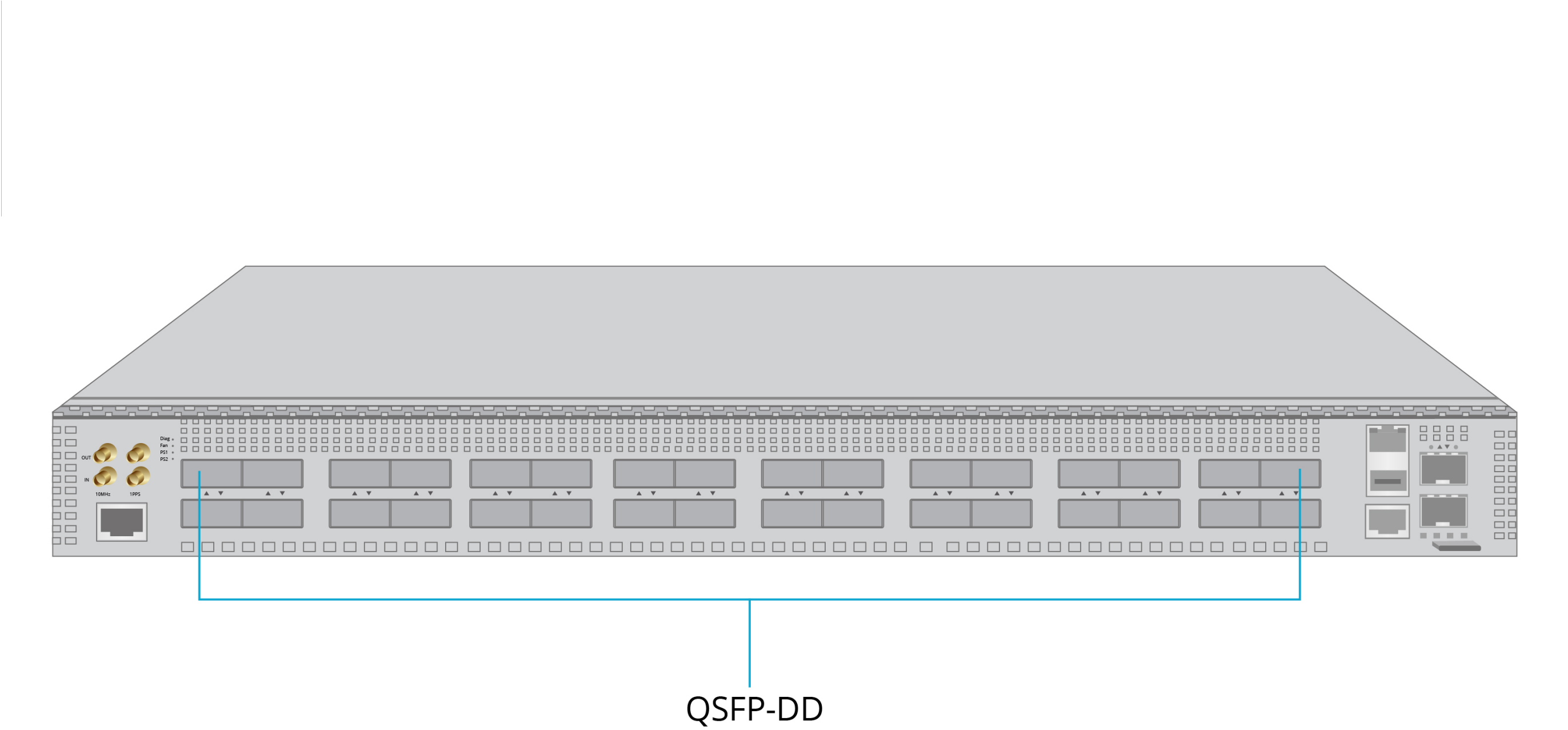


Table 6. LEDs on the QSFP-DD Ports on N9550-32D Switch

Color	State and Description
Only the 1st LED is used when running at 400G without breakout.	
Solid Blue	Port linked operating at max port speed 400G.
Off	No link.
Flashing Blue	Transmit/Receive is activity.
Only the 1st LED is used when running at 100G without breakout.	
Solid Green	Port linked operating at max port speed 100G.
Off	No link.
Flashing Green	Transmit/Receive is activity.
All four LEDs are used when running at 4 x 100G in breakout mode.	
Solid Green	Port linked operating at max port speed 100G.
Off	No link.

Flashing Green	Transmit/Receive is activity.
Three LEDs are used when running at 2 x 200G in breakout mode.	
Solid Blue (one LED) Solid Green (two LEDs)	Port linked operating at max port speed 200G.
Off	No link.
Flashing Green	Transmit/Receive is activity.

1.3 Cooling System

The cooling system in N9550-32D switches consists of fan modules and built-in fans in the power supplies. The airflow direction depends on the fan modules and power supplies installed in the switch. You can order a N9550-32D switch that supports front-to-back airflow (air enters through the front of the switch).

The fan modules are hot-removable and hot-insertable field-replaceable units (FRUs) installed in the rear panel of the switch: You can remove and replace them without powering off the switch or disrupting switch functions.

