NVIDIA.

SOLUTION SHOWCASE

NUTANIX.

Network connectivity with NVIDIA + Nutanix

Challenge

> Accomodate diverse traffice loads

> Legacy infrastructures are too rigid and complex

> Ability to easily scale without limits

NVIDIA® + Nutanix™ Solution

> Easy to design and deploy

> One platform for all

> Simple and scalable networking

> Easy-to-manage networking

Solultion Benefits

> Operational efficiency

> Organizational agility

> Procuremnt flexibility

> System reliability

SIMPLIFY NUTANIX CONNECTIVITY WITH NVIDIA NETWORKING

The Connectivity Challenge

IT managers are under considerable pressure to accommodate diverse traffic loads, increase scalability, and improve resiliency. Too often, their legacy infrastructures are too rigid and complex to meet these needs—they're simply not up to the task. What's needed is an open, flexible and efficient networking model that is easy to operate, scalable, and cost-effective.

Hyper-converged infrastructure (HCI), integrates compute, networking, virtualization, storage, and management to offer lower operating costs, improved performance, greater scalability, streamlined management, and simplified procurement.

In a crowded field of HCI vendors, Nutanix has emerged as a top performer, receiving high marks from analysts for both strength of product offering and long-term strategy. Nutanix leverages commodity server hardware to collapse independent services into a single converged platform, optimizing both computing and storage infrastructures. Given these advantages, it's no surprise that many IT groups are moving to deploy Nutanix solutions.

The NVIDIA-Nutanix Solution

Unfortunately, many risk the potential to fall behind schedule, hampered by network connectivity, configuration issues, and organizational challenges. NVIDIA® Mellanox® Ethernet networking solutions simplify the deployment and management of high-speed networks within HCI environments. Optimized for high-speed and data and storage networking, NVIDIA networking is ideal for hyperconverged solutions, such as the Nutanix Xtreme Computing Platform. The NVIDIA Ethernet networking solutions stand apart from other suppliers with

unique port count/form factors for full switch redundancy in a single rack unit without wasting ports, and ultra-low latency and acceleration features improve overall efficiency. Validated as Nutanix Ready for Networking, NVIDIA provides a transparent and simplified user experience, further reducing complexity and total cost of ownership when combined with Nutanix infrastructure.

Solution Overview

Nutanix solutions are based on a distributed scale-out architecture for all enterprise workloads at any scale. NVIDIA Ethernet networking solutions greatly reduce overall complexity, especially when IT infrastructure scales and enterprise-class reliability is required. Together, Nutanix and NVIDIA deliver end-to-end solutions to simplify converged IT infrastructures. This includes automation of network connectivity, simplified procurement and time to problem resolution.

The key features of the joint solution include:

> **Easy to design and deploy:** leverage a streamlined installation process, sizing tools and reference designs to go from concept to production in as much as 30X faster than traditional approaches

> **One platform for all:** Consolidation on to a single solution with predictable scalability delivered by Nutanix's web-scale architecture and NVIDIA Mellanox Spectrum® switches

> **Simple and scalable networking:** It simply works- with sufficient ports in the smallest and most convenient form factor, the Spectrum switches are the most flexible while NVIDIA Cumulus® network operating system (OS) offers automatic VLAN provisioning and built-in link redundancy when using the Multi-Chassis Link Aggregation (MLAG) protocol

> **Easy-to-manage networking:** With REST-based management APIs, NVIDIA networking solutions provide automated network provisioning and monitoring capabilities that can be easily integrated into existing management software, offer end-to-end visibility across the network fabric, and a distributed networking solution to eliminate the need for a central controller

Solution Benefits

The NVIDIA-Nutanix solution delivers tangible business value by increasing efficiency, boosting organization agility, procurement flexibility, and improving system reliability.

