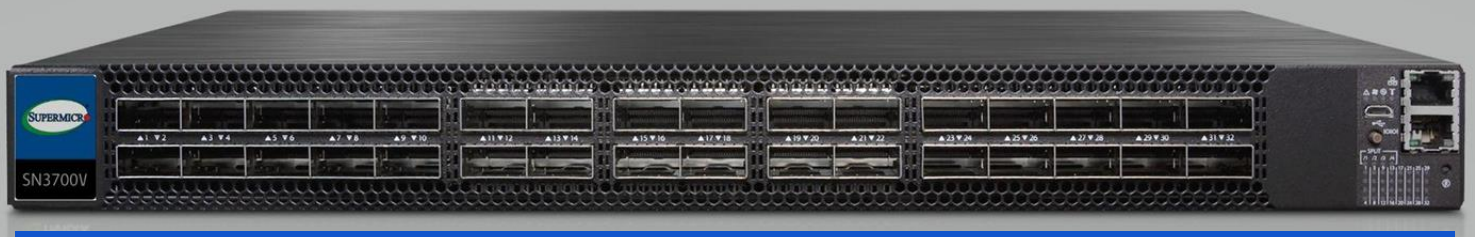


SUPERMICRO SSE-SN3000 SERIES SWITCHES

DATA CENTER PERFORMANCE, SCALE, AND RICH TELEMETRY

The Supermicro SN3000 series switches are powered by the NVIDIA Spectrum-2 switch ASIC, a key component in the NVIDIA Spectrum Ethernet platform, purpose-built to accelerate data center fabrics. The SSE-SN3000 series provides port speeds spanning from 25GbE to 200GbE, and delivers accelerated Ethernet to any server at any speed.

The SSE-SN3000 series is ideal for enabling cloud-scale efficiency for data centers of any size. The SSE-SN3000 platforms provide high performance and consistent low latency along with support for advanced software defined networking features, making them the ideal choice for web scale IT, cloud, hyperconverged storage and data analytics applications.

As part of the Spectrum platform, the SSE-SN3000 platforms are pre-tested and pre-validated with NVIDIA's full portfolio of Ethernet networking technology, including BlueField DPUs and ConnectX SmartNICs. This end-to-end switch to host solution is critical to powering accelerated workloads, and delivers the high performance and innovative feature set needed to supercharge cloud-native applications at scale.

NETWORK DISAGGREGATION: OPEN ETHERNET

Open Ethernet breaks the paradigm of traditional switch systems, eliminating vendor lock-in. Instead of forcing network operators to use the specific software that is provided by the switch vendor, open Ethernet offers the flexibility to use a choice of operating systems on top of Ethernet switches, thereby re-gaining control of the network, and optimizing utilization, efficiency and overall return on investment.

Encouraging an ecosystem of open source, standard network solutions, open Ethernet adopts the same principles as standard open solutions for servers and storage, and applies them to the world of networking infrastructure. These solutions can then be easily deployed into the modern data center across network equipment that eases management and ensures full interoperability. With a range of system form factors, and a rich software ecosystem, SSE-SN3000 series allows you to pick and choose the right components for your data center.

Performance

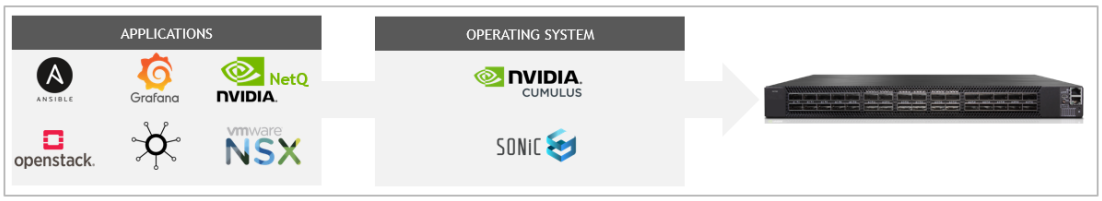
- Fully shared packet buffer provides a fair, predictable and high bandwidth data path
- Consistent and low cut-through latency
- Robust RoCE transport to power NVMe over fabric and machine learning applications that leverage NVIDIA GPUDirect®
- Best-in-class VXLAN scale—10X more tunnels and tunnel endpoints than others
- 512K shared forwarding entries flexibly shared across ACL, LPM routes, host routes, MAC, ECMP and tunnel applications