1.3.1 Fan Modules

We ship N9550-32D switches with six fan modules (5+1 redundancy) preinstalled in the rear panel.

The fan module is available in one airflow direction: Front-to-back (cold air enters through the front of the switch and hot air exhausts through the back of the switch).

1.3.2 Models and Airflow Direction

Table 7 shows the airflow direction in the N9550-32D switch model.

Table 7. Airflow Direction in N9550-32D Switch Model

Fan Modules and Power Supplies	Direction of Airflow in the Fan Modules and Power Supplies
We ship the switch with six fan modules (with front-to-back airflow) and two AC power supplies (with a red ejector lever).	Front-to-back—Cold air intake to cool the chassis is through the vents on the front panel of the chassis, and hot air exhausts through the vents on the rear panel of the chassis.

N9550-32D Model with Front-to-Back Airflow

In the N9550-32D switch models that have front-to-back airflow, the cold air intake to cool the chassis is through the vents on the front panel of the switch and hot air exhausts through the vents on the rear panel (see Figure 7).

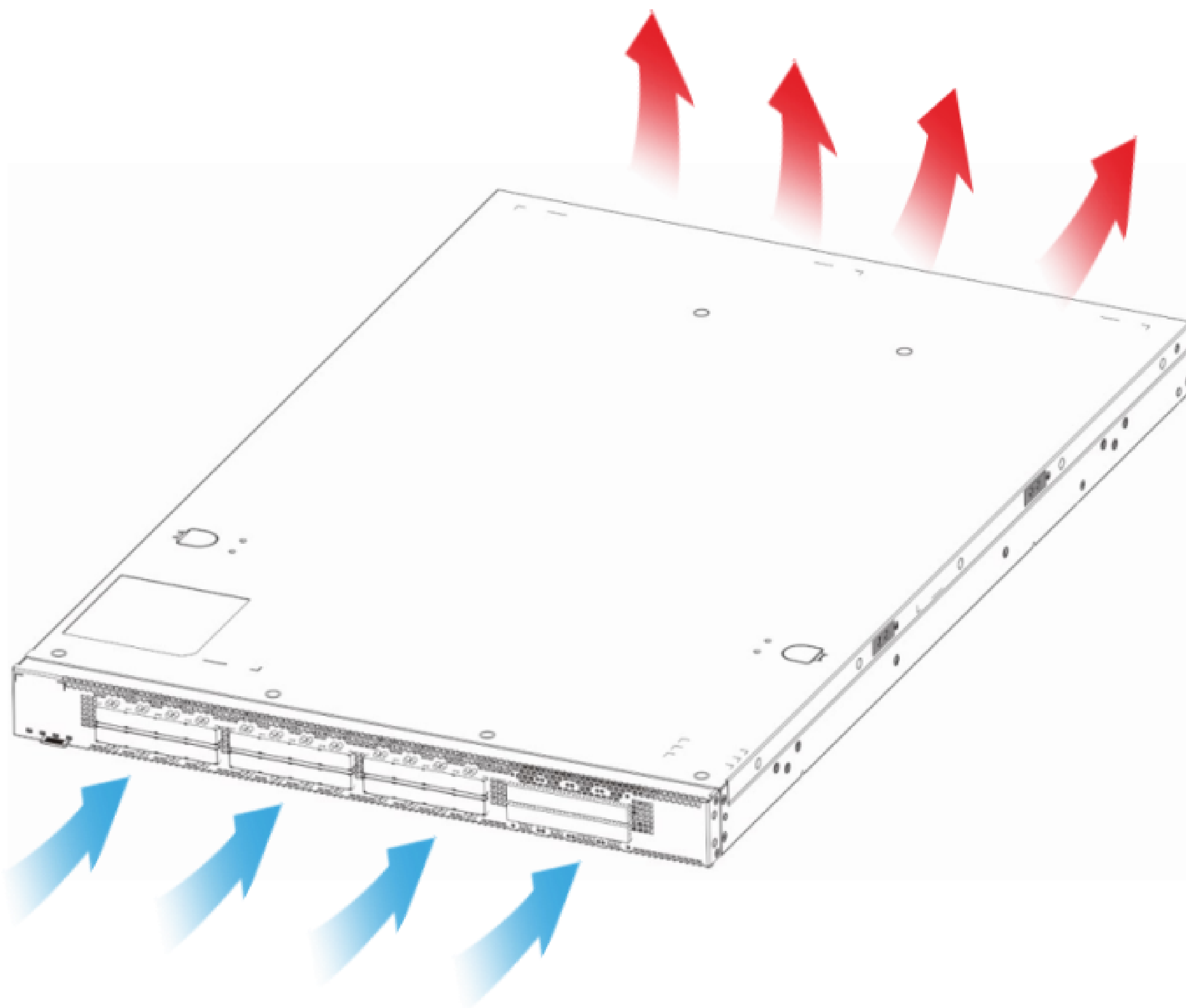
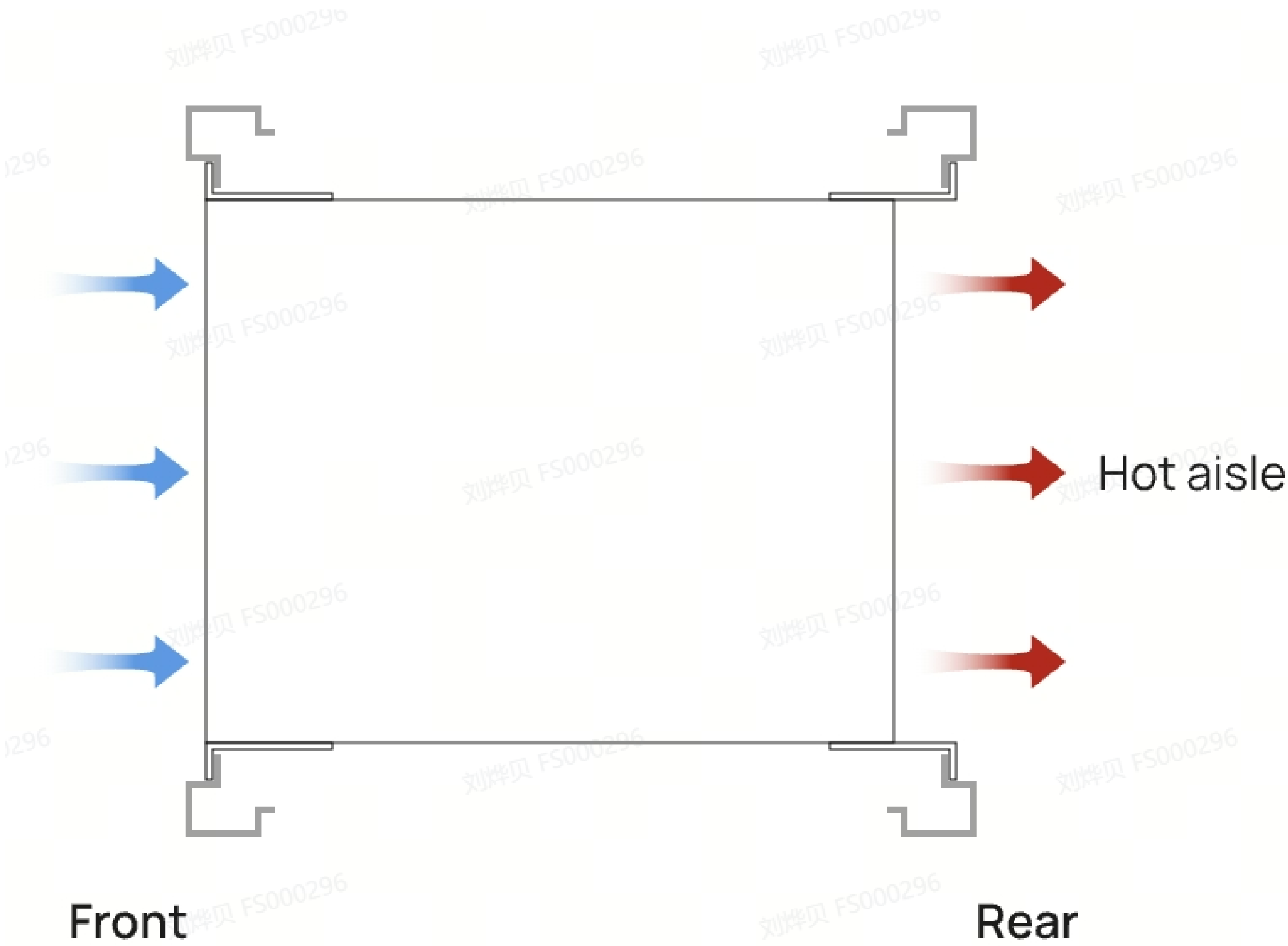


