NVIDIA SPECTRUM SN4000 SERIES SWITCHES

for accelerated data centers

NVIDIA® Spectrum™ SN4000 series switches are the 4th generation of Spectrum switches, purpose-built for leaf/spine/super-spine datacenter applications. Allowing maximum flexibility, SN4000 series provides port speeds spanning from 1GbE to 400GbE, with a port density that enables full rack connectivity to any server at any speed. In addition, the uplink ports allow a variety of blocking ratios to suit any application requirement.

The SN4000 series is ideal for building wire-speed and cloud-scale layer-2 and layer-3 networks. The SN4000 platforms deliver high performance, consistent low latency along with support for advanced software defined networking features, making it the ideal choice for web scale IT, cloud, hyperconverged storage and data analytics applications.

Network Disaggregation: NVIDIA 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.

Open Ethernet adopts the same principles as standard open solutions for servers and storage, and applies them to the world of networking infrastructure. It encourages an ecosystem of open source, standard network solutions.

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, NVIDIA SN4000 series allows you to pick and choose the right components for your data center.

NVIDIA SN4000 Series

SN4000 series platforms are based on the high-performance Spectrum-3 ASIC with a bidirectional switching capacity of 12.8Tbps. SN4000 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 leaf and fixed configuration spines. SN4000 series provides full wire speed, cut through-mode latency, on-chip fully-shared 64MB 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, NVIDIA SN4000 series is capable of addressing today's data center's complex networking requirements.

VISIBILITY

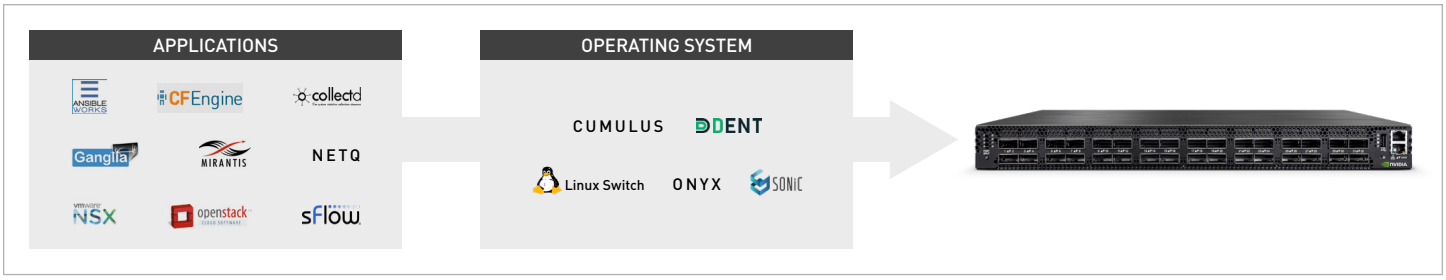
- What Just Happened?® (WJH) telemetry dramatically reduces mean time to issue resolution by providing answers to: When, What, Who, Where and Why
- Hardware-accelerated histograms track and summarize queue depths at sub-microsecond granularity
- Inband network telemetry (INT)-ready hardware
- Streaming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

PERFORMANCE

- Fully shared packet buffer provides a fair, predictable and high bandwidth data path
- Consistent and low cut-through latency
- Intelligent hardware-accelerated data movement, congestion management and load balancing for RoCE and Machine learning applications that leverage GPUDirect®
- Best-in-class VXLAN scale-10X more tunnels and tunnel endpoints
- 512K shared forwarding entries flexibly shared across ACL, LPM routes, host routes, MAC, ECMP and tunnel applications
- Up to 1M IPv4 route entries

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



ONIE.NVIDIA Spectrum-3

SN4700

The SN4700 spine/super-spine offers 32 ports of 400GbE in a compact 1U form factor. It enables connectivity to endpoints at varying speeds and carries a throughput of 12.8 Tb/s, with a landmark 8.4Bpps processing capacity. As an ideal spine solution, the SN4700 allows maximum flexibility, with port speeds spanning from 1 to 400GbE per port.

