Azure Stack HCI

Hybrid Cloud Next Generation
with Dell EMC Integrated Systems

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professional.
fast.
secure.

Microsoft Azure

Azure Stack HCI

The best infrastructure for hybrid and datacenter modernization

Innovation anywhere with Azure

Hybrid and multicloud

Single control plane with Azure Arc

Bring Azure services
to any infrastructure

Modernize datacenters
with Azure Stack

Extend to the edge
with Azure IoT

Modernize datacenters with Azure Stack

Azure Stack HCI

Hyperconverged solution

Scalable virtualization and storage

Remote branch office

High-performance workloads

Integration with Azure Arc

AKS on Azure Stack HCI

Azure Stack Edge

Cloud-managed appliance

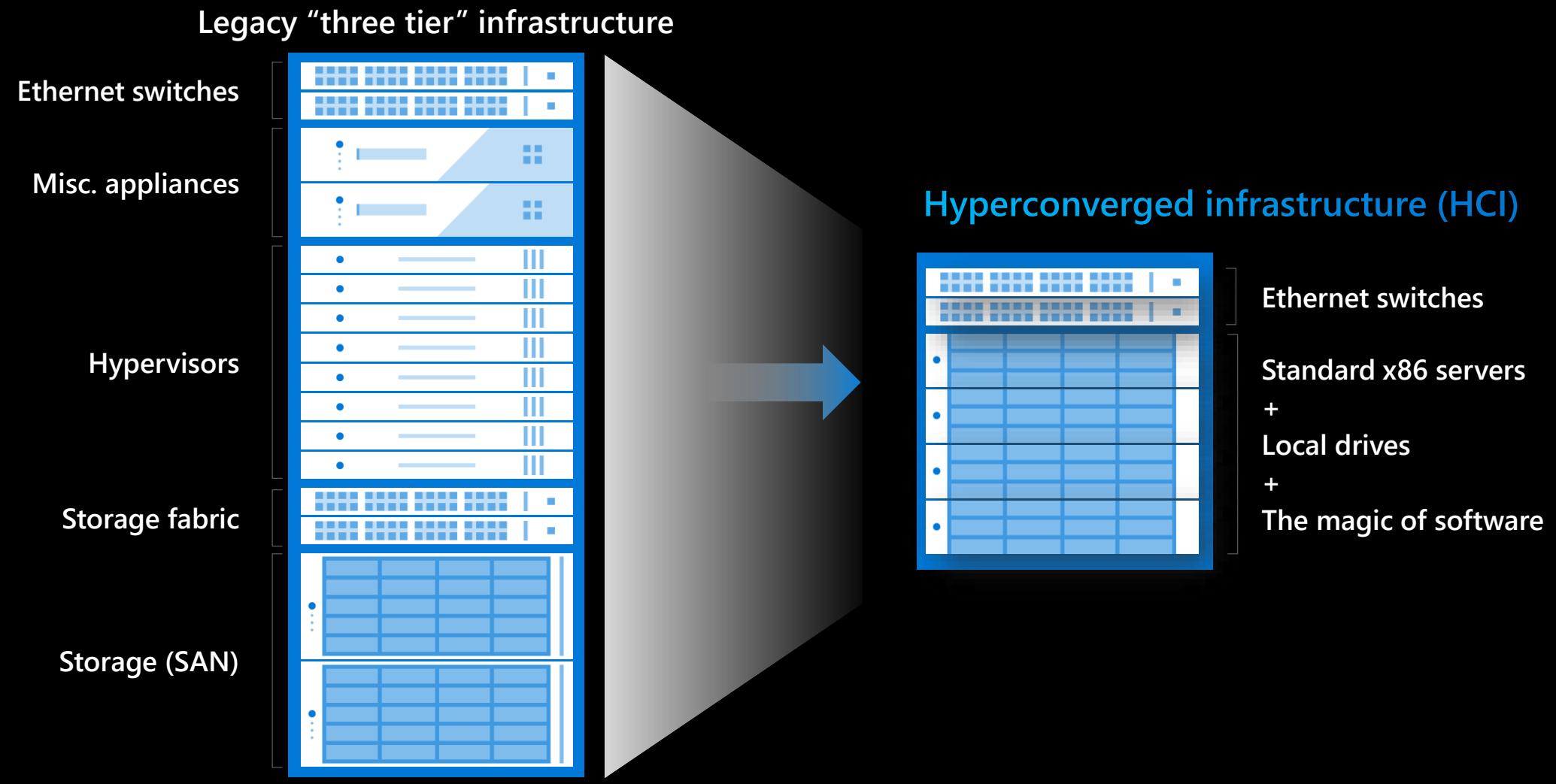
Compute, AI & IoT at the edge

Azure Stack Hub

Cloud-native integrated system

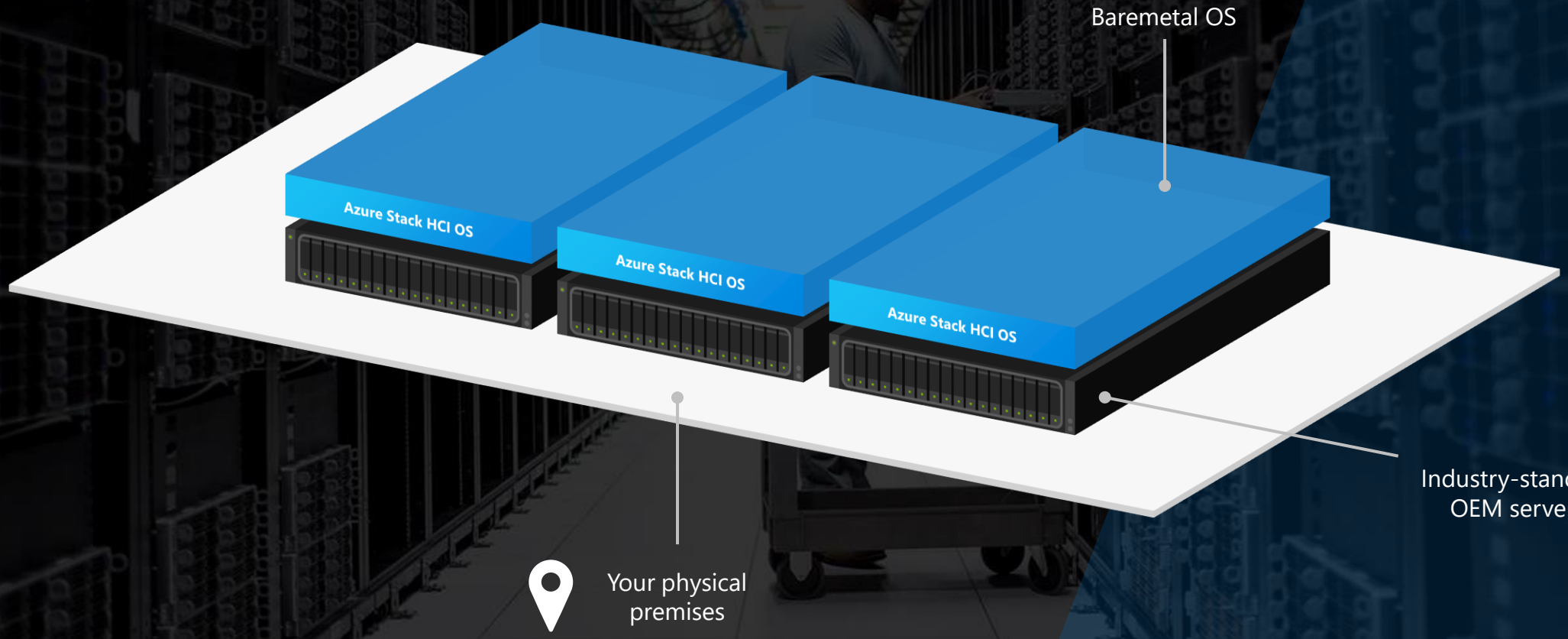
Disconnected scenarios

What is hyperconvergence?



Runs on your servers, on your premises

Learn more at Azure.com/HCI



Flexibility with Azure to do it all

Management services

Monitoring | Policy | Defender | More...

Cloud native applications

Azure Arc-enabled data services

Azure Arc-enabled

Container Management

AKS on Azure Stack HCI

Familiar management, operations and deployment flexibility

Datacenter Modernization

Azure Stack HCI

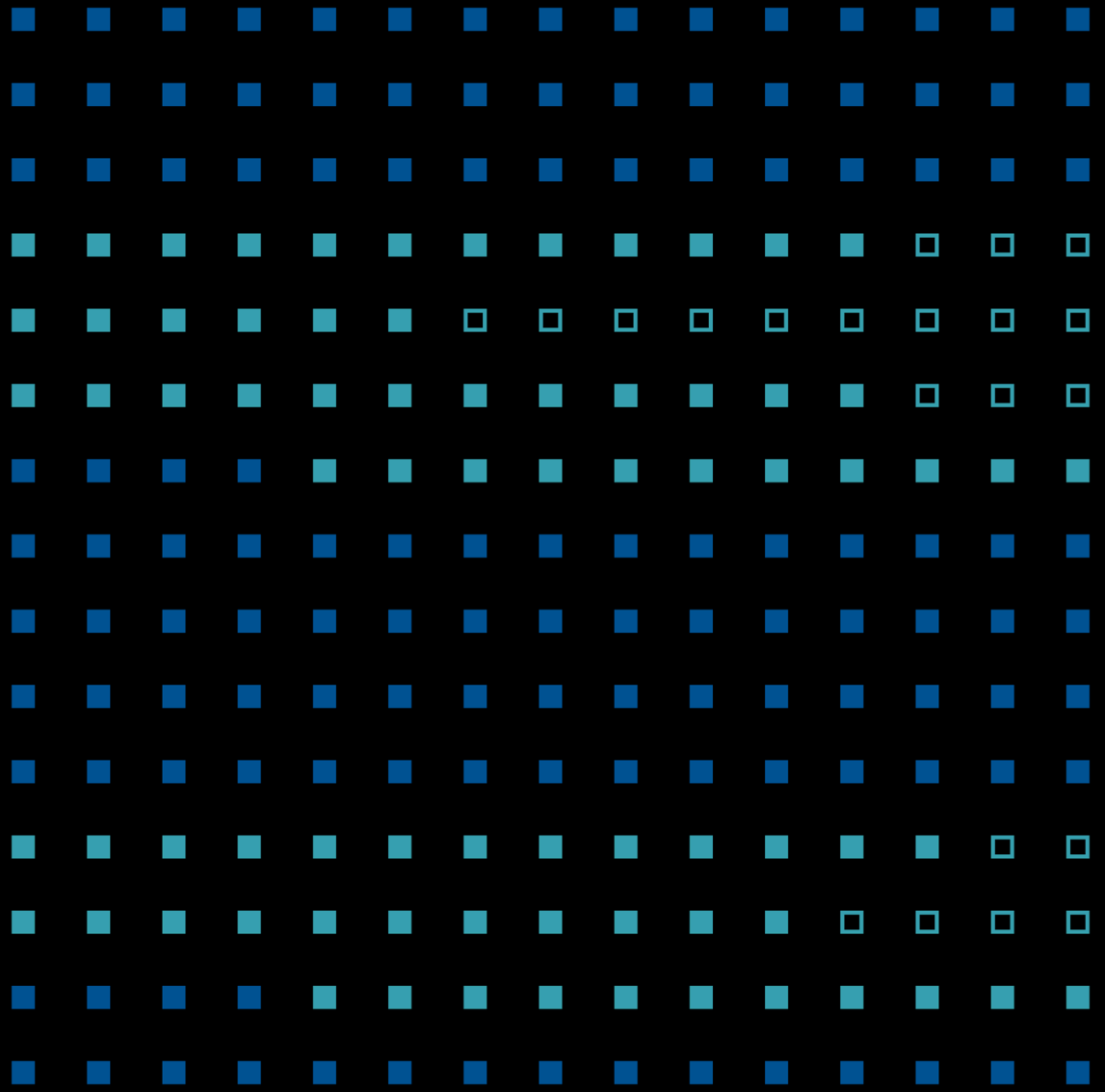
Flexible for VM and cloud native with AKS on Azure Stack HCI

Enterprise scale and great price-performance

Microsoft Azure

Azure Stack HCI

What is it and what is it used for?



Growing Azure Stack HCI into its own product line

Azure Stack HCI

Windows Server

Exciting roadmap of new HCI focused releases

Exciting roadmap of new releases

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

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

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

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

Run apps inside Windows or Linux virtual machines

Runtime for Windows apps like SQL Server

Runs on **your hardware**

Runs **anywhere**

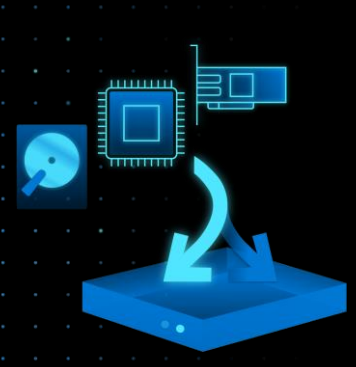
Azure Stack HCI

Modern subscription for flexible, familiar hyperconverged infrastructure

Azure hybrid by design

Enterprise scale and price performance

Familiar management and operations



Choice of deployment options

Azure hybrid by design

Azure hybrid by design

Native integration with Azure Arc and Azure Monitor

Connect to hybrid services like Azure Security Center, Azure Backup, and Azure Site Recovery

Monitor and manage clusters at scale from Azure

Centrally manage VMs from Azure Portal

Fleet management for hosts and VMs

Always up to date HCI as a service

Regular and consistent feature and security updates

Unified Azure billing

Leverage existing Azure support plan

Enterprise scale & price-performance

Industry leading price-performance

Millions of IOPs and batch requests with Storage Spaces Direct

Optimized for SQL Server virtual workloads

Per physical core monthly subscription to scale up or down

Secure virtualization platform for Windows and Linux

Unlimited hosting of Linux VMs

Choice of licenses available for Windows VMs

Secured-core server supported for ultimate enterprise security

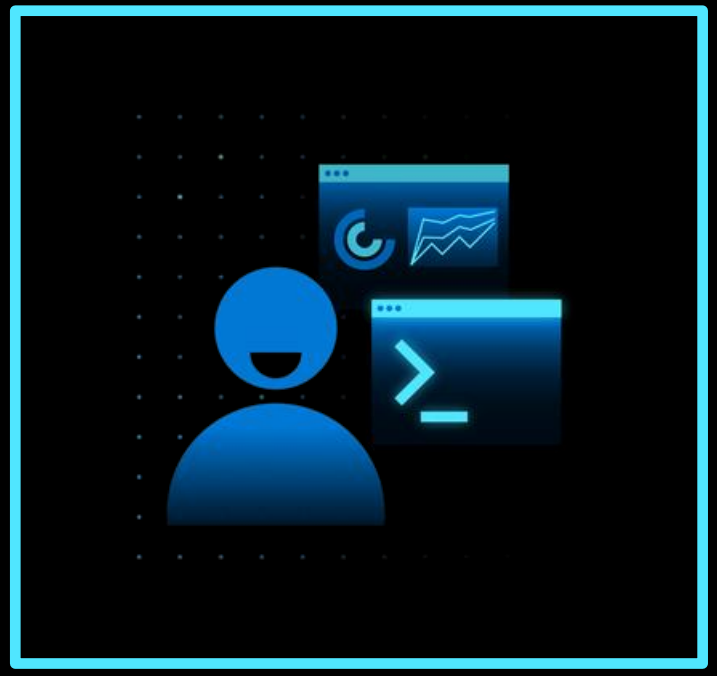
Includes Extended Security Updates (ESU) for Windows Server 2008/R2

Built-in HA/DR

New simple deployment GUI for clusters available through Windows Admin Center

Stretch cluster: extend HCI cluster from a single site to two sites

Protect VMs with cloud backup



Familiar management and operations

Leverage existing skills

Built on foundation of Windows Server and Hyper-V

Familiar tools like Windows Server Admin Center and Azure Portal

Support for Active Directory, Group Policy Object

Work with popular tools

Work with familiar Microsoft tools such as System Center and Windows Admin Center

Compatible with popular third-party tools such as Altaro, Datadog, Commvault, Veeam, Veritas, etc.

Benefit from automation

Management tasks are completely scriptable using popular, cross-platform Windows PowerShell framework

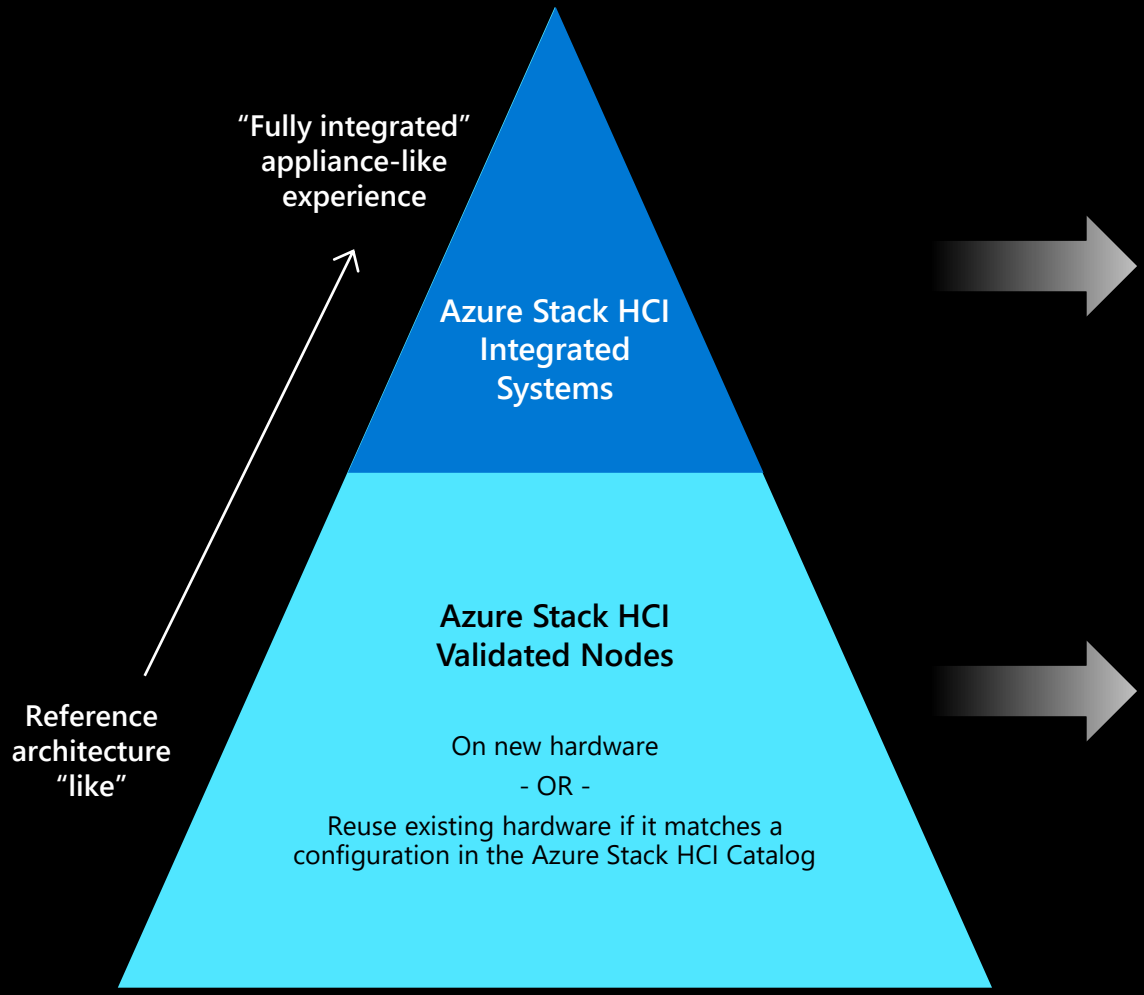
Examples of tools your team already knows

ALTARO	COMMVAULT	DATADOG	VEEAM	VERITAS
Altaro VM Backup	Commvault Backup & Recovery	Monitoring	Veeam Backup & Replication	Comprehensive Data Protection

System Center	Windows Admin Center	Windows PowerShell

Learn more at aka.ms/azurestackhci-utilityapplications

Azure Stack HCI: hardware deployment scenarios



Recommended for fastest time to value

- 3 hardware vendors offer integrated systems (more to come)
- Simple to deploy and procure
- New full stack update feature in Azure Stack HCI and Windows Admin Center makes upgrades, maintenance and management super easy for customers
- Ideal for customers who require turn-key solutions with little deployment effort from IT staff
- **Joint support agreement with partners with ticket exchange between partner and Microsoft**

Broadest choice of hardware components

- More diverse configurations for demanding workloads, some customization due to diversity of solution offerings
- Ability for customer to engage with preferred SI for deployment and integration if needed
- Existing hardware can be repurposed as long as it matches a current validated node solution in the Azure Stack HCI catalog
- Separate support for hardware and software
- **Historically, validated nodes are the most popular hardware scenario**

Visit the Azure Stack HCI Catalog to find the validated hardware offerings from our global partners

When to use Azure Stack HCI

Run virtual machines on-premises and easily connect to Azure hybrid services

Modernize and secure your datacenter

Affordably run intelligent edge and remote branch solutions

Industry-best performance for SQL Server databases

Deploy cloud native apps and Azure Arc enabled services through tight integration with AKS on HCI

When to use Azure Stack HCI

Deploy cloud native apps and Azure Arc enabled services leveraging AKS on HCI

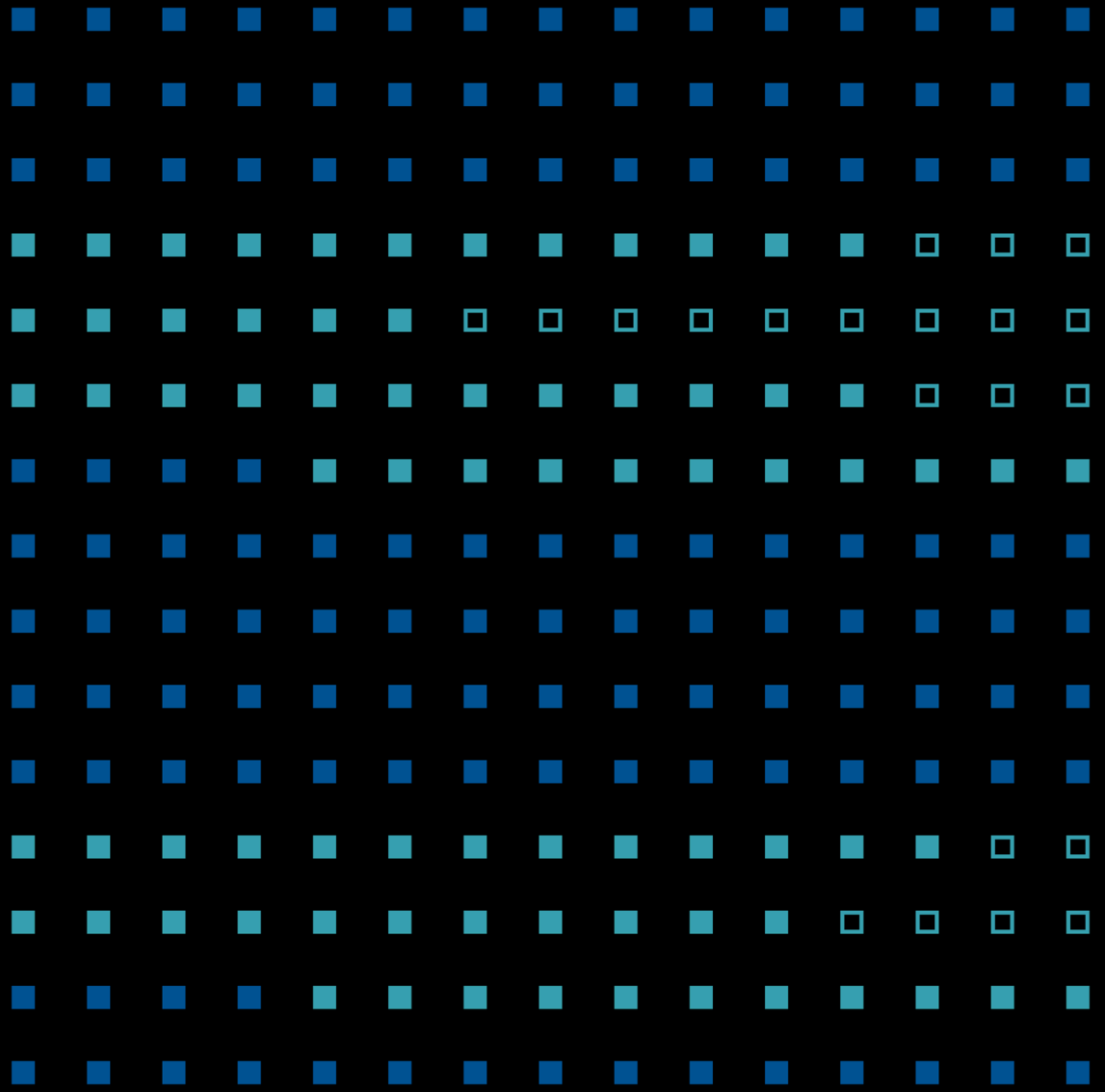
Bring a container managed platform to your on-prem environment enabling running PaaS like service on-prem

Deploy cloud native apps in AKS such as cognitive services and deploy unmodified to the edge

With built-in resiliency, ideal platform to run Azure Arc enabled services like data services

Microsoft Azure

Azure integration and making it hybrid

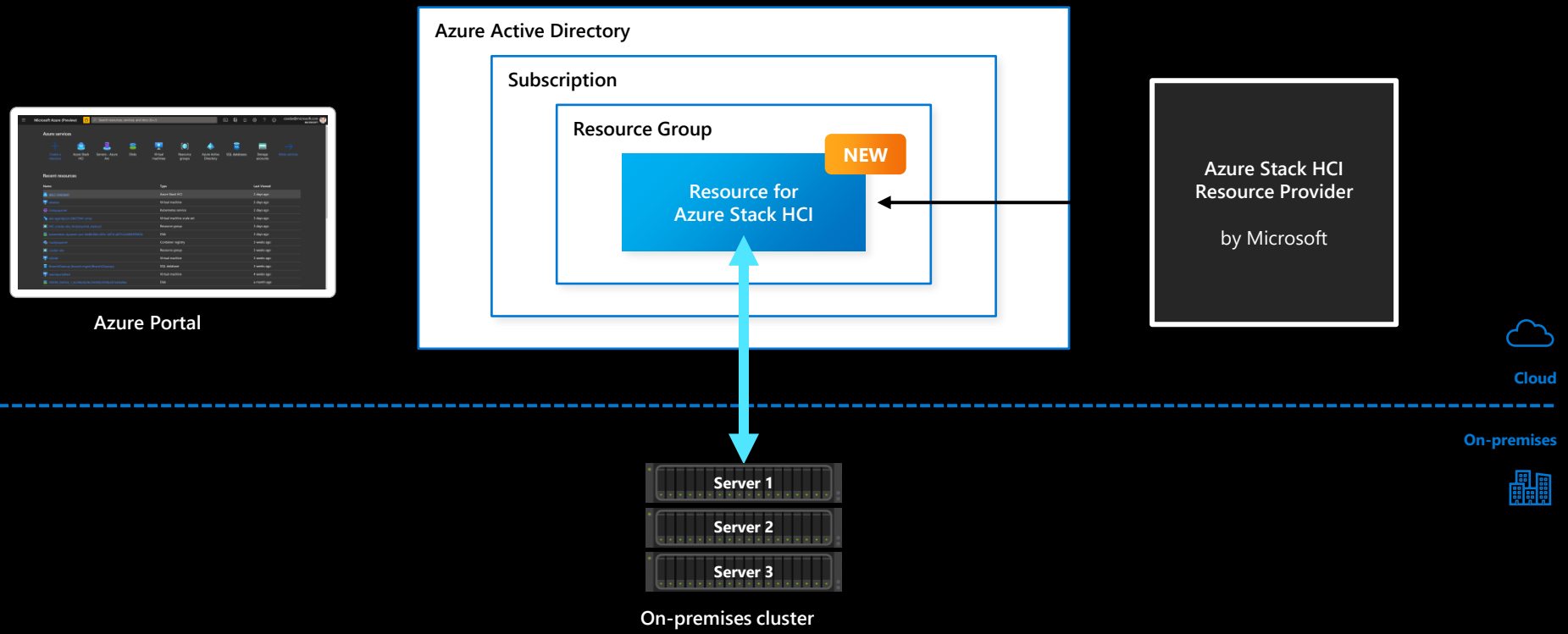


Simplify hybrid with native Azure integration

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!



Connect seamlessly with Azure when using Windows Admin Center

Azure Site Recovery

Azure Backup

Azure File Sync

Azure Update Management

Azure Monitor

Azure Security Center

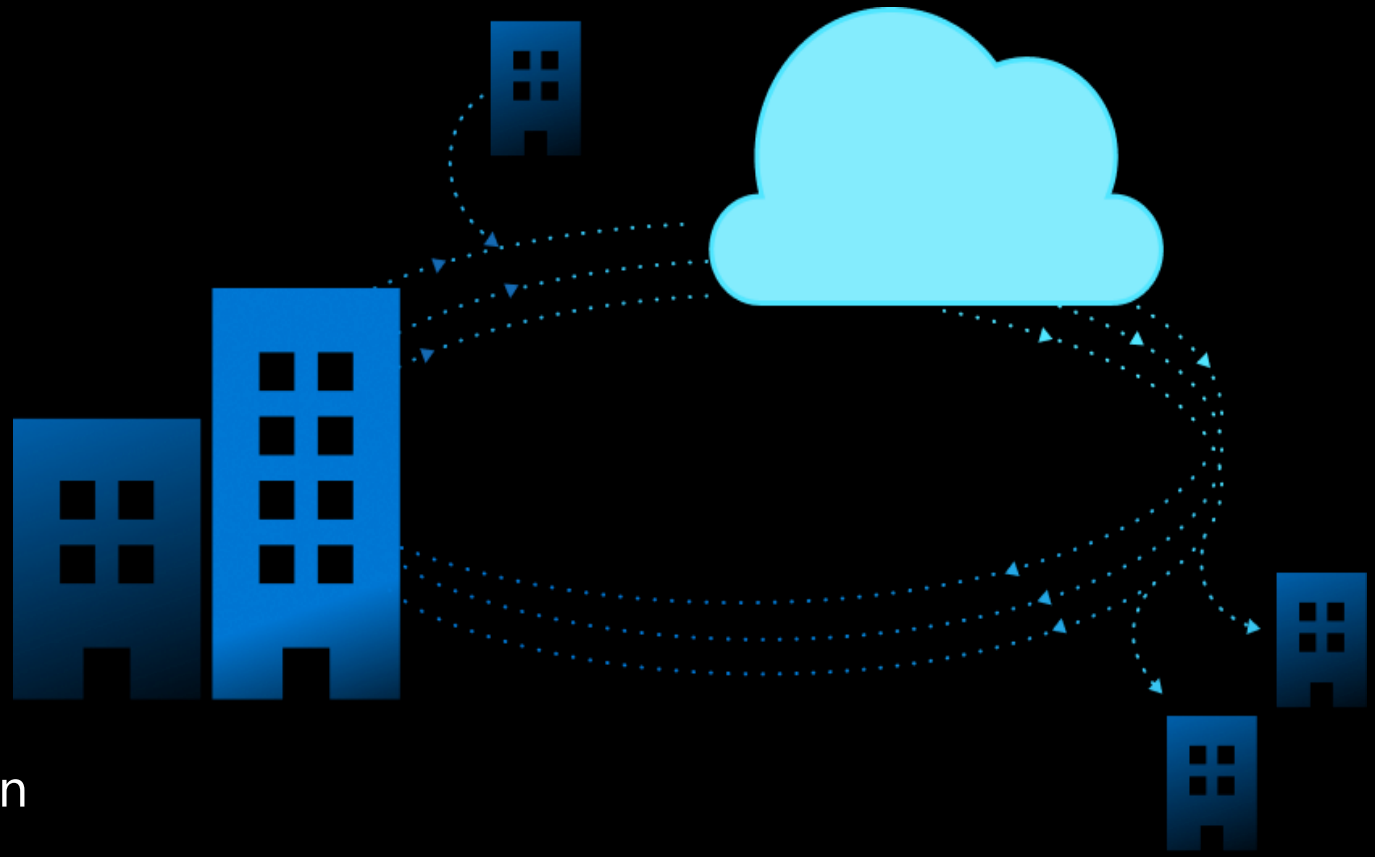
How do customers use hybrid?

Extend on-premises into Azure

- Offsite backup and disaster recovery
- Extend on-premises capacity

Centrally manage from Azure

- Centralized update management
- Cloud-based monitoring
- Security and advanced threat protection
- Centralized governance across environment



Azure Stack HCI & hybrid via Windows Admin Center

Extend on-premises into Azure

- Offsite backup and disaster recovery
- Extend on-premises capacity

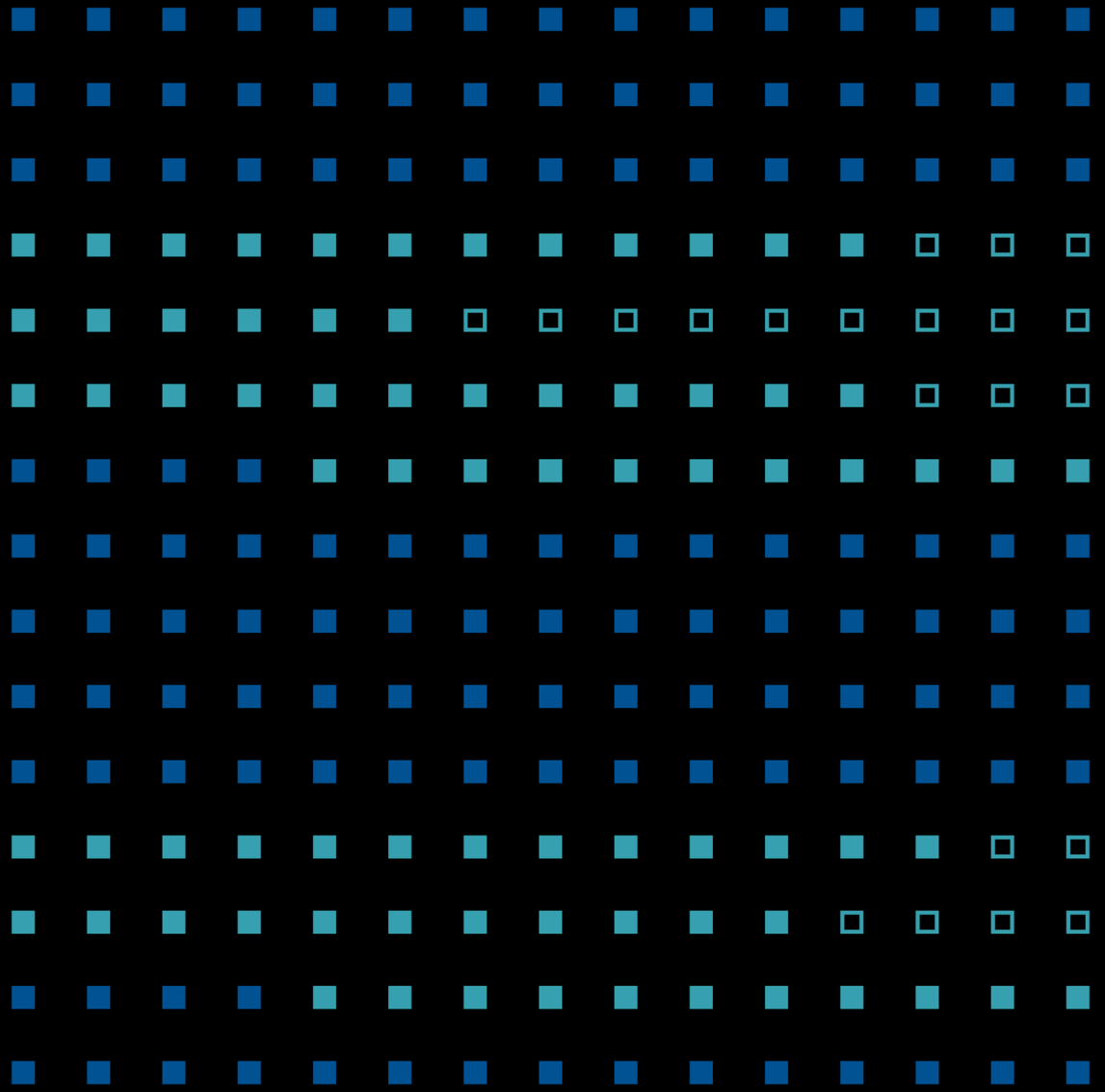
Centrally manage from Azure

- Centralized update management
- Cloud-based monitoring
- Security and advanced threat protection
- Centralized governance across environment

Azure Stack HCI host	Guest VMs
 Azure Site Recovery	 Azure Backup
 Cloud Witness	 Azure File Sync
 Azure Monitor	 Azure Security Center
	 Azure Update Management

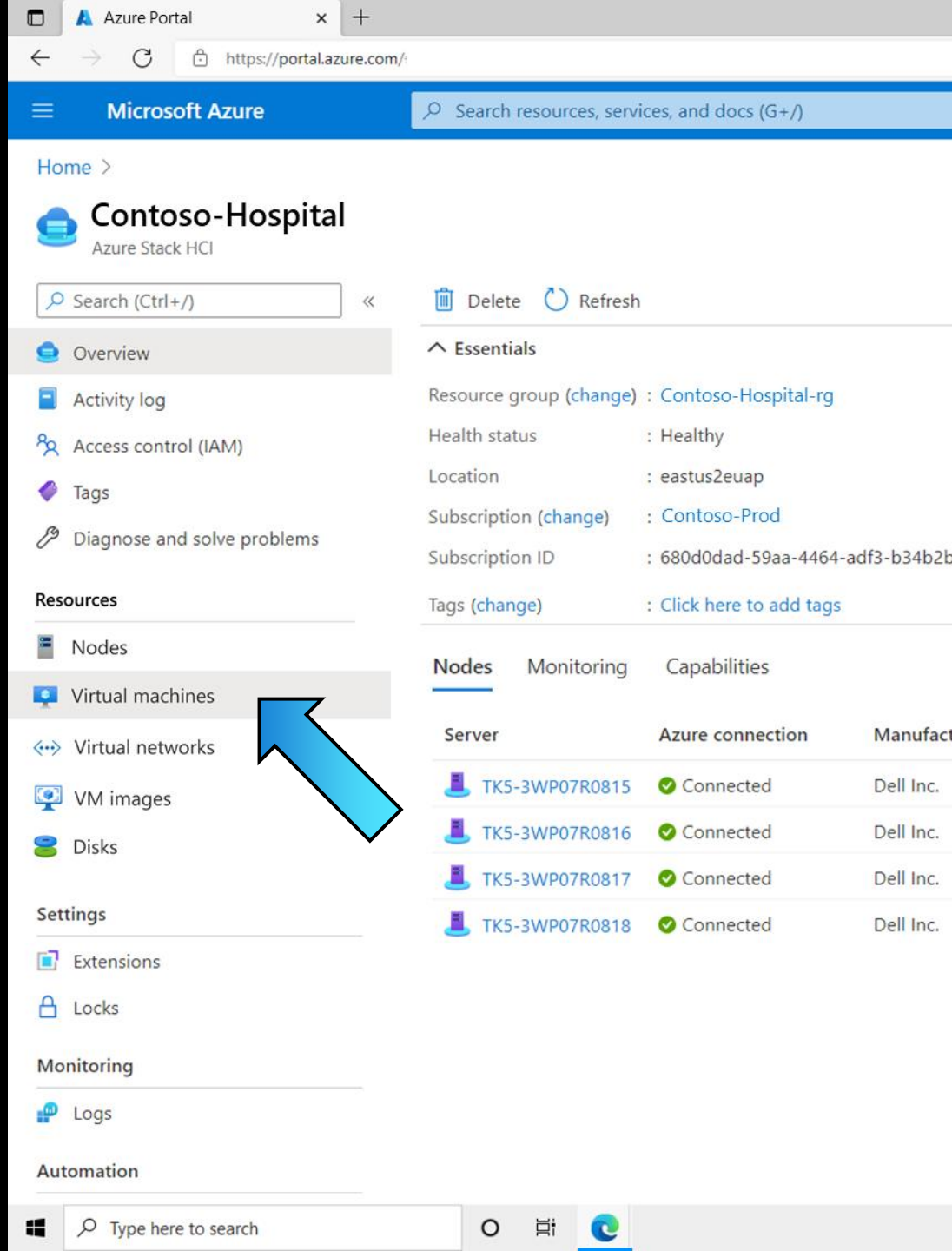
Microsoft Azure

Azure Stack HCI new features since GA



New

Provision and manage VMs from the Azure Portal



Provision and manage VMs from the Azure Portal

with Arc-enabled VM management for Azure Stack HCI (preview)

Azure Portal

Consistent user experience across cloud and edge

ARM templates

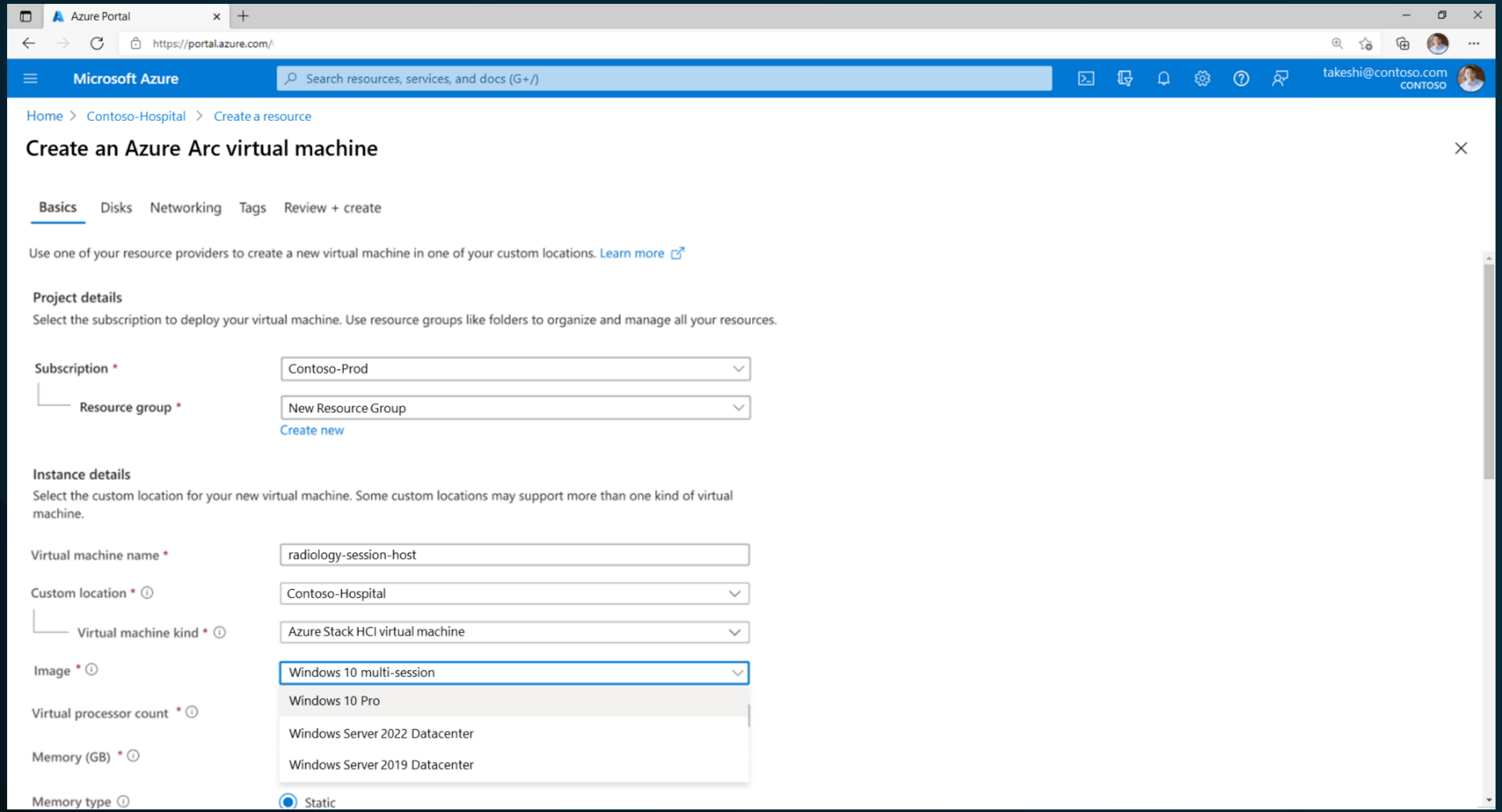
Automate VM deployments with ARM templates

RBAC and self-service

Users can access their VMs only, not the host fabric

Arc-enabled guests

Manage and monitor the guest OS and apps



Windows Server better-together

with Azure Stack HCI, version 21H2

For newer workloads…

Windows Server 2022 Azure Edition (coming soon)

Special version of Windows Server for Azure VMs only, with unique benefits

- ✓ Hot patching (no restart)
- ✓ Azure Extended Network
- ✓ SMB over QUIC

For older workloads…

Free extended security updates (ESUs)

Lift and shift onto Azure Stack HCI to secure older workloads on-premises

- ✓ Windows Server 2008/R2
- ✓ Windows Server 2012/R2
- ✓ SQL Server 2008/R2
- ✓ SQL Server 2012/R2

For all Windows Server workloads…

Convenient inherited activation (AVMA)

Simplify licensing with Automatic Virtual Machine Activation

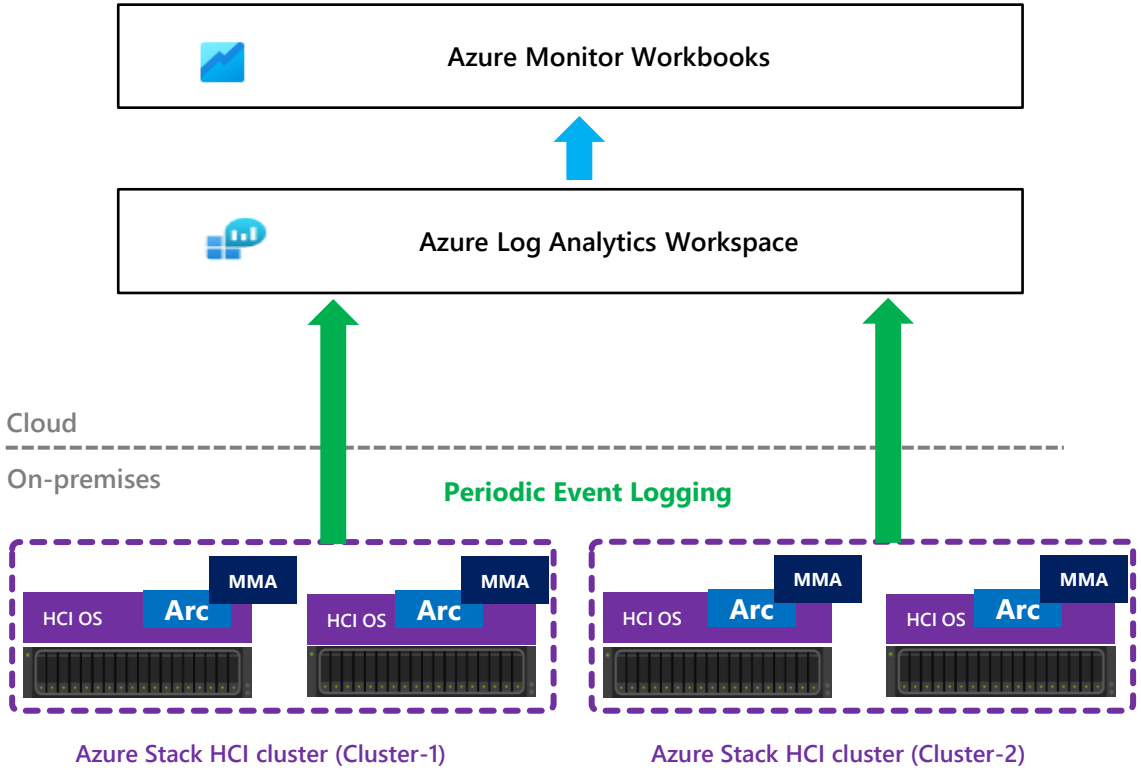
Option 1: Enter key into host

Option 2: Add-on subscription

New

Multi-Cluster Monitoring

- Managed by Azure
- Provides at scale perspective
- Customizable and collaborative



Announcing...

Azure Virtual Desktop

for Azure Stack HCI (preview)

New

Azure Virtual Desktop for Azure Stack HCI (preview)

Extending the benefits of cloud-managed VDI to on-premises

Cloud control plane

Fully managed, cloud-hosted VDI management plane

End-user experience

Windows 10 and 11 Enterprise multi-session

Lower latency

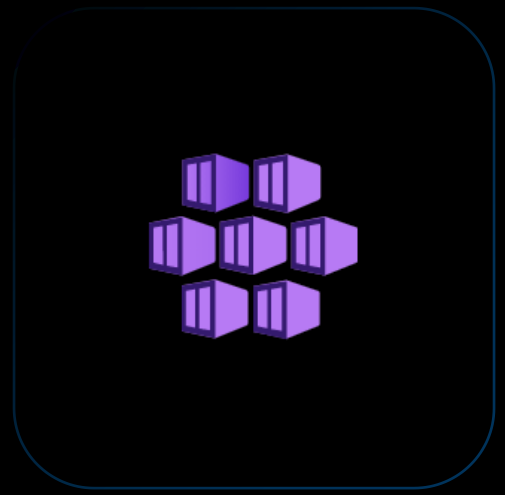
Direct access to local session hosts with RDP Shortpath

Review of Azure workloads and benefits

available on Azure Stack HCI, version 21H2

Windows Server

Azure Edition (coming soon), free ESUs, pay-as-you-go



Azure Kubernetes Service

Deploy and manage Windows and Linux containers

PaaS services (preview)

Managed SQL, App services, Functions, Logic Apps

Azure Virtual Desktop (preview)

Cloud-hosted control plane, Windows multi-session

New

Azure infrastructure innovation

in the 21H2 feature update

Kernel soft reboot

Software-only restart that skips pre-boot sequence incl. hardware POST. Up to 10x faster than cold reboot.

GPUs for AI/ML

Assign whole GPUs (DDA) to clustered virtual machines, which can failover for high availability.

Dynamic CPU compatibility

Minimize performance degradation when mixing processor generations in same cluster.

Thin provisioning

Size and allocate Storage Spaces Direct data volumes independent of how much physical capacity is installed.

Network ATC

Intent-based configuration for IPs, VLANs, vSwitch, SET, and more. Propagates cluster-wide and corrects drift.

Secured-Core Server

Baseline assurance of hardware, firmware, and OS hardening to defend against current and future threats.

Roadmap: Extensions planned for Azure Stack HCI

Adding powerful new functionality through the extension mechanism

Monitoring

MMA/AMA ext.

Send logs, metrics, alerts from OS to Azure Monitor

Public Preview

Management

WAC-in-Portal ext.

Depth management without leaving Portal

In development

Automanage

Guest Configuration ext.

Audit and remediate OS configuration via DSC

Private Preview

Disaster recovery

ASR H2A agent ext.

Replicate VMs into Recovery Services Vault

In development

PowerShell

Run Cmd v2 ext.

Run any cmdlet or script against one or every node

In planning

And stay tuned for others!

Review: What's new for Azure Stack HCI in 2021

Azure workloads and benefits

WS 2022 Azure Edition (coming soon)

Free ESUs for Windows and SQL Server

Windows Server subscription add-on

Azure Virtual Desktop for HCI (preview)

Continuous Kubernetes innovation

Arc-enabled PaaS services

Azure management and governance

Integrates with Azure Resource Manager

Extensions and Arc-enabled servers

Multi-cluster monitoring for HCI (preview)

Arc-enabled VM management (preview)

Azure Backup and Azure Site Recovery

(and Arc-enabled Kubernetes!)

Azure infrastructure innovation

High availability for GPU workloads

Restart 10X faster with KSR

Intent-driven cluster networking

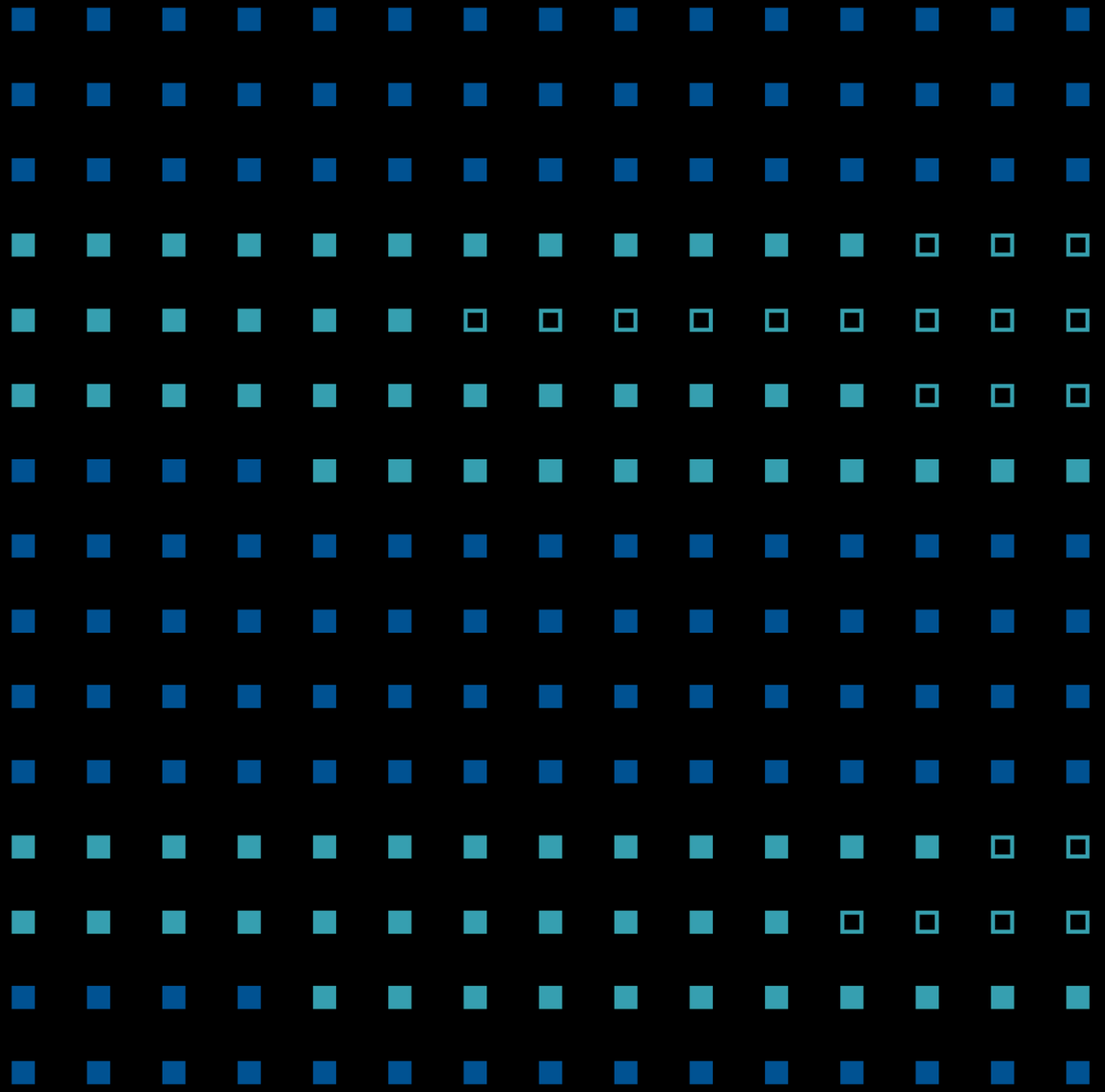
Thin provisioning for Storage Spaces Direct

Dynamic processor compatibility

Secured-Core Server

Microsoft Azure

Licensing



How does it work: License guests and apps separately

As little or as much Windows Server as you need, like other HCI offerings in the market

Host: Subscription

Guest: Perpetual

What you want to run:

Linux applications
Open-source software

What you buy:

OEM HW

+

Azure Stack HCI

+

Nothing else from Microsoft

See provider if fees apply

What you want to run:

A few Windows Server roles or applications

What you buy:

Validated OEM HW

+

Azure Stack HCI

+

Windows Server 2019/2022 Standard(s)

What you want to run:

Unlimited Windows Server roles or applications

What you buy:

Validated OEM HW

+

Azure Stack HCI

+

Windows Server 2019/2022 Datacenter

INTRODUCING

Dell EMC Integrated System for Microsoft Azure Stack HCI

Modernize and Transform your Operational Experience

