

# Juniper Networks and Nutanix Make Infrastructure “Invisible”

Collaborative Solution Addresses Today’s Enterprise IT Challenges with Simplification

## Challenge

In this application-driven world, IT is constantly under pressure to deliver more, faster, and with reduced cost. But the increasing cost and complexity of the network, compute, and storage hardware, coupled with IT teams working in silos to build and support the underlying infrastructure, are presenting significant challenges.

## Solution

The Juniper and Nutanix hyper-converged solution addresses these challenges by simplifying the data center infrastructure.

## Benefits

The combined Juniper and Nutanix solution enables faster, more secure delivery of highly available applications while driving down overall TCO.

Virtualization revolutionizes how we look at resources by abstracting the underlying hardware components. It enables pooling of compute, network, and storage resources from across the underlying infrastructure and improves resource efficiency with streamlined deployment and management of physical resources. While the infrastructure has gotten streamlined, scale-out applications continue to be the most disruptive force within traditional data center networks. New applications and workloads are changing the requirements for separate storage area networks (SANs); this impacts the role of networking and IP storage, where virtual machine (VM) mobility sustains multiple gigabits of throughput by default with multicore processors. Combining compute and storage into a single appliance offers customers a hyper-converged solution, reducing cost and time for application workload deployment and operations.

## The Challenge

The traditional way of implementing networks and services in hardware makes them static, rigid, manual, and unable to respond as application requirements change frequently and rapidly. To adjust to today’s new reality with a minimum of disruption, organizations want to build their networks to meet the connectivity and service requirements of these increasingly dynamic applications with policy-driven, programmable, scalable, and automated methodologies to connect ideas to opportunities. While converged systems typically consist of separate components designed to work well together, hyper-converged systems are truly modular, resulting in a scale-out approach as opposed to a scale-up one. The count of virtual machines per server host will go higher as dense, efficient modules are built around virtualized networks and storage as well as compute. Hyper convergence is meant to scale out by adding modules as opposed to scaling up with bigger hosts.

## Nutanix and Juniper Value Proposition for Virtualization

Using a web-scale architecture that integrates compute and storage resources into a 100% software-defined appliance, Juniper Networks and Nutanix empower both large and small IT organizations to efficiently consolidate and run all virtualized workloads on a single system.

The value proposition for this joint solution includes:

- A single platform delivering high performance and predictable scale for any virtual workload
- High performance networking and security for scale-out virtual data centers
- Flexibility with multi-hypervisor support (Hyper-V, ESXi, Acropolis Hypervisor) and a full appliance portfolio for the right mix of compute and storage resources
- VMs that keep running and are protected with VM-centric backups and integrated disaster recovery
- Innovative Virtual Chassis Fabric architecture with automation capabilities for simplified management

This collaborative solution offers distinct advantages in the following areas:

- **Respond quickly to growth:** Start small and linearly scale out the IT infrastructure in hours, enabling you to pay-as-you-grow as needs change.
- **Maintain high performance for all workloads:** Service all critical applications and development operation environments on one platform with excellent VM performance.
- **Achieve predictable scale-out:** Benefit from linearly, nondisruptive scaling of infrastructure to support growing numbers of applications without overprovisioning storage resources.
- **Improve availability:** Meet service-level agreements (SLAs) by keeping key VMs protected and running, with VM-centric backups, efficient disaster recovery, and nondisruptive upgrades.
- **Reduce operational complexity:** Lower TCO by up to 60% with intuitive, consumer-grade management, VM-centric operations, and unprecedented insight into infrastructure performance.

Together, Nutanix hyper-converged platform and Juniper switching, routing and security solutions are the ideal, pay-as-you-grow solution for virtualization in the data center.

## The Juniper Networks and Nutanix Converged Virtualization Solution

Juniper Networks and Nutanix address today's enterprise IT challenges by aligning with the following customer values:

- **Freedom of Choice:** Flexible deployment options allow implementation to be started anywhere in the network with the ability to grow and evolve over time. Multivendor support and seamless interoperability between physical and virtual elements help prevent expensive vendor lock-in and allow best-in-class choices that future-proof the infrastructure.
- **Intelligent Automation:** Insights based on data-derived knowledge of network operations guides automation decisions and closes the infrastructure provisioning feedback loop through a policy-driven, programmable infrastructure. Rich analytics collected from all infrastructure resources with Juniper Networks® Junos Space Network Director provide correlations between virtual and physical layers while improving visibility, troubleshooting, and network telemetry. At the same time, Nutanix Prism gives administrators a simple and elegant way to manage virtual environments. Powered by advanced data analytics and heuristics, Prism simplifies and streamlines common workflows within a data center, eliminating the need to have disparate management solutions.