Figure 7: Model with front-to-back airflow

1.3.3 How to Position the Switch

In front-to-back airflow, hot air exhausts through the vents on the rear panel of the switch.

For front-to-back airflow, install the fan modules with the air intake side (typically the side with the fan blades visible or the grille pattern) facing the cold aisle, and the air exhaust side (typically the side with the power connector or handle) facing the hot aisle.



1.3.4 N9550-32D Fan Module Status

There is a status LED for each fan module on N9550-32D switch, next to the fan module slot on the rear panel of the chassis, indicating the status of the fan module. Table 8 describes the fan module LED.

Table 8. Fan Module Status LED

LED	Color	Description
Fan status LED	Green	The fan module is operating normally.
	Red	The fan module is operating abnormally.

1.4 Power System

The smart power module for the N9550-32D supports power consumption management and hot swapping. It can obtain the output power, output current, and operating temperature in real time.

ⓘ Caution:

- To improve system stability and availability, you are advised to configure 1 + 1 power redundancy. The chassis configured with power redundancy works in current-sharing mode.
- At least one power module is required. If any slot is unoccupied, install a filler panel to enable proper airflow and to keep dust out of the chassis.
- Unplug the power cord before installing or removing the power module.

1.4.1 AC Power Supply in N9550-32D Switch

