

TD SYNnex on Tour

HPE ProLiant

Software Defined Storage mit
VMware vSAN und Microsoft Azure Stack HCI

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**Hewlett Packard
Enterprise**

Radically simple storage for the software-defined data center

VMware vSAN ReadyNodes
from Hewlett Packard Enterprise

vmware®

The IT evolution continues

Remain in lock-step with the changes

Experience the idea economy

- Continuing to gain velocity

Grow with a software-defined data center (SDDC)

- Designed to handle monumentally large workloads

Choose software-defined storage (SDS)

- Leveraging the power of hypervisors and automation

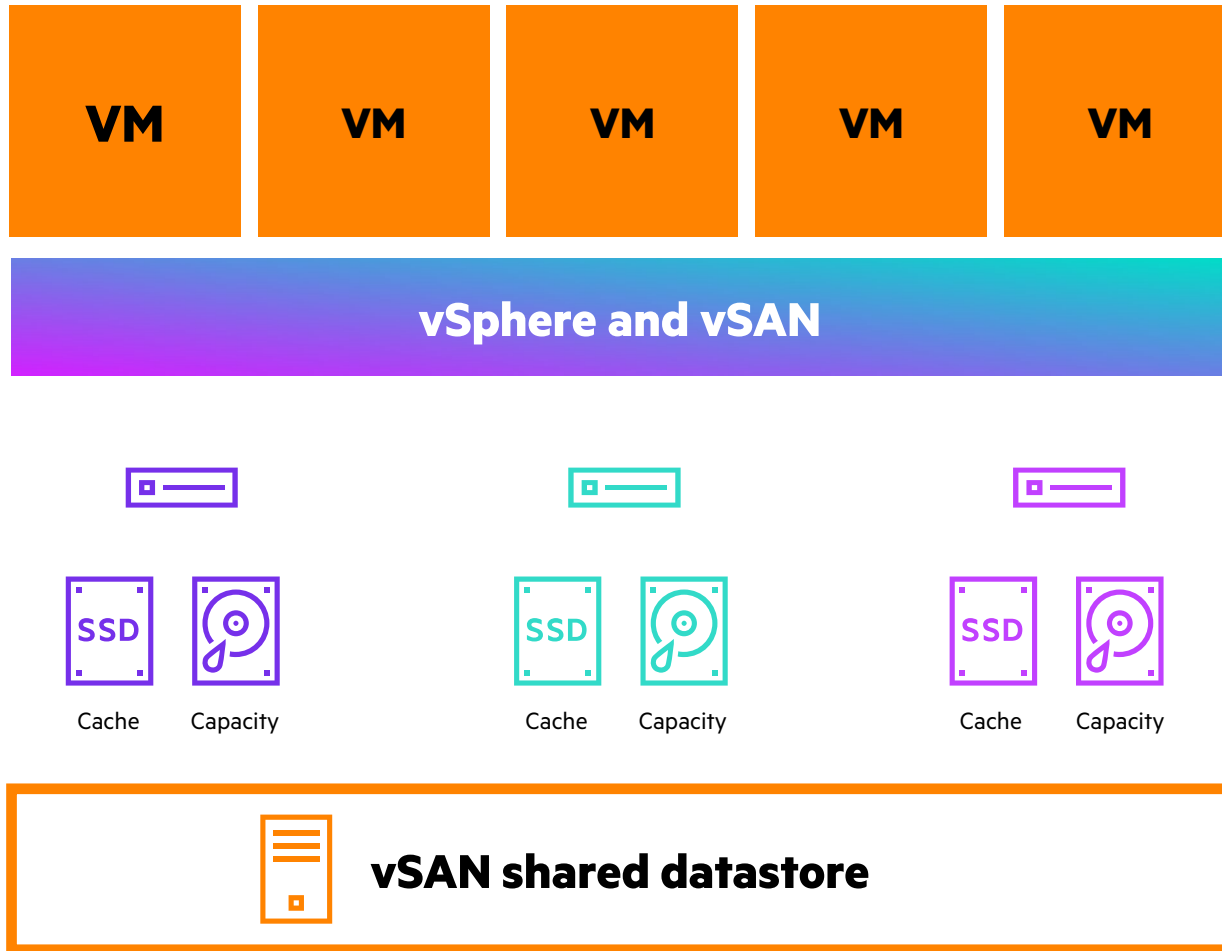
Trust HPE and VMware

- Taking software-defined technology to new heights



What is VMware vSAN Original Storage Architecture (OSA)?

Radically simple hypervisor-converged storage

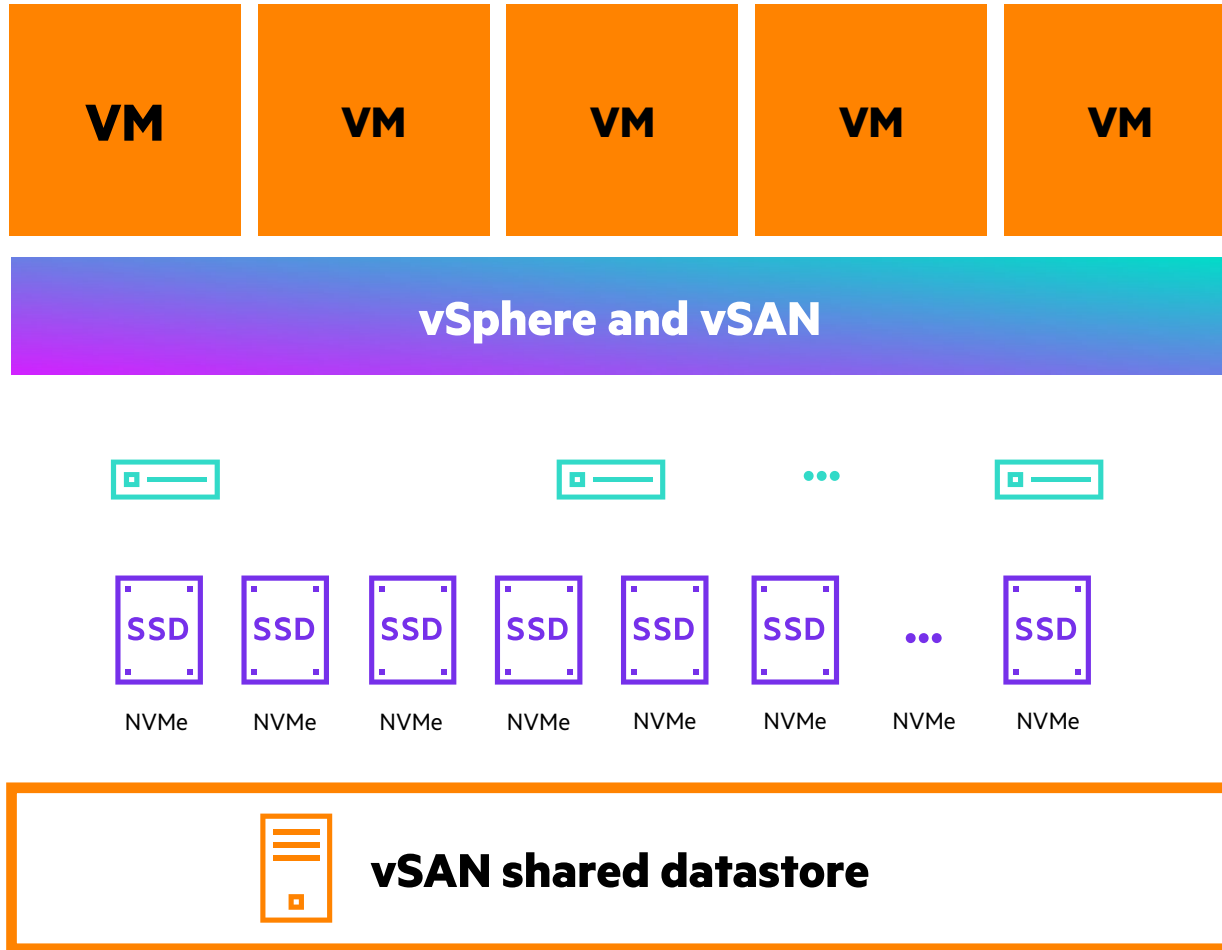


The basics

- SDS embedded in VMware® vSphere®—proven for eight years and market leader for many years in SDS
- Available on vSphere 7.x and 8.x
- Network shared storage through cache and capacity tiered drives
- Managed through storage policy-based management (SPBM) framework
- Available for hybrid (SSD/HDD) and all flash (SAS and NVMe)
- Available on certified VMware vSAN™ ReadyNode™ servers or through build your own components
- HPE ProLiant Gen10 servers, Gen10 Plus servers, and Gen11 servers

What is VMware vSAN Express Storage Architecture (ESA)?

