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☎ 089 4208 – 2020

# Dell Technologies HCI Update, neue Serien, neue Lösungen

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**intel**<sup>®</sup>

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# Agenda



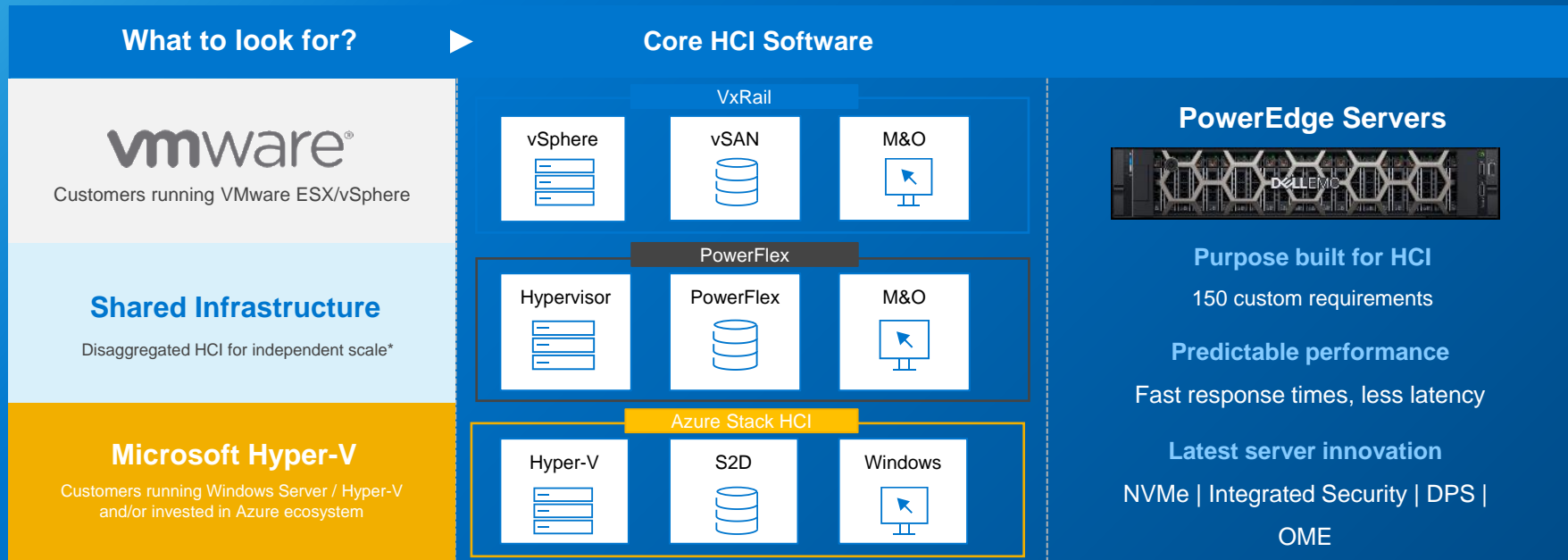
1 VxRail HCI System Software

2 VxRail 7.0.100-132

3 VxRail Use Cases - VDI

4 Azure Stack HCI

# Making it real - Dell EMC's HCI Portfolio



\*Note: For Hyper-V, PowerFlex supports only a disaggregated 2 layer architecture and not HCI



# Dell Technologies HCI VxRail

# Dell EMC VxRail

Turnkey HCI platform with fastest and simplest path to IT outcomes

- » Single click, automated lifecycle management maintains Continuously Validated States for all clusters
- » First HCI system fully integrated with VMware Cloud Foundation SDDC Manager, delivers a simple and direct path to the hybrid cloud
- » Automates 99% of network fabric configuration steps across multiple racks



## The VxRail Advantage

**VxRail HCI System Software:** Drives operational efficiencies, enables **52%** lower cost of operations compared with refreshing legacy environments.<sup>1</sup>

**VMware Cloud Foundation on VxRail:** Delivers unique integrations with Cloud Foundation to offer a seamless, automated upgrade experience.

**VxRail ACE:** Analytics Consulting Engine delivers AI/ML based predictive analytics and lifecycle management orchestration.

**Flexible deployment options:** Appliance to integrated rack with network flexibility, 2-node enterprise edge, data center clusters or as turnkey on-premises cloud.

# Benefits of HCI adoption

## Agility



Public cloud speed, efficiency, and economics within the data center

## Scalability



Start small and easily scale up or scale out while maintaining performance levels

## Simplicity



Simplify operations with software-driven automation and lifecycle management

Improve efficiency | Lower OpEx costs

# HCI trends and continued innovation

## DATA CENTER MODERNIZATION



Continues to simplify  
and transform IT  
operations

## EDGE COMPUTING GROWTH



More AI/ML and IoT  
driving compute at edge  
locations

## HYBRID CLOUD ACCELERATION



Delivers consistent  
infrastructure and  
operations

## CLOUD-NATIVE ADOPTION DRIVER



HCI will power  
cloud native and  
container adoption

## CONTINUED INNOVATION

New consumption models | New data services | AI / ML for self-diagnosis  
Next-gen processors | NVMe | 5G | 100GbE | Enhanced serviceability



# What's new with VxRail 7.0.100-132

Synchronous VMware HCI software releases

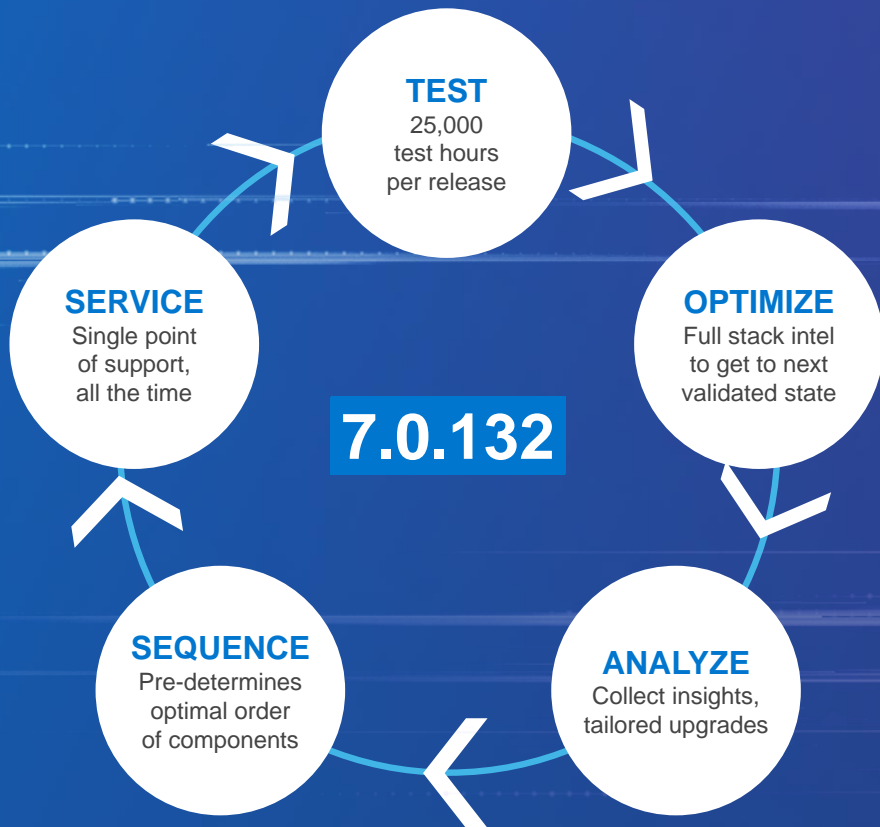
NEW



- Runs latest set of health checks as they are available to run outside upgrade window.
- Support procedure to expand a 2-node cluster to a 3-or-more node cluster
- HCI Mesh
- Remote cluster support for internal vCenter
- Create LAG configurations across NDC and PCIe NICs
- LCM of vRealize components
- Integrated remove node workflows
- Automated LCM of Intel Optane PMem

# Unique benefits of VxRail LCM

How we ensure your continuously validated state



Single-click, non-disruptive upgrades across the fully integrated HW & SW stack

Mix heterogenous node types and generations to meet any workload requirement

Bypass interim patches and releases

# Testing the validated state

Example upgrade cadence

## SOFTWARE

VxRail	4.7.100
ESXi	6.7 EP5
vSAN	6.7 U

## HARDWARE

BIOS	1.49 (422T0)
<b>HBA</b>	
HBA Mini	FW: 15.17.09.06 (MF6CM) Driver: 16.00.01.00
HBA330 Adapter	FW: 15.17.09.06 (7KY60) Driver: 16.00.01.00
<b>NDC and NICs</b>	
Intel i350	FW: N/A Driver: N/A
Intel x520	FW: N/A Driver: N/A
Intel x540	FW: N/A Driver: N/A
Intel x550	FW: 18.5.18 (3XJH0) Driver: 1.6.5
Intel x710	FW: 18.5.17 (T6VN9) Driver: 1.5.8
BCM57414	FW: 20.08.04.04 Driver: 20.8.152.0
iDRAC	3.21.23.22 (K877V)
PTAgent	1.8.1-21
iSM	3.3-1290 (833XD)
PM	FW: 1.08 Driver: 1.11 (factory)
M.2 disk	See additional info
Boss/SATADOM	2.5.13.3011 (RPD7Y) / 2.5.13.1306 (MKV82)(Man)