SN4600

SN4600 is a 2U 64-port 200GbE spine that can also be used as a high density leaf, fully splittable to up to 128X 10/25/50GbE ports when used with splitter cables. SN4600 allows for maximum flexibility, with ports spanning from 1 to 200GbE and port density that enables full rack connectivity to any server at any speed, and a variety of blocking ratios.

SN4600C

SN4600C is a 64-port 100GbE switch system that is ideal for spine/super-spine applications. With a landmark 8.4Bpps processing capacity and 6.4Tb/s throughput in a dense 2U form factor, SN4600C offers diverse connectivity in combinations of 10/25/40/50/100GbE. The SN4600C is well-suited to answer the challenging needs of large virtualized data centers and cloud environments.

SN4410

SN4410 is a 48-port 100GbE (24x QSFP28-DD) + 8x 400GbE (8x QSFP56-DD) leaf/spine switch system. The SN4410 is ideal for interconnecting 100GbE servers and networks to 400GbE infrastructure. With a landmark 8.4Bpps processing capacity and 8.0Tb/s throughput in a dense 1U form factor, SN4410 offers diverse connectivity in combinations of 10/25/40/50/100/200/400GbE.

SN4800

SN4800 is a modular switch platform ideally-suited for large virtualized data centers and cloud environments, allowing flexibility and customization with up to 8 line cards and a single management card. Demonstrating a landmark 8.4B pps processing capacity and up to 12.8Tb/s throughput in a versatile 4U form factor. The SN4800 offers 10/25/40/50/100GbE connectivity with a 16 x 100GbE (QSFP28) line card.

* Future Option
† For illustration only. Actual products may vary.

Platform Software Options

SN4000 series platforms are available out of the factory in three different flavors:

- 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.
- Pre-installed with NVIDIA Onyx™, a home-grown operating system utilizing common networking user experiences and an industry standard CLI.
- Bare metal including ONIE image, installable with any ONIE-mounted OS. ONIE-based platforms utilize the advantages of Open Networking and the Spectrum-3 ASIC capabilities.

High Availability

SN4000 series switches are designed with the following software and hardware features for high availability:

- 1+1 hot-swappable power supplies and N+1 hot-swappable fans
- Color-coded PSUs and fans
- Up to 128X 100/50/25/10/1GbE, 64X 200GbE or 32X 400GbE
- Multi-chassis LAG for active/active L2 multipathing
- 128-way ECMP routing for load balancing and redundancy

SN4000 Series: A Rich Software Ecosystem

NVIDIA Cumulus-Linux

NVIDIA 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 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. NVIDIA fully supports the Pure Open Source SONiC from the SONiC community site on all of the SN4000 series switch platforms. With advanced monitoring and diagnostic capabilities, SONiC is a perfect fit for the NVIDIA SN4000 series. Among other innovations, SONiC on SN4000 series enables fine-grained failure recovery and in-service upgrades (ISSU), with zero downtime.

Linux Switch and Dent

Linux Switch enables users to natively install and use any standard Linux distribution as the switch operating system, such as DENT, a Linux-based networking OS stack that is suitable for campus and remote networking. Linux Switch is based on a Linux kernel driver model for Ethernet switches (Switchdev). It breaks the dependency of using vendor-specific, closed-source software development kits. The open-source Linux driver is developed and maintained in the Linux kernel, replacing proprietary APIs with standard Linux kernel interfaces to control the switch hardware. This allows off-the-shelf Linux-based networking applications to operate on Spectrum-based switches for L2 switching and L3 routing, including open source routing protocol stacks, such as FRR (Quagga), Bird and XORP, OpenFlow applications, or user-specific implementations.

NVIDIA Onyx

Onyx is a high performance switch operating system, with a classic CLI interface. Whether building a robust storage fabric, cloud, financial or media and entertainment fabric, customers can leverage the flexibility of Onyx to tailor their network platform to their environment. With built-in workflow automation, monitoring and visibility tools, enhanced high availability mechanisms, and more, Onyx simplifies network processes and workflows, increasing efficiencies and reducing operating expenses and time-to-service.