Next-generation vSAN for NVMe devices



The basics

- VMware vSphere 8.0 required
- Single-tier NVMe—No cache or capacity segments
- TCO better than OSA—No performance loss using RAID 5 over RAID 1 with higher storage utilization
- Same vSAN management experience as OSA
- User experience prioritized over vSAN kernel rebuilds (taking nodes offline for maintenance, for example)
- HPE ProLiant Gen11 server offerings and HPE ProLiant DL380 Gen10 Plus server offerings

What we know about vSAN ESA Build and Performance

Networking

- vSAN ESA thrives on throughput allotment from NICs
- Performance of 100Gb very clear over 25Gb
- Adding RoCEv2 makes performance at 25Gb nearly on par with 100Gb without it

NVMe SSD

- Min. Required is 4 NVMe devices
- Sweet spot of performance max is 8 total NVMe drives
- Anything beyond 8 total drives is purely adding capacity with minimal performance benefit

Customer Experience

- Rebuild times are significantly faster with vSAN ESA
- Minimal IOPs lost when rebuild triggers after device failure
- Once rebuild completes the IOPs remain back at steady state

Taking advantage of the TCO benefit for vSAN ESA

How the new ESA certification benefits a customer's TCO

ESA benefit for a customer's TCO can be up to 40% over OSA.

ESA architecture gives RAID 5/6 capacity at better performance than OSA RAID 1.

RAID 6 vs RAID 1 increases usable storage capacity or can reduce overhead costs by requiring fewer NVMe to gain the same capacity.

ESA performance difference combined with capacity increase allows for more VMs in the same space.

Key takeaway: vSAN ESA can deliver the same performance and capacity with significantly fewer hosts (power, space, cost, licensing) than required for a vSAN OSA configuration.

With vSAN 8, you benefit from:

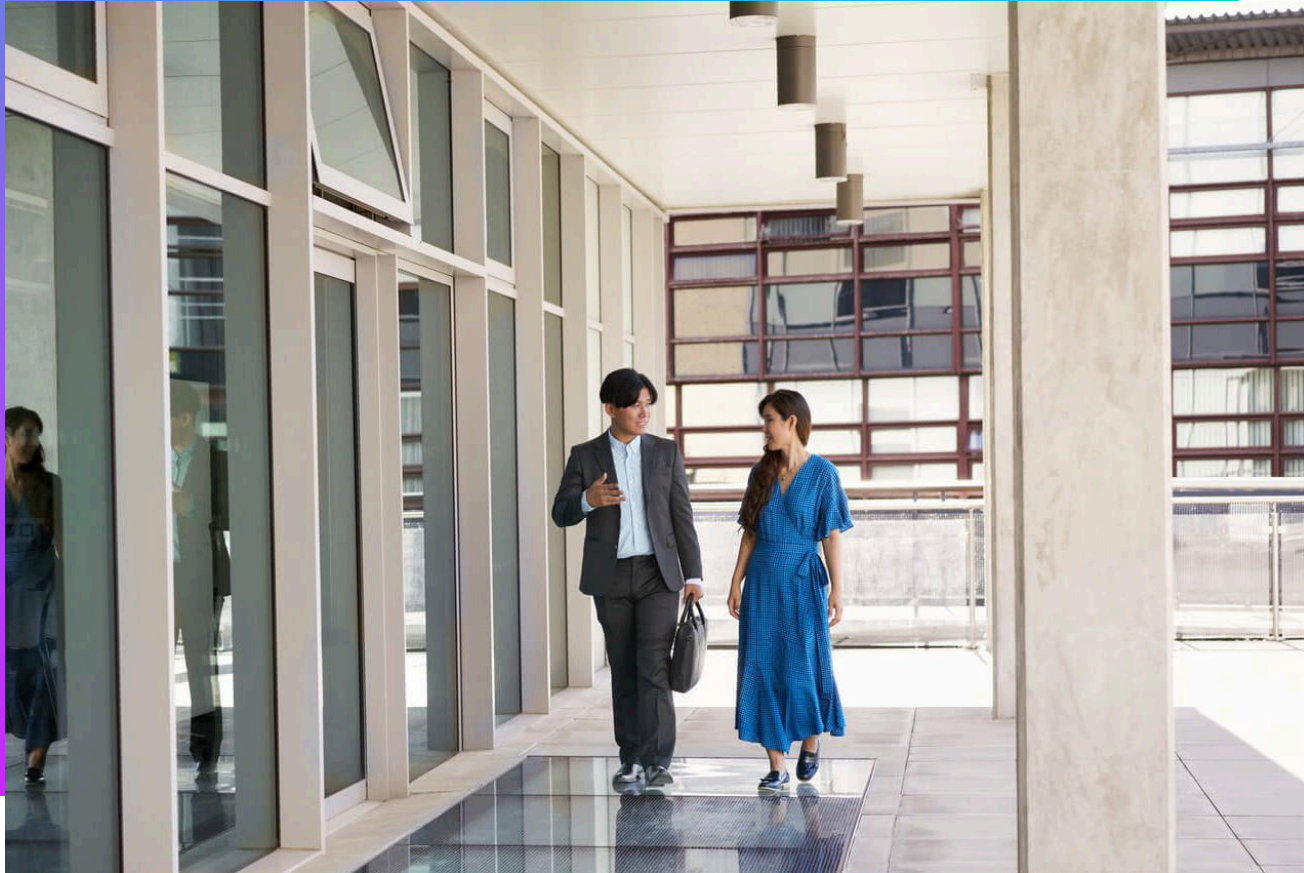
- 4x improvement in compression*
- Triple buffer capacity from 600 GB to a maximum of 1.6 TB¹
- Workloads that can run at a higher performing rate for longer periods of time²

¹ "Announcing vSAN 8," VMware blog, August 30, 2022.

² "An Introduction to the vSAN Express Storage Architecture," VMware blog, August 30, 2022.

Deployment choices

Server profiles available from hybrid to all-flash NVMe



Giving you the configuration options you want and need

To properly size your vSAN ReadyNodes:

- Visit the **Simple Configurator** at <https://vsansizer.esp.vmware.com/>.
- Follow the steps outlined.
 - ✓ For OEMs: **Choose HPE.**
 - ✓ Select model.
 - ✓ Follow “Next steps.”

The list of certified components can be found at [vSAN Certified Components](#).

Design

vSAN ESA ReadyNode Hardware Guidance

Description	vSAN-ESA-AF-2	vSAN-ESA-AF-4	vSAN-ESA-AF-6	vSAN-ESA-AF-8	vSAN-ESA-AF-HighDensity
Node Capacity (TB) (Min)	15	20	40	60	100
CPU (#cores) per Node (Min)	16	40	48	56	48
Memory (GB) (Min)	128	512	768	1024	768
Network (GbE) (Min)	1 x 25	1 x 25	2 x 25	1 x 100	2 x 25

vSAN 8.0 Feature Matrix

Deployment Model

Features

vSAN 8.0

	Standard	Advanced	Enterprise	Enterprise Plus
	Hybrid Deployment OSA	All-Flash Deployment OSA / ESA	Enterprise Features OSA / ESA	Intelligent HCI at Scale OSA / ESA
Storage Policy Based Management (SPBM)	✓	✓	✓	✓
Virtual Distributed Switch	✓	✓	✓	✓
Software Checksum	✓	✓	✓	✓
All-Flash Hardware	✓	✓	✓	✓
iSCSI Target Service	✓	✓	✓	✓
QoS – IOPS Limit	✓	✓	✓	✓
Cloud Native Storage (CNS) Control Plane	✓	✓	✓	✓
vSphere Container Storage Interface (CSI) Driver	✓	✓	✓	✓
Shared Witness	✓	✓	✓	✓
Deduplication & Compression		✓	✓	✓
RAID-5/6 Erasure Coding		✓	✓	✓
vRealize Operations within vCenter		✓	✓	✓
Stretched Cluster with Local Failure Protection	✓ ²	✓ ²	✓	✓
Data-at-rest and Data-In-Transit Encryption			✓	✓
File Services			✓	✓
HCI Mesh ¹			✓	✓
Data Persistence Platform for Modern Stateful Services			✓	✓
vRealize Operations 8.0 Advanced				✓

¹ Cross Cluster Capacity Sharing.

² Two-node clusters only. Stretched clusters with 3 or more hosts require vSAN ENT or ENT+ licensing.

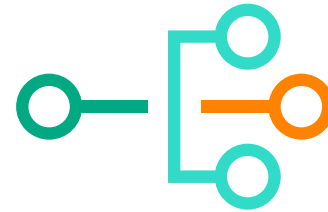
What is a vSAN ReadyNode?

Turnkey solution for accelerating your journey to software-defined storage



Consolidated compute and storage nodes

- HPE ProLiant servers as the trusted platform
- Use vSAN storage kernel
- 10/25 Gb networking options as base
- Listed configurations in VMware VCG
- All supported by HPE (HPE hardware and VMware software) when licenses are purchased through HPE



Tested solution ships complete with the prescribed

- Memory with new DDR5 for HPE ProLiant Gen11 servers
- Networking from 10 Gb to 100 Gb
- HBA options from Microchip or Broadcom using all flash SAS or SATA SSD
- All NVMe builds (**no HBA**) for the new ESA certification
- All running on an HPE ProLiant server

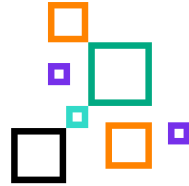
What is a vSAN ReadyNode? (continued)

Turnkey solution for accelerating your journey to SDS



Easy to order and faster time to market

- From a single source—HPE
- Faster time to market by using prescribed configurations



Simple to manage

- Through converged management of the physical and virtual environment



Less costly to run

- Using highly efficient HPE ProLiant servers



Secure

- 99.8% detection rate*
- 100% malware protection across any app, cloud, or device*
- 60% reduction in the number of traditional firewalls required*

**Validated HPE server configurations jointly recommended by
HPE and VMware to run vSAN**

* AV Comparatives, Business Security Test March–April 2020 – Factsheet, 2020.

HPE ProLiant servers for vSAN ESA ReadyNodes

HPE ProLiant DL380 Gen10 Plus server

- 3rd Gen Intel® Xeon® Scalable processors
- 2P, 2U
- AF-2 through AF-HD available

HPE ProLiant DL360 Gen10 Plus server

- 3rd Gen Intel Xeon Scalable processors
- 2P, 1U
- AF-2 through AF-8 available

HPE ProLiant DL345 Gen11 server

- 4th Generation AMD EPYC
- 1P, 2U
- AF-2 through AF-HD available

HPE ProLiant DL360 Gen11 server

- 4th Gen Intel Xeon Scalable processors
- 2P, 1U
- AF-2 through AF-8 available



HPE ProLiant DL380 Gen11 server

- 4th Gen Intel Xeon Scalable processors
- 2P, 2U
- AF-2 through AF-HD available

HPE ProLiant DL385 Gen11 server

- 4th Generation AMD EPYC processors
- 2P, 2U
- AF-2 through AF-HD available

HPE ProLiant DL365 Gen11 server

- 4th Generation AMD EPYC processors
- 2P, 1U
- AF-2 through AF-8 available

What can vSAN ReadyNodes from HPE do?

Handle a wide variety of workloads

Client virtualization (VDI)

Enhancing your client environment and user experience

Generation production workloads

Giving your midrange data center the high levels of performance, capacity, reliability, and manageability you need

Disaster recovery target

Providing a cost-effective solution for meeting your recovery point and time objectives

Test/dev and staging

Compact, cost-effective, and efficient for distributed workload environments



Why choose HPE for your vSAN ReadyNode deployment?

Value, simplicity, savings, and choice



Turnkey solution

- Fully tested
- Delivered on a proven HPE ProLiant server
- Faster time to market by using prescribed configurations
- Backed by comprehensive HPE service and support



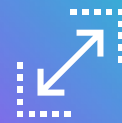
Proven infrastructure

- Built on the high performance and reliability of HPE ProLiant servers
- Deploying vSAN on the number one server platform for virtualization
- Tens of thousands of customers running vSAN



Simplified, Converged management

- Made possible through HPE OneView
- SPBM makes operations easier
- vSAN is managed through vCenter and can integrate with vRealize® Operations



Granular and linear scalability

- Scaling your storage environment up or out by adding storage drives to servers and/or servers to the cluster



Hypervisor-converged architecture

- Enabling storage and compute to run in the same physical host



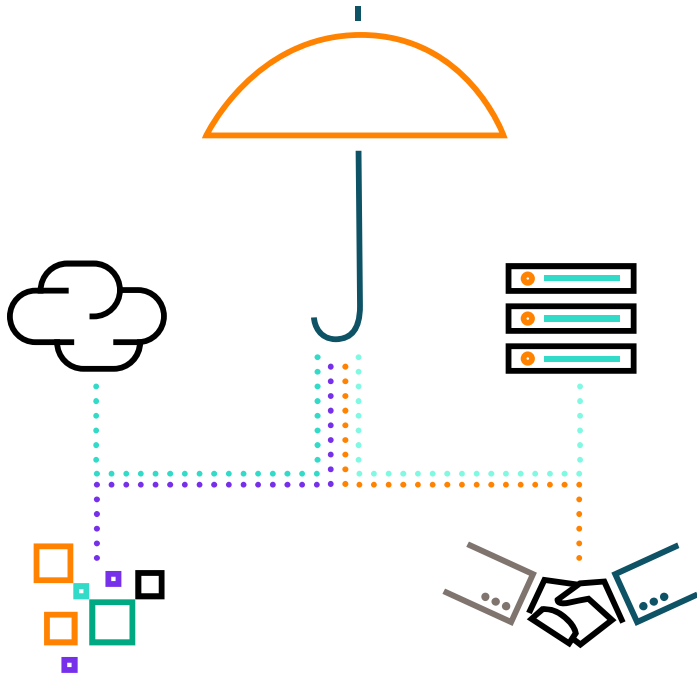
Deployment choices

- Availability of Reference Builds in OCA tool for latest configurations
- Several preconfigured vSAN ReadyNodes from HPE
- Ability to build a vSAN solution with your choice of certified hardware¹

¹ For list of certified HPE components, refer to the VMware vSAN Compatibility Guide.

Get the support you need

HPE Services for virtualization and VMware are your foundation of value



Trusted service provider

- Offering one-stop simplicity for technical support for both hardware and software, including vSAN software
- Providing the answers you need to resolve problems fast
- Delivering a consistently excellent service experiences

Enabling a phased approach

Helping you at every stage of your move to a virtualized infrastructure or cloud:

- Assessment
- Design
- Implementation
- Support

Preventing

66%
of incidents
before they
occur—through
proactive support
and education¹

¹ Anonymous customer results. Customer was able to reduce the time to build and deploy infrastructure for 12 call centers from 66 days to 1.

HPE and VMware—Working together for you

Helping you look forward to more



**of partnership, engineering,
and joint investment**



Broad portfolio



One-stop support



Integrated, tested solutions



Two ways to build a vSAN OSA or ESA Node

Completely hardware independent

1. vSAN ReadyNode

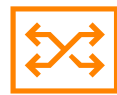
Validated, preconfigured server options are ready for vSAN deployment.



Hard drive



SSD



Switch

Multiple options are available and categorized into different vSAN ReadyNode profiles.

2. Build your own

Choose individual components.

Any server on the vSphere Hardware Compatibility List



SSD or NVMe



SAS/NL-SAS/SATA HDDs



HBA/RAID controller



Use the vSAN Compatibility Guide ¹

¹For additional details, refer to the [VMware Virtual SAN Compatibility Guide](#). Components for Virtual SAN must be chosen from Virtual SAN HCL; other components are unsupported.

1 vSAN Ready Node How-To

- VMware Compatibility Guide

ESA: <https://www.vmware.com/resources/compatibility/search.php?deviceCategory=vsanesa>

OSA: <https://www.vmware.com/resources/compatibility/search.php?deviceCategory=vsanosa>

vSAN Express Storage Architecture (ESA) ReadyNode Configurator

STEP 1: Refer to the **vSAN ESA ReadyNode™ Hardware Guidance** for guidance on how to build vSAN ReadyNode™

STEP 2: Proceed to configure and build vSAN ESA ReadyNode™

Choose (Step 1)

Configure (Step 2)

Consume (Step 3)

*vSAN ESA ReadyNode Vendors:

Cisco
Dell
Fujitsu
Hewlett Packard Enterprise
Hitachi
Hitachi Vantara

*vSAN ESA Server Model:

HPE ProLiant DL360 Gen10 Plus
HPE ProLiant DL365 Gen11
HPE ProLiant DL380 Gen10 Plus
HPE ProLiant DL385 Gen11
HPE ProLiant DL325 Gen11
HPE ProLiant DL345 Gen11

*vSAN ESA ReadyNode Generation:

Intel Xeon Scalable (Ice-Lake-SP)
Intel Xeon Scalable (Sapphire-Rapids-SP)
AMD EPYC (Genoa)

*vSAN ESA ReadyNode Profile:

vSAN-ESA-AF-2
vSAN-ESA-AF-HighDensity
vSAN-ESA-AF-6
vSAN-ESA-AF-8
vSAN-ESA-AF-4
vSAN-ESA-AF-0

vSAN Ready Node How-To

Beispiel Ergebnis:

DL385 Gen11
ESA-AF-2 Node:

AF=All Flash
0/2/4/6/8=
Leistungsklasse

▼ vSAN ESA ReadyNode Model : vSAN-ESA-AF-2-HPE ProLiant DL385 Gen11 [Certified ReadyNode]

Components	Details	BOM Quantity
System	HPE ProLiant DL385 Gen11	
CPU	AMD EPYC 9124 3.0GHz 16-core 200W Processor Kit for HPE Cray EX P53702-B21	Host - Total No. of Core: 32 Host - Total No. of Socket: 2
Memory	HPE 32GB (1x32GB) Single Rank x4 DDR5-5200 CAS-42-42-42 EC8 Registered Smart Memory Kit P50310-B21	Host - Total Memory: 512 GB
Storage Tier	HPE NVMe Mixed Use SFF U.3 PM1735a P50227-B21 [3 DWPD]	No. of Storage Devices: 10 Each Device Storage Capacity: 1.6 TB Total Raw Storage Capacity: 16 TB
NIC	Model: Mellanox MCX631102AS-ADAT Ethernet 10/25Gb 2-port SFP28 Adapter for HPE P42044-B21 (OR) Broadcom BCM57414 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE P26262-B21	Network Speed: 2x25 Gbps Host - Total No. of NIC(s): 1
Boot Device	HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device P48183-B21	

Supported Releases ESXi 8.0 U2 (vSAN 8.0 Update 2), ESXi 8.0 U1 (vSAN 8.0 Update 1), ESXi 8.0 (vSAN 8.0)

vSAN Ready Node How-To

vSAN Ready Nodes

Im OCA

Hardware Software Accessories Smart Templates Recent My Library

BTO CTO BOTH

vsan ready Advanced Products Categories

Compute Servers (11)

- vSAN Ready Node Solutions
- Ready Node - Default Configurations
- DL380 Gen11 - vSAN ESA AF-2
- DL380 Gen11 - vSAN ESA AF-4
- DL380 Gen11 - vSAN ESA AF-6
- DL385 Gen11 - vSAN ESA AF-2
- DL385 Gen11 - vSAN ESA AF-4
- DL385 Gen11 - vSAN ESA AF-6
- DL325 Gen10 vSAN ReadyNode All Flash 6
- DL360 Gen10 vSAN ReadyNode All Flash 8
- DL380 Gen10 vSAN ReadyNode All Flash 4 Hybrid 8

vSAN Ready Node How-To

Beispiel BOM

Anhand des DL385 AF-2 nodes

Aus den Compatibility Guide

1	P53921-B21	HPE ProLiant DL385 Gen11 8SFF Configure-to-order Server
2	P53702-B21	AMD EPYC 9124 3.0GHz 16-core 200W Processor for HPE
16	P50311-B21	HPE 32GB (1x32GB) Dual Rank x8 DDR5-4800 CAS-40-39-39 EC8 Registered Smart Memory Kit
2	P55083-B21	HPE ProLiant DL385 Gen11 8SFF Tri-Mode U.3 x4 BC Backplane Kit
10	P50227-B21	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD
1	P26262-B21	Broadcom BCM57414 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE
2	P44712-B21	HPE 1800W-2200W Flex Slot Titanium Hot Plug Low Halogen Power Supply Kit
1	BD505A	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features
1	P57845-B21	HPE ProLiant DL385 Gen11 SFF Backplane Power Cable Kit
1	P57853-B21	HPE ProLiant DL385 Gen11 8SFF x4 NVMe Box 3 Direct Attach Cable Kit
1	P57854-B21	HPE ProLiant DL385 Gen11 8SFF x4 NVMe Box 2 Direct Attach Cable Kit
1	P57886-B21	HPE ProLiant DL385 Gen11 2U Standard/Performance FIO Air Baffle Kit
6	P58465-B21	HPE ProLiant DL3X5 Gen11 2U Performance Fan Kit
1	P50400-B21	HPE Gen11 2U Bezel Kit
1	P48183-B21	HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device
1	P52351-B21	HPE DL3XX Gen11 Easy Install Rail 2 Kit
1	P57850-B21	HPE ProLiant DL3X5 Gen11 Tertiary NS204i-u NVMe Hot Plug Boot Device Enablement Kit
2	P58458-B21	HPE ProLiant DL3X5 Gen11 Standard 2U Heat Sink Kit
1	P59756-B21	HPE DL385 G11 16NVMe U.3 2P Bal FIO Kit
1	P63226-B21	HPE ProLiant vSAN ReadyNode Express Storage Architecture Tracking
1	R7A11AAE	HPE GreenLake for Compute Ops Management Enhanced 3-year Upfront ProLiant SaaS
1	AC114A	HPE ProLiant Door/dock Medium Logistic Service
1	HA114A1	HPE Installation and Startup Service
1	HA114A1 5A6	HPE ProLiant DL/ML Startup SVC
1	HU4A6A3	HPE 3Y Tech Care Essential Service
1	HU4A6A300DH	HPE DL385 GEN11 Support

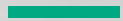


**Hewlett Packard
Enterprise**



Microsoft

HPE Solutions for Microsoft Azure Stack HCI



Microsoft Azure Stack HCI use cases from edge to cloud



Remote office/ branch office

Run workloads from branch office to edge at an affordable cost



Large-scale virtual desktop implementations

Use remote desktop services, highly available VMs, and integrated scalable storage



Virtualized SQL Server optimization

Deploy and manage demanding SQL Server workloads with best of class performance



Improved security

Use virtualization-based security and HPE certified hardware to help protect sensitive workloads



Integrated Kubernetes deployment

Automated deployment and management of containerized apps



Microsoft Azure Stack HCI

Hosting workloads on-premises with **Azure Stack HCI** enables you to:

Optimize your workloads

- Decrease datacenter complexity
- Increase scalability
- Lower costs
- Improve performance and availability
- Simplify operations

Use Azure as a service

- Get the latest performance, feature and security updates
- Easily manage in Azure Portal
- Receive dedicated Azure support and modern subscription billing

Manage and operate with ease

- Familiar edge-local tools
- Freedom to choose and customize hardware
- PowerShell, SC VMM
- Full administrator control

New and distinct product line from Microsoft

Azure Stack HCI



Exciting roadmap of new releases

Innovation focused on being the **best infrastructure host**

Future of Hyper-V virtualization, software-defined storage and networking

Azure **subscription-based** model

Runs on **your hardware**

Exciting roadmap of new releases

Innovation focused on being the **best guest** and **traditional server**

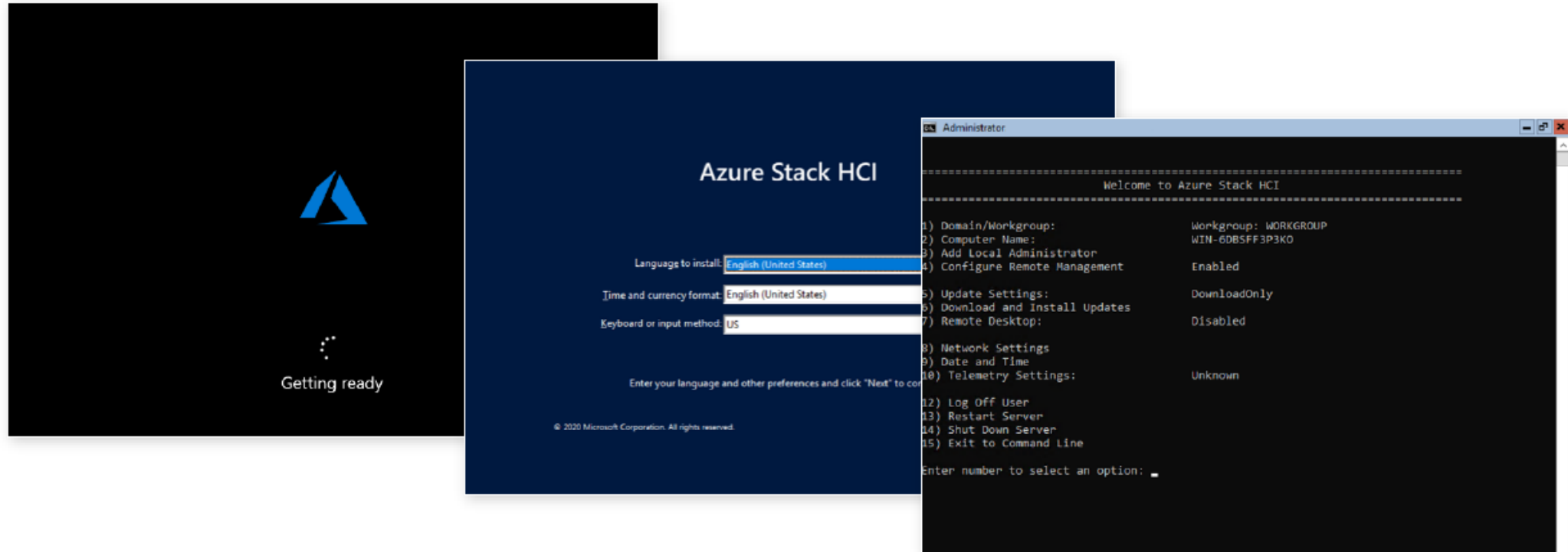
All other Windows Server roles, like IIS, File Services, DNS, DHCP, AD/DS ¹

Subscription based and **Traditional licensing** models

Runs **anywhere**

¹ Existing features like Hyper-V will not be removed unless deprecated (not planned).

New operating system for Azure Stack HCI



- Latest Azure hypervisor with built-in software defined storage and networking
- Optimized for virtualization with reduced composition

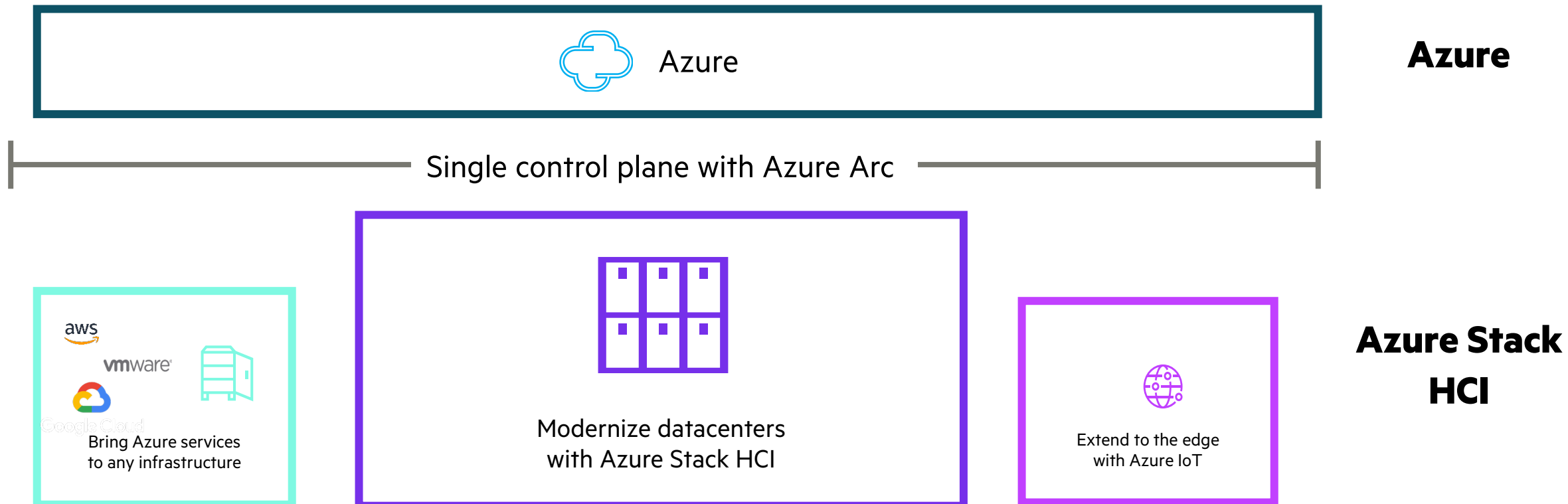


Microsoft Azure Stack HCI – Hybrid Vision



Azure Stack HCI - Hybrid by design with Azure ARC

Innovation anywhere with Azure



Azure Stack HCI is delivered as a Hybrid Service

No software license
to buy and track



**Automatically billed to
your Azure subscription**

No standalone legal agreement
to read and sign



**Covered by Azure
service terms**

No separate contract
support number

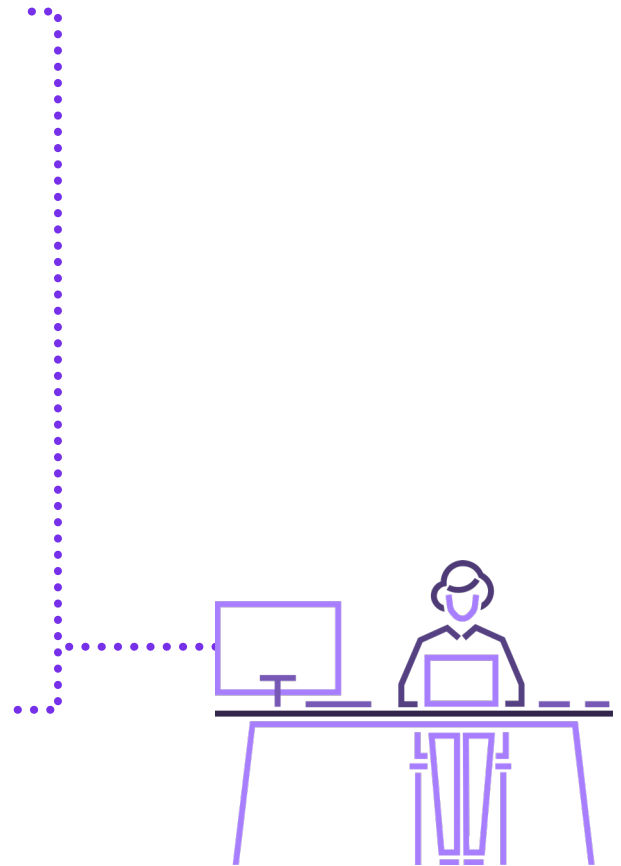


**Azure Support from
the Azure Portal**

No versions to upgrade

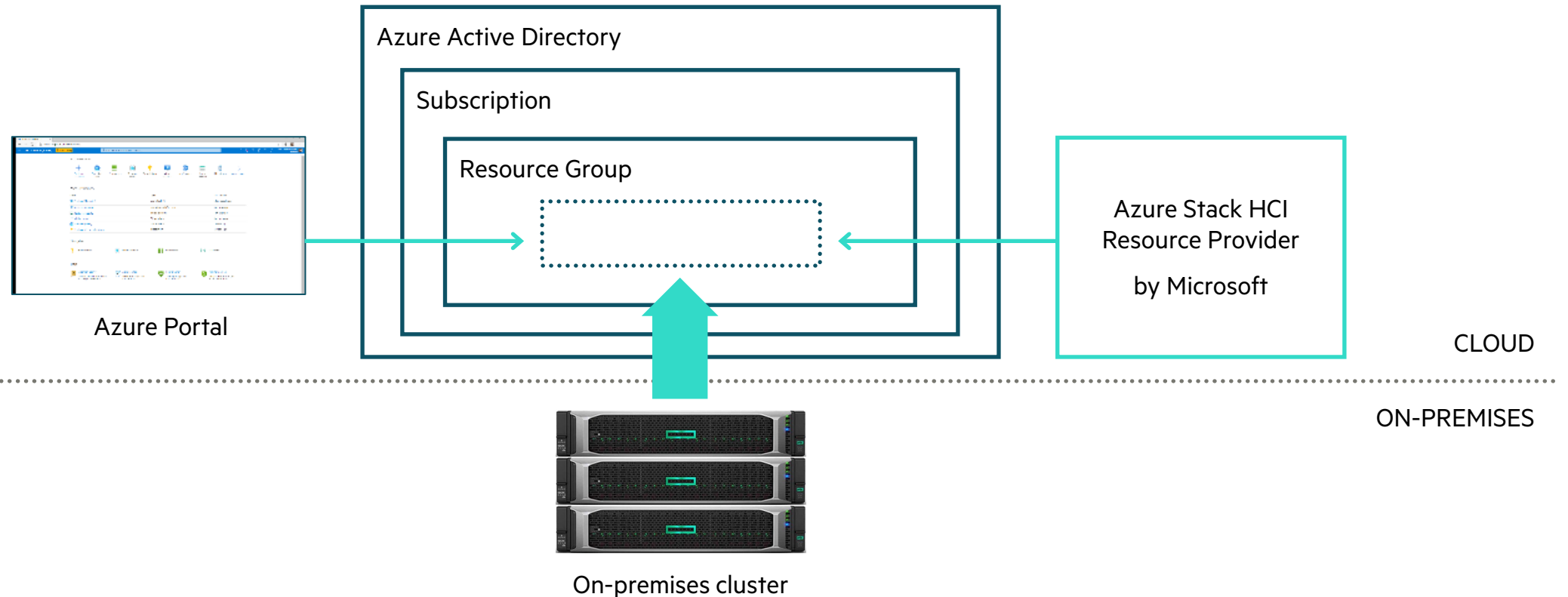


Continuous feature updates



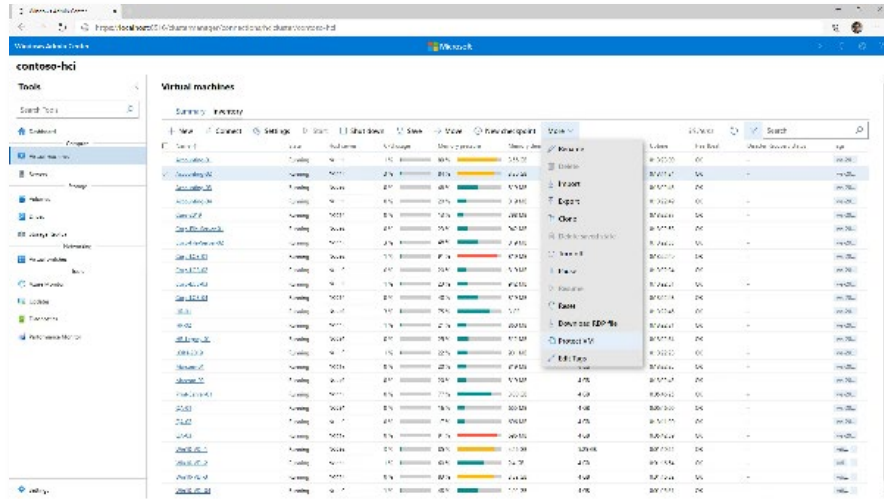
Natively integrates with azure

- Azure Resource Manager (ARM) resource represents each on-premises Azure Stack HCI cluster
- Visibility in the Azure Portal and foundation for hybrid management
- **No fuss with agents or scripts – it's built in!**



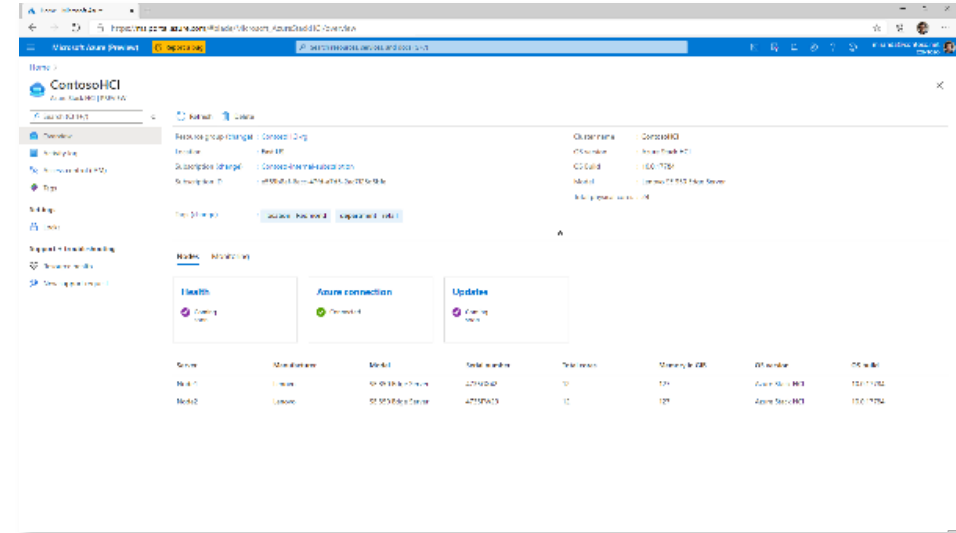
Azure Stack HCI Operation

Admin Center (included)
Edge-local, always available



- Initial set-up
- Manage infrastructure
- HW management extensions (Firmware and driver updates)
- Troubleshooting

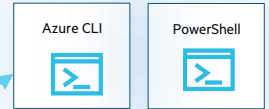
Azure Portal (included)
Cloud-based, highly scalable



- Global visibility
- Monitoring and security services
- Request support
- Billing

Complimentary & consistent

SUMMARY !



HPE GreenLake

Azure Hybrid Services

Billing	Azure Policy	Azure AD (RBAC)	Azure Tags	Azure Audit	Azure Automation	Azure Backup
Resource Inventory	Azure Security Center	Azure Monitor	Azure Log Analytics	Azure Defender	Azure Automanage	Azure File Exchange
Monitoring & Logs						
Governance						
Security & Compliance						

HPE GreenLake Integration
Consumption Metering

Azure Arc Integration

Azure Stack HCI OS

- Windows Admin Center
- Hyper-V
 - Azure Arc-enabled servers
 - Azure Arc-enabled SQL servers
 - Azure Arc-enabled AKS clusters
- Storage Spaces Direct
- Software Defined Networking

HPE Solutions for Azure Stack HCI

HPE Solutions for Azure Stack HCI

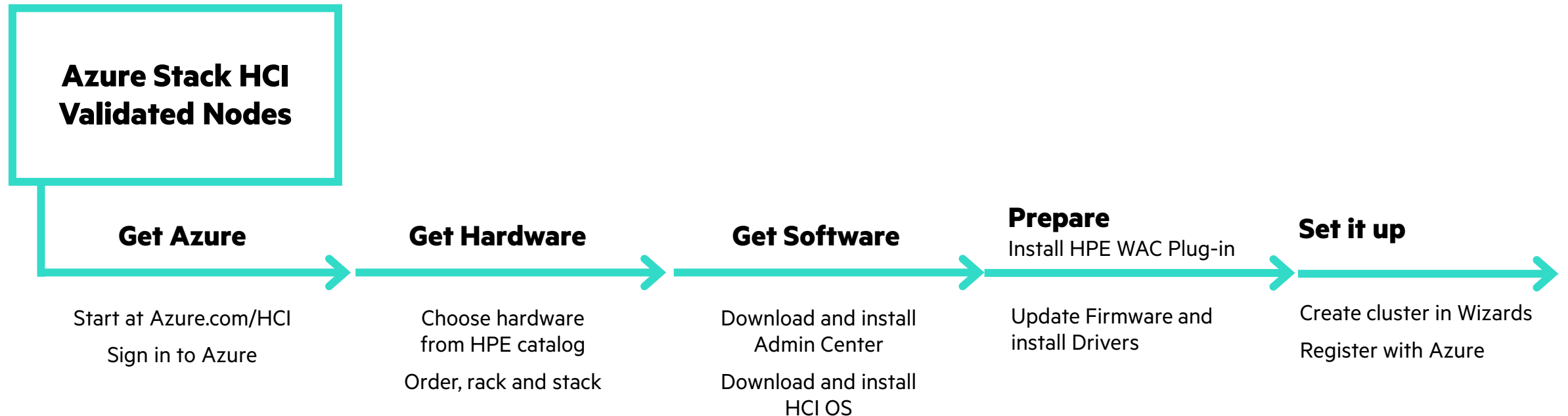


Validated Nodes



Setting up validated node HCI

The integrated solution is the fastest approach to Azure Stack HCI. But setting up Azure Stack HCI on validated nodes is also an easy and straightforward process.



HPE Azure Stack HCI Validated Nodes



HPE ProLiant with Azure Stack HCI

Remote Branch Office, Scalable Virtualization and Storage, High Performance Workloads

- Windows Administration center (WAC) for:
 - Server Management Extension
 - Azure Stack HCI Cluster Management Extension
 - Deploy and Update Management Snap-In
- HPE Validated Configuration in the Microsoft Azure Stack HCI OS Catalog
- Microsoft Azure Stack HCI OS as an HPE GreenLake offering

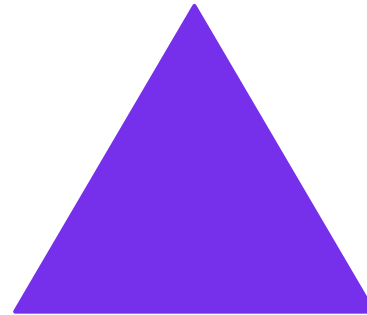
Agile Performance



HPE Edgeline EL8000/EL8000t with Azure Stack HCI

Edge Compute and IoT

Edge



Data Capacity



HPE Apollo 4200 with Azure Stack HCI
















Capacity oriented HCI

Workload Optimized



Validated Node

Azure Stack HCI Solutions | Microsoft (hccatalog.azurewebsites.net)

<p>HPE GreenLake</p> <p>Integrated System</p> <p>Hewlett Packard Enterprise</p> <p>Hewlett Packard Enterprise</p> <p>2 to 16 nodes Intel® 3rd Gen Xeon® Scalable Processor</p> <p>6 solutions ></p> <p>HPE GreenLake</p>	<p>HPE ProLiant DL380 Gen10</p>  <p>Hewlett Packard Enterprise</p> <p>2 to 16 nodes Intel® 1st Gen Xeon® Scalable Processor</p> <p>8 solutions ></p>	<p>HPE ProLiant DL385 Gen10</p>  <p>Hewlett Packard Enterprise</p> <p>2 to 16 nodes AMD 1st Gen EPYC™</p> <p>6 solutions ></p>	<p>HPE Apollo 4200 Gen10</p>  <p>Hewlett Packard Enterprise</p> <p>2 to 16 nodes Intel® 1st Gen Xeon® Scalable Processor</p> <p>4 solutions ></p>	<p>HPE ProLiant DL385 Gen10 Plus v2</p>  <p>Hewlett Packard Enterprise</p> <p>1 to 16 nodes AMD 3rd Gen EPYC™</p> <p>4 solutions ></p>	<p>HPE ProLiant DL385 Gen10 Plus</p>  <p>Hewlett Packard Enterprise</p> <p>1 to 16 nodes AMD 2nd Gen EPYC™</p> <p>3 solutions ></p>	<p>HPE ProLiant DL325 Gen10 Plus</p>  <p>Hewlett Packard Enterprise</p> <p>1 to 16 nodes AMD 2nd Gen EPYC™</p> <p>2 solutions ></p>	<p>HPE Edgeline EL8000</p>  <p>Hewlett Packard Enterprise</p> <p>1 to 8 nodes Intel® 2nd Gen Xeon® Scalable Processor</p> <p>1 solution ></p>
<p>HPE ProLiant DL325 Gen10</p>  <p>Hewlett Packard Enterprise</p> <p>2 to 4 nodes AMD 1st Gen EPYC™</p> <p>4 solutions ></p>	<p>HPE ProLiant DL325 Gen10 Plus v2</p>  <p>Hewlett Packard Enterprise</p> <p>1 to 16 nodes AMD 3rd Gen EPYC™</p> <p>4 solutions ></p>	<p>HPE ProLiant DL360 Gen10</p>  <p>Hewlett Packard Enterprise</p> <p>2 to 16 nodes Intel® 2nd Gen Xeon® Scalable Processor</p> <p>4 solutions ></p>	<p>HPE ProLiant DL360 Gen10 Plus</p>  <p>Hewlett Packard Enterprise</p> <p>1 to 16 nodes Intel® 3rd Gen Xeon® Scalable Processor</p> <p>4 solutions ></p>	<p>HPE ProLiant DL110 Gen10 Plus Telco server</p>  <p>Hewlett Packard Enterprise</p> <p>2 nodes Intel® 3rd Gen Xeon® Scalable Processor</p> <p>1 solution ></p>	<p>HPE Apollo 4200 Gen10 Plus</p>  <p>Hewlett Packard Enterprise</p> <p>1 to 16 nodes Intel® 3rd Gen Xeon® Scalable Processor</p> <p>4 solutions ></p>	<p>HPE ProLiant DL380 Gen10 Plus</p>  <p>Hewlett Packard Enterprise</p> <p>1 to 16 nodes Intel® 3rd Gen Xeon® Scalable Processor</p> <p>4 solutions ></p>	<p>HPE Edgeline EL8000t</p>  <p>Hewlett Packard Enterprise</p> <p>1 to 8 nodes Intel® 2nd Gen Xeon® Scalable Processor</p> <p>1 solution ></p>



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- Microsoft Azure Stack HCI solutions von HPE:
- <https://www.hpe.com/us/en/alliance/microsoft/azurestackhci.html>



DL380 Gen 11
2U/2P/Rack



DL360 Gen11
1U/2P Rack



DL380 Gen10 Plus
2U Rack



DL360 Gen10 Plus
2U Rack



DL380 Gen10
2U/2P/Rack



DL360 Gen10
1U/2P/Rack



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- Beispiel DL380 Gen11:



ProLiant DL380 Gen11

Scale: 1 to 16 Nodes

CPU: 16 to 120 cores total (Intel) 1 or 2 Processors

RAM: 64GB to 8TB

Networking: up to 100 Gbps iWARP or RoCE

Chassis: 2U/SFF

[DL380 Gen 11 Solutions Configuration Technical White Paper](#) →



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- Technical white paper "HPE Solutions for Microsoft Azure Stack HCI" <https://www.hpe.com/psnow/doc/a50008245enw.pdf>

Drive configuration guidelines

- Use of any size drive above 800 GB within this solution is supported for cache-tier, capacity-tier, or single-tier storage.
- Hybrid storage tiers require two cache drives minimum, plus four capacity drives minimum.
- Single-tier storage all-flash requires two drives minimum. This can be achieved with SATA SSD, SAS SSD, or NVMe devices.
- Cache-tier and single-tier all-flash configurations are recommended to use mixed-use endurance.

All NVMe drives must be direct-connect configuration to PCIe bus. NVMe workload drives may not be connected to HBA controller for Microsoft Azure Stack HCI solutions. Only boot drives may be connected to a RAID controller.

- NVMe supported drive model list:
 - PM1735
 - PM1735a
 - CM6
 - P46110



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Table 5. List of supported and validated storage controllers

Option type	Description	Part number
Storage controller modular	HPE MegaRAID MR416i-a Gen10 Plus 4GB 72b Cache Storage Controller	P26279-B21
Storage controller modular	HPE MegaRAID MR216i-a Gen10 Plus 4GB 72b Cache Storage Controller	P26325-B21
Storage controller PCIe plug-in	HPE MegaRAID MR416i-p Gen10 Plus 4GB 72b Cache Storage Controller	P06367-B21
Storage controller PCIe plug-in	HPE MegaRAID MR216i-p Gen10 Plus 4GB 72b Cache Storage Controller	P26324-B21
Storage controller modular	HPE Smart Array P816i-a SR Gen10 (16 Internal Lanes/4GB Cache/SmartCache) 12G SAS Modular Controller	804338-B21
Storage controller modular	HPE Smart Array E208i-a SR Gen10 (8 Internal Lanes/No Cache) 12G SAS Modular Controller	804326-B21
Storage controller modular	HPE Smart Array P408i-a SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS Modular Controller	804331-B21
Storage controller PCIe plug-in	HPE Smart Array E208i-p SR Gen10 (8 Internal Lanes/No Cache) 12G SAS PCIe Plug-in Controller	804394-B21
Storage controller PCIe plug-in	HPE Smart Array P408i-p SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS PCIe Plug-in Controller	830824-B21
Storage controller PCIe plug-in (only SAS drives are supported)	HPE Smart Array E208e-p SR Gen10 (8 External Lanes/No Cache) 12G SAS PCIe Plug-in Controller	804398-B21
Storage controller PCIe plug-in (only SAS drives are supported)	HPE Smart Array P408e-p SR Gen10 (8 External Lanes/4GB Cache) 12G SAS PCIe Plug-in Controller	804405-B21

 **Raid Controller only needed if you choose SSD drive**

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Network adapter support list

Table 2. List of supported and validated network adapters

Option type	Description	Part number
Network OCP3	Marvell QL41232HQCU Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE	P10118-B21
Network OCP3	Mellanox MCX562A-ACAI Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE	P10112-B21
Network OCP3	Mellanox MCX631432AS-ADAI Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter	P42041-B21
Network OCP3	Intel® E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE	P10106-B21
Network OCP3	Intel E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 OCP3 Adapter for HPE	P41614-B21
Network adapter PCIe plug-in	Marvell QL41232HLCU Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	P22702-B21
Network adapter PCIe plug-in	Intel E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE	P08458-B21
Network adapter PCIe plug-in	Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	P08443-B21
Network adapter PCIe plug-in	Mellanox MCX512F-ACHT Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	P13188-B21
Network adapter PCIe plug-in	Mellanox MCX631102AS-ADAT Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	P42044-B21
Network adapter PCIe plug-in	Mellanox MCX623106AS-CDAT Ethernet 100Gb 2-port QSFP56 Adapter for HPE	P25960-B21

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Network switch support list

- HPE FlexFabric 5944 Switch Series
- HPE FlexFabric 5945 Switch Series
- HPE Aruba Networking CX 8325 Switch Series
- HPE Aruba Networking CX 8360 Switch Series
- HPE Aruba Networking CX 9300 Switch Series
- HPE Aruba Networking CX 10000 Switch Series

Grundsätzlich kann jeder RDMA taugliche Switch verwendet werden,
Die hier gelisteten wurden jedoch explizit mit Azure Stack HCI getestet.



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Beispiel BOM

Anhand eines DL380 Gen11
AF (All Flash)

1	P52534-B21	HPE ProLiant DL380 Gen11 8SFF NC Configure-to-order Server
2	P49653-B21	Intel Xeon-Gold 5416S 2.0GHz 16-core 150W Processor for HPE
4	P43328-B21	HPE 32GB (1x32GB) Dual Rank x8 DDR5-4800 CAS-40-39-39 EC8 Registered Smart Memory Kit
1	P48814-B21	HPE DL380 Gen11 8SFF U.3 Prem Kit
2	P50227-B21	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD
1	P42041-B21	Mellanox MCX631432AS-ADAI Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE
2	P03178-B21	HPE 1000W Flex Slot Titanium Hot Plug Power Supply Kit
1	BD505A	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features
1	P48825-B21	HPE ProLiant DL380 Gen11 8SFF CPU1/2 NVMe Cable Kit
1	P51911-B21	HPE DL360 Gen11 CPU1/OCP2 x8 Enable Kit
1	P48820-B21	HPE DL380/DL560 G11 2U High Perf Fan Kit
1	P50400-B21	HPE Gen11 2U Bezel Kit
1	P48183-B21	HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device
2	P49145-B21	HPE ProLiant DL380 Gen11 Standard Heat Sink Kit
1	P52152-B21	HPE ProLiant DL380 Gen11 NS204i-u Internal Cable Kit
1	P52341-B21	HPE ProLiant DL3XX Gen11 Easy Install Rail 3 Kit
1	P53633-B21	HPE ProLiant DL380 Gen11 8NVMe Balanced FIO Bundle Kit
1	P54542-B21	HPE ProLiant DL380 Gen11 NS204i-u FIO Bundle Kit
1	R7A11AAE	HPE GreenLake for Compute Ops Management Enhanced 3-year Upfront ProLiant SaaS
1	AC114A	HPE ProLiant Door/dock Medium Logistic Service
1	HA114A1	HPE Installation and Startup Service
1	HA114A1 5A6	HPE ProLiant DL/ML Startup SVC
1	HU4A6A3	HPE 3Y Tech Care Essential Service
1	HU4A6A300DK	HPE DL380 Gen11 Support

HPE GreenLake for Azure Stack HCI

Integrated system



HPE Solutions for Microsoft Azure Stack HCI:

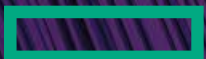
<https://www.hpe.com/us/en/alliance/microsoft/azurestackhci.html>

Microsoft Azure Stack HCI Catalog:

<https://azurestackhcisolutions.azure.microsoft.com/#/catalog?vendorName=Hewlett+Packard+Enterprise>

HPE MS Azure Stack HCI Technical white paper:

<https://www.hpe.com/psnow/doc/a50008245enw.pdf>





Thank you !