Choose your  
validated state

Seamlessly  
bypass interim  
updates

Document  
compliance  
automatically

or

4.7.110  
6.7 EP6  
6.7 U1

or

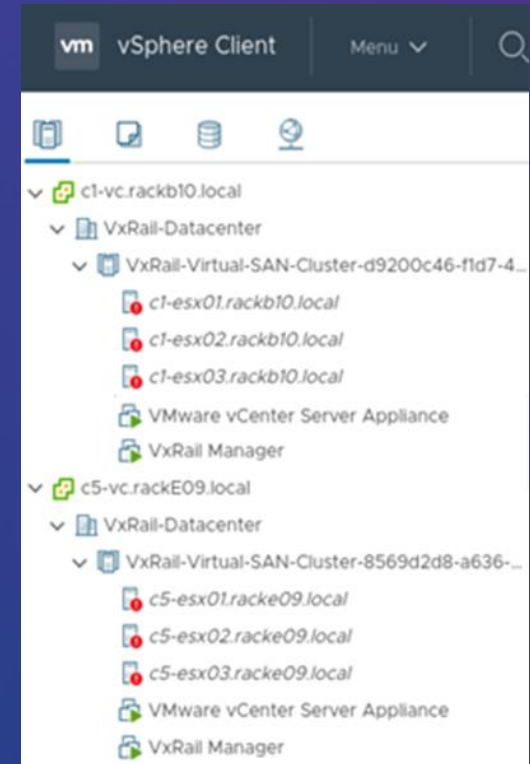
4.7.200  
6.7 U2  
6.7 U2

or

4.7.300  
6.7 U3  
6.7 U3

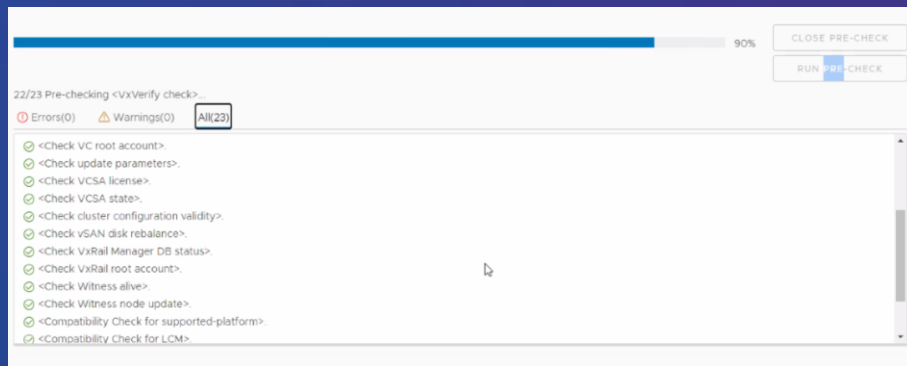
# Managing multiple VxRail clusters with vCenter Server

- Manage multiple VxRail clusters using a VxRail-provided vCenter Server
  - View and manage
  - VxRail handles the LCM of vCenter Server
  - When deploying new cluster, join existing vCenter Server
- VxRail-provided vCenter Server supports Enhanced Link Mode (ELM)
  - Builds on view-only support in VxRail 7.0.010
  - Now manage multiple VxRail clusters
  - Leverage ELM features
    - Simplified HA process, remove need for load balancers
    - Simplified backup and restore process
  - Support up to 15 vCenter Servers per SSO domain

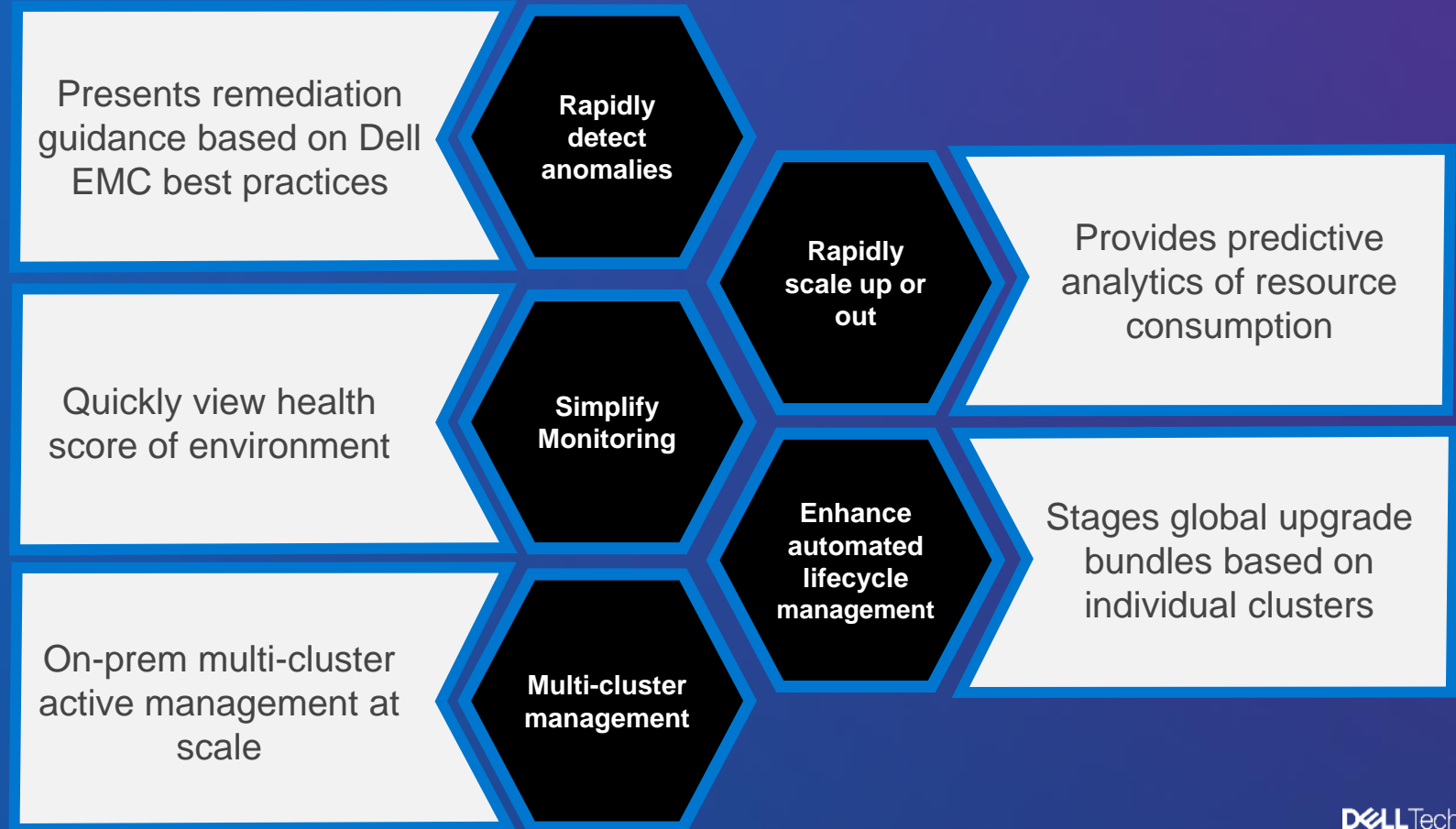


# Run the latest system health checks

- List of health checks continues to evolve
- Benefits
  - More robust pre-upgrade health check for planning activities
  - Remediate issues that may impact cluster update
  - Good for customers who do not regularly upgrade their clusters
- Implementation
  - Pre-update health check will now automatically look for latest health check script
  - Requires internet to connect to VxRail ACG



# SaaS multi-cluster management benefits



# VxRail REST APIs

Empowering customers to automate processes and streamline operations



Further simplify IT Ops and reduce OPEX by enabling automation at scale

Integrate VxRail with “infrastructure as code” environments, such as Puppet, Ansible and Chef

Easily accessible using a scripting interface familiar for VMware admins – PowerShell / PowerCLI

Easy to explore, consume and access the latest API documentation via a web browser