Onyx leverages capabilities of the SN4000 series to provide greater magnitudes of scale, state-of-the-art telemetry, enhanced QoS, exceptional programmability that enables a flexible pipeline supporting both new and legacy protocols, a larger fully-shared buffer, and more**.

NVIDIA NetQ

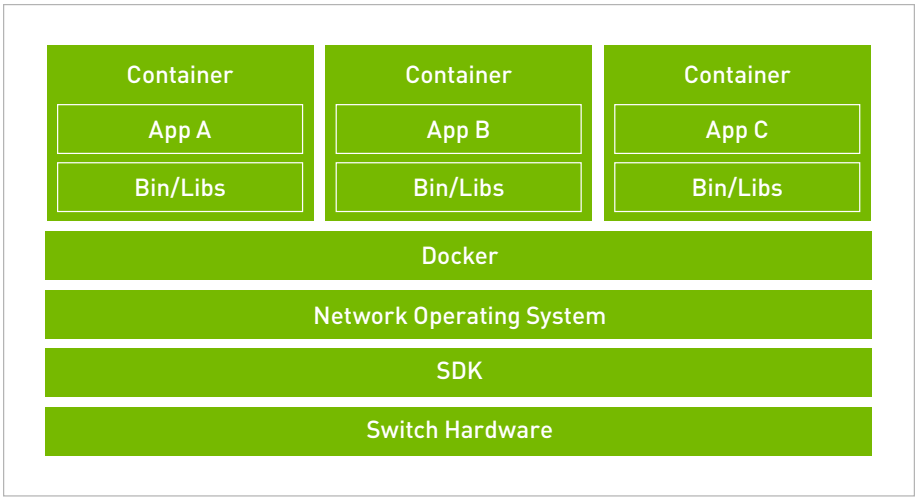
NVIDIA NetQ is a highly-scalable, modern, network operations tool set that provides visibility, troubleshooting and lifecycle management of your open networks in real time. NetQ delivers actionable insights and operational intelligence about the health of your data center and campus networks — from the container or host, all the way to the switch and port, enabling a NetDevOps approach. NetQ is the leading network operations tool that utilizes telemetry for deep troubleshooting, visibility and automated workflows from a single GUI interface, reducing maintenance and network downtimes. With the addition of full lifecycle management functionality, NetQ now combines the ability to easily upgrade, configure and deploy network elements with a full suite of operations capabilities, such as visibility, troubleshooting, validation, trace and comparative look-back functionality.

ONIE

The open network install environment (ONIE) is an open compute project open source initiative driven by a community to define an open "install environment" for bare metal network switches, such as the NVIDIA SN4000 series. ONIE enables a bare metal network switch ecosystem where end users have a choice of different network operating systems.

Docker Containers

NVIDIA fully supports the running of third party containerized applications on the switch system itself. The third party application has complete access to the bare-metal switch via its direct access to the SDK. The switch has tight controls over the amount of memory and CPU cycles each container is allowed to use, along with fine grained monitoring of those resources.



Docker Containers Support

** SN4410, SN4600, SN4800 will not support Onyx

NVIDIA Spectrum-3: Build your cloud without compromise

Groundbreaking Performance

Packet buffer architecture has a major impact on overall switch performance. The Spectrum-3 packet buffer is monolithic and fully shared across all ports, supporting cut-through line rate traffic from all ports, without compromising scale or features. With its fast packet buffer, Spectrum-3 is able to provide a high-performance fair and bottleneck-free data path for mission-critical applications.

Pervasive Visibility

Spectrum-3 provides deep and contextual network visibility, which enables network operators to proactively manage issues and reduce mean time to recovery/innocence. The WJH 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 Spectrum-3 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. Spectrum-3 features a unique feature rich and efficient packet processing pipeline that offers rich data center network virtualization features without compromising on performance or scale. Spectrum-3 has a programmable pipeline and a deep packet parser/editor that can process payloads up to the first 512B. Spectrum-3 supports single pass VXLAN routing as well as bridging. Additionally, Spectrum-3 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, Spectrum-3 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.