- **Always-on Reliability:** The combined Juniper-Nutanix solution provides support for business continuity and business-critical applications with reliable, highly secure, scalable software, and purpose-built hardware.

To build a hyper-converged data center infrastructure with the necessary performance, scalability, reliability, and security to support any business-critical operation, including continuity and data replication functions, companies need innovative, proven products from a world-class technology partner. Juniper and Nutanix deliver the products needed to transform data centers into a competitive advantage for any business.

- Juniper Networks EX Series Ethernet Switches and QFX Series switches are flexible, supporting the most popular and commonly used fabric architectures to connect virtual and physical network environments.
- Juniper Networks MX Series 3D Universal Edge Routers interconnect multiple data centers and clouds across virtual and physical networks.
- Juniper Networks SRX Series Services Gateways provide multiple layers of defense against threats and intruders.
- Juniper-Nutanix hyper-converged solutions deliver agility through orchestration of virtual networks.
- Nutanix delivers invisible infrastructure for the next-generation enterprise data center, elevating IT to focus on the applications and services that power the business. By natively converging server and storage resources into the turnkey Xtreme Computing Platform that is easy to deploy and manage, Nutanix has helped large and small IT organizations simplify their data centers and gain predictable performance, linear scalability, and cloud-like infrastructure consumption.
- Designed with intelligent data tiering, high-performance flash storage, and dense hard disk drives for high performance and low latencies across a large storage capacity, Nutanix services all of your critical enterprise applications and development operation environments on a single Acropolis platform, under a common management framework. Enterprise-grade features, including self-healing storage and VM-granular policies combined with consumer-grade management, enable IT to eliminate the operational complexity typical of server virtualization environments with three-tier infrastructure and easily manage deployments around the world through global management.

With Juniper Networks Virtual Chassis Fabric technology and Nutanix's hyper-converged Acropolis platform, you can build a high-performance, highly reliable data center that lets you deploy new applications, services, and technologies quickly and easily while ensuring secure, always-on access to data. The Virtual Chassis Fabric technology provides a low-latency, high-performance fabric architecture that can be managed as a single device. A Virtual Chassis Fabric configuration employs a spine-and-leaf architecture, with each spine device interconnected to each leaf device.