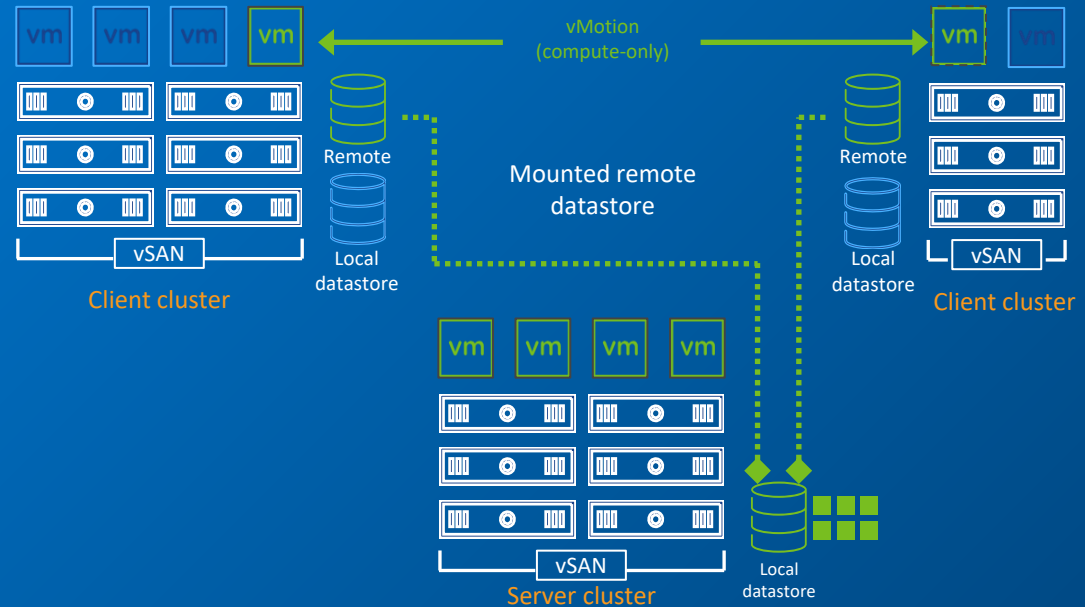
# vSAN HCI Mesh “Phase 1”

New in vSAN 7.0 U1, supported in VxRail 7.0.100

## Why HCI Mesh

The scale-out architecture of VMware vSAN enables powerful non-disruptive scale-up or scale-out capabilities. You can non-disruptively expand capacity and performance by adding hosts to a cluster (scale-out) or just grow capacity by adding disks to a host (scale-up). As application workloads organically grow, this enables performance to be right sized at each expansion interval. Over time the ratio of storage and compute can be right sized through vSAN. Despite this, inorganic scale events can prove challenging to any architecture.

While vSAN can export iSCSI or NFS, **the native vSAN protocol** was chosen to export storage to another cluster





# VMware Tanzu on VxRail

Kubernetes at the Speed of Cloud – The fastest way to deploy Tanzu



## ACCELERATE ADOPTION

Automate Kubernetes infrastructure deployment and provisioning to accelerate developer productivity



## RAPID K8s EVOLUTION

Lock step support for latest VMware Kubernetes advancements



## K8s YOUR WAY

Choice of infrastructure delivery options across private, public and edge based on your needs

**15 minutes**  
to add new VxRail  
nodes to a cluster

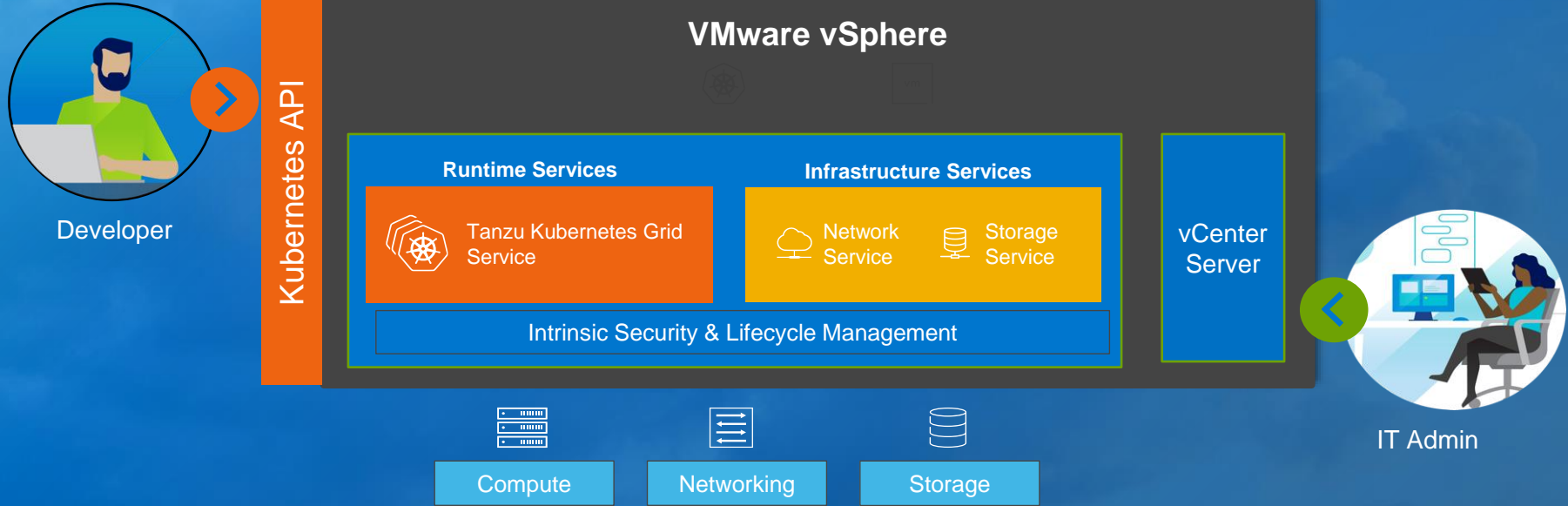
**30 day**  
Synchronous release with  
VMware

**Only**  
Vendor offering fully  
integrated RA, cluster,  
and private cloud  
offerings

1. Based on internal testing **AD#:** G20000139
2. Based on VMware validation #G20000312...

# vSphere with Tanzu delivers Kubernetes

Modernize the 70 million+ workloads running on vSphere









**Deliver Developer-ready infrastructure**

**Align Dev Ops and IT Teams**

**Simplify cloud operations**

# VxRail on latest generation Dell EMC servers

E665/F/N & E560/F/N	P570/F & P580N	V570/F	D560/F	S570	G560/F
					
Our everything platform	Performance focused	Optimized for VDI	Durable & rugged	Storage dense	Compute dense
<p>Single socket 2<sup>nd</sup> Gen AMD EYPC™ 8 to 64 cores  <b>Or</b>                      Single or dual Intel® Xeon® Scalable Gen 1 and Gen 2                      4 to 56 cores</p> <p>* Up to 3TB of Optane Persistent Memory</p>	<p>Single, dual, and quad Intel® Xeon® Scalable Gen 1 and Gen 2 processors, with up to 112 cores</p> <p>Up to 6TB of Optane Persistent Memory</p>	<p>Dual Intel® Xeon® Scalable Gen 1 &amp; 2 only</p> <p>Up to six GPUs with five different NVIDIA Tesla and Quadro GPU options</p>	<p>MIL-STD 810G certified to withstand extreme heat, sand, dust and vibration</p> <p>Short depth only 20"                      Certified cold start down to -15C &amp; to run at up to 45C</p>	<p>Only series with 3.5" HDD Hybrid only</p>	<p>Eight Intel® Xeon® Scalable Gen 1 or Gen 2 processors in 2U</p>
<p>R6515 10 x 2.5" all NVMe or 8 x 2.5" all flash / hybrid</p> <p>R640 10 x 2.5" drives</p>	<p>R740XD / R840                      24 x 2.5" drives</p>	<p>R740XD                      24 x 2.5" drives</p>	<p>XR2                      8 x 2.5" drives</p>	<p>R740XD                      12 x 3.5" plus                      2 x 2.5" drives</p>	<p>C6400 with C6420 node                      24 x 2.5" drives</p>
<p>10GbE or 25GbE                      Optane/NVMe/SAS cache                      All NVMe capacity                      FC HBA                      * NVIDIA T4 GPU                      * 48V DC PSU option</p>	<p>10GbE or 25GbE                      Optane/NVMe/SAS cache                      All NVMe capacity                      FC HBA                      48V DC PSU option</p>	<p>10GbE or 25GbE                      SAS cache only                      FC HBA                      220V – 240V AC only</p>	<p>10GbE or 25GbE                      Optane/NVMe/SAS cache</p>	<p>10GbE or 25GbE                      SAS cache only                      FC HBA                      48V DC PSU option</p>	<p>10GbE                      Optane/NVMe/SAS cache                      220V – 240V AC only</p>

\* E560 only, not available on E665

# VxRail P675F/N - 2nd Gen AMD EPYC™

New!

