

NVIDIA

NVIDIA SN5610

Datasheet

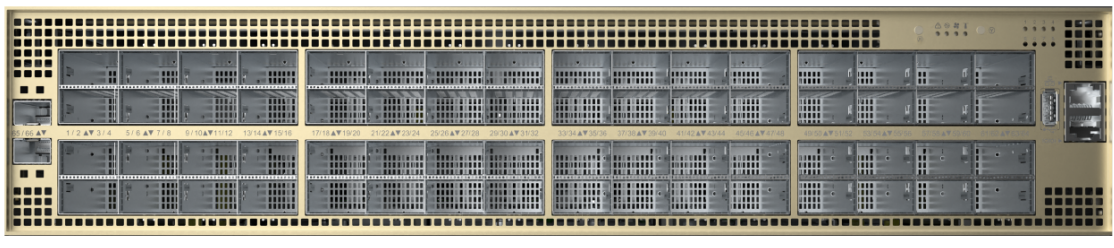
Product Overview

- The NVIDIA SN5610 is a Spectrum-4 based 2U open Ethernet switch designed for high-performance data-center fabrics, cloud infrastructure, AI clusters, and data analytics networks.
- It provides 64 OSFP ports supporting up to 800GbE per port and two SFP28 ports supporting 1/10/25GbE connectivity for management or lower-speed links.
- With 51.2 Tbps throughput and flexible breakout support for 400GbE, 200GbE, 100GbE, 50GbE, 25GbE, and 10GbE links, it supports dense spine and super-spine deployments.
- The exact NVIDIA configuration includes four AC power supplies, an AMD EPYC 3251 processor, Secure Boot, standard-depth construction, Connector-to-Power airflow, and a tool-less rail kit.
- The open networking platform supports NVIDIA Cumulus Linux and bare-metal deployment through ONIE, while front USB-A, RJ45 management, and RJ45 console interfaces simplify operations.
- Five fans, redundant power capability, shared buffering, and predictable wire-speed forwarding support resilient operation in demanding data-center environments.

Product Highlights

- **800GbE Port Density:** 64 OSFP ports support up to 800GbE per port for high-bandwidth spine and super-spine connectivity.
- **Flexible Breakout:** Documented breakout modes support 2 x 400GbE, 4 x 200GbE, 8 x 100GbE, and lower-speed 50GbE, 25GbE, and 10GbE links subject to port mapping.
- **Dedicated SFP28 Connectivity:** Two SFP28 ports support 1/10/25GbE, with 1GbE support limited to these two ports.
- **Redundant AC Power:** Four AC power supplies provide redundant power paths, and the system can operate with at least two active PSUs.

Detailed Features



NVIDIA SN5610

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Component	Specification
System Model	NVIDIA SN5610
Official NVIDIA SKU	920-9N42F-00RI-3C1
Data Interfaces	64 x OSFP ports up to 800GbE; 2 x SFP28 ports supporting 1/10/25GbE
Switching and Forwarding	51.2 Tbps throughput; 33.3 Bpps packet processing
Power and Airflow	4 x AC PSUs; Connector-to-Power airflow; 2U 19-inch rack mount

High-Density 800GbE Fabric

The SN5610 provides 64 OSFP ports with up to 800GbE per port in a 2U chassis. This density supports spine, super-spine, and AI-fabric designs that require high bandwidth while preserving rack space.

Spectrum-4 Switching Performance

Based on the NVIDIA Spectrum-4 ASIC, the SN5610 delivers 51.2 Tbps throughput and documented wire-speed forwarding for demanding cloud, AI, analytics, and simulation workloads.

Flexible Port-Speed Migration

The 800GbE OSFP interfaces support documented breakout paths to 400GbE, 200GbE, 100GbE, 50GbE, 25GbE, and 10GbE. This allows the same platform to serve mixed-speed fabrics as link requirements evolve.

Open Networking Deployment

NVIDIA documents pre-installed Cumulus Linux and bare-metal deployment with ONIE-mounted network operating systems for SN5000 systems. This gives operators flexibility in selecting the network software environment.

Operational Interfaces

Front USB-A, RJ45 management, and RJ45 console interfaces support local setup, administration, troubleshooting, and service operations without requiring a separate management chassis.

Redundant Power Architecture

The SN5610 is specified with four AC power supplies and can operate with at least two active PSUs. Connecting all supplies provides redundant power paths for higher availability.

Thermal and Airflow Design

The system uses five fans and a Connector-to-Power airflow direction. Matching the airflow direction of installed components helps maintain the intended thermal conditions in the rack.

AI and Cloud Fabric Applications

NVIDIA positions the SN5000 family for data-center fabrics, cloud-scale infrastructure, AI, data analytics, and simulation. The SN5610 combines high port density, flexible breakout, and open Ethernet deployment for these environments.

Technical Specifications

Product Specifications

Feature	Value
User SKU	MLNX:SN5610
Official NVIDIA ordering SKU	920-9N42F-00RI-3C1
System model	SN5610
Product family	NVIDIA Spectrum-4 SN5000 2U switch systems
Product type	2U open Ethernet switch
Switch ASIC	NVIDIA Spectrum-4
CPU	AMD EPYC 3251, 8-core, Secure Boot
System memory	32 GB DDR4 RAM
Storage	80 GB NVMe
PCIe	Gen3 x4
Switching capacity	51.2 Tbps
Packet processing	33.3 Bpps total packet processing
High-speed ports	64 x OSFP ports, up to 800GbE per port
SFP28 ports	2 x SFP28 ports, supporting 1/10/25GbE



Feature	Value
Supported rates	64 x 800GbE; 128 x 400GbE; 256 x 10/25/50/100/200GbE
1GbE support	Supported on the two SFP28 ports only
High-power transceiver support	18 W on all 64 OSFP ports
800GbE breakout	2 x 400GbE or 4 x 200GbE; 8 x 100GbE with documented adjacent-port mapping constraints
400GbE breakout	2 x 200GbE or 4 x 100GbE; 8 x 50GbE with documented adjacent-port mapping constraints
Lower-speed breakout	Documented 25GbE and 10GbE breakout options are available with supported splitter cables
Connector cages	OSFP for high-speed ports; SFP28 for the two auxiliary ports
Operating system options	Pre-installed NVIDIA Cumulus Linux; bare-metal deployment through ONIE-mounted network operating systems
Firmware updates	Handled through management software; separate switch firmware updates are not required
USB interface	USB-A, front
Management interface	RJ45 Ethernet management interface, front
Console interface	RJ45 serial console interface, front
Power supplies	4 x AC PSUs
Minimum active PSUs	At least 2 active PSUs are required for operation
Input voltage	High-line, rated 200-240 VAC
AC current rating	16 A
Input frequency	50/60 Hz
Typical power consumption	900 W with passive cables under ATIS conditions; 2.08 kW with 64 optical modules
Airflow	Connector-to-Power (C2P), connector-side inlet to power-side outlet
Fans	5
Form factor	2U, 19-inch rack mount
Dimensions (H x W x D)	88 mm x 438 mm x 775 mm; 796 mm with fan levers
Dimensions, imperial	3.46 in x 17.2 in x 30.5 in; 31.3 in with fan levers
Weight	26.9 kg
Operating temperature	0 to 35 °C
Non-operating temperature	-40 to 70 °C



Feature	Value
Operating humidity	10% to 85%, non-condensing
Non-operating humidity	10% to 90%, non-condensing
Operating altitude	Up to 3050 m
Safety and EMC	CB, cTUVus, CE, CU, S_Mark, FCC, VCCI, ICES, RCM, BSMI, KCC, CCC
RoHS	RoHS compliant

Product Comparison

Feature	NVIDIA SN5610 / 920-9N42F-00RI-3C1	NVIDIA SN5600 / 920-9N42F-00RI-7C0	NVIDIA SN5400 / 920-9N42C-00FB-7C0
System model	SN5610	SN5600	SN5400
High-speed ports	64 OSFP	64 OSFP	64 QSFP56-DD
Maximum port speed	800GbE	800GbE	400GbE
Additional SFP28 ports	2	1	2
Maximum switching capacity	51.2 Tbps	51.2 Tbps	25.6 Tbps
Breakout scale	Up to 128 x 400GbE or 256 x 10/25/50/100/200GbE	Up to 128 x 400GbE or 256 x 10/25/50/100/200GbE	Up to 128 x 200GbE or 256 x 10/25/50/100GbE
AC power supplies	4	2	2
Fans	5	4	4
Operating temperature	0 to 35 °C	0 to 35 °C	0 to 40 °C
Weight	26.9 kg	23.5 kg	23.5 kg
Airflow	C2P	C2P	P2C

Accessories



Category	Accessories
Included Accessories	- 1 x system - 1 x rail kit - 4 x US-certified power cables for each PSU, Type C14 to C15 - 1 x HAR000028 RS232 2 m DB9-to-RJ45 harness - 4 x cable retainers for each PSU
Optional Accessories	- 930-9SKIT-00L0-00E: tool-less rail kit for SN5610 - 930-9SFAN-00RM-00F: C2P fan unit for SN5610 - 930-9SPSU-00RA-00C: 2KW AC PSU for SN5610 - 930-9BPWE-00NA-000: 250V 10A C14-to-C15 power cord



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- [3] NVIDIA. (2025). Data Interfaces and High Power Transceivers Support. <https://networking-docs.nvidia.com/sn5000hw/data-interfaces-and-high-power-transceivers-support>