Agility

- Comprehensive Layer-2, Layer-3 and RoCE
- Advanced network virtualization with high performance single pass VXLAN routing and IPv6 segment routing
- Cloud scale NAT – 100K+ sessions
- Programmable pipeline that can programmatically parse, process and edit packets
- Deep packet inspection – 512B deep

Visibility

- NVIDIA What Just Happened® (WJH) telemetry dramatically reduces mean time to issue resolution by providing answers to: When, What, Who, Where and Why
- Hardware-accelerated histograms track and summarize queue depths at sub-microsecond granularity
- Inband network telemetry (INT)-ready hardware
- Streaming telemetry
- 512K on-chip flow counters



Supermicro SN3000 SERIES

SSE-SN3000 series platforms are based on the high-performance NVIDIA Spectrum-2 ASIC with a bidirectional switching capacity of 6.4Tb/s. SSE-SN3000 platforms are available in a range of configurations, each delivering high performance combined with feature-rich layer 2 and layer 3 forwarding, ideally suited for both top-of-rack (ToR) leaf and fixed configuration spines.

SSE-SN3000 series provides full wire speed, cut through-mode latency, on-chip fully-shared 42MB packet buffering, and flexible port use in addition to advanced capabilities. Combining a wide range of innovations in the area of programmability, telemetry, and tunneling with industry leading performance, SSE-SN3000 series is capable of addressing today's data center's complex networking requirements.

SSE-SN3700V

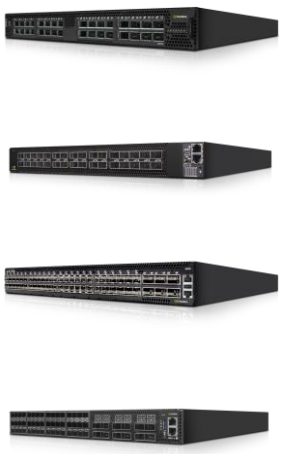
SSE-SN3700 spine/super-spine offers 32 ports of 200GbE in a compact 1U form factor. It enables connectivity to endpoints at different speeds and carries a throughput of 6.4Tb/s, with a landmark 8.33Bpps processing capacity. As an ideal spine solution, the SSE-SN3700 allows maximum flexibility, with port speeds spanning from 10GbE to 200GbE per port.

SSE-SN3700C

SSE-SN3700C is a 1U 32-port 100GbE spine that can also be used as a high density 10/25GbE leaf when used with splitter cables. SSE-SN3700C allows for maximum flexibility, with ports spanning from 1GbE to 100GbE and port density that enables full rack connectivity to any server at any speed, and a variety of blocking ratios. SSE-SN3700C ports are fully splittable to up to 128 x 10/25GbE ports.

SSE-SN3420

As data-center switching architectures increasingly adopt 100GbE, the SSE-SN3420 offers a high-performance, cost-effective way to evolve host connectivity from 10G to 25G. Equipped with 48 ports of 10/25GbE and 12 ports of up to 100GbE in a compact 1U form factor. The SSE-SN3420 is an ideal ToR switch platform, delivering a total throughput of up to 2.4 Tb/s with a processing capacity of 3.58 Bpps. The SSE-SN3420 enables the seamless use of QSFP28 connections for leaf-spine topology and future-proofing the data center.



HIGH AVAILABILITY

SSE-SN3000 series switches are designed with the following features for high availability both from a software and hardware perspective:

- 1+1 hot-swappable power supplies and N+1 hot-swappable fans
- Color coded PSUs and fans
- Up to 128x 10/25/50GbE, 64x 100GbE, or 32x 200GbE
- Multi-chassis LAG for active/active L2 multipathing
- 64-way ECMP routing for load balancing and redundancy

PLATFORM SOFTWARE

SSE-SN3000 series platforms are available pre-installed with NVIDIA Cumulus Linux™, a revolutionary operating system, taking the Linux user experience from servers to switches and providing a rich routing functionality for large scale applications.