## GPU options

- 3x Tesla T4
- 1x Tesla V100S (32GB)

Note: Customers obtain and configure GPU SW and drivers vGPU requires vSphere Enterprise



Supports Intel Optane, NVMe, and Mixed-use cache drives

### FORM FACTOR

Single system  
2U

### DRIVE CONFIGURATION

24x 12G SAS drive slots (2.5")  
24x NVMe drive slots (2.5")

### PROCESSORS

Single socket server, with up to 64 cores

### MAX CAPACITY

135.6 TB Flash  
135.6 TB NVMe

### BASE CONNECTIVITY

2x10GbE RJ45/SFP+, 2x25GbE SFP28

### POWER SUPPLIES

1100W 110V - 250V AC  
1600W 110V - 250V AC  
1100W -48V DC

### ADDITIONAL CONNECTIVITY OPTIONS

2x10GbE RJ45/SFP+, 4x10GbE RJ45,  
2x25GbE SFP28, 2x100GbE SFP28, 2x16Gb FC, 2x32Gb FC

### MEMORY

Up to 2,048 GB RAM

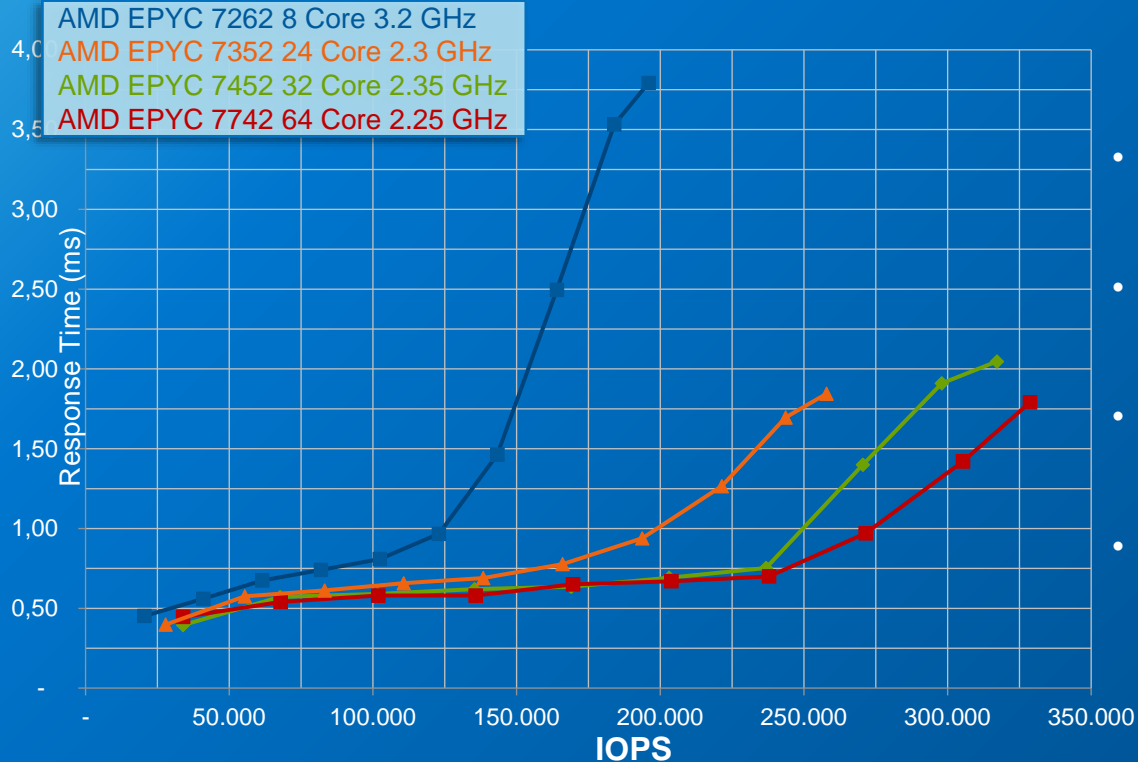
### BOOT

BOSS with dual SATA M.2

**DELL**Technologies

# AMD vs AMD – OLTP 4K

Performance comparison – different core counts



- Storage performance scales non-linearly with the most benefit up to 32 cores
- 32 cores provides the best value per IOPS
- >32 cores processors suitable for greater VM density
- VMware licensing costs increase at >32 cores

# Key takeaways for VxRail P675F/N

- Supported with VxRail 4.7.520 or 7.0.100
- Single socket, 64 cores, 2TB memory, and 20 NVMe capacity drives in 2U
  - More powerful processor options than on E665
  - Choice of three T4 or one V100S GPU
- Available in all-flash or all-NVMe
  - Not available in hybrid
- Supported in 2-node and VCF deployments

# VxRail Configuration Flexibility for Your Workload

E, P, V, D, S, G Series based on the latest Dell EMC PowerEdge servers

## Processor

Single, dual or quad, Gen 2 and Gen 1 Intel® Xeon® Scalable with 4 to 112 cores per system  
Or  
2nd Gen AMD EPYC™ 7002 Series with 8 to 64 cores in a single socket

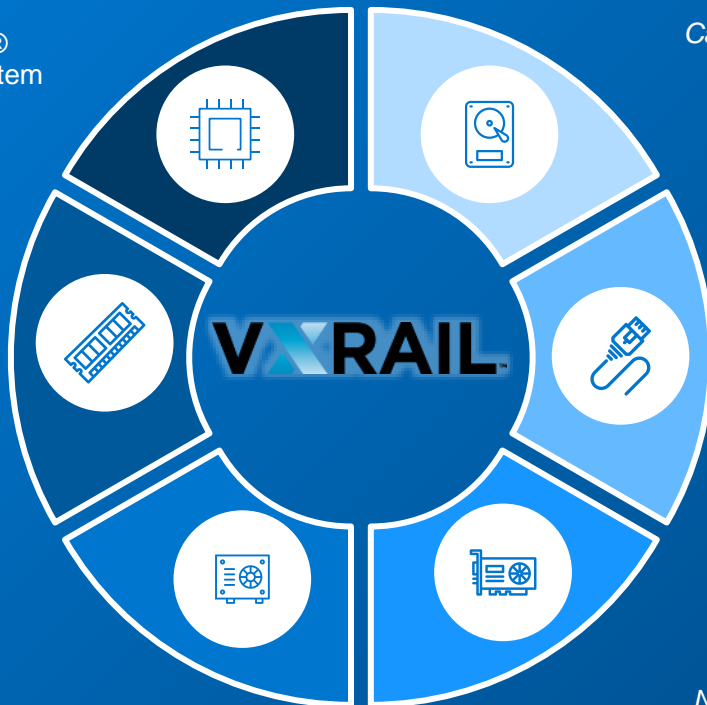
## RAM

16GB RDIMM  
32GB RDIMM  
64GB RDIMM/LRDIMM  
128GB LRDIMM

*Intel Optane Persistent Memory:*  
128GB & 256GB

## Power supply

550W, 1100W, 1600W	100-240V AC
1600W, 2000W, 2400W	200-240V AC
1100W	48V DC



Options vary by series

## Storage

*Cache Drives:* Optane 375GB, NVMe 1600GB  
SAS 400GB, 800GB, 1600GB

*Capacity NVMe:* 1TB, 4TB  
*Capacity SSDs:* 1.92TB, 3.84TB, 7.68 TB  
*HDDs:* 1.2TB to 8.0TB

## Base networking

SFP28, SFP+, RJ45

2x 25GbE  
4x 10GbE  
2x 10GbE  
4x 1GbE (4x 10GbE auto-negotiate)  
Optional add-on NICs, FC HBA

## GPUs

NVIDIA Tesla T4, V100/V100s or M10  
NVIDIA Quadro RTX6000 or RTX8000

*Note:* GPU software & drivers sold separately

 INTEL RAM

 DELL Technologies

# VxRail Sizing Tool

ID: TestCluster1

## VxRail Sizing Tool

v2.24

Help Report Bug Sign Out

CS

Project

Workloads

Results

You can adjust the configuration using the 'Filters' button.

**Configuration Option A**

Lowest Price ▾

Save Export Import

Hide Option

**Configuration Option B**

Lowest Price ▾

Min Spare Capacity %: 25 Show Filters

**VxRail S570 - 4 Nodes (4 x 2U1N)**

	Socket/DG	Node	Cluster
<b>CPU:</b> 5218 (16C, 2.3GHz)	NA	1 (16 Cores - 36.8 GHz)	4 (64 Cores - 147.2 GHz)
<b>Memory:</b> 32 GB DIMMs	6 Per Socket (192 GB)	6 (192 GB)	24 (768 GB)
<b>Persistent Memory:</b> None			
<b>Cache:</b> 400 GB (1% ratio)	NA	1	4
<b>Storage:</b> 8 TB 7.2K (6 free capacity slots)	6 Per DG (48 TB)	6 (48 TB)	24 (192 TB)

This configuration is 1.5% more expensive than Option B.

