

Nutanix and Mellanox for ROBO—Expand Your Enterprise Cloud to Remote and Branch Offices

One-Click Simplicity & Automation for Transparent and Always-ON Business Operations

Remote offices and edge sites are common in enterprise IT infrastructures. The adoption of cloud-based virtualization and hyperconverged infrastructure (HCI) removes data center silos and leads to workload consolidation into a main data center. In practice, however, there are still certain workloads remaining in the local infrastructure of a remote office or branch office (ROBO) to support local needs. The combination of large data sets, increased compute and inference power of local servers, and in some cases, economic, regulatory and compliance concerns, make running these workloads at remote or edge sites the natural choice. With the advent of enterprise cloud solutions for multi-site and distributed IT infrastructure, ROBO is an integral part of the coherent, enterprise cloud.

The geographically distributed nature of remote and branch offices and lack of local on-site IT staff present a series of unique challenges centering around the operation of ROBO infrastructures, such as providing services for deployment, maintenance, protection and security. Diverged environments complicate matters even further, with their various space limitations, power restrictions, and air flow constraints for different sites, as well as the variation in hardware and software. In the event of an outage, quick recovery and business continuity that conforms to a business's recovery point objective (RPO) and recovery time objective (RTO) must be ensured.

The Nutanix Enterprise Cloud addresses these challenges with its invisible and cloud-native hyperconverged infrastructure. From a converged compute and storage system, the Nutanix enterprise cloud extends one-click simplicity and high availability to remote and branch offices. Streamlined and automated operations and self-healing from infrastructure anomalies, eliminate unnecessary onsite visits and overtime, thus reducing operational and support costs. With the Nutanix solution, enterprise IT staff can deploy and administer ROBO sites as if they were deployed to the public cloud, while maintaining control and security on their own terms.

ROBO networking must be simple and transparent as well. Mellanox's end-to-end Ethernet Storage Fabric™ (ESF) perfectly complements the Nutanix Enterprise Cloud. The Mellanox ESF offers Zero Touch Provisioning (ZTP), guaranteed performance, automated operation, and real-time network visibility at the virtual machine (VM) or container level, for business operations on Day 0/1/2. To provide a transparent, automated experience for application provisioning and mobility, data backup and disaster recovery, Mellanox's ESF is integrated into the Nutanix enterprise cloud via the management plane. Through REST APIs, Mellanox's network orchestration and management platform, Mellanox NEO®, automates network provisioning from Nutanix Prism and eliminates complex and expensive manual configuration for numerous network devices in multiple clouds.

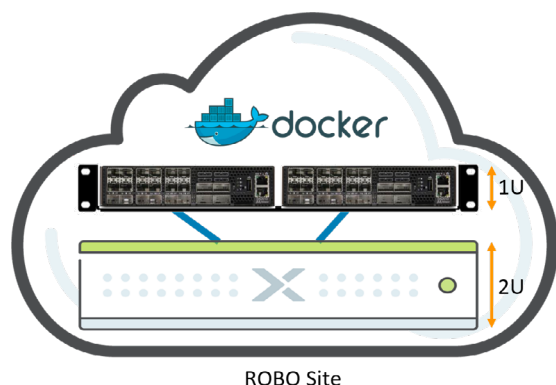


Figure 1. Nutanix ROBO in a Box with Mellanox Networking

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HIGHLIGHTS

- Nutanix enterprise cloud in a box for ROBO
- One-click simplicity for efficient remote management
- Automated network provisioning with integration between Nutanix Prism and Mellanox NEO®
- High availability and disaster recovery for business continuity
- Real-time visibility for extensible, intelligent, and automated IT Ops

Nutanix ROBO in a Box

With its web-scale efficiency and enterprise-level resilience and security, Nutanix offers hyperconverged clusters for remote and branch offices. Providing options for one-node, two-node, and three-node clusters, the Nutanix solution for ROBO meets various requirements with respect to data protection, high availability, and cost-effectiveness.

A three-node cluster is the gold standard for Nutanix ROBO, which provides on-site data protection and tolerates an entire node going down. Apart from that, self-healing with a data rebuild within the cluster eliminates needless trips to remote sites., while a two-node cluster offers reliability for smaller ROBO sites that must keep costs down. Beyond that, a remote witness node is used for data rebuild and automatic upgrades. Moreover, a one-node cluster is a perfect fit for low-availability requirements and strong management for multiple sites.

