VMWARE SD-WAN FOR HYPER-CONVERGED PLATFORM

Hyper-Converged Infrastructure Solution

Overview
Organizations seek to serve applications to users in their remote and branch office locations with a minimum of local infrastructure, however application performance over the wide area network is impacted by traffic congestion and network outages. In order to overcome these limitations and deliver applications reliably and with high performance, organizations are implementing SD-WAN in conjunction with HCI.

HCI: The Next Infrastructure Revolution
Businesses are embracing hyper-converged infrastructure (HCI) technologies to reduce the time, effort and cost to deploy applications, and to easily and securely scale up resources as users and applications are added, enabling them to deliver on their business initiatives and explore new business opportunities.

HCI is a scale-out, software-defined infrastructure that converges core data services on flash-accelerated, industry-standard servers, delivering flexible and powerful building blocks under unified management. All key data center functions run in a tightly integrated software layer—delivering services that previously required purpose-built hardware.

SD-WAN and HCI
VMware SD-WAN by VeloCloud aggregates all types of WAN connections including Internet Broadband, MPLS private lines, wireless LTE, from branch offices and remote locations and performs dynamic application aware per-packet link steering and path conditioning to deliver enterprise-class network quality and performance for the most demanding applications.

In the architecture described in this solution brief, VMware SD-WAN is combined together with Dell EMC’s VxRail HCI infrastructure to enable reliable and high-performance delivery of applications from the data center to branch offices with a minimum of infrastructure in the remote locations.

VMware SD-WAN by VeloCloud for Hyper-Converged Platform
VMware SD-WAN for Hyper-Converged Platform applies software-based network technologies to WAN connections. This platform:

- Seamlessly integrates with Dell EMC’s VxRail™ hyper-converged infrastructure to provide a transformational approach for wide area network (WAN) architectures.
- Leverages the benefits of the cloud, the bandwidth of broadband, and existing enterprise-wide network infrastructure to more efficiently and cost effectively transmit media (data, video, voice) and provide access to cloud applications from every location in the network.
- Dynamically uses multiple available connections (MPLS, broadband, LTE) to expedite traffic via optimal delivery paths across the entire network.
- Enables bandwidth on-demand, provides direct and optimal access to cloud-based applications, simplifies deployment of services, improves operational automation, and assures application performance.
- Enables IT organizations to deploy their data center and branch office (ROBO) infrastructure as quickly as possible, delivering an on-premise hybrid cloud to their business.
- Allows data center administrators to quickly deploy infrastructure resources and update software-defined workflows in response to ever-changing consumer engagement requirements.

VMware SD-WAN connected VxRail solution scales from small to large workloads, offers ease of deployment across a multi-site architecture, provides network agility, is highly configurable for operational flexibility and tuning, and provides central management and control of SD-WAN deployments at a greatly reduced cost.

HCI consists of three software components:
- compute virtualization
- storage virtualization
- management

The virtualization software abstracts and pools the underlying resources and dynamically allocates them to applications running in virtual machines or containers. Users enjoy a sleek new operational model where they manage the compute, storage and networking from a single tool.
Solution Architecture

The following figure shows the deployment architecture of the VxRail Hyper-Converged Platform connected by VMware SD-WAN across two sites: headquarters and a branch office.

- In this deployment, the HQ and Branch Data Centers include four VxRail nodes that are interconnected using a network TOR switch.
- The headquarters data center VxRail acts as single pod inside a physical rack. The pod encompasses the combination of servers, storage, and network that are required to fulfill a specific role within the virtual infrastructure.
- The different functions of the SDDC (management, edge and desktop pool) are implemented as a standardized set of building blocks on a VxRail vSphere cluster and separated with resource pools. Each resource pool contains the appropriate compute and memory resources to balance each workload within the VxRail vSphere cluster.
- The Branch Data Center consists only of remote clients and the local tools necessary for the branch IT staff to perform remote user tasks. Remote users connect and consume resources/applications and desktops from the HQ Data Center over secure SD-WAN connections.

**PLATFORM COMPONENTS**
The VMware SD-WAN by VeloCloud for Hyper-Converged Platform solution includes the following components:

- **Dell EMC VxRail appliances**
  Accelerate and simplify IT through standardization and automation. Streamline deployment and the ability to extend existing IT tools and processes. Provides standardized HCI infrastructure and enterprise data services: compression, deduplication, replication, backup, and other core services.

- **VMware SD-WAN by VeloCloud**
  Combines virtualized WAN with a cloud-based service that includes policy-based traffic steering, network-wide application performance visibility and control, while dramatically simplifying the WAN by delivering virtualized network services from the branch offices to the data center and the cloud.

- **VMware NSX**
  Network virtualization and security platform that enables the virtual cloud network and provides a software-defined approach to networking.

- **VMware Horizon 7**
  Virtualized or hosted desktops and applications through a single platform to end users. Services accessed from one digital workspace across devices, locations, media, and connections.

**VIRTUAL INFRASTRUCTURE COMPONENTS**
- VMware vCenter
- VMware ESXi
- VMware vSAN (Software-Defined Storage)
- VMware vRealize Log Insight
- VxRail Manager

**SOLUTION BENEFITS**
- Cost reduction
- Easily scalable across a range of workloads from small to large
- Ease of deployment
- Configurable with minimal efforts
- Faster deployment across multiple sites
- Enhanced security
- Network agility
- Centralized management and control of the SD-WAN deployment