Min Spare Capacity %: 25 Show Filters

**VxRail S570 - 4 Nodes (4 x 2U1N)**

	Socket/DG	Node	Cluster
<b>CPU:</b> 4216 (16C, 2.1GHz)	NA	1 (16 Cores - 33.6 GHz)	4 (64 Cores - 134.4 GHz)
<b>Memory:</b> 32 GB DIMMs	6 Per Socket (192 GB)	6 (192 GB)	24 (768 GB)
<b>Persistent Memory:</b> None			
<b>Cache:</b> 400 GB (1% ratio)	NA	1	4
<b>Storage:</b> 8 TB 7.2K (6 free capacity slots)	6 Per DG (48 TB)	6 (48 TB)	24 (192 TB)

This configuration is 1.5% cheaper than Option A.



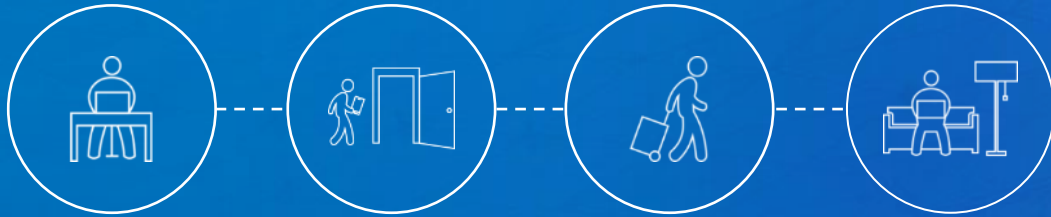
# Solution and Uses Cases on VxRail

## VDI



# The way we work has changed...

## The workforce *has changed*



## Work can happen *anytime*, from *anywhere*



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Employees need remote access to data/apps on their devices

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Companies need to maintain security & compliance

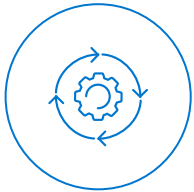
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Total need to manage costs

# VxRail Use Case for VDI



## BENEFITS



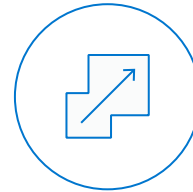
HCI System  
Software lifecycle  
management



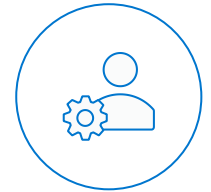
Predictable costs,  
performance, and  
scalability to support  
a growing workforce



Rapid  
deployments



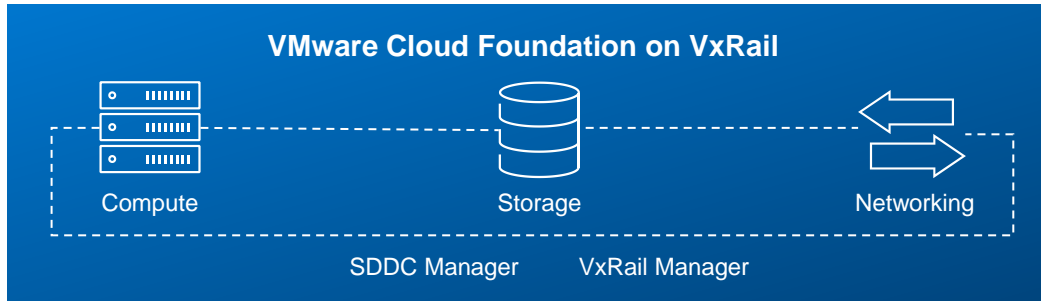
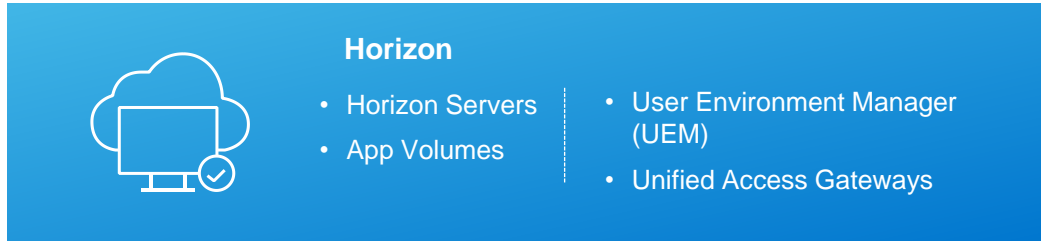
Rapid scaling to  
serve enterprises of  
any size



Dell EMC single-  
company-support  
model

# Horizon on VCF on VxRail

Fast, standardized, repeatable, and scalable deployment of virtual desktops



- VMware Cloud Foundation automates deployment of Horizon infrastructure
- Rapid deployment to Horizon Pod and Block architecture
- Reduce complexity
- Standardize environments
- Scale rapidly
- More time for value-add tasks
- Faster time to value and ROI

\* Automation available on VCF 3.x – not on 4.x

# Dell EMC Ready Architectures on VxRail

VDI on HCI for customers wanting fully integrated solutions on native VMware



Available exclusively with VMware ESXi hypervisor

VMware Horizon or Citrix Virtual Apps and Desktop

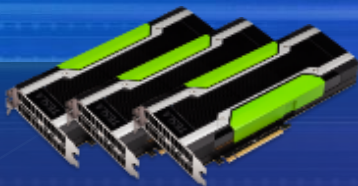
## SOLUTION BENEFITS

- Predictable per-seat cost & performance, and linear scale to support a growing workforce
- Ideal for rapid deployments
- Scale rapidly with workload specific configurations per platform
- **16x** Lower install and upgrade costs
- **30%** TCO advantage over DIY HCI
- **42%** Lower total cost of serviceability

For the latest specification - [VxRail Spec sheet](#)

# Dell EMC Ready Architectures on VxRail

VDI on HCI for customers wanting fully integrated solutions on native VMware



Choice of Hybrid or All Flash storage configurations

Available from 3 to 64 nodes per cluster

Services: Deployment, Integration, Support

## DIFFERENTIATION

- Optimized Dell EMC hardware powered by VMware software with single point of contact for deployment and support
- Integrated Lifecycle Management with a full suite of management software
- Reduce RPO and RTOs with RPVM and in-line deduplication and data compression