CUMULUS LINUX

Cumulus Linux is a powerful open network operating system enabling advanced automation, customization and scalability using web-scale principles like the world's largest data centers. It accelerates networking functions and provides choice from an extensive list of supported switch models including NVIDIA Spectrum based switches. Cumulus Linux was built for automation, scalability and flexibility, allowing you to build data center and campus networks that ideally suits your business needs. Cumulus Linux is the only open network OS that allows you to build affordable and efficient network operations like the world's largest data center operators, unlocking web-scale networking for businesses of all sizes.

SONiC

SONiC was designed for cloud networking scenarios, where simplicity and managing at scale are the highest priority. With advanced monitoring and diagnostic capabilities, SONiC is a perfect fit for the SSE-SN3000 series. Among other innovations, SONiC on the SSE-SN3000 series enables fine-grained failure recovery and in-service upgrades (ISSU), with zero downtime.

NVIDIA SPECTRUM-2:
BUILD YOUR CLOUD WITHOUT COMPROMISE

GROUNDBREAKING PERFORMANCE

Packet buffer architecture has a major impact on overall switch performance.

The NVIDIA Spectrum-2 packet buffer is fully shared across all ports, supporting cut-through line rate traffic from all ports, without compromising scale or features. With its fast packet buffer, NVIDIA Spectrum-2 is able to provide a high-performance fair and bottleneck-free data path for mission-critical applications.

PERVASIVE VISIBILITY

NVIDIA Spectrum-2 provides deep and contextual network visibility, which enables network operators to proactively manage issues and reduce mean time to recovery/innocence. The What Just Happened (WJH) Spectrum feature leverages the underlying silicon and software capability to provide granular and event-triggered information about infrastructure issues. In addition, the rich telemetry information from NVIDIA Spectrum-2 is readily available via open APIs that are integratable with third party software tools and workflow engines.

UNPRECEDENTED AGILITY

For modern data center infrastructure to be software defined and agile, both its compute and network building blocks need to be agile. NVIDIA Spectrum-2 features a unique feature rich and efficient packet processing pipeline that offers data center network virtualization features without compromising on performance or scale. NVIDIA Spectrum-2 is a programmable pipeline and a deep packet parser/editor (can process payload up to the first 512B). NVIDIA Spectrum-2 supports single pass VXLAN routing as well as bridging. Additionally, NVIDIA Spectrum-2 supports advanced virtualization features such as IPv6 segment routing, and Network Address Translation (NAT).

MASSIVE SCALE

The number of endpoints in the data center is increasing exponentially. With the current shift from virtual machine-based architectures to container-based architectures, the high-scale forwarding tables required by modern data centers and mega-clouds increase by up to an order of magnitude or more. To answer these needs for scalability and flexibility, NVIDIA Spectrum-2 uses intelligent algorithms and efficient resource sharing, and supports unprecedented forwarding table, counters and policy scale.

- Fine-grained resource allocation to fit all specific needs, allowing up to 512K entries to be dynamically shared across MAC, ARP, IPv4/IPv6 routes, ACLs, ECMP, and Tunnels.
- An innovative algorithmic TCAM optimized for data centers and cloud environments, which can scale the number of rules to up to half a million rules.