Given the small number of nodes in the Nutanix cluster and often rigid environmental requirements in space, power and airflow, Mellanox's half-width top-of-rack (TOR) SN2010 switches are a perfect fit for Nutanix ROBO both in terms of connectivity and cost. Featuring 18 ports of 1/10/25G downlinks and 57 Watts of typical power consumption, two SN2010 switches can be installed side-by-side, along with a 2U Nutanix appliance, to build a ROBO datacenter in a 3U box. The 1G management port on the Nutanix node can be connected to a SN2010 switch port, eliminating the need for a separate management switch.

The SN2010 is based on the state-of-art Mellanox Spectrum® switching ASIC, which provides guaranteed performance for any workload running on the Nutanix cluster, regardless of packet size, network speed, and throughput/latency requirements, making the networking completely transparent. The Mellanox switch provides additional value by allowing Docker containers, such as VPN and DHCP services, to run on the switch, further simplifying manageability and security while reducing costs.

Automated Provisioning for Business Continuity

Nutanix enterprise cloud streamlines datacenter operations with consumer-grade management in Prism™, which simplifies application mobility and load balancing. It also reduces complex operations such as disaster recovery to a single click and ensures business continuity of mission-critical applications.

The integration of Nutanix Prism and Mellanox NEO®, Mellanox's network orchestrator, enables automated network provisioning that requires no manual operation. In a CRUD event (i.e., VM or container creation, migration, and deletion), Mellanox NEO works with Prism through RESTful APIs in the background, configuring the virtual local area network (VLAN) for that VM/container on the switch port it's connected to. When the VM/container becomes live through Prism, it automatically comes online.

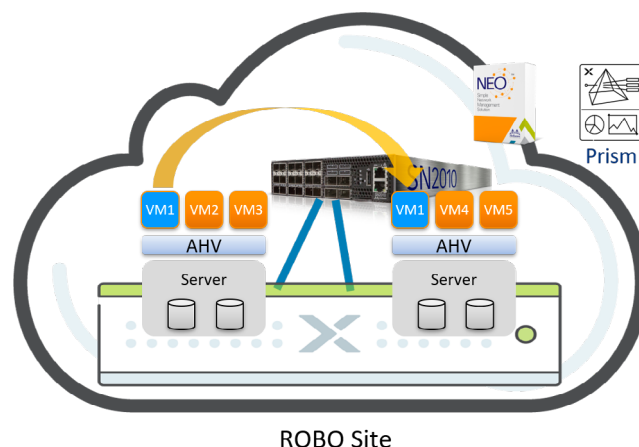


Figure 2. Integrated Network Provisioning for VM Mobility

In the event of a disaster, networking is often the key challenge for implementing business continuity and disaster recovery beyond data replication. The joint Nutanix- Mellanox solution automates network provisioning as part of workload lifecycle management and allows workloads to preserve their IP addresses and gateways when they failover to the remote DR site, enabling uninterrupted business continuity during partial or full failover. These capabilities are delivered through the Mellanox NEO and Prism Central integration for automation, using Ethernet VPN (EVPN)-based virtual extensible LAN (VXLAN) overlays. This allows the transparent stretching of networks from the ROBO site to the DR site or the main datacenter. Nutanix offers synchronous, asynchronous, and near-synchronous replication options that can be granularly controlled to meet various RPO/RTO goals. In addition, Mellanox NEO provides one-click configuration for mLAG and switch software upgrade at scale.