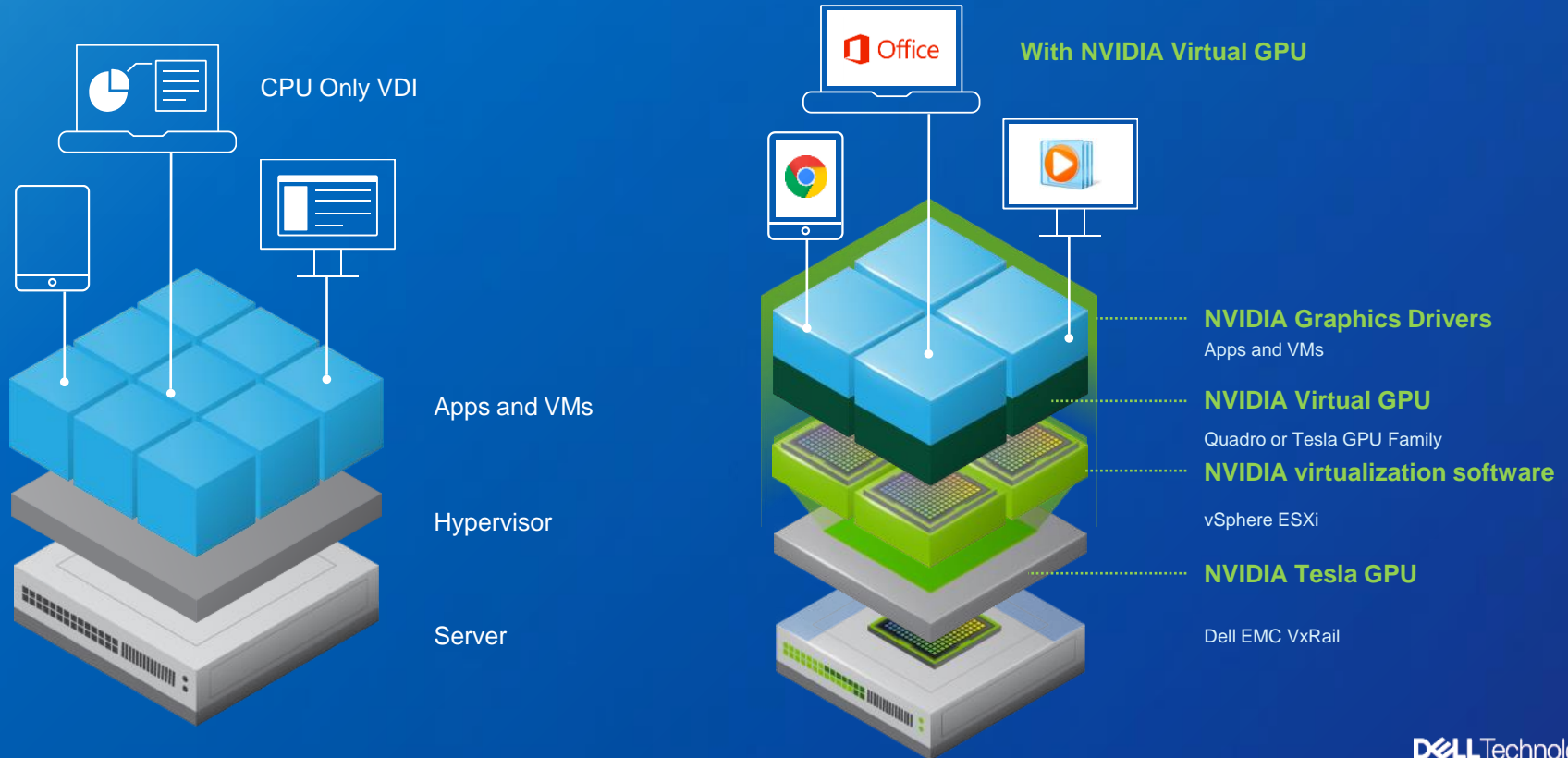
### GPU supported VxRail's

- VxRail V570: 2U,
- VxRail E560: 1U,
- For supported GPUs review [current specification list](#)

For the latest specification - [VxRail Spec sheet](#)

# How it works

NVIDIA Virtual GPU Products deliver a GPU Experience to every Virtual Desktop



# Dell EMC VxRail SVB Bundles



SKU	Order Code	Protocol	Chassis	Capacity	Service	Expansion Possibilities	Recommended UpSells
486-51590	VxRail VDI 1A	VSAN ADV	1U	2 x Intel Gold 6226R (16) Cores @ 2.9GHz, <b>384GB RAM</b> , 1 X 400GB SSD Cache 2 x 3.84TB SATA Capacity SSD	3Yr ProSupport and 4Hr mission critical	Additional Drives	<ul style="list-style-type: none"> <li>3.84TB SATA Capacity SSD</li> <li>DPS Suite/Appliance</li> <li>Dell Network Top Of Rack Switching</li> </ul>
486-51591	VxRail VDI 1B	VSAN ADV	1U	2 x Intel Gold 6226R (16) Cores @ 2.9GHz, <b>768GB RAM</b> , 1 X 400GB SSD Cache 2 x 3.84TB SATA Capacity SSD			
486-51592	VxRail VDI 2A	VSAN ADV	1U	2 x Intel Gold 6248R (24) Cores @ 2.9GHz, <b>768GB RAM</b> , 2 X 1.6TB SSD Cache 4 x 3.84TB SATA Capacity SSD		Additional Drives	
486-51593	VxRail VDI 2B	VSAN ADV	1U	2 x Intel Gold 6248R (24) Cores @ 2.9GHz, <b>1,536GB RAM</b> , 2 X 1.6TB SSD Cache 4 x 3.84TB SATA Capacity SSD			
486-48749	VxRail Compete 2	VSAN ADV	14x3.5" Drives Chassis	3.2TB Raw – 2 x 1.6TB SSD + 32TB Raw – 8 x 4TB 7.2K Rpm NLSAS	3YR PS NBD	Additional Drives	<ul style="list-style-type: none"> <li>4TB NLSAS</li> <li>DPS Suite</li> </ul>
486-57507	VxRail Compete 3	VSAN ADV	2U	2 x 800GB SSD, 4 x 3.84TB SATA SSD	3Yrs Pro Sup	Additional Drives	<ul style="list-style-type: none"> <li>3.84TB SATA SSD</li> <li>DPS Suite</li> </ul>
486-57508	VxRail Compete 4	VSAN ADV	2U	1 x 800GB SSD, 2 x 1.92TB SATA SSD	3Yrs Pro Sup	Additional Drives	<ul style="list-style-type: none"> <li>800GB SSD, 1.92TB SATA SSD</li> <li>DPS Suite</li> </ul>

• 3 nodes are required to create a new VDI cluster



# Resources

- [Dell EMC Ready Architectures for VDI](#) (Reference Architecture)
- [VDI Design Guide—VMware Horizon on VxRail and vSAN Ready Nodes](#) (Design Guide)
- [Dell EMC Quickstart Bundles for VDI](#) (Website)
- [VMware Horizon VDI on VxRail](#) (YouTube Video)



# Azure Stack HCI

## INTRODUCING

# Dell EMC Integrated System for Microsoft Azure Stack HCI

Modernize and Transform your Operational Experience



### Streamline & Simplify Operations

Deliver Operational Efficiency



### Integrated Azure Experience

Flexible Consumption Options

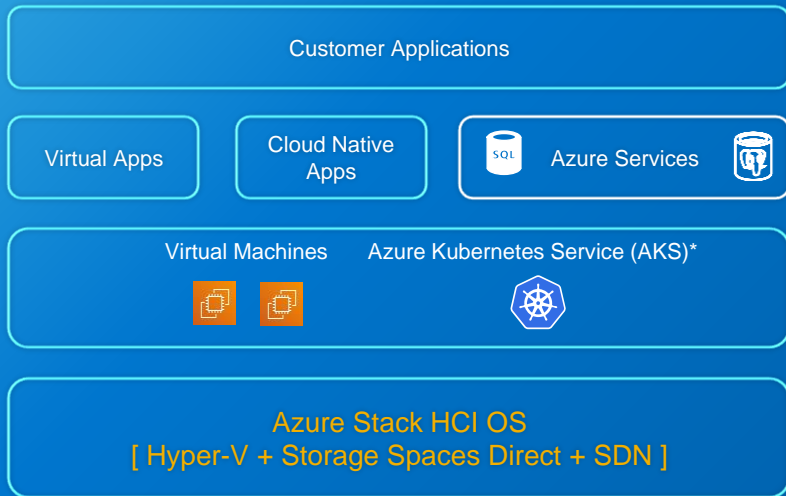


### Be Confident

Rely on enterprise-class expertise



# Hybrid Infrastructure with Azure Stack HCI

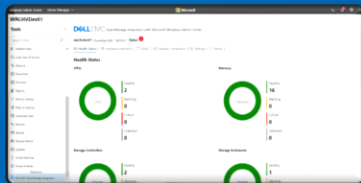


- Connect to Azure Services such as Azure Monitor, Update, Site Recovery, etc.
- Azure Arc enabled data services\* bring Azure services such as Azure SQL, Azure Postgres SQL hyperscale on-prem, but managed as Azure service

- Premium features such as stretched clusters, Arc integration and management
- Announced – Azure Kubernetes Service on HCI – enables traditional VMs and K8 clusters to run on same infrastructure

- Azure Stack HCI – hybrid HCI OS available as an Azure Service
- Always up to date and current as part of Azure subscription
- Billed as any other Azure service with \$10/core/month
- Managed locally or via Azure portal using Arc

## Dell EMC Integrated System for Azure Stack HCI



- Dell EMC Integrated System for Azure Stack HCI
- Turnkey HCI appliance with simplified deployment and LCM
- Local management via Windows Admin Center (WAC) and Dell EMC WAC Extension
- Dell EMC infrastructure available via CapEx or OpEx