End-to-End Solution

The SN4000 series is part of the NVIDIA complete end-to-end solution which provides 1GbE through 400GbE interconnectivity within the data center. Other devices in this solution include ConnectX®-based network interface cards and LinkX® copper or fiber cabling.

specifications

Switch Model	SN4800*	SN4700	SN4600	SN4600C	SN4410
Connectors	Based on Line Cards	32 QSFP-DD 400GbE	64 QSFP56 200GbE	64 QSFP28 100GbE	24 QSFP28-DD 100G + 8 QSFP-DD 400GbE
Max. 400GbE Ports	-	32	-	-	8
Max. 200GbE Ports	-	64	64	-	16
Max. 100GbE Ports	Up to 128 in full chassis	128	128	64	48+32**
Max. 50GbE Ports	Up to 128 in full chassis	128	128	128	48+32**
Max. 40GbE Ports	Up to 128 in full chassis	64	64	64	32
Max. 25GbE Ports	Up to 128 in full chassis	128	128	128	128
Max. 10GbE Ports	Up to 128 in full chassis	128	128	128	128
Max. 1GbE Ports	-	128	128	128	128
Switching Capacity [Tb/s]	12.8Tb/s	12.8Tb/s	12.8Tb/s	6.4Tb/s	8Tb/s
Wire Speed Switching [Bpps]	8.4Bpps	8.4Bpps	8.4Bpps	8.4Bpps	8.4Bpps
CPU	Hexa-core x86	Quad-core x86	Quad-core x86	Quad-core x86	Quad-core x86
System Memory	32GB	16GB	16GB	8GB	16GB
SSD Memory	128GB	64GB	64GB	32GB	64GB
Packet Buffer	64MB	64MB	64MB	64MB	64MB
100/1000Mb/s Mgmt Ports	1	1	1	1	1
Serial Ports	1 RJ45	1 RJ45	1 RJ45	1 RJ45	1 RJ45
USB Ports	1	1	1	1	1
Hot-Swap Power Supplies	4 (2+2 redundant)	2 (1+1 redundant)	2 (1+1 redundant)	2 (1+1 redundant)	2 (1+1 redundant)
Hot-Swappable Fans	6 (N+1 redundant)	6 (N+1 redundant)	3 (N+1 redundant)	3 (N+1 redundant)	6 (N+1 redundant)
Reversible Airflow Option	Yes	Yes	Yes	Yes	Yes
Power Supplies	Frequency: 50-60Hz Input range: 100-264 AC	Frequency: 50-60Hz Input range: 100-264 AC	Frequency: 50-60Hz Input range: 100-264 AC	Frequency: 50-60Hz Input range: 100-264 AC	Frequency: 50-60Hz Input range: 100-264 AC
Size (H x W x D)	6.93'' x 17.4'' x 29.6'' (176mm x 444mm x 754.3mm)	1.72'' x 16.85'' x 22.3'' (44mm x 428mm x 568.5mm)	3.46'' x 16.85'' x 22.3'' (88mm x 428mm x 568.5mm)	3.46'' x 16.85'' x 22.3'' (88mm x 428mm x 568.5mm)	1.72'' x 16.85'' x 22.3'' (44mm x 428mm x 568.5mm)