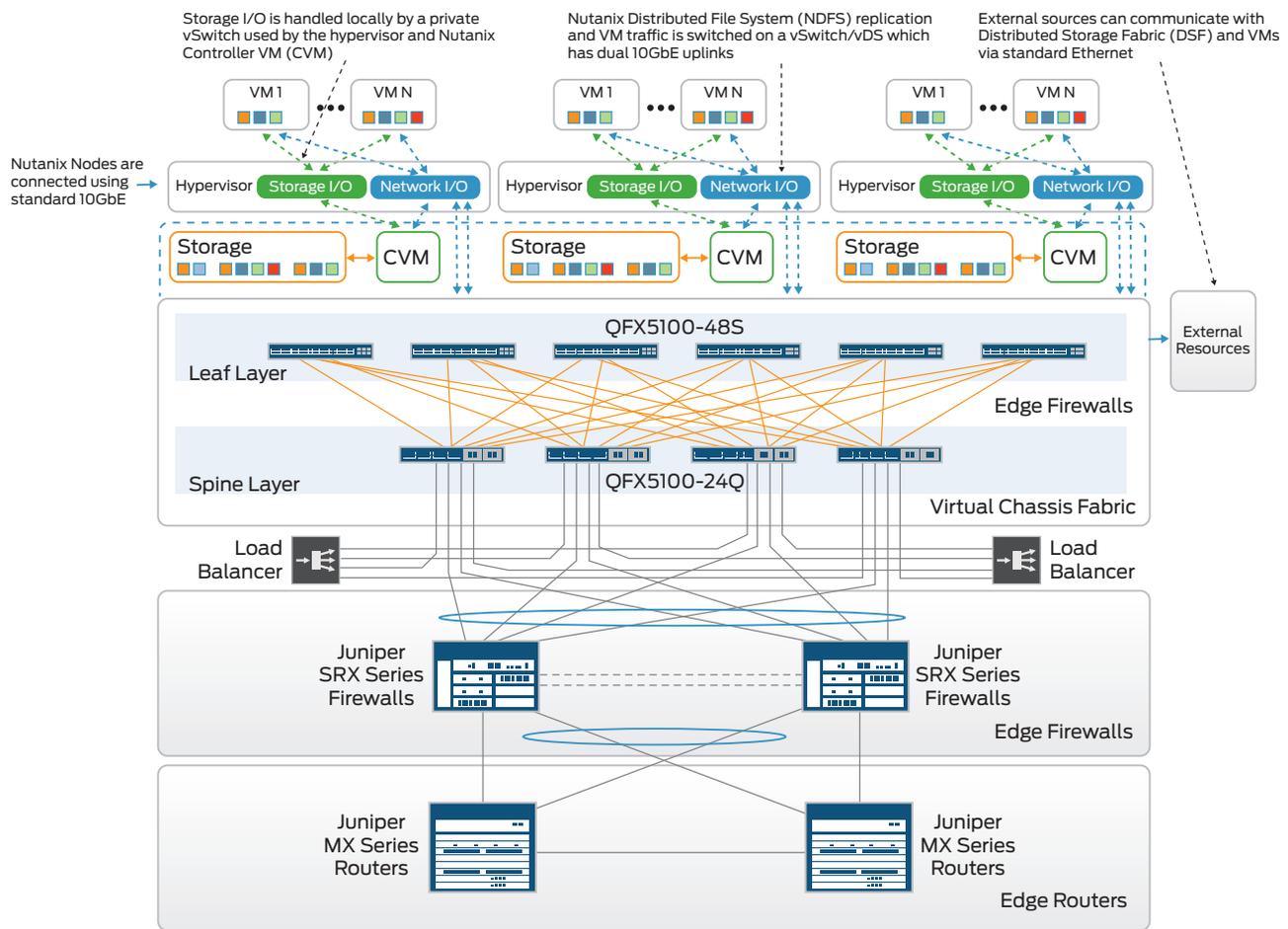


Figure 1: VM I/O paths interacting with Virtual Chassis Fabric networks.

Figure 1 shows an example of how a VM’s I/O path interacts with the Virtual Chassis Fabric networks.

### Features and Benefits

The Nutanix hyper-converged solution, built on top of the Juniper Networks Virtual Chassis Fabric technology, provides the following benefits:

- **Low Latency:** Virtual Chassis Fabric technology provides predictable low latency because it uses a fabric architecture that ensures each device is one or two hops away from every other device. The algorithm that makes traffic forwarding decisions in a Virtual Chassis Fabric configuration contains the built-in intelligence to forward traffic by using the optimum available path to the destination, further ensuring predictable low latency for traffic traversing the fabric.
- **Resiliency:** The Virtual Chassis Fabric architecture provides a resilient framework with multiple paths across the fabric, allowing traffic to be easily diverted and redirected when a device or link fails.
- **Flexibility:** You can easily expand the size of your Virtual Chassis Fabric configuration by adding devices to the fabric as your networking needs grow.
- **Investment Protection:** In environments that need to expand beyond the capabilities of a traditional Juniper Networks QFX5100 and EX4300 switch-based Virtual Chassis configuration, Virtual Chassis Fabric technology is often a logical upgrade option because it enables the existing system to evolve, protecting current investments and avoiding the need for forklift upgrades.
- **Manageability:** Virtual Chassis Fabric technology provides multiple features that simplify configuration and management. Virtual Chassis Fabric, for instance, has an auto-provisioning feature that enables you to add new devices to the fabric with minimal initial configuration. Virtual Chassis Fabric technology also leverages many of the existing configuration procedures from Virtual Chassis configuration, helping users familiar with the technology to deploy, manage, and maintain their Virtual Chassis Fabric configuration with ease.

## Summary—Juniper and Nutanix Deliver Hyper-Converged Infrastructure

The Juniper and Nutanix hyper-converged solution addresses IT challenges by simplifying the data center infrastructure. Delivered on flexible, secure, simplified, and highly available Juniper switching and routing platforms, this joint solution enables enterprise IT to deliver applications with limitless scalability, faster time-to-value, and a small footprint—while at the same time driving down the cost. Virtual Chassis Fabric technology provides multiple features that simplify configuration and management, while Nutanix delivers invisible infrastructure for the next-generation enterprise data center, elevating IT to focus on the applications and services that power the business.

### Next Steps

For more information about Juniper Networks, please visit [www.juniper.net](http://www.juniper.net). For more information about Nutanix, please visit <http://www.nutanix.com>.

## About Nutanix

Nutanix delivers invisible infrastructure for next-generation enterprise computing, elevating IT to focus on the applications and services that power their business. The company's software-driven Xtreme Computing Platform natively converges compute, virtualization and storage into a single solution to drive simplicity in the datacenter. Using Nutanix, customers benefit from predictable performance, linear scalability and cloud-like infrastructure consumption.

## About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at [www.juniper.net](http://www.juniper.net).

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