

VMware

VMware provides a powerful, flexible, and secure foundation that adds agility and accelerates the transformation to hybrid cloud and software defined data centers (SDDC). VMware helps end-users run, manage, connect and secure applications and new workloads through virtualization, Software Defined Networks (SDN), and virtualized storage solutions that help with the growing needs and complexity of modern infrastructure.

Mellanox 10/25G Ethernet interconnect solutions enable unmatched competitive advantages in VMware environments by increasing efficiency of overall server utilization and eliminating I/O bottleneck to enable more virtual machines per server, faster migrations and speed access to storage. Explore this reference guide to learn more about how Mellanox key technologies can help improve efficiencies in your VMware environment.

Virtualization



Mellanox Key Functionality

- High Bandwidth
- Low Latency
- Virtual Functions
- Certified SR-IOV
- Inbox drivers

SDN



Mellanox Key Functionality

- Physical Function
- Virtual Functions
- Overlay Networks
- Proven deployments

Storage



Mellanox Key Functionality

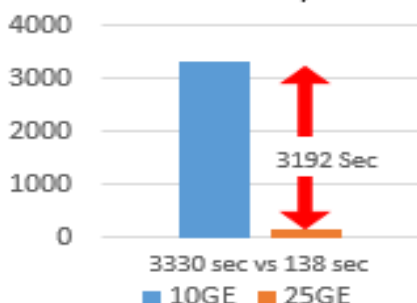
- RDMA Enabled
- iSER Certified
- Support for All-Flash devices
- Inbox RoCE and iSER drivers

Accelerate vMotion

Migrate 23X Faster

VMware vMotion allows the movement of virtual machines from one host to another. Deploying Mellanox high-speed Ethernet can help decrease the amount of time it takes to migrate virtual machines. The results clearly show that increasing from 10 to 25G in an ESXi 6 environment reduced the time to transfer a VM. Migration time dropped from 55 minutes to a little over 2 minutes, a 96% improvement. Mellanox Ethernet, RDMA, and iSER drivers are certified and ship in the box with vSphere.

VMware ESXi 6 vMotion From All-Flash Array



Hyper-Converged

Reduce CapEx Expense

Hyper-Converged Infrastructure (HCI) is a demanding environment for networking components. HCI consists of three software components: compute virtualization, storage virtualization and management in which all three require an agile and responsive network. Deploying on 10, or better, 25G larger network pipes assists as does network adapters with offload capabilities to optimize performance and availability of synchronization and replication of virtualized workloads.

CapEx Analysis: 10G vs. 25G

	10GbE	25GbE
# of Network Ports	2 @ \$400	1 @ \$500
# of Storage Ports	2 @ \$400	1 @ \$500
16 Nodes Cluster Price	\$25,600	\$16,000
32 Nodes Cluster Price	\$51,200	\$32,000
64 Nodes Cluster Price	\$102,400	\$64,000

VDI Deployments

Increase Virtual Desktops

Virtual desktop infrastructure (VDI) have similar characteristics as cloud deployment, such as high virtual machine consolidation ratios, with typically hundreds of small to medium sized desktops consolidated on a single host. Network performance is important for user experience as well as yielding direct CapEx and OpEx savings. Savings can grow as you move to higher performing networks. Below is an example of CapEx savings when moving from 10 to 25GE.

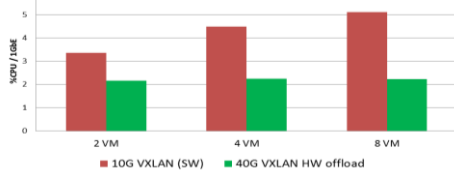
CapEx Analysis: 10G vs. 25G

	10GE	25GE
#VDI p/ Server	60	140
Physical Servers	84	36
Switches	2	1
CapEx	\$540k	\$179k
Per VD	\$108	\$55

Proven Higher Efficiency

Accelerate NSX

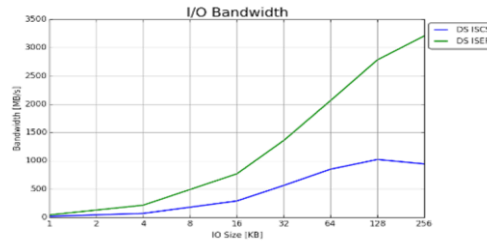
NSX services enable east-west routing between the SDDC and north-south routing for external networks and require VXLAN segmentation which can consume CPU processes and diminish overall server efficiency. Mellanox supports VXLAN offloads to handle this processing resulting in higher throughput and over 50% reduction in CPU utilization.



