



NVIDIA Announces Spectrum High-Performance Data Center Networking Infrastructure Platform

End-to-End 400G Hyperscale Networking Platform Delivers 4x Acceleration With Breakthrough Spectrum-4 Switch, BlueField-3 DPU and ConnectX-7 SmartNIC

GTC—NVIDIA today announced [NVIDIA Spectrum™-4](#), the next generation of its Ethernet platform which enables the extreme networking performance and robust security needed for data center infrastructure at scale.

The world's first 400Gbps end-to-end networking platform, NVIDIA Spectrum-4 provides 4x higher switching throughput than previous generations, with 51.2 terabits per second. It consists of the [NVIDIA Spectrum-4 switch family](#), [NVIDIA ConnectX®-7 SmartNIC](#), [NVIDIA BlueField®-3 DPU](#) and the [DOCA™ data center infrastructure software](#) to supercharge cloud-native applications at scale.

Built for AI, NVIDIA Spectrum-4 arrives as data centers are growing exponentially and demanding extreme performance, advanced security and powerful features to enable high-performance, advanced virtualization and simulation at scale. The Spectrum-4 Ethernet platform includes key features needed for the uncompromising requirements of these technologies.

Spectrum-4 switches allow nanosecond timing precision — which is an improvement of five to six orders of magnitude compared to typical, millisecond-based data centers. They also accelerate, simplify and secure the network fabric with 2x faster per-port bandwidth, 4x fewer switches and 40 percent lower power consumption compared to the previous generation.

The Spectrum platform enables the simulation of precise space and time in the [NVIDIA Omniverse™](#) platform for 3D design collaboration and simulation and the Spectrum-3 switch fabric connects 32 OVX servers to form the OVX SuperPOD.

“A new era of massive-scale cloud technologies, such as Omniverse, requires a transformation of data center architecture,” said Kevin Deierling, vice president of Networking at NVIDIA. “The Spectrum-4 platform's extreme performance and robust security will equip data centers to power breakthrough discoveries that push the boundaries of what's possible for the benefit of society.”

NVIDIA Spectrum-4 Switch Performance and Innovation

The NVIDIA Spectrum-4 ASIC and SN5000 switch family is based on a 4N process and contains over 100 billion transistors along with a simplified transceiver design that leads to best-in-class power efficiency and total cost of ownership. With 51.2Tbps aggregate ASIC bandwidth supporting 128 ports of 400GbE, combined with adaptive routing and enhanced congestion control mechanisms, Spectrum-4 optimizes RDMA over Converged Ethernet fabrics and dramatically accelerates data centers.

The Spectrum-4 ASIC features state-of-the-art security features such as support for MACsec and VXLANsec, plus secure boot as default via hardware root of trust to help ensure the security and integrity of data flows and network management.

With 12.8Tbps of encrypted bandwidth and these security features — also found in BlueField-3 DPUs and ConnectX-7 SmartNICs — Spectrum-4 is the fastest, most secure end-to-end Ethernet networking platform on the market.

The Spectrum platform, inclusive of Spectrum switches, BlueField and ConnectX, boosts performance and scalability for AI applications, digital twins and cloud infrastructure, enabling the highest efficiency and availability for modern data centers.

Growing Ecosystem of Spectrum Support

The speed, security and functionality of the Spectrum platform is ideal for building state-of-the-art data centers and is being adopted by a growing number of partners.

BlueField DPUs now offload and accelerate [Red Hat OpenShift](#), including an end-to-end cloud-native architecture that integrates tenant and infrastructure clusters with automation and deployment tools capable of running complex containerized workloads.

BlueField is also central to VMware's Project Monterey, which includes a collaboration between VMware and NVIDIA that aims to improve the performance, manageability and security of data centers.

Now select enterprises can get immediate access to [VMware's Project Monterey Early Access with BlueField on NVIDIA LaunchPad](#). LaunchPad equips IT administrators to deploy data-driven applications for quick testing and prototyping entire workflows on the same complete stack.

[BlueField-2 DPU integration with Palo Alto Networks VM-Series](#) virtual next-generation firewalls and [Intelligent Traffic Offload](#) service delivers best-in-class security innovation that results in up to a 5x [performance boost](#) to virtual firewalls for

enterprise and service provider networks.

The Spectrum platform accelerates state-of-the-art data center networking infrastructure for industry-leading customers and software vendors that include Akamai, Baidu, Canonical, Criteo, DDN, F5, Kuaishou, NetApp, Nutanix, OVHcloud, Pure Storage, Pluribus Networks, Red Hat, StackPath, VAST Data, VMware, WEKA and others.

Industry-leading server manufacturers integrating Spectrum switches into their systems include Hewlett Packard Enterprise, IBM, Lenovo and Supermicro.

NVIDIA BlueField DPUs are being offered in solutions from innovators that include ASUS, Atos, Dell Technologies, GIGABYTE, H3C, IBM, Inspur, Lenovo, Nettrix, Pluribus Networks, Quanta/QCT and Supermicro.

The BlueField-3 DPU and Spectrum-4 switch systems will be available later this year. ConnectX-7 is available now.

To learn more about NVIDIA Spectrum, watch the [GTC 2022 keynote](#) from NVIDIA CEO Jensen Huang. [Register for GTC for free](#) to attend sessions with NVIDIA and industry leaders.

About NVIDIA

[NVIDIA](#)'s (NASDAQ: NVDA) invention of the GPU in 1999 sparked the growth of the PC gaming market and has redefined modern computer graphics, high performance computing and artificial intelligence. The company's pioneering work in accelerated computing and AI is reshaping trillion-dollar industries, such as transportation, healthcare and manufacturing, and fueling the growth of many others. More information at <https://nvidianews.nvidia.com/>.

Certain statements in this press release including, but not limited to, statements as to: the benefits, impact, specifications, performance and availability of our products and technologies, including NVIDIA Spectrum-4, NVIDIA ConnectX-7 SmartNICs, the Spectrum platform and NVIDIA BlueField DPUs; data centers growing exponentially and demanding extreme performance, advanced security and powerful features to enable high-performance, advanced virtualization and simulation at scale; the requirements of a new era of massive-scale cloud technologies; the growing ecosystem of Spectrum support; the Spectrum platform being adopted by a growing number of partners; our collaborations with third parties, including Project Monterey; the Spectrum platform accelerating state-of-the-art data center networking infrastructure for industry-leading customers and software vendors; industry-leading server manufacturers integrating Spectrum switches into their systems; and the innovators offering NVIDIA BlueField DPUs in solutions are forward-looking statements that are subject to risks and uncertainties that could cause results to be materially different than expectations. Important factors that could cause actual results to differ materially include: global economic conditions; our reliance on third parties to manufacture, assemble, package and test our products; the impact of technological development and competition; development of new products and technologies or enhancements to our existing product and technologies; market acceptance of our products or our partners' products; design, manufacturing or software defects; changes in consumer preferences or demands; changes in industry standards and interfaces; unexpected loss of performance of our products or technologies when integrated into systems; as well as other factors detailed from time to time in the most recent reports NVIDIA files with the Securities and Exchange Commission, or SEC, including, but not limited to, its annual report on Form 10-K and quarterly reports on Form 10-Q. Copies of reports filed with the SEC are posted on the company's website and are available from NVIDIA without charge. These forward-looking statements are not guarantees of future performance and speak only as of the date hereof, and, except as required by law, NVIDIA disclaims any obligation to update these forward-looking statements to reflect future events or circumstances.

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