NVIDIA ETHERNET NETWORKING PORTFOLIO
SMART END-TO-END CONNECTIVITY SOLUTIONS

Organizations are pushing more and more traffic through enterprise data centers. Networks built to handle the increase in traffic and application workloads require predictability, offloads, accelerators, and open Ethernet. NVIDIA® empowers companies to better address business needs by solving typical networking issues such as congestion, demand for bandwidth, and network inefficiencies to deliver better performance at the application level.

NVIDIA SPECTRUM SWITCHES

The NVIDIA Spectrum™ family of Open Ethernet switches provides Open Ethernet, flexibility, speed, and simple management. Spectrum switches enable flexibility and freedom to run a choice of network operating systems, including NVIDIA Cumulus Linux™, NVIDIA Onyx™, SONiC, DENT, or other third-party network operating systems, to optimize utilization, efficiency, and overall return on investment. With comprehensive Layer 2 and Layer 3 support for spine and top-of-rack switching at speeds from 1 to 400GbE, Spectrum switches provide the highest density/performance, in a broad portfolio ranging from 16 ports through 128 ports, including industry-unique half-width switches. This allows for maximum connectivity and flexibility to meet application deployment requirements.

NVIDIA CONNECTX SMARTNICS

NVIDIA ConnectX® Ethernet SmartNICs provide world-class server, network, and storage performance for the most demanding data center environments . ConnectX SmartNICs accelerate servers and improve application efficiency through hardware offloads and innovative technologies such as NVIDIA GPUDIRECT®, and NVIDIA ASAP² Accelerated Switch and Packet Processing™.
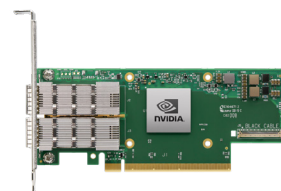
NVIDIA BLUEFIELD DPUs

NVIDIA BlueField® DPU is the world's most advanced data processing unit (DPU), combining the networking power of the ConnectX SmartNIC with programmable Arm cores with offloads for storage virtualization, threat detection, and security isolation. Delivering up to 200GbE of connectivity, BlueField DPUs provide a rich set of networking, storage, and security accelerators, controlled by a tightly integrated, fully programmable processor running software-defined data center services.
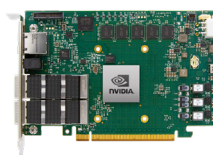
NVIDIA LINKX CABLES AND TRANSCEIVERS

NVIDIA LinkX® cables optimize signal integrity and ensure reliable connections. Whether your network application runs on Ethernet or InfiniBand, the LinkX cables and transceivers make 100GbE deployments as easy and as universal as 10GbE links. NVIDIA offers one of the industry's broadest portfolio of 10, 25, 40, 50, 100, 200, and 400GbE direct attach copper cables (DACs), copper splitter cables, active optical cables (AOCs) and transceivers, with a reach of 0.5m to 10km between data centers. LinkX certified cables are 100% tested with NVIDIA Ethernet and InfiniBand systems to ensure optimal signal integrity and the best end-to-end performance.

ADVANCED NOS AND TELEMETRY
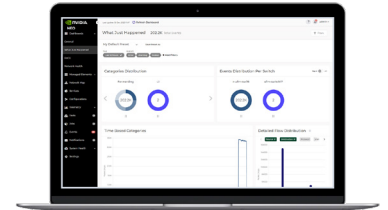
Cumulus Linux

Cumulus Linux is a powerful open network operating system (NOS) that enables advanced automation, customization and scalability by using web-scale principles.
It accelerates networking functions and provides choice from a wide range of vendors and supported switch models including Spectrum based switches.

NVIDIA Onyx

Onyx network operating system (NOS) delivers a new level of flexibility and scalability to next-generation data centers with storage, cloud, financial or media and entertainment fabrics. Featuring a robust layer 3 protocols stack, built-in workflow automation, monitoring and visibility tools, and high availability.

NVIDIA WHAT JUST HAPPENED

As an advanced telemetry technology, NVIDIA WHAT JUST HAPPENED® (WJH) provides real time visibility into problems in the network. WJH goes beyond conventional telemetry solutions by providing actionable details on abnormal network behavior. WJH eliminates the guesswork from network troubleshooting.

NVIDIA SPECTRUM ETHERNET SWITCHES

Switch	Performance	Application	Size	OS
SN2010	18x10/25GbE + 4x40/100GbE	Ideal storage and hyper-converged switch	1U /½ 19" wide	NVIDIA Cumulus Linux NVIDIA Onyx, SONiC, DENT
SN2100	16X100GbE 32X50GbE 64X10/25GbE	Ideal ToR storage/hyper-converged switch ½ width rack, 2 units side-by-side		
SN2410	48X10/25GbE + 8X100GbE	ToR switch with server and uplink ports	1U	
SN2700	32x100GbE 64x50GbE 64x25GbE	100GbE Aggregation Switch		
SN3420	48x25GbE +12x100GbE	High-density ToR switch		
SN3510	48x50GbE + 6x4 GbE	Ideal ToR switch for hyper-converged storage		
SN3700C	32x100GbE 64x50GbE 128x25GbE	100GbE ToR switch with up to 128 ports w/ breakout cables		
SN3700	32x200 64x100/ 40GbE 128x50/25/1GbE	Ideal all-in-one 200GbE cloud and hyperscale data center switch		

NVIDIA SPECTRUM ETHERNET SWITCHES (CONTINUED)

Switch	Performance	Application	Size	OS
SN4600C	64x100/40GbE	Ideal for spine/super-spine applications	2U	NVIDIA Cumulus Linux NVIDIA Onyx, SONiC, DENT
SN4600	64x200GbE	Ideal for spine or as a high density ToR		
SN4700	32x400GbE	Spine solution with maximum flexibility, port speeds spanning from 1GbE to 400GbE ports	1U	

CONNECTX SMARTNICS

Adapters	Speeds	Connectors	Bus	Size	Features	Use Cases	OS
ConnectX-4 Lx	10/25/40 and 50GbE	SFP28, QSFP28	PCIe Gen3 X8	Single and Dual	RoCE (over layer2 and layer3) GPUDirect SR-IOV ASAP[2] Overlay networks Stateless offloads Dynamically connected transport		Linux, Windows, VMWare, FreeBSD, OFED
ConnectX-5	10/25/40/50 and 100GbE	QSFP28	PCIe Gen 4 X16 PCIe Gen3 X8	Single and Dual	Out of order RDMA RoCE over Overlay Networks PeerDirect RDMA SR-IOV ASAP[2] Overlay networks Stateless offloads NVMe-oF MPI tag matching Dynamically connected transport		
ConnectX-6 Dx	10/25/40/50/ 100 and 200GbE	SFP28, SFP56, QSFP28, QSFP56, SFP-DD	PCIe Gen 3 X16 PCIe Gen 4 X16	Single and Dual	An intelligent and secure cloud Ethernet network interface cards (NIC) for accelerating mission-critical data-center applications, e.g., security, virtualization, SDN/NFV, big data, machine learning, and storage		
ConnectX-6 Lx	10/25/50GbE	SFP28, QSFP2	PCIe Gen4 x8	Single and Dual	ASAP[2] Hardware root-of-trust Secure firmware update IPsec inline crypto Advanced RoCE Advanced overlay tunneling accelerator		
ConnectX-6	10/25/50/100/ 200GbE	QSFP56, SFP-DD	PCIe Gen3 2X16	Single and Dual	215 million messages/sec ASAP[2] Hardware root-of-trust Secure firmware update IPsec inline crypto Advanced RoCE Advanced overlay tunneling accelerators		

BLUEFIELD DPUs

Adapters	Speeds	Connectors	Bus	Size	Features	Use Cases	OS
BlueField	25/50/100GbE	SFP28, QSFP28	PCIe 3/4 x8	Dual	**SOC** Multicore Arm® processor with ConnectX High-speed memory controller security, and storage tasks from the CPU		Linux, Windows, VMWare, FreeBSD, OFED
BlueField-2	25/50/100GbE	QSFP28	PCIe 3/4 x8 or x16	Single or Dual	**Security** > RegEx engine accelerator > Air-gapped isolation > IPsec/TLS and XTS encryption > Connection tracking **Storage** > NVMe SNAP™ storage emulation > NVMe-oF accelerator > VirtIO-blk accelerator **Networking** > RoCE, Zero Touch RoCE > VirtIO-net accelerator > ASAP², OVS acceleration > Telemetry Agent over Arm cores > GPUDirect		CentOS, Ubuntu, Yocto, OFED

NVIDIA LINKX CABLES AND TRANSCEIVERS

Direct Attach Cables (DAC)	Active Optical Cables (AOC)	Optical Transceivers
Lowest priced passive links Reach: ½–7m Zero power consumption Near zero latency delays Point-to-point, splitters and port adapters	Lowest priced optical interconnects Reach: up to 100m Lowest power consumption 2.2W Low latency delays Tunable CDRs - saves power, latency multi-mode VCSEL and silicon photonics	Full line of 25/50/100/200G Reaches: 30m–500m, 2Km, 10Km Connectorized optics: MPO and LC SR4 lowest power consumption (2.3W) Multi-mode + single-mode

Learn more at **www.nvidia.com/en-us/networking/products/ethernet**