* Available July 2022

Supported Transceivers and Cables

Supported Transceivers and Cables	Interface Type	Description	SKU
400GbE PAM4 QSFP-DD	400BASE-CR8 copper	0.5m-2.5m DAC	MCP1660-W0xxxxx
	400BASE-SR8	850nm, MPO16, up to 100m	T-DQ8FNS-N00-M
	400BASE-DR4	1310nm, MPO, up to 500m	MMS1V00-WM
	400BASE-FR4	1310nm, LC-LC, up to 2km	MMS1V50-WM*
	400BASE-LR4	1310nm, LC-LC, up to 10km	MMS1V90-WR*
	400BASE-AOC	3m-100m	C-DQ8FNM0xx-H0-M
	400GbE to 2 x 200GbE QSFP56	1m-2.5m DAC	MCP7H60-W0xxxxx
	400GbE to 4 x 100GbE QSFP56	1m-2.5m DAC	MCP7F60-W0xxxxx
	400GbE to 8 x 50GbE SFP56	1m-2.5m DAC	MCP7F80-W0xxxxx*
200GbE PAM4 QSFP56	200BASE-CR4 copper	0.5m-2.5m LSZH DAC	MCP1650-V0xxxxx
	200BASE-AOC	3m-100m	MFS1S00-Vxxxx
	200BASE-SR4	850nm, MPO, up to 100m	MMA1T00-VS
	200BASE-FR4*	1310nm, LC-LC, up to 2km	MMS1W50-HM
	200GbE to 4 x 50GbE SFP56	1m-2.5m DAC	MCP7H70-V0xxxx
	200GbE to 2 x 100GbE QSFP56	1m-2.5m DAC	MCP7H50-V0xxxxx
	200GbE to 2 x 100GbE QSFP56	3m-30m AOC	MFS1S50-Vxxxx
100GbE NRZ QSFP28	100BASE-CR4 copper	0.5m-5m LSZH DAC	MCP1600-C0xxxxxx
	100BASE-AOC	3m-100m	MFA1A00-CXXX
	100BASE-SR4	850nm, MPO, up to 100m	MMA1B00-C100D
	100BASE-PSM4	1310nm, MPO, up to 500m	MMS1C10-CM
	100BASE-LR4	1310nm, LC-LC, up to 10km	MMA1L10-CR
	100BASE-CWDM4	1310nm, LC-LC, up to 2km	MMA1L30-CM
	100BASE-SWDM4	850nm, LC-LC, up to 100m	FTLC9152RGPL
	100BASE-ER	1310nm, LC-LC, up to 40km	SPQ-CE-ER-CDFL-M
	100BASE-DR1	1310nm, LC-LC, up to 500m	MMS1V70-CM
	100GbE to 4 x 25GbE SFP28	1m-5m DAC	MCP7F00-A0xxxxxx
	100GbE to 4 x 25GbE SFP28	3m-30m AOC	MFA7A50-Cxxx
	100GbE to 2 x 50GbE QSFP28	1m-5m DAC	MCP7H00-G0xxxxxxx
	100GbE to 25GbE	QSA28 pluggable adapter	MAM1Q00A-QSA28
40GbE QSFP	40BASE-CR4	1m-5m DAC	MC2210130-00X
	40BASE-SR4	850nm, MPO, up to 100m	MMA1B00-B150D
		850nm, MPO, up to 300m	MC2210411-SR4E
	40BASE-LR4	1310nm, LC-LC, up to 10km	MC2210511-LR4
	40GbE to 4 x 10GbE	1m-5m DAC	MC26091XX-00X
	40GbE to 10GbE	QSA pluggable adapter	MAM1Q00A-QSA
25GbE SFP28	25BASE-CR	0.5m-5m DAC	MCP2M00-A0xxxxxxx
	25BASE-AOC	3m-100m	MFA2P10-AXXX
	25BASE-SR	850nm, LC-LC, up to 100m	MMA2P00-AS
	25BASE-LR	1310nm, LC-LC, up to 10km	MMA2L20-AR
10GbE SFP+	10BASE-CR	1m-7m DAC	MC3309xxx-00X
	10BASE-SR	850nm, LC-LC, up to 300m	MFM1T02A-SR
	10BASE-LR	1310nm, LC-LC, up to 10km	MFM1T02A-LR

