VxRail 15G Update

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Eine Appliance

Kann auch eine Lösung sein – ABER…

VxRail:
On the latest generation Dell EMC PowerEdge

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VxRail Hyper-converged, Self-contained Infrastructure

What is in a node?

| Processor | RAM | Redundant power & cooling | Network Connectivity (10Gbps/25Gbps) | GPU | All NVMe, all-flash or hybrid disk packs |
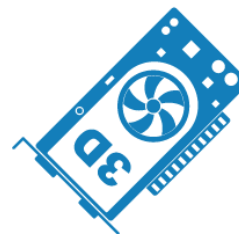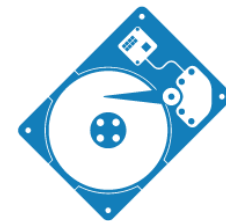
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Additional VxRail Next Gen Nodes - Hardware highlights

Updated!

Two new platforms – E660N and S670, adding to the existing E660/F, P670F, and V670F

Faster

- New CPUs up to 40C
  (42% increase)

- PCIe Gen 4
  (Up to 2x bandwidth)

- SAS HBA with 16x SAS lanes
  (Up to 2x bandwidth)

- Next-gen Intel Optane persistent memory
  (Up to 32% bandwidth improvement)

- **NVMe cache drives on S and V Series**

- PCIe Gen 4 NVMe cache drives

Bigger

- Up to 4TB of memory
  (33% increase)

- Up to 8TB of 2nd gen Intel Optane persistent memory
  (166% increase)

- **12TB NL-SAS capacity drives on the S Series**
  (50% increase)

- Additional 4 capacity disk slots on P Series for up to 184TB of storage
  (20% increase)

- Quad 25GbE OCP 3.0 networking
  (2.5x more bandwidth)

Simpler

- Rear serviceable and hot-pluggable BOSS

- Industry standard OCP3 networking form factor for consistency across portfolio

- Dual-side PSU wiring for cleaner cabling, improved air flow and cooling

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VxRail on latest generation Dell EMC servers

Updated!

E660/F/N	E665/F/N	P670F	P675F/N	V670F
Our everything platforms		Performance focused platforms		Optimized for acceleration
R650 10 x 2.5" drives All-NVMe / All-Flash / Hybrid	R6515 10 x 2.5" NVMe *or* 8 x 2.5" All-Flash / Hybrid	R750 28 x 2.5" drives All-Flash only	R7515 24 x 2.5" drives All-Flash or NVMe	R750 24 x 2.5" drives All-Flash only
Single or dual Intel® Xeon® Scalable Gen 3 10GbE or 25GbE OCP3 2nd Generation Intel Optane Persistent Memory Two single wide GPUs 3 x PCIe Gen4 slots	Single 2nd or 3rd Gen AMD EYPC™ 10GbE or 25GbE OCP2 2 x PCIe Gen4 slots	Dual Intel® Xeon® Scalable Gen 3 10GbE or 25GbE OCP3 2nd Generation Intel Optane Persistent Memory 4 x PCIe Gen4 slots	Single 2nd or 3rd Gen AMD EYPC™ 10GbE or 25GbE OCP2 Two single width GPUs or One double wide GPU 2 x PCIe Gen4 slots	Dual Intel® Xeon® Scalable Gen 3 10GbE or 25GbE OCP3 Six single width GPUs or Two double wide GPUs Four NVIDIA GPU options 8 x PCIe Gen4 slots (6 x if using DW GPU)
10GbE or 25GbE PCIe Optane/NVMe/SAS cache FC HBA	FC HBA	10GbE or 25GbE Optane/NVMe/SAS cache SAS/SATA capacity FC HBA	10GbE or 25GbE Optane/NVMe/SAS cache All NVMe capacity FC HBA 48V DC PSU option	10GbE or 25GbE Optane/NVMe/SAS cache FC HBA 220V – 240V AC only

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VxRail on Dell EMC PowerEdge