Average CPU% per 1GbE VXLAN Traffic

Deliver 3X Efficiency with iSER

Storage virtualization requires an agile and responsive network. iSER accelerates workloads by using an iSCSI extensions for RDMA. Using the iSER extension lowers latencies and CPU utilization to help keep pace with I/O requirements and provides a 70% improvement in throughput and 70% reduction in latencies.

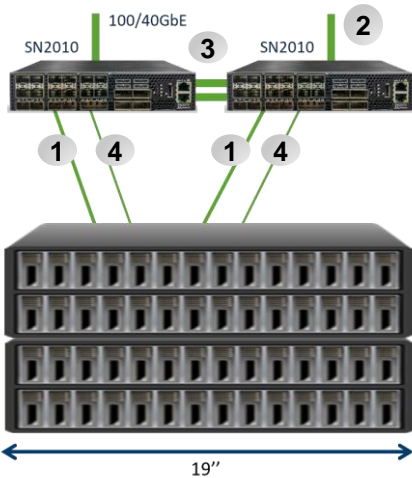


Fully Certified with EVO

VMware EVO SDDC provides a validated suite of interoperable, tested components to deliver a completely Integrated System. This comprises fully qualified hardware components including Mellanox switches and adapters that are pre-built and pre-racked, providing an appliance-like experience that makes it easy for customers to deploy, operate and support. Mellanox leverages our relationship with Cumulus Linux to extend access from Layer 2 across Layer 3 networks topologies,

Spectrum Switches

Deployment Config



- 1/2 19" width, 1U height
- 18x10/25GbE + 4x40/100GbE
- 57W typical (ATIS)

- 1 25/10GbE link: QSFP to SFP+
- 2 100/40GbE link: QSFP to QSFP
- 3 100GbE link: QSFP to QSFP
- 4 1GbE link: 1GbE Transceiver

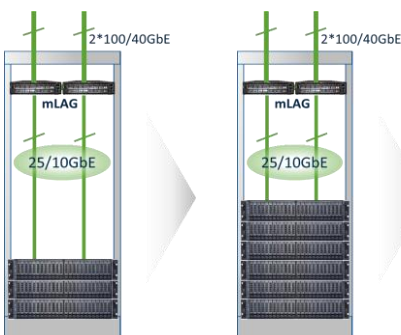
Why Spectrum

- 2 switches in 1U
- Ideal storage/HCI port counts
- Zero packet loss
- Low latency
- RoCE optimized (NVMe-oF, Spark, SMB Direct, etc.)
- NEO for network automation/visibility
- Native SDK for containers
- Cost optimized
- Network OS alternatives

Pay As You Grow

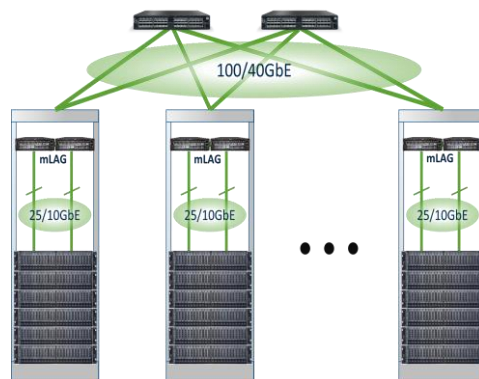
Half Rack
12 nodes

Full Rack
24 nodes



Scalable from a half rack to multiple racks

10 Racks
up to 240 nodes



Automated Network

Provisioning & Orchestration

- Zero-touch provisioning
- VLAN auto-provisioning
- Migrate VMs without manual configuration
- VXLAN/DCI support for VM migration across multiple datacenters for DR

Monitoring

- Performance monitoring
- Health monitoring
- Detailed telemetry
- Alerts and notifications