OPERATIONAL EFFICIENCY

> Dramatically shorten the time required to start up Nutanix clusters
> Avoids project stalling due to connectivity problems
> NVIDIA Mellanox NEO® simplifies network orchestration with automated network provisioning and monitoring

ORGANIZATIONAL AGILITY

> Reduces friction between networking group and compute/storage engineers
> Empowers project team to meet aggressive deployment deadlines with a simple transition path to production
> mproves the user experience with single interface via Nutanix Prism

PROCUREMENT FLEXIBILITY

> Choose from standard to half-width switches with speeds from 10G – 200G and choice of NVIDIA Mellanox Onyx® or NVIDIA Cumulus Linux NOS

> Make purchasing decisions based on the needs of the business, not a single vendor's ability to deliver

> Streamlines procurement with a single bill of material from multiple vendors, including Lenovo and Dell

SYSTEM RELIABILITY

> Improves consistency and quality of service with scalable Layer 3 overlay fabric

> Accelerates mean time to resolution (MTTR) thanks to end-to-end network visibility

> Eliminates human error in the installation process

The Integrated Solution

Components of the joint solution:

SPECTRUM SWITCHES

Spectrum Ethernet switches provide industry leading performance, efficiency and throughput, low-latency, and scalability for data center networks. The NVIDIA SN2100 and SN2010 are Spectrum-based Ethernet switch system that are ideal for top-of-rack solution, tested and validated for the Nutanix hyperconverged Enterprise Cloud Platform. Both offer a unique design to accommodate the highest rack performance. Their design allows for side-by-side placement of two switches in a single 1U slot of a 19" rack, delivering high availability to the Nutanix cluster nodes.
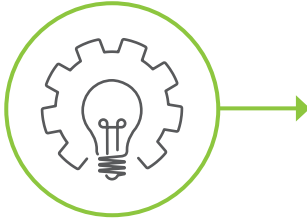
KEY BENEFITS OF SPECTRUM SWITCHES

> Up to 30X faster time to value from concept to production

> Get the fastest VM-related compute and storage performance

> Unique port count - Two Mellanox switches fit in a 1RU space in a 19" rack

> Eliminate under-utilized infrastructure silos, using up to 80% less space and 50% lower CapEx

> Improved performance: Class leading forwarding rate at all packet sizes and extremely low latency

> Cost-effective 10GbE switch with 25/40/ 50/100GbE capable ports - future proof for data center expansion and 25/40GbE Nutanix nodes

NUTANIX READY
• AHV •
• INTEGRATED •

SN2010   SN2010

10/25GbE
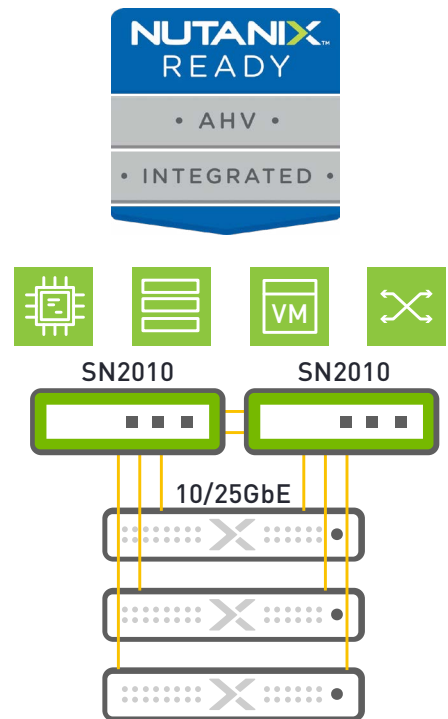
NVIDIA ONYX NOS

NVIDIA Onyx operation system provides a streamlined deployment model with a full documentation set to facilitate networking configurations ranging from basic to advanced. The Onyx NOS offers intelligent features including a robust Layer 3 protocols stack, multilink aggregation groups (MLAGs) to create a highly available L2 fabric to ensure that you can meet even the most stringent SLAs, built-in workflow automation, monitoring & visibility tools, and high availability mechanisms. Onyx enables highly scalable leaf-spine deployments and simplifies network processes and workflows, increasing efficiencies and reducing operating expenses and time-to-service.