P580N	D560/F	S670	G560/F
Performance focused	Durable & rugged	Storage dense	Compute dense
Quad Intel® Xeon® Scalable Gen 2, up to 112 cores Up to 12TB of Optane Persistent Memory	MIL-STD 810G and DNV-GL Maritime certified to withstand extreme heat, sand, dust and vibration Short depth only 20" Certified cold start down to -15C & to run at up to 45C	Only series with 3.5" HDD Hybrid only	Eight Intel® Xeon® Scalable Gen 2 processors in 2U
R840 24 x 2.5" drives	XR2 8 x 2.5" drives	R750 12 x 3.5" plus 4 x 2.5" drives	C6400 with C6420 node 24 x 2.5" drives
10GbE or 25GbE Optane/NVMe cache All NVMe capacity FC HBA M10 GPU	10GbE or 25GbE Optane/NVMe/SAS cache NVIDIA T4 GPU	10GbE or 25GbE NVMe / SAS cache FC HBA 48V DC PSU option	10GbE Optane/NVMe/SAS cache 220V – 240V AC only

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VxRail Configuration Flexibility for Your Workload

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

Updated!

Processor

Single, dual or quad, Gen 2 or Gen 3 Intel® Xeon ® Scalable with 4 to 112 cores
Or
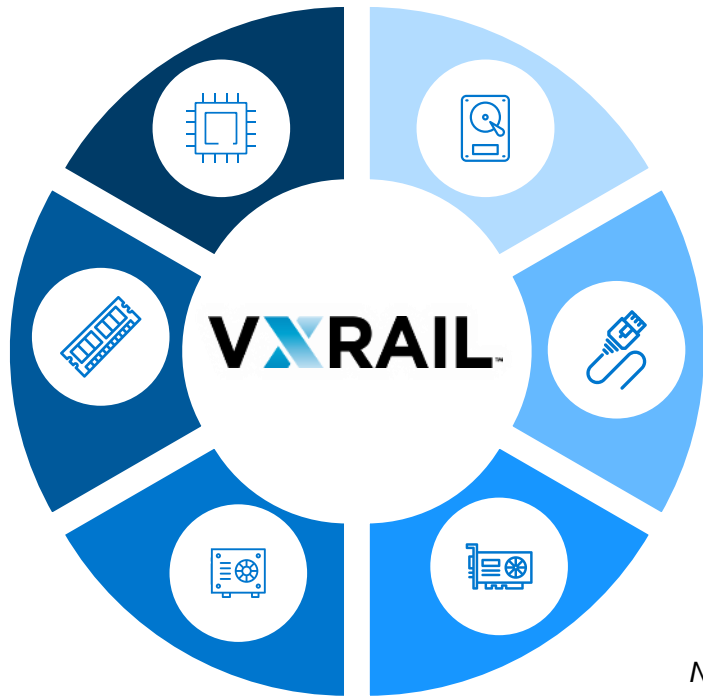2nd or 3rd Gen AMD EPYC™ 7000 Series with 8 to 64 cores in a single socket

RAM

16GB RDIMM
32GB RDIMM
64GB RDIMM/LRDIMM
128GB LRDMIM
256GB LRDMIM

Intel Optane Persistent Memory:
128GB, 256GB & 512GB

Power supply

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

VXRAIL™

Options vary by series

Storage

Cache Drives: Optane 400GB or 800GB
NVMe 1600GB
SAS 400GB to 1600GB

Capacity NVMe: 960GB, 4TB, 7.68TB
Capacity SSDs: 1.92TB, 3.84TB, 7.68 TB
HDDs: 1.2TB to 12.0TB

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 or M10
NVIDIA Ampere A16, A40, A30 or A100
Note: GPU software & drivers sold separately

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Optane Persistent Memory 200 Series

Larger capacity, more slots, faster speeds, and lower power

Left panel:

AES 256-BIT encryption | Secure Erase | UP TO 512 GB modules

Intel Optane PMem 100 series

intel XEON

2nd Generation Intel® Xeon® Scalable processors on 2S/4S/8S platform

8–28 cores

6 channels memory

3 TB Intel Optane PMem per socket*

4.5 TB Total system memory per socket*

2,666 MT/s DDR4 + Intel Optane PMem

18 W Max thermal design power

Right panel:

AVG. 32% higher average memory bandwidth over the previous generation[10] | AES 256-BIT encryption | Secure Erase | UP TO 512 GB modules

Intel Optane PMem 200 series

intel XEON

3rd Generation Intel Xeon Scalable processors on 2S platform

16–40 cores

8 channels memory
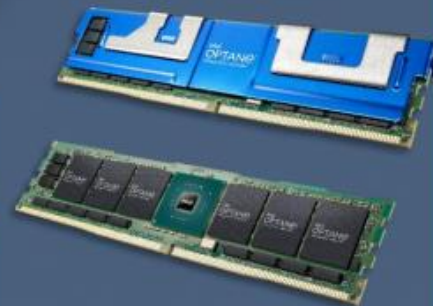
4 TB Intel Optane PMem per socket**

6 TB Total system memory per socket**

3,200 MT/s DDR4 + Intel Optane PMem

eADR

15 W Max thermal design power

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Persistent Memory: Memory Mode

E660/F/N, P670F, & V670F*

Updated!

