NVIDIA SPECTRUM SN2201
Your Top-Of-Rack Ethernet Switch

The NVIDIA® Spectrum® SN2201 switch system sets a new bar for 1G switches. Flexibly adapting to modern data center requirements, the SN2201 has two key use cases: a top-of-rack switch, connecting up to 48 x 1G/100M/10M Base-T host-ports with non-blocking 100 GbE spine uplinks, or as an out-of-band (OOB) management switch. Featuring highly advanced hardware and software, along with ASIC-level telemetry and a 16MB fully shared buffer, the SN2201 delivers unique and innovative features to 1G switching.

Part of the SN2000 series switch family, powered by NVIDIA Spectrum ASICs, the SN2201 features dynamic, flexible shared buffers and predictable wire speed performance with zero packet loss at any packet size. The SN2201 is built to accelerate NVIDIA platforms, including NVIDIA EGX™, NVIDIA DGX POD™, and NVIDIA OVX™ SuperPODs, and AI solution stacks such as NVIDIA AI Enterprise and NVIDIA LaunchPad. The SN2201 supports all standard compliances and is fully interoperable with third party systems.

The SN2201 offers ultra-rich Layer 2 and Layer 3 forwarding, VXLAN/EVPN tunneling, multi-homing, telemetry, and versatile features, making it ideal for both data and management networking.

The SN2201's 48 RJ45 ports support 10base-T, 100base-T, and 1000base-T speeds up to 100 meters over twisted-pair cables (CAT-5E or CAT-6). The 4 QSFP28 ports are capable of providing 1, 10, 25, 40, 50, or 100 GbE speeds and breakout (split) up to 16 ports with flexibility in speed selection. These ports support a wide range of connectivity solutions based on Direct Attach Copper (DAC), Active Optical Cables (AOC), and optical transceivers ranging from 0.5m up to 80km.

The SN2201 offers full, hot-swappable redundancy for PSUs and fans, ensuring a reliable, continuously running network.

Platform Orderable Options

The NVIDIA SN2201 is an ONIE-based platform, available for order in two varieties:

> Pre-installed with NVIDIA Cumulus Linux™, a revolutionary operating system that takes the Linux user experience from servers to switches, and provides a rich routing functionality for large-scale applications.

> Bare metal with ONIE, installable with any ONIE-mounted OS.

SPECIFICATIONS

> 48 Ports of 10/100/1000Mb Base-T
> 4 Ports of QSFP28 up to 100 GbE (up to 16 ports using breakout cables)
> 1/10/25/40/50/100 GbE Speeds
> Low Latency
> Forward and Reverse Airflows
> Hot-Swappable PSUs and Fans
> x86 Dual-Core Atom® Processor, 2.2GHz
> 8GB DDR4 RAM
> 20GB NVMe Storage

FEATURES

> NVIDIA Cumulus Linux / SONiC NOS Compatibility
> Full Line-Rate L2 and L3
> IPv4 and IPv6
> VXLAN/EVPN
> ECMP
> MLAG
> Advanced Telemetry

SCALE

> 16MB Fully-Shared Buffer
> Up to 180K MAC Entries
> Up to 176K IPv4 Routes
> Up to 40K IPv6 Routes
> 4K VLANS
> 9K Jumbo Frames
> VXLAN - EVPN
> ECMP
> MLAG

Data Center Digital Twins

NVIDIA enables digital twins of the SN2201 (as well as the rest of the Spectrum portfolio) through the NVIDIA Air Infrastructure Simulation Platform. The digital twin includes logical instances of every switch and cable, enabling it to be used for validating security policy compliance, automation processes, monitoring tools, interoperability, and upgrade procedures. The digital twin is key to transforming network operations models and allows IT architects and infrastructure specialists to deploy and update networks up to 95 percent faster through CI/CD integration.

Two Network Operating Systems

NVIDIA CUMULUS LINUX

NVIDIA Cumulus Linux is a powerful network operating system, purpose built for advanced automation, customization, and scalability, using web-scale principles validated in the world's largest data centers. It accelerates networking functions and is a true "Linux-based operating system" that helps users achieve operational efficiency through simplified management and automation. It is programmable, easy to use and reliable for your mission-critical workloads. Along with NVIDIA NetQ™, Cumulus Linux provides end-to-end visibility, which is critical for monitoring and troubleshooting day-to-day network operations. Cumulus Linux and the SN2201 enable unified, cloud-scale efficiency in your data center across every network fabric.

SONiC

SONiC was designed for cloud networking scenarios, where simplicity and managing at scale are the highest priority. NVIDIA fully supports Pure SONiC from the SONiC community website on all of the SN2000 series switch platforms. The SN2201 is the first management switch to support Pure SONiC, and it allows users to unify configurations, monitoring, diagnostic capabilities, and automation schemes of both the data plane and management networks. Serving as a stepping stone towards SONiC, the SN2201 allows some users to take a phased deployment approach: first deploy Pure SONiC on the management network and then continue to the data plane network. Among other innovations, Pure SONiC on SN2201 enables fine-grained failure recovery and in-service upgrades (ISSU), with zero downtime.

Centralized, remote management of AI deployments enables over-the-air software updates, remote debugging, and system monitoring, as well as other features, such as self-healing systems. These remote management features make maintenance and upkeep easier. They also make AI more accessible and practical for locations that are difficult to access or far from headquarters. This enables the delivery of faster, more comprehensive insights that can drive real-time decisions.

Specifications

Feature	NVIDIA Spectrum SN 2201
Form Factors	48 x RJ45 + 4 x QSFP28 100 GbE
Max 100 GbE Ports - QSFP28	4
Max 50 GbE Ports - QSFP28 breakout	8
Max 40 GbE Ports - QSFP28	4
Max 5 GbE Ports - QSFP28 breakout	16
Max 10 GbE Ports - QSFP28 breakout	16
Max 1 GbE Ports - QSFP28 breakout	16
Max 1 GBase-T Ports	48
Max 100 MBase-T Ports	48
Max 10 MBase-T Ports	48
Throughput	448 Gb/s
Packet Rate	667 Mpps
Packet Buffer	16MB
CPU	Dual-core x86
System Memory	8GB
SSD Memory	20GB
10/100/1000 Ethernet Management Port	Single RJ45
Serial Port	Single RJ45
Config and Backup	Single USB Port
Power Supplies	2 (1+1 Redundant)
Fans	4 (N+1 Redundant)
Airflow Options	Forward/Reverse
Electrical	Frequency: 50-60 Hz Input Range: 100-264 AC Input Current: 2.9-4.5 A
Typical Power (ATIS)	100 W (estimated)
Rack Mounting	4-Post: Tool-less Rail Kit 2-Post: Fixed Brackets
Size (W x H x D)	43.9mm x 428mm x 432mm (1.72'' x 16.84'' x 17'')
Weight	7.41 kg (16.34 lb)

Supported Transceivers and Cables

Supported Transceivers and Cables	Interface Type	Description	SKU
100 GbE NRZ QSFP28	100BASE-CR4 copper	0.5m-5m LSZH DAC	980-9I6xx
	100BASE-AOC	3m-100m	980-9I13xx
	100BASE-SR4	850nm, MPO, up to 100m	980-9I49-00CS00
	100BASE-PSM4	1310nm, MPO, up to 500m	980-9I16X-00C000
	100BASE-LR4	1310nm, LC-LC, up to 10km	980-9I17P-00CR00
	100BASE-CWDM4	1310nm, LC-LC, up to 2km	980-9I17Q-00CM00
	100BASE-SWDM4	850nm, LC-LC, up to 100m	980-9I90Z-00C000
	100BASE-ER(*)	1310nm, LC-LC, up to 40km	980-9I53X-00C000
	100 GbE to 4 x 25 GbE SFP28	1m-5m DAC	980-9I48xx
	100 GbE to 4 x 25 GbE SFP28	3m-30m AOC	980-9I4xx
	100 GbE to 25 GbE	QSA28 pluggable adapter	980-9I78I-00A000

Supported Transceivers and Cables	Interface Type	Description	SKU
40 GbE QSFP	40BASE-CR4	1m-3m DAC	980-9I66xx
	40BASE-SR4	850nm, MPO, up to 100m	980-9I426-00BM00
		850nm, MPO, up to 300m	980-9I170-00BM00
	40BASE-LR4	1310nm, LC-LC, up to 10km	980-9I21O-00TR00
	40GbE to 4 x 10GbE	1m-3m DAC	980-9I6xx
	40GbE to 1/10GbE	QSA pluggable adapter	980-9I71G-00J000
25 GbE SFP28	25BASE-CR	0.5m-5m DAC	980-9I63xx
	25BASE-AOC	3m-100m	980-9I53xx
	25BASE-SR	850nm, LC-LC, up to 100m	980-9I595-00AM00
	25BASE-LR	1310nm, LC-LC, up to 10km	980-9I094-00AR00
10 GbE SFP+	10BASE-CR	1m-5m DAC	980-9I68xx
	10BASE-SR	850nm, LC-LC, up to 300m	980-9O000-0000-409
	10BASE-LR	1310nm, LC-LC, up to 10km	980-9O000-0000-343

Ordering Information

SKU	Description
920-9N110-00F1-0C0	NVIDIA Spectrum-based 1GbT/100 GbE 1U Open Ethernet switch with Cumulus Linux, 48 RJ45 ports and 4 QSFP28 ports, Dual Power Supply (AC), x86 CPU, short depth, P2C airflow, and Rail kit.
920-9N110-00R1-0C0	NVIDIA Spectrum-based 1GbT/100 GbE 1U Open Ethernet switch with Cumulus Linux, 48 RJ45 ports and 4 QSFP28 ports, Dual Power Supply (AC), x86 CPU, short depth, C2P airflow, and Rail kit.
920-9N110-00F1-0N1	NVIDIA Spectrum-based 1GbT/100 GbE 1U Open Ethernet switch with ONIE, 48 RJ45 ports and 4 QSFP28 ports, Dual Power Supply (AC), x86 CPU, short depth, P2C airflow, and Rail kit.
920-9N110-00R1-0N1	NVIDIA Spectrum-based 1GbT/100 GbE 1U Open Ethernet switch with ONIE, 48 RJ45 ports and 4 QSFP28 ports, Dual Power Supply (AC), x86 CPU, short depth, C2P airflow, and Rail kit.

Accessories and Replacement Parts

SKU	Description
930-9NRKT-00JS-000	NVIDIA Tool-less rack installation kit, 4-post rack, For SN2201 switch
930-9NFAN-00IV-000	NVIDIA Fan module, P2C Airflow, For SN2201 switch
930-9NFAN-00J9-000	NVIDIA Fan module, C2P Airflow, For SN2201 switch
930-9NPSU-00J9-000	NVIDIA Power-Supply Unit, 250W AC, P2C Airflow, For SN2201 switch, Power cord included
930-9NPSU-00JQ-000	NVIDIA Power-Supply Unit, 250W AC, C2P Airflow, For SN2201 switch, Power cord included

Compliance

Standards Compliance	
Safety/EMC	CB, cTUVus, CE, CU, S_Mark, CE, FCC, VCCI, ICES, RCM, BSMI, KCC, CCC
RoHS	RoHS compliant

Learn more

To learn more about NVIDIA Spectrum SN2000 Series switches, visit:
nvidia.com/en-us/networking/ethernet-switching/spectrum-sn2000/

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