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 a wide range of vendors and supported switch models including NVIDIA Mellanox Spectrum based switches. NVIDIA continues to be the leader in open networking, end-to-end, across hardware and software. 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 affordably build and efficiently operate your network like the world's largest data center operators, unlocking web-scale networking for businesses of all sizes.

For a list of compatible NVIDIA Cumulus Linux supported switches, cabling and optics hardware, please find the Hardware Compatibility List (HCL) and platform-specific information at **cumulusnetworks.com/hcl**.

NVIDIA CUMULUS NETQ

NVIDIA Cumulus 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.

NVIDIA MELLANOX NEO

NEO is a powerful platform for data-center network orchestration, designed to simplify network provisioning, monitoring and operations of the modern data center. NEO simplifies fabric management, automates configuration of devices, provides deep visibility into traffic and network health, and enables early detection and auto-recovery of errors and failures. NEO leverages REST APIs to simplify integration with third-party orchestration and management platforms, and allows access to fabric-related data and provisioning operations

NVIDIA MELLANOX CONNECTX ADAPTERS

ConnectX**®** Ethernet adapters deliver intelligent networking and storage offloads including TCP, RDMA, NVMe over Fabrics (NVMe-oF), erasure coding, T10 DIF, and encryption at 10, 25, 40, 50, 100 and up to 200 Gb/s Ethernet speeds. When used in a Nutanix environment they reduce storage latency and free up CPU on the initiator and target, so both servers and storage have more CPU power for running applications or storage features.

NVIDIA VIRTUAL GPU SOLUTIONS

Nutanix supports GPU-accelerated computing for guest VMs through the use of NVIDIA GPUs and software including NVIDIA Data Center GPUs, NVIDIA GRID™ vPC and vApps software, and the NVIDIA Quadro® Virtual Data Center Workstation (Quadro vDWS) software that extends the power of NVIDIA GPU technology to virtual desktops and applications.

NVIDIA MELLANOX LINKX CABLES AND TRANSCEIVERS

LinkX® offers one of industry's broadest portfolio of 10, 25, 40, 50,100, 200 and 400Gb/s Direct Attach Copper cables (DACs), Copper Splitter cables, Active Optical Cables (AOCs) and Transceivers, every data center reach from 0.5m to 10km is supported.

LinkX cables and transceivers complete the NVIDIA end-to-end Ethernet networking portfolio to deliver a unique price-performance value proposition for networking Nutanix HCI solutions.

INVISIBLE INFRASTRUCTURE THAT JUST WORKS

Nutanix makes data center infrastructure invisible by delivering an Enterprise Cloud that enables IT to focus on the applications and services that power their business. Nutanix combined with NVIDIA networking natively converges silos of compute, storage, networking and virtualization in a hyper-converged platform to run any workload, at any scale.

NVIDIA CUMULUS LINUX HARDWARE COMPATIBILITY LIST (HCL)

For other compatible NVIDIA Cumulus Linux supported switches, cabling and optics hardware, please find the Hardware Compatibility List (HCL) and platform-specific information at Choose the hardware that suits your needs.

ABOUT NUTANIX

Nutanix makes infrastructure invisible, elevating IT to focus on the applications and services that power their business. The Nutanix enterprise cloud platform leverages web-scale engineering and consumer-grade design to natively converge compute,virtualization and storage into a resilient, software-defined solution with rich machine intelligence. The result is predictable performance, cloud-like infrastructure consumption, robust security, and seamless application mobility for a broad range of enterprise applications. Learn more at **www.nutanix.com** or follow us on Twitter **@nutanix**.

LEARN MORE

To learn more about NVIDIA and Nutanix solution, visit:
www.mellanox.com/technology-partners/nutanix and
www.cumulusnetworks.com/HCI

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