- 1:4 only supported ratio for near to far memory

- PMem capacities are:
  - 128GB, 256GB, and 512GB

- Only available on dual processor configurations
  - 4 or 8 PMem DIMMs per socket

- Available configurations at launch
  - 8x 128GB PMem + 16x 16GB DRAM
  - 16x 128GB PMem + 16x 32GB DRAM
  - 16x 256GB PMem + 16x 64GB DRAM
  - 16x 512GB PMem + 16x 128GB DRAM

MEMORY MODE:
Performance with extended, affordable memory

Application

Pool of Volatile Memory

DRAM as Cache

Optane PMEM

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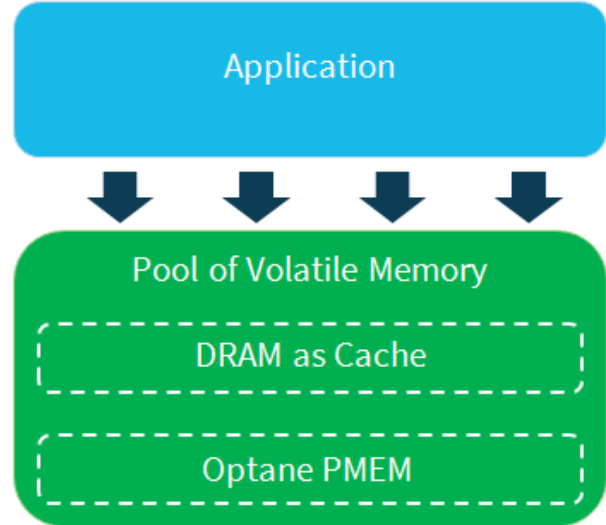
New diskgroup configuration options

More capacity per diskgroup, but fewer diskgroups
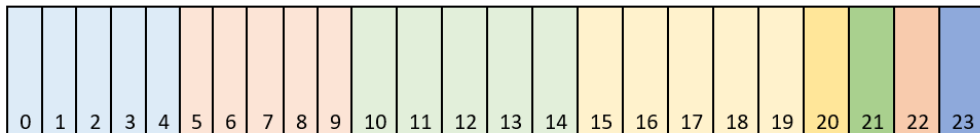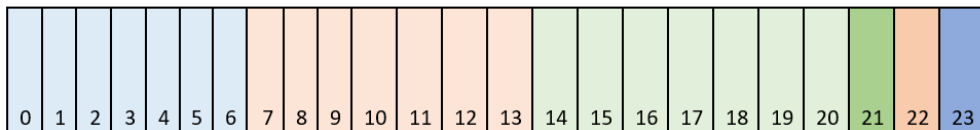
- ## V670F
  - Default: 4 groups, up to 5 capacity drives
  - Option: 3 groups, up to 7 capacity drives
    - One additional capacity drive per node

- ## P670F
  - Default: 4 groups, up to 6 capacity drives
    - 28 drive slots total
    - 4 additional capacity drive slots are in rear
    - No optional config

- ## E660/F/N
  - Default: 2 groups, up to 4 capacity drives
  - Option: 1 group, with 7 capacity drives
    - Slots 7 & 8 are unmanaged

Example of the optional three diskgroup layout above,
and the default four diskgroup layout below on the V670F

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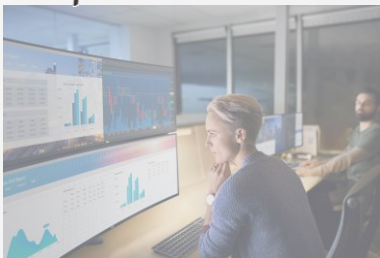
Virtual GPUs for every workload