# Flexible configuration options

Density optimized



**AX-640**

Applications requiring balance of performance, cost and density

Capacity and performance optimized



**AX-740xd**

Applications needing balance of compute and storage

All-flash

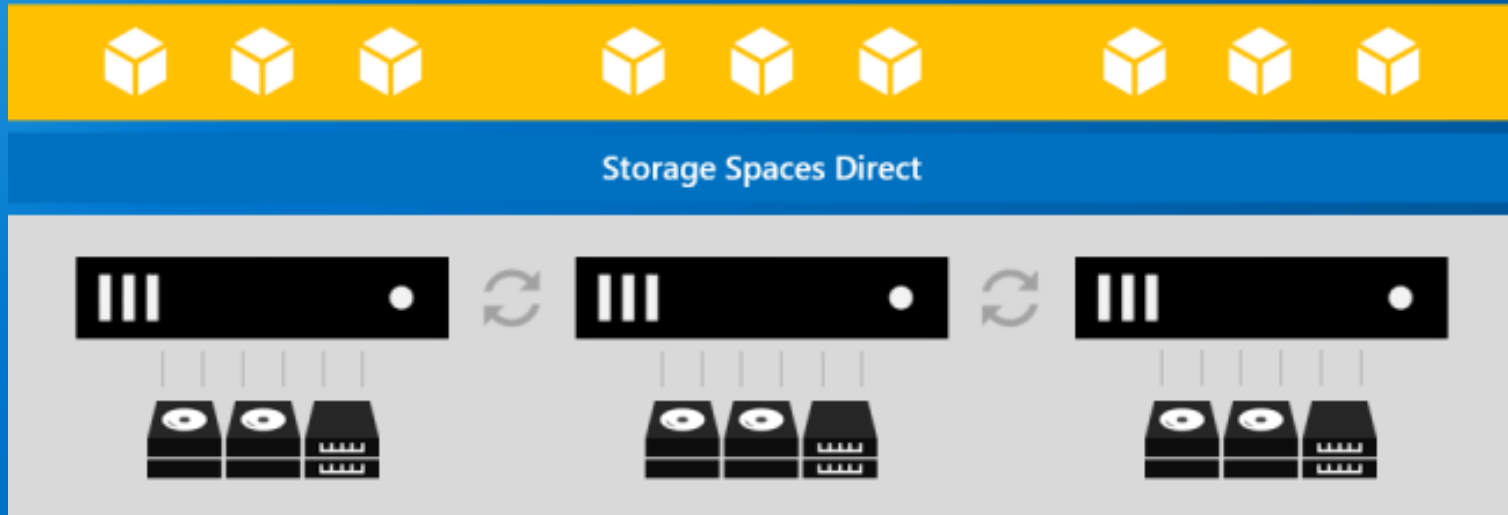
Hybrid

All-NVMe

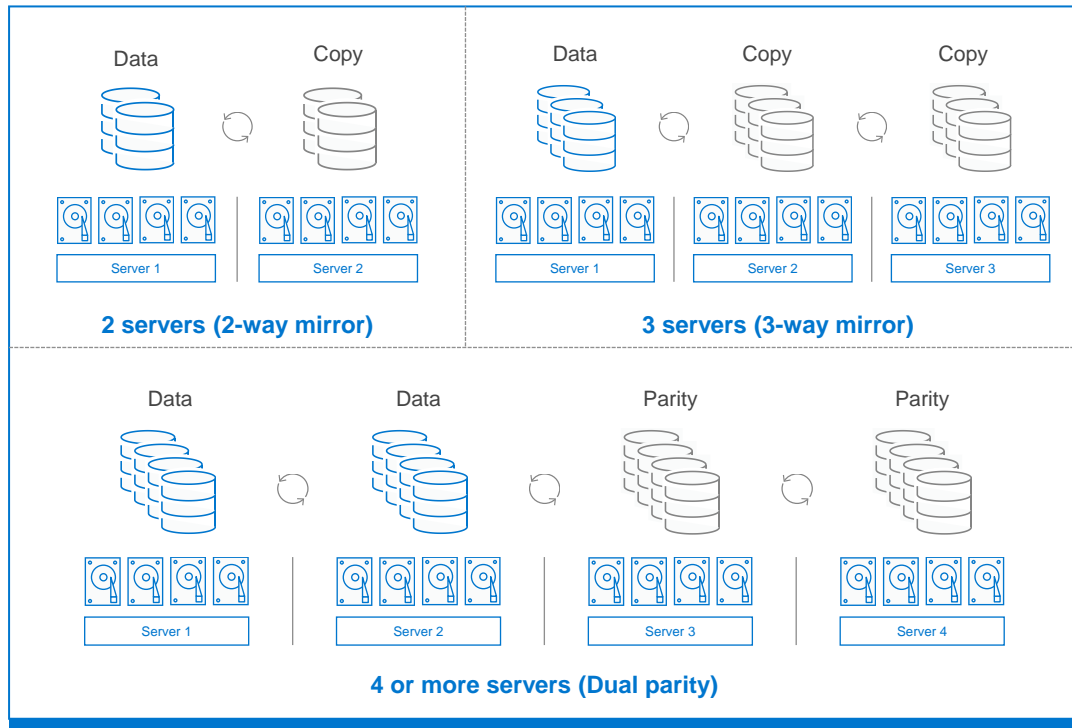
# Storage Spaces Direct

# Microsoft's Software Defined Storage Platform

Hyper-V Virtual Machines



# Volume and resiliency options



# of Servers	Available Protection
2	<b>2-way mirroring</b> (mandatory) <i>Other options:</i> Nested 2-way mirror Nested mirror-accelerated parity
3	<b>3-way mirroring</b> (recommended) <i>Other options:</i> Single parity
4 or more	<b>3-way mirroring</b> (recommended) <i>Other options:</i> Dual-parity Mirror-accelerated parity



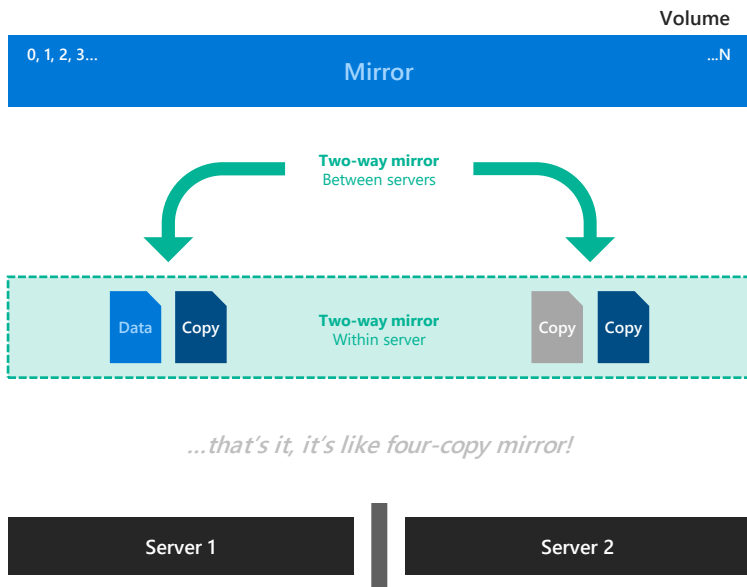
# Volume resiliency capacity efficiency and performance

Resiliency type	Capacity efficiency	Speed	Workloads
Mirror	<p>Three-way mirror: 33% Two-way-mirror: 50%</p>	<p>Highest performance</p>	Virtualized workloads Databases Other high performance workloads
Mirror-accelerated parity	<p>Depends on proportion of mirror and parity</p>	<p>Much slower than mirror, but up to twice as fast as dual-parity Best large sequential writes and reads</p>	Archival and backup Virtualized desktop infrastructure
Dual-parity	<p>4 servers: 50% 16 servers: up to 80%</p>	<p>Highest I/O latency &amp; CPU usage on writes Best large sequential writes and reads</p>	Archival and backup Virtualized desktop infrastructure

- Make the number of volumes a multiple of the number of servers in your cluster (even distribution among servers)
- Limit the total number of volumes to 64 per cluster in Windows Server 2019
- Ensure that there is enough reserve capacity in the storage pool for any in-place volume repair arising out of failed disk replacement. 1 drive per server in the first 4 nodes in a cluster is automatically configured.
- Use the Resilient File System ([ReFS](#)) : preferred file system for [performance](#) and [data integrity](#)

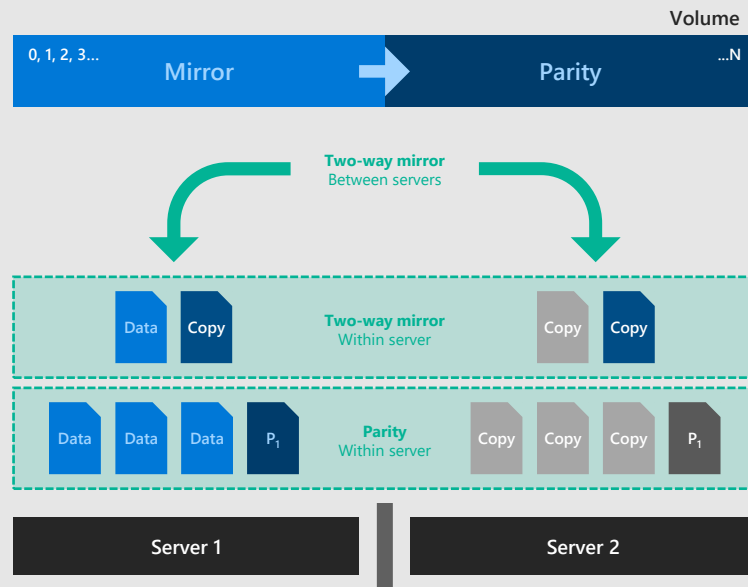
# Two new resiliency options

## Nested two-way mirror



~25%  
Usable

## Nested mirror-accelerated parity



~40%  
Usable

# Tiering recommendations

- **Single-tier all flash** configuration is often recommended due to high performance, low latency, no CPU and memory overhead due to cache operations, and faster rebuild times. Deduplication is also faster with single-tier. Make sure endurance is met by devices and capacity.
- Best price / performance met by 2-tier design (**NVMe + SSD or NVMe + HDD**) with low endurance / read optimized devices for capacity.
- Notes about cache in 2-tier configurations:
  - Cache should accommodate the working set (active reads/writes at any given time)
  - Configure the cache to capacity ratio at **10-15%**
  - 5% cache is sufficient for large nodes ~150 TB or 2-tier configuration using Intel® Optane™ SSDs and Intel® Optane™ DC Persistent Memory
  - Cache does **not** contribute to overall capacity