Specifications

Switch Model	SSE-SN3700V	SSE-SN3700C	SSE-SN3420
Connectors	32 QSFP56 200GbE	32 QSFP28 100GbE	48 SFP28 25GbE + 12 QSFP28 100GbE
Max. 400GbE Ports	---	---	---
Max. 200GbE Ports	32	---	---
Max. 100GbE Ports	64	32	12
Max. 50GbE Ports	128*	64	24
Max. 40GbE Ports	32	32	12
Max. 25GbE Ports	128	128	48+48
Max. 10GbE Ports	128	128	48+48
Max. 1GbE Ports	128	128	48+48
Throughput	12.8Tb/s	6.4Tb/s	4.8Tb/s
Packet Per Second	8.33Bpps	4.76Bpps	3.58Bpps
Latency	425ns	425ns	425ns
CPU	Quad-core x86	Dual-core x86	Dual-core x86
System Memory	8GB	8GB	8GB
SSD Memory	32GB	32GB	32GB
Packet Buffer	42MB	42MB	42MB
Typical Power	250W	242W	204W
100/1000Mb/s Mgmt Ports	1	1	1
Serial Ports	1 RJ45	1 RJ45	1 RJ45
USB Ports	1	1	1
Hot-Swap Power Supplies	2 (1+1 redundant)	2 (1+1 redundant)	2 (1+1 redundant)
Hot-Swappable Fans	6 (N+1 redundant)	4 (N+1 redundant)	5 (N+1 redundant)
Reversible Airflow Option	Yes	Yes	Yes
Power Supplies	Frequency: 50-60Hz Input range: 100-264 AC Input current 2.9-4.5A	Frequency: 50-60Hz Input range: 100-264 AC Input current 2.9-4.5A, DC**	Frequency: 50-60Hz Input range: 100-264 AC Input current 2.9-4.5A
Size (H x W x D)	1.72" x 16.84" x 22" (44mm x 428mm x 559mm)	1.72" x 16.84" x 22" (44mm x 428mm x 559mm)	1.72" x 16.84" x 17" (44mm x 428mm x 432mm)
Weight	11.1kg (24.5lb)	11.1kg (24.5lb)	8.5kg (18.73lb)

SUPPORTED TRANSCEIVERS AND CABLES

The cable list will be added by Supermicro cable PM later depending on the availability so forth. But for now, please ignore this section for Nvidia review if any.

COMPLIANCE

Standards Compliance	
Safety	CB, CE, cTUVus, CU
EMC	CE, ICES, FCC, RCM, VCCI
Operating Conditions	Operating: 0ºC to 40ºC; Non-Operating: -40ºC to 70ºC
Relative Humidity	5% to 85%
Operating Altitude	0-3050m
RoHS	RoHS compliant

ORDERING INFORMATION

Supported SKUs	
SSE-SN3700V Series: 32 Ports of up to 200GbE	
SSE-SN3700-VS2FC	Spectrum-2 based 200GbE 1U Open Ethernet Switch with Cumulus Linux, 32 QSFP56 ports, 2 Power Supplies (AC), Standard depth, x86 CPU, Reverse airflow, Rail Kit
SSE-SN3700-VS2RC	Spectrum-2 based 200GbE 1U Open Ethernet Switch with Cumulus Linux, 32 QSFP56 ports, 2 Power Supplies (AC), Standard depth, x86 CPU, Standard airflow, Rail Kit
SSE-SN3700C Series: 32 Ports of up to 100GbE	
SSE-SN3700-CS2FC	Spectrum-2 based 100GbE 1U Open Ethernet Switch with Cumulus Linux, 32 QSFP28 ports, 2 Power Supplies (AC), Standard depth, x86 CPU, Reverse airflow, Rail Kit
SSE-SN3700-CS2RC	Spectrum-2 based 100GbE 1U Open Ethernet Switch with Cumulus Linux, 32 QSFP28 ports, 2 Power Supplies (AC), Standard depth, x86 CPU, Standard airflow, Rail Kit
SSE-SN3420 Series: 48 Ports of up to 25GbE and 12 Ports of up to 100GbE	
SSE-SN3420-CB2FC	Spectrum-2 based 25GbE/100GbE 1U Open Ethernet switch with Cumulus Linux, 48 SFP28 ports and 12 QSFP28 ports, 2 power supplies (AC), x86 CPU, standard depth, Reverse airflow, Rail Kit
SSE-SN3420-CB2RC	Spectrum-2 based 25GbE/100GbE 1U Open Ethernet switch with Cumulus Linux, 48 SFP28 ports and 12 QSFP28 ports, 2 power supplies (AC), x86 CPU, standard depth, Standard airflow, Rail Kit

Warranty Information

Our standard warranty is three years parts and labor with cross-ship for the first year. Extension of the warranty is available.