NVIDIA M10

Knowledge Worker VDI w\vPC

NVIDIA T4

Entry – Mid Range vWS
Knowledge Worker VDI w/vWS
Inference w/Virtual Compute Server

NVIDIA A40

High-End vWS

NVIDIA A100

High-End Virtual Data Science

hidden layers

input cells

output cell

probabilistic hidden cells

memory cells

fig. 1 – Modified Neural Turing Machine (NTM)

Office productivity & streaming video

Enterprise acceleration, Graphics, Analytics, Inference

Largest CAD models, CAE, photorealistic rendering, Seismic exploration

Medium size/complexity CAD models, Basic DCC, Medical Imaging, PLM

Large/complex CAD models, Seismic exploration, complex DCC effects, 3D Medical imaging recon

Deep Learning training, HPC, AI, Data Science

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What is inside VxRail?
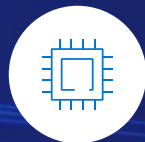
VMware HCI Software

- Choice of vSAN
- vCenter Server
- vRealize Suite Ready
- vSphere Ready*
- Tanzu Basic (optional)
- VMware Cloud Foundation (optional)

VxRail HCI System Software

- VxRail Manager
- SaaS multi-cluster management
- RESTful APIs
- Automation and orchestration services
- Ecosystem connectors

Data Protection Options

- RecoverPoint for VMs
- VMware vSphere Replication

*Compatible with a broad range of customer-supplied vSphere licenses

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VxRail is vSphere License Independent

vSphere Enterprise Plus is recommended for the best VxRail experience

vSphere Enterprise Plus

Dramatically increases administrator productivity

- Automated workload placement, rebalancing, and affinity rules
- Automated maintenance mode
- One-click software updates
- Streamlined drive replacement
- Simplified operations
- Intrinsic security

vSphere Standard

Lower upfront costs; manual administration

- One-click software updates (unique for VxRail*)
- Manual workload placement and balancing
- Manual maintenance mode
- Business continuity
- Multi-step drive replacement

vSphere ROBO

Remove site virtualization

- Business continuity through high availability and replication, backup, encryption, and limited DRS
- Up to 25 virtual machines across multiple nodes and sites
- Three editions: Standard, Advanced, Enterprise

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VxRail 2-Node Cluster

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VxRail 2-Node Overview

Supported with either direct connection or ToR switch
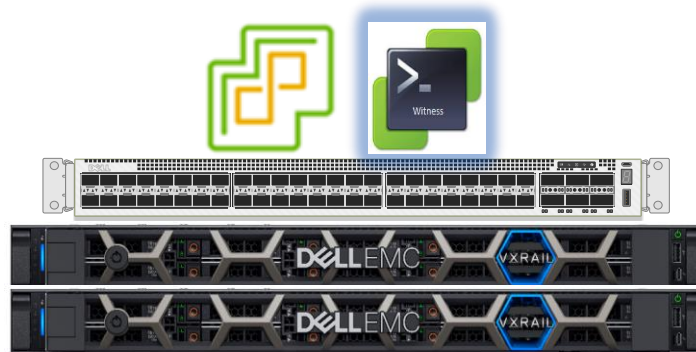
- 1/3 less footprint than a traditional cluster
- Uses Witness host
- Supports automated LCM

- E560/F/N, E665/F/N, P570/F, V570/F, S570, D560/F
- 10GbE or 25GbE connectivity
- Minimum VxRail software version 4.7.100

- Standard ProDeploy Service
- Specially adapted and automated 1st run experience

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Shared Witness for 2-Node Deployments – 7.0.100

Reduced administration time and infrastructure costs associated with 2-node clusters

- Share witness across multiple 2-node clusters
  - Supports up to 64 clusters
  - Reduced operations and technical costs
  - Reduced infrastructure

- Operational flexibility
  - Witness and multiple clusters managed from single vCenter
  - Clusters must run vSphere 7.0 U1 and above
    - Clusters not required to use the same version
    - Manual guidance on witness upgrading
  - Cannot be used with stretched clusters