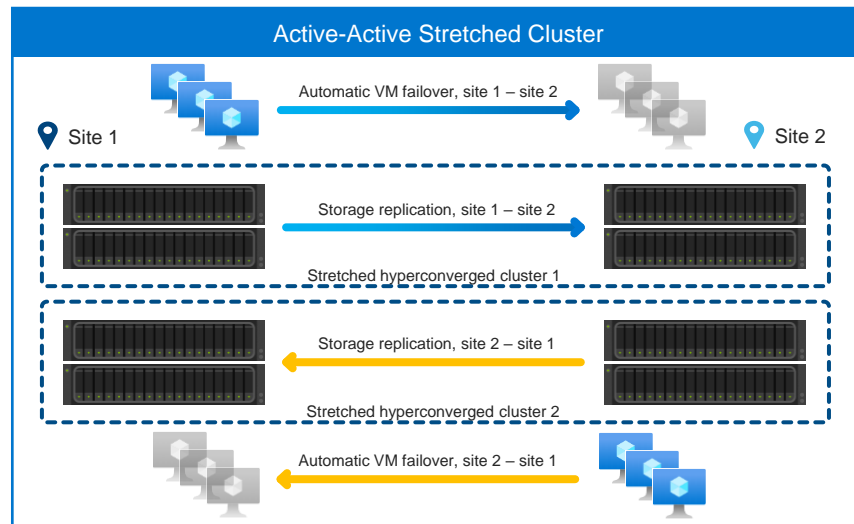
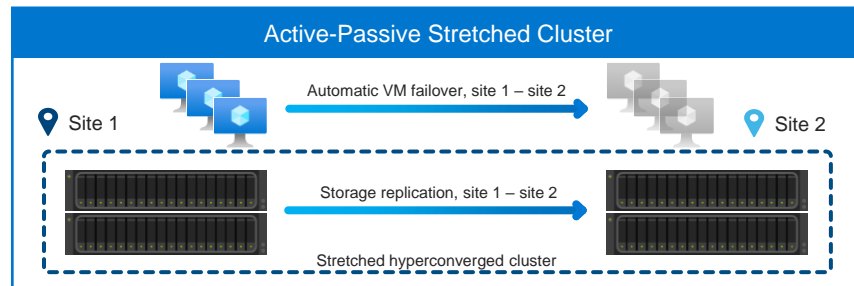
# Native disaster recovery with stretch clustering

NEW!

## Azure Stack HCI stretch clustering

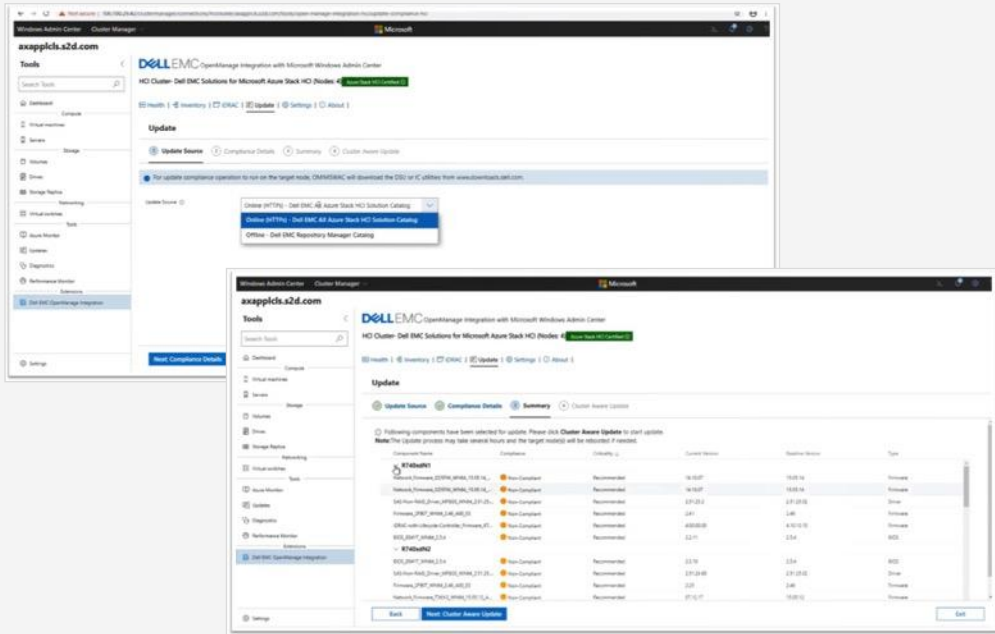


- Span an Azure Stack HCI cluster across two rooms, two buildings, or two cities
- Site-local resiliency
- Sync or async storage replication
- Optional encryption
- Combine with Virtual Machine Affinity or Anti-Affinity for site awareness



# Full Stack lifecycle management

BIOS, firmware, driver, and Microsoft updates using Cluster-Aware Updating



Requires iDRAC Premium License for Windows Admin Center

## Life cycle management functionality details

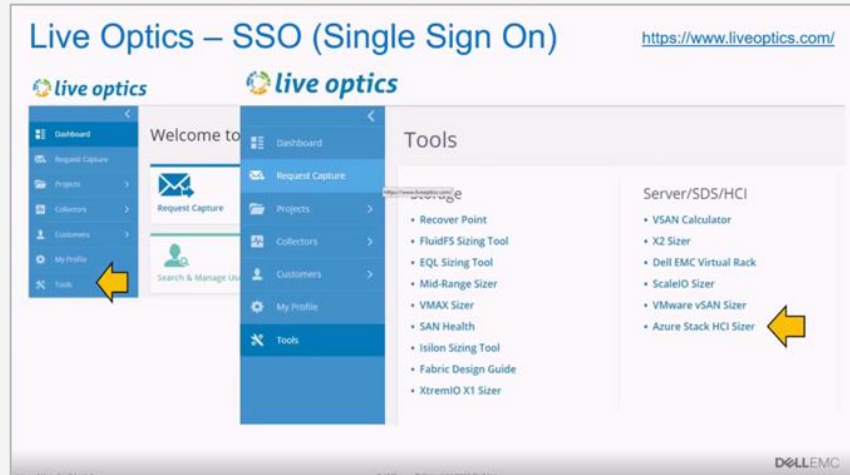
### NEW IN 2.0! Scheduled updates of BIOS, firmware, and Microsoft Components

- Automation prevents potential for human error and downtime
- Upgrade and downgrade
- Use catalog from Dell Repository Manager (DRM) or online-based PDK/MX catalogs
- Compliance report to verify update success

# Sizing and Configuration

# Live Optics

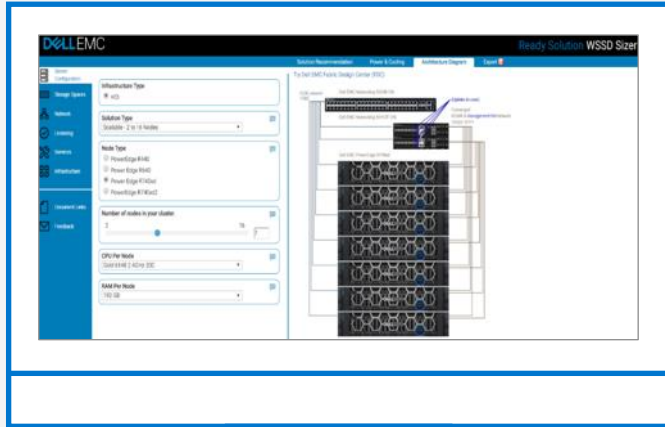
Capture, collect, and analyze performance information from various operating systems



## Live Optics - Real-world data for IT decisions

- Uses **host-based performance collector**, Optical Prime (formerly known as DPACK)
- Live Optics software is designed to be used in both small and large IT environments
- Live Optics allows users to request project preparation and analysis to view **analytic performance metrics** in the project they create
- Download the software, run the collector and create/view your project in 3 simple steps
- Includes link to **Azure Stack HCI Sizer Tool**.

# Azure Stack HCI Sizer Tool



## Explore configuration options

- Quickly match business requirements to appropriate configuration
- Great deal of flexibility and ease of use



## BOM made easy

### Detailed BOM and architecture diagram

- Visual images for ease of understanding / usability
- Easily share and fine tune configurations





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