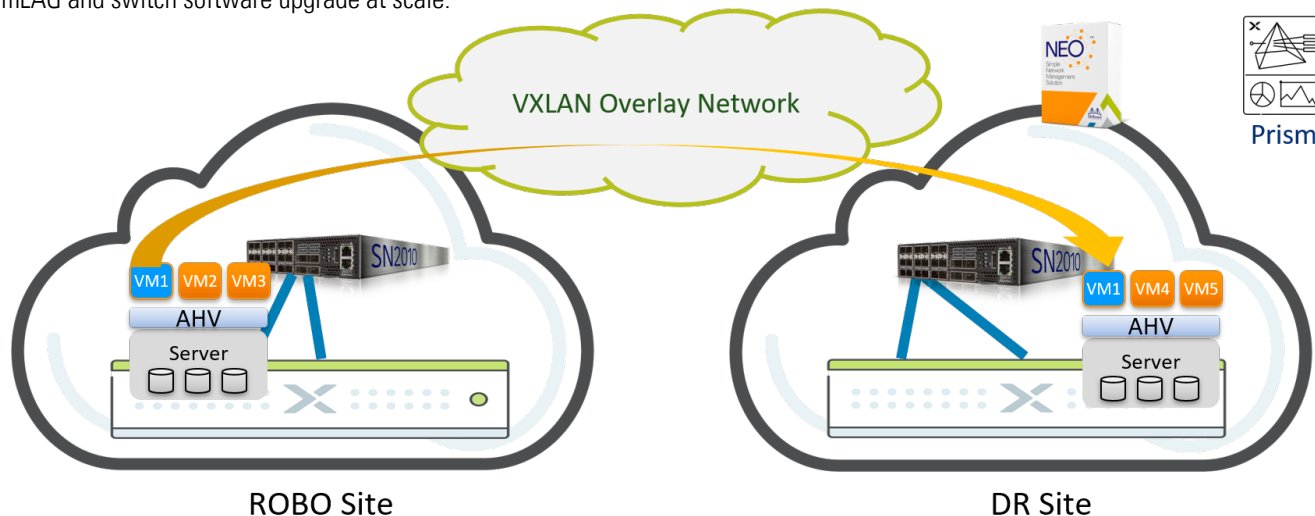


Figure 3. Automated Network Provisioning for Disaster Recovery and Business Continuity

Real-time Visibility for AIOps

Nutanix offers real-time visibility in the cluster of applications running on the node and associated compute, storage and security metrics at the VM/container level. Such visibility is used for remote management, in a cloud-native way, for extensible, intelligent and automated IT Ops – forecast, planning, optimization, and anomaly detection and remediation.

Similarly, Mellanox ESF provides real-time visibility into network-related problems, through an event-based, advanced telemetry technology called What Just Happen™ (WJH). Mellanox WJH does packet inspection at line rate, accelerated by the switch ASIC. In the events of network anomalies, the WJH telemetry agent, running as a container on the Mellanox switch, streams out both the packet itself and related information in JSON or other streaming methods. The telemetry data can be streamed to a database repository or directly to the management software, such as Mellanox NEO, Nutanix Prism, and TIG (Telegraf-InfluxDB-Grafana).



While traditional telemetry solutions try to extrapolate root causes of network issues by analyzing network counters and statistical packet sampling, WJH goes beyond that by providing actionable details on abnormal network behavior and eliminating the guess work from fast network troubleshooting.

Conclusion

ROBO is common in enterprise IT infrastructures. Deploying and managing ROBO sites efficiently as part of the enterprise cloud is a key imperative for business operations. Nutanix delivers a web-scale, hyperconverged infrastructure solution, and brings the scale, resilience and economic benefits of web-scale architecture to ROBO. Mellanox Ethernet Storage Fabric, with its purpose-built TOR switches in particular, allows a ROBO solution in a box with integrated automation of the Nutanix platform for network provisioning, operation, and troubleshooting. The Nutanix and Mellanox solution brings ROBO into the unified enterprise cloud with efficiency and cost savings throughout the lifecycle of Day 0/1/2 operations.

About Nutanix

Nutanix makes infrastructure invisible, elevating IT to focus on the applications and services that power their business. Using Nutanix, customers benefit from predictable performance, linear scalability, and cloud-like infrastructure consumption. A single software fabric unifies your private and public clouds, and delivers one-click simplicity in managing multi-cloud deployments. One OS, one click. Learn more at www.nutanix.com or visit Twitter @nutanix.

About Mellanox

Mellanox Technologies is a leading supplier of end-to-end Ethernet interconnect solutions and services for enterprise data centers, Web 2.0, cloud, storage, and financial services. More information is available at: www.mellanox.com



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