Remote 2-node vSAN Clusters
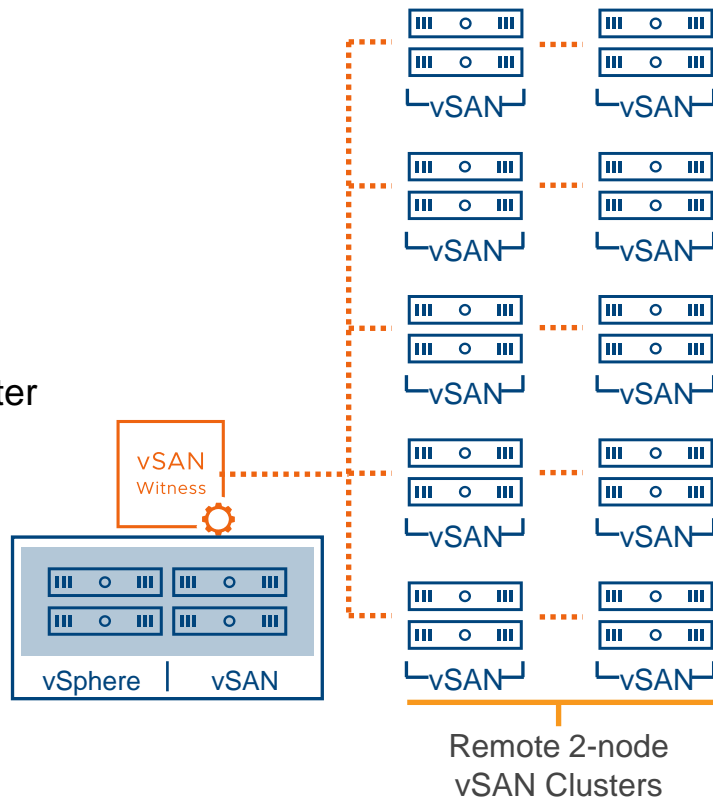
vSAN 2-node cluster secondary resiliency – 7.0.300
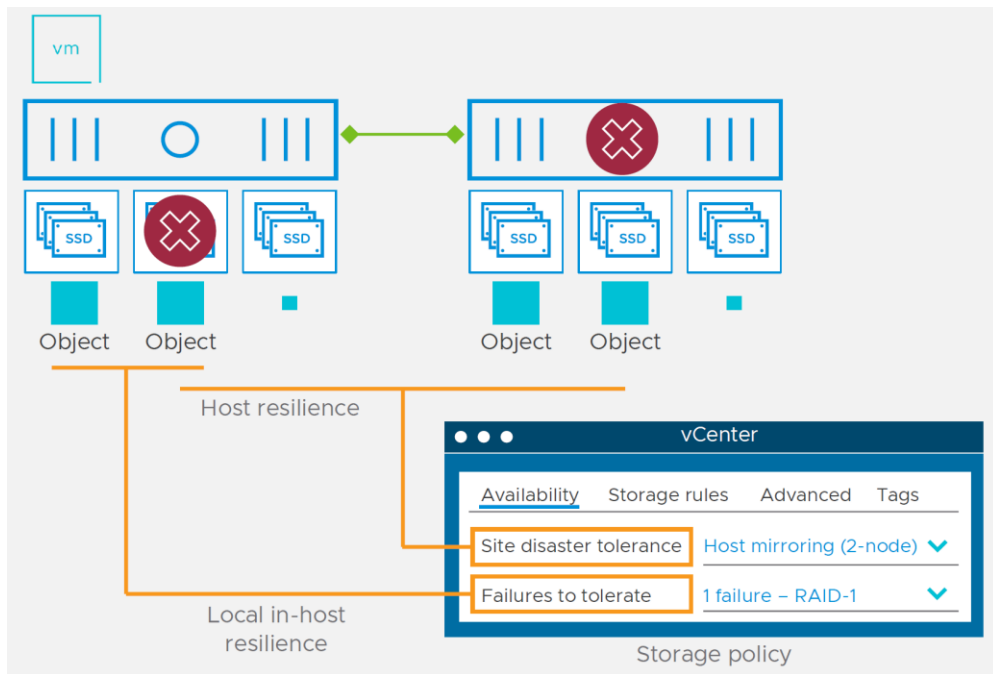
- Maintain data resiliency when a secondary host and witness appliance become unavailable

- Mirrors data and adds witness component within a single host

- Requires 3 disk groups for 3 fault domains
  - 3 cache drives

- Applies to 2-node and stretched clusters

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VxRail dynamic nodes

VxRail dynamic nodes

Flexibly scale storage to optimize VMware HCI deployments

Updated!

- Compute-only nodes with no vSAN license

- Flexible primary storage options – VMware vSAN HCI Mesh or Dell EMC external storage arrays

- Scale compute independent of storage

- VxRail HCI System Software with dynamic nodes for VxRail LCM experience

- E660F, P670F, and V670F models with **no support for internal storage**

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VxRail dynamic nodes

Updated!

E660F	P670F	V670F
Our low-profile everything platform	Performance focused	Optimized for GPU acceleration
Dual Intel® Xeon® Scalable Gen 3 16 to 80 cores Up to 4TB of DRAM memory Up to 8TB of Optane PMem 200 Series Up to two single wide NVIDIA GPUs	Dual Intel® Xeon® Scalable Gen 3 16 to 80 cores Up to 4TB of DRAM memory Up to 8TB of Optane PMem 200 Series	Dual Intel® Xeon® Scalable Gen 3 16 to 80 cores Up to 4TB of DRAM memory Up to six GPUs from a choice of NVIDIA Ampere and Tesla cards
BOSS with dual M.2 SATA	BOSS with dual M.2 SATA	BOSS with dual M.2 SATA
R650	R750	R750
10GbE or 25GbE networking 16Gb or 32Gb Fibre Channel	10GbE or 25GbE networking 16Gb or 32Gb Fibre Channel	10GbE or 25GbE networking 16Gb or 32Gb Fibre Channel

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Key use cases

New!

- Dynamic nodes for VMware vSAN HCI Mesh Compute Clusters
  - Allow utilization of vSAN storage on vSphere clusters
  - Optimize licenses costs
  - Use of a common operating model with VxRail HCI System Software on client and server clusters

- Dynamic nodes for VCF on VxRail Workload domains*
  - Address data-centric workloads that require external storage arrays and their data services
  - Leverage existing 3-tier infrastructure for VCF on VxRail
  - Scale storage and compute independently

- Dynamic nodes for vSphere with Dell EMC Storage
  - Extend VxRail HCI management experience to vSphere clusters
  - Requires use of Dell EMC Storage Arrays
  - Must be an exclusively vSphere use case

*Supported in upcoming VCF on VxRail release

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VxRail satellite nodes

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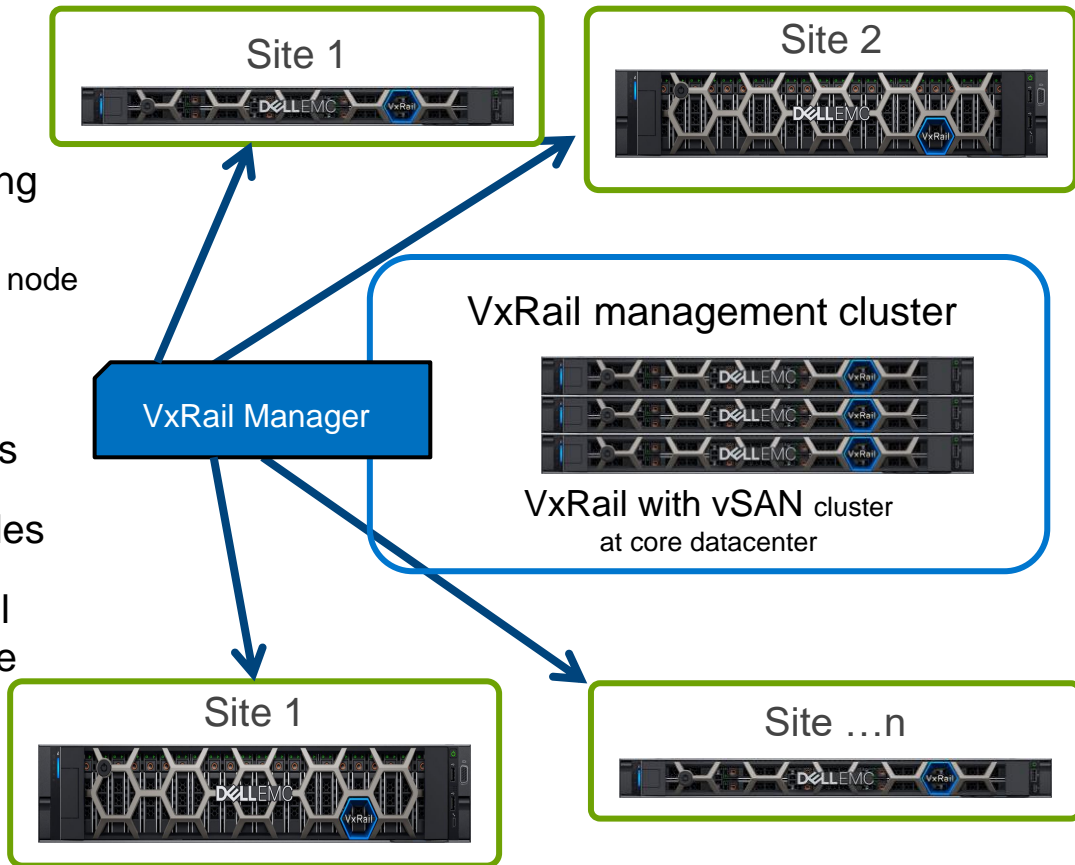
VxRail satellite nodes

Low-cost single node extension for existing VxRail customers

- Benefit from the simplicity, scalability, and automation of VxRail beyond the core data center

- Single node deployment option for retail, ROBO, and Telco edge customer, managed by a VxRail with vSAN cluster

- Leverages existing E660, E660F, and V670F platforms: Supports all hardware options

- Includes PERC H755 for local RAID protected storage
  - Data and applications not protected from node failure.
  - For resilience consider: 2-node cluster, vSphere Replication, or RP4VM*

- Smaller footprint and lower cost than 2-node, no vSAN licensing costs

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VxRail management cluster

- Support VxRail satellite node deployments

- VxRail management cluster continues acting as a VxRail with vSAN cluster
  - Supplementary role of managing VxRail satellite node
  - Requires a customer managed vCenter

- Single VxRail management cluster can manage one to many VxRail satellite nodes

- No VxRail Manager on VxRail satellite nodes

- New or existing three node or larger VxRail with vSAN cluster running 7.0.300 or above

Site 1

Site 2

VxRail Manager

VxRail management cluster

VxRail with vSAN cluster
at core datacenter

Site 1

Site …n

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VxRail satellite nodes hardware features

- Built on E660, E660F, and V670F platforms
  - E Series for single socket and hybrid options
  - V Series for variety of GPU options and more storage capacity

- 10GbE, 25GbE and 100Gbe networking support
  - 1GbE with 10GbE Base-T / RJ45 cards

- PERC H755 controller provide local RAID protection from disk failures
  - RAID levels: 0, 1, 5, 6, 10, 50, and 60 with dedicated or global hot spare
  - Supported drive types: SATA, SAS, and NVMe

- Licensing
  - vSphere Standard or Enterprise Plus
  - No vSAN license
  - vCenter: Uses same vCenter as management cluster

- Existing VxRail with vSAN cluster required
  - Acts as a management cluster to provide remote access to the satellite nodes across sites

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CloudIQ for VxRail – Virtualization View

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Virtualization View

- Brand new virtualization view added to CloudIQ UI
  - View infrastructure objects and relevant information in virtualization context

- Similar to how clusters are organized on vCenter Server UI
  - vCenter Server > Data Center > VxRail clusters

- Virtualization view include three tabs
  - Summary tab for cluster information
  - Alerts tab for health alerts
  - VMs tab for inventory of VMs

- Virtualization view only supports VxRail at the time of introduction

- Functional simulator with sample data:
  - https://cloudiq.dell.com/simulator/

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Virtualization view – Summary tab

Interactive Demo and Hands-On Lab

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What's available to you

- Core VxRail demos
  - Interactive demo – VxRail 4.7
    - https://vxrail.is/demo
  - Hands-on lab: VxRail 4.7 – Simplifying IT through Standardization and Automation
    - https://democenter.dell.com/
  - Hands-on lab: VxRail ACE
    - https://democenter.dell.com/

- VCF demos
  - New interactive demo
    - https://vxrail.is/vcfdemo

Interactive Demos: VMware Cloud Foundation on Dell EMC VxRail — **DELL**EMC

VMware Cloud Foundation on Dell EMC VxRail

vmware® Cloud Foundation™ — VXRAIL

Start

Cloud Foundation on VxRail Deployment

Workload Domain Management

SDDC Manager UI Tour

VxRail Manager vCenter Plugin

Full Stack LCM

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