Ordering information

SKUs	
MSN4800 Series:	
MSN4800-WS4F	"Spectrum-3 based 100GbE 4U Modular Open Ethernet Chassis, 4 Power Supplies (AC), x86 CPU, standard depth, P2C airflow, Rail Kit
MSN4800-WS4R	"Spectrum-3 based 100GbE 4U Modular Open Ethernet Chassis, 4 Power Supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit
MSN4800-C16	SN4800 100GbE Line-Card, 16 QSFP28 ports
MSN4800-MGMT-2C	SN4800 Chassis Management Card with Cumulus, x86 hexa-Core CPU, 128G SSD, 32G RAM
MSN4800-MGMT-2O	SN4800 Chassis Management Card with ONIE, x86 hexa-Core CPU, 128G SSD, 32G RAM
MSN4700 Series:	
MSN4700-WS2F	Spectrum-3 based 400GbE 1U Open Ethernet Switch with Onyx, 32 QSFPDD ports, 2 Power Supplies (AC), x86 CPU, standard depth, P2C airflow, Rail Kit
MSN4700-WS2R	Spectrum-3 based 400GbE 1U Open Ethernet Switch with Onyx, 32 QSFPDD ports, 2 Power Supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit
MSN4700-WS2FC	Spectrum-3 based 400GbE 1U Open Ethernet Switch with Cumulus Linux, 32 QSFPDD ports, 2 Power Supplies (AC), x86 CPU, standard depth, P2C airflow, Rail Kit
MSN4700-WS2RC	Spectrum-3 based 400GbE 1U Open Ethernet Switch with Cumulus Linux, 32 QSFPDD ports, 2 Power Supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit
MSN4700-WS2FO	Spectrum-3 based 400GbE 1U Open Ethernet Switch with ONIE, 32 QSFPDD ports, 2 Power Supplies (AC), x86 CPU, standard depth, P2C airflow, Rail Kit
MSN4700-WS2RO	Spectrum-3 based 400GbE 1U Open Ethernet Switch with ONIE, 32 QSFPDD ports, 2 Power Supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit
MSN4600C Series:	
MSN4600-CS2F	Spectrum-3 based 100GbE 2U Open Ethernet Switch with Onyx, 64 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, standard depth, P2C airflow, Rail Kit
MSN4600-CS2R	Spectrum-3 based 100GbE 2U Open Ethernet Switch with Onyx, 64 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit
MSN4600-CS2FC	Spectrum-3 based 100GbE 2U Open Ethernet Switch with Cumulus Linux, 64 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, standard depth, P2C airflow, Rail Kit
MSN4600-CS2RC	Spectrum-3 based 100GbE 2U Open Ethernet Switch with Cumulus Linux, 64 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit
MSN4600-CS2FO	Spectrum-3 based 100GbE 2U Open Ethernet Switch with ONIE, 64 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, standard depth, P2C airflow, Rail Kit
MSN4600-CS2RO	Spectrum-3 based 100GbE 2U Open Ethernet Switch with ONIE, 64 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit
MSN4600 Series:	
MSN4600-VS2FC	Spectrum-3 based 200GbE 2U Open Ethernet Switch with Cumulus Linux, 64 QSFP56 ports, 2 Power Supplies (AC), x86 CPU, standard depth, P2C airflow, Rail Kit
MSN4600-VS2RC	Spectrum-3 based 200GbE 2U Open Ethernet Switch with Cumulus Linux, 64 QSFP56 ports, 2 Power Supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit
MSN4600-VS2FO	Spectrum-3 based 200GbE 2U Open Ethernet Switch with ONIE, 64 QSFP56 ports, 2 Power Supplies (AC), x86 CPU, standard depth, P2C airflow, Rail Kit
MSN4600-VS2RO	Spectrum-3 based 200GbE 2U Open Ethernet Switch with ONIE, 64 QSFP56 ports, 2 Power Supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit
MSN4410 Series:	
MSN4410-WS2FC	Spectrum-3 based 100GbE/400GbE 1U Open Ethernet Switch with Cumulus Linux, 24 QSFP-DD28 and 8 QSFP-DD ports, 2 Power Supplies (AC), x86 CPU, standard depth, P2C airflow, Rail Kit
MSN4410-WS2RC	Spectrum-3 based 100GbE/400GbE 1U Open Ethernet Switch with Cumulus Linux, 24 QSFP-DD28 and 8 QSFP-DD ports, 2 Power Supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit
MSN4410-WS2FO	Spectrum-3 based 100GbE/400GbE 1U Open Ethernet Switch with ONIE, 24 QSFP-DD28 and 8 QSFP-DD ports, 2 Power Supplies (AC), x86 CPU, standard depth, P2C airflow, Rail Kit
MSN4410-WS2RO	Spectrum-3 based 100GbE/400GbE 1U Open Ethernet Switch with ONIE, 24 QSFP-DD28 and 8 QSFP-DD ports, 2 Power Supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit