

# NVIDIA

# NVIDIA SN5400

## Datasheet

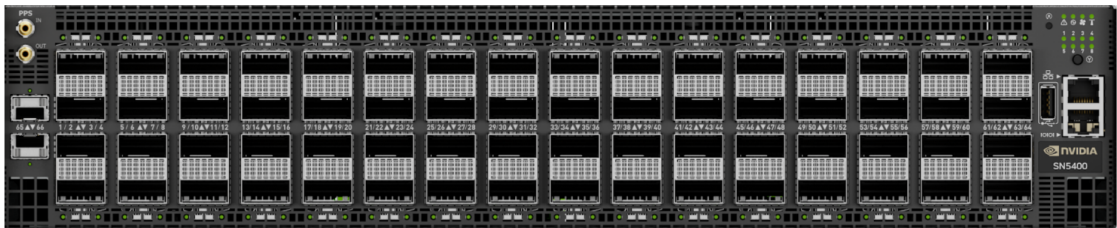
## Product Overview

- The NVIDIA SN5400 is a Spectrum-4 based 2U open Ethernet switch for dense data-center fabrics and high-performance cloud, AI, and data analytics networks.
- The 920-9N42C-00FB-7C0 configuration provides 64 QSFP56-DD ports for up to 400GbE and two SFP28 ports for 1/10/25GbE connectivity.
- It delivers 25.6 Tbps of throughput, 33.3 Bpps packet processing, and flexible breakout options for 200GbE, 100GbE, 50GbE, 40GbE, 25GbE, and 10GbE deployments.
- The exact SKU includes two AC power supplies, Secure Boot, an x86 CPU, standard-depth construction, a tool-less rail kit, and Power-to-Connector airflow.
- Its open networking design supports NVIDIA Cumulus Linux, ONIE-based bare-metal installation, and documented SN5000 support for SONiC, with front management, console, and USB interfaces.
- With high port density, shared buffering, low-latency forwarding, and documented breakout support, the SN5400 fits leaf, spine, and super-spine roles in scalable data-center fabrics.

## Product Highlights

- **400GbE Port Density:** 64 QSFP56-DD ports support up to 400GbE per port and provide high-density connectivity in a 2U chassis.
- **Flexible Breakout:** Supported splitter configurations provide up to 128 x 200GbE or 256 x 10/25/50/100GbE connections, subject to port mapping.
- **Dedicated SFP28 Ports:** Two SFP28 ports support 1/10/25GbE; 1GbE is limited to these two ports.
- **Configuration-Matched Resilience:** The exact SKU combines dual AC PSUs, four fans, Secure Boot, a tool-less rail kit, and Power-to-Connector airflow.

## Detailed Features



NVIDIA SN5400

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| Component                | Specification                                                   |
|--------------------------|-----------------------------------------------------------------|
| System Model             | NVIDIA SN5400                                                   |
| Official NVIDIA SKU      | 920-9N42C-00FB-7C0                                              |
| Data Interfaces          | 64 x QSFP56-DD ports, up to 400GbE; 2 x SFP28 ports, 1/10/25GbE |
| Switching and Forwarding | 25.6 Tbps throughput; 33.3 Bpps                                 |
| Power and Airflow        | 2 x AC PSUs; Power-to-Connector airflow; 2U 19-inch rack mount  |



## High-Density Fabric Connectivity

The SN5400 combines 64 QSFP56-DD ports, 25.6 Tbps throughput, and 33.3 Bpps packet processing in a 2U form factor. This supports dense leaf, spine, and super-spine designs where rack space and uplink capacity are important.

## Flexible Speed Migration

NVIDIA documents QSFP-DD operation at 400GbE with 50Gb/s lanes and breakout paths to 200GbE, 100GbE, 50GbE, 40GbE, 25GbE, and 10GbE. This lets a fabric adopt mixed link speeds without changing the switch platform.

## Open Networking Platform

The system supports pre-installed NVIDIA Cumulus Linux and bare-metal deployment through ONIE. NVIDIA also documents SONiC support for SN5000 systems, giving operators a choice of network operating environments.

## Operational Visibility

Front RJ45 management, RJ45 RS232 console, and USB 3.0 interfaces support initial setup, remote administration, troubleshooting, software upgrade, and file management. SN5000 platform documentation also describes streaming telemetry and network visibility tools.

## Configuration-Matched Airflow

The exact ordering SKU uses Power-to-Connector airflow, meaning air enters from the power side and exits through the connector side. Rack equipment and field-replaceable components should use the same airflow direction for correct thermal operation.

## Redundant Hardware Design

The configuration includes two AC power supplies and four fans. NVIDIA states that the SN5400 can operate with one connected PSU, while the dual-PSU design provides power-path redundancy when both supplies are connected.

## Secure Boot and Hardware Trust

The ordering description identifies Secure Boot, and the SN5000 platform documentation describes hardware root of trust and image authentication capabilities. These features help protect the switch boot and software chain in controlled data-center deployments.

## Breakout-Aware Deployment

At 50GbE per lane, a 400GbE port can split to 2 x 200GbE or 4 x 100GbE without limitation, or to 8 x 50GbE while disabling the adjacent mapped port. Deployment planning should follow NVIDIA's documented port-mapping rules.

# Technical Specifications

## Product Specifications

| Feature                      | Value                                                          |
|------------------------------|----------------------------------------------------------------|
| User SKU                     | MLNX-920-9N42C-00FB-7C0                                        |
| Official NVIDIA ordering SKU | 920-9N42C-00FB-7C0                                             |
| System model                 | SN5400                                                         |
| Product family               | NVIDIA Spectrum-4 SN5000 2U switch systems                     |
| Product type                 | 2U open Ethernet switch                                        |
| Switch ASIC                  | NVIDIA Spectrum-4                                              |
| CPU                          | Intel x86 Xeon, hex-core Coffee Lake E-2276ME with Secure Boot |
| System memory                | 32 GB DDR4 RAM                                                 |
| SSD                          | 160 GB SSD                                                     |
| PCIe                         | Gen3 x4                                                        |
| Packet buffer                | 128 MB                                                         |
| QSFP56-DD ports              | 64 x QSFP56-DD ports, up to 400GbE per port                    |
| QSFP56-DD connector          | QSFP56-DD                                                      |



| Feature                                | Value                                                                                                                                           |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| SFP28 ports                            | 2 x SFP28 ports, 1/10/25GbE                                                                                                                     |
| 1GbE limitation                        | 1GbE is supported only on the two SFP28 ports                                                                                                   |
| Management interface                   | 10/100/1000Mb Ethernet management interface, RJ45, front                                                                                        |
| Console interface                      | RS232 serial console interface, RJ45, front                                                                                                     |
| Console configuration                  | 115200 bps, 8N1 default baud configuration                                                                                                      |
| USB interface                          | USB Type-A, USB 3.0 compliant; USB 1.0 is not supported                                                                                         |
| Reset and indicators                   | Reset button, status and port LEDs, lane select LEDs, and power button                                                                          |
| Maximum 400GbE ports                   | 64                                                                                                                                              |
| Maximum 200GbE ports                   | 128 through documented breakout configurations                                                                                                  |
| Maximum 100GbE ports                   | 256 through documented breakout configurations                                                                                                  |
| Maximum 50GbE ports                    | 256 through documented breakout configurations                                                                                                  |
| Maximum 40GbE ports                    | 128 through documented QSFP-DD configurations                                                                                                   |
| Maximum 25GbE ports                    | 256 through documented breakout configurations, plus the two SFP28 ports subject to port mapping                                                |
| Maximum 10GbE ports                    | 256 through documented breakout configurations, plus the two SFP28 ports subject to port mapping                                                |
| Maximum 1GbE ports                     | 2, supported on the two SFP28 ports only                                                                                                        |
| High-power transceiver support         | Up to 12 W on all 64 QSFP-DD ports                                                                                                              |
| 400GbE breakout at 50GbE per lane      | Each 400GbE port can split to 2 x 200GbE or 4 x 100GbE without limitation, or 8 x 50GbE while disabling the 50GbE port above or below it        |
| 200GbE breakout at 25GbE per lane      | Each 200GbE port can split to 2 x 100GbE or 4 x 50GbE                                                                                           |
| Supported transceiver connection types | QSFP-DD modules or transceivers, QSFP-DD cables, SFP adapters, hybrid cables, and splitter cables                                               |
| Switching capacity                     | 25.6 Tbps                                                                                                                                       |
| Packet processing                      | 33.3 Bpps total packets per second                                                                                                              |
| Software options                       | Pre-installed NVIDIA Cumulus Linux; bare metal with ONIE image installable with an ONIE-mounted OS; SONiC support documented for SN5000 systems |
| Firmware updates                       | Handled through management software; separate firmware updates are not required                                                                 |
| Layer 2 and Layer 3 scope              | Feature-rich Layer 2 and Layer 3 forwarding documented for the SN5000 platform                                                                  |



| Feature                          | Value                                                                                                            |
|----------------------------------|------------------------------------------------------------------------------------------------------------------|
| Overlay and virtualization scope | VXLAN routing and bridging, EVPN multi-homing, and MLAG documented at the SN5000 platform level                  |
| Routing and scale scope          | 256-way ECMP documented at the SN5000 platform level                                                             |
| Security scope                   | Secure Boot and hardware root of trust capabilities documented for the SN5000 platform                           |
| Telemetry scope                  | Streaming telemetry, INT, What Just Happened (WJH), and on-chip flow counters documented for the SN5000 platform |
| Power supplies                   | 2 x AC power supplies; the SN5400 system can operate with one connected PSU                                      |
| Power redundancy                 | Dual-PSU configuration; connect both supplies for redundant power paths                                          |
| Input voltage                    | Rated 220-240 VAC; minimum 200 VAC; maximum 264 VAC                                                              |
| AC current rating                | 16 A                                                                                                             |
| Input frequency                  | 50/60 Hz                                                                                                         |
| Typical power consumption        | 670 W with passive cables, ATIS condition                                                                        |
| Exact SKU airflow                | Power-to-Connector (P2C), power-side inlet to connector-side outlet                                              |
| Fans                             | 4 fans; SN5400 platform documentation lists four fans                                                            |
| Form factor                      | 2U, 19-inch rack mount                                                                                           |
| Dimensions (H x W x D)           | 88 mm H x 438 mm W x 720 mm D; 745 mm D with fan levers                                                          |
| Dimensions, imperial             | 3.46 in H x 17.2 in W x 28.3 in D; 29.3 in D with fan levers                                                     |
| Weight                           | 23.5 kg                                                                                                          |
| Operating temperature            | 0 to 40 °C                                                                                                       |
| Non-operating temperature        | -40 to 70 °C                                                                                                     |
| 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 SN5400 /<br>920-9N42C-00FB-7C0       | NVIDIA SN5600 /<br>920-9N42F-00RI-7C0           | NVIDIA SN5610 /<br>920-9N42F-00RI-3C1           |
|-----------------------------------|---------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| System model                      | SN5400                                      | SN5600                                          | SN5610                                          |
| High-speed connectors             | 64 QSFP56-DD                                | 64 OSFP                                         | 64 OSFP                                         |
| Maximum speed per high-speed port | 400GbE                                      | 800GbE                                          | 800GbE                                          |
| Additional SFP28 ports            | 2 SFP28 ports                               | 1 SFP28 port                                    | 2 SFP28 ports                                   |
| Maximum switching capacity        | 25.6 Tbps                                   | 51.2 Tbps                                       | 51.2 Tbps                                       |
| Breakout scale                    | Up to 128 x 200GbE or 256 x 10/25/50/100GbE | 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 |
| AC power supplies                 | 2                                           | 2                                               | 4                                               |
| Fans                              | 4                                           | 4                                               | 5                                               |
| Operating temperature             | 0 to 40 °C                                  | 0 to 35 °C                                      | 0 to 35 °C                                      |
| Weight                            | 23.5 kg                                     | 23.5 kg                                         | 26.9 kg                                         |
| Airflow / ordering distinction    | P2C for target SKU                          | C2P for listed ordering SKU                     | C2P for listed ordering SKU                     |

## Accessories

| Category             | Accessories                                                                                                                                                                                                                                                                                                                |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Included Accessories | <ul style="list-style-type: none"> <li>- 1 x system</li> <li>- 1 x rail kit</li> <li>- 2 x power cables for each PSU, Type C20 to C19</li> <li>- HAR000028 RS232 2 m DB9-to-RJ45 harness</li> <li>- 2 x cable retainers for each PSU</li> </ul>                                                                            |
| Optional Accessories | <ul style="list-style-type: none"> <li>- 930-9SFAN-00FM-00A: P2C fan unit for SN5400</li> <li>- 930-9SPSU-00FA-00B: 3KW AC P2C PSU for SN5400, power cord included</li> <li>- ACC000734: 250V, 16A C19-to-C20 power cord</li> <li>- 930-9SKIT-00L0-00A: tool-less rail kit for 64 x 400G and 64 x 800G switches</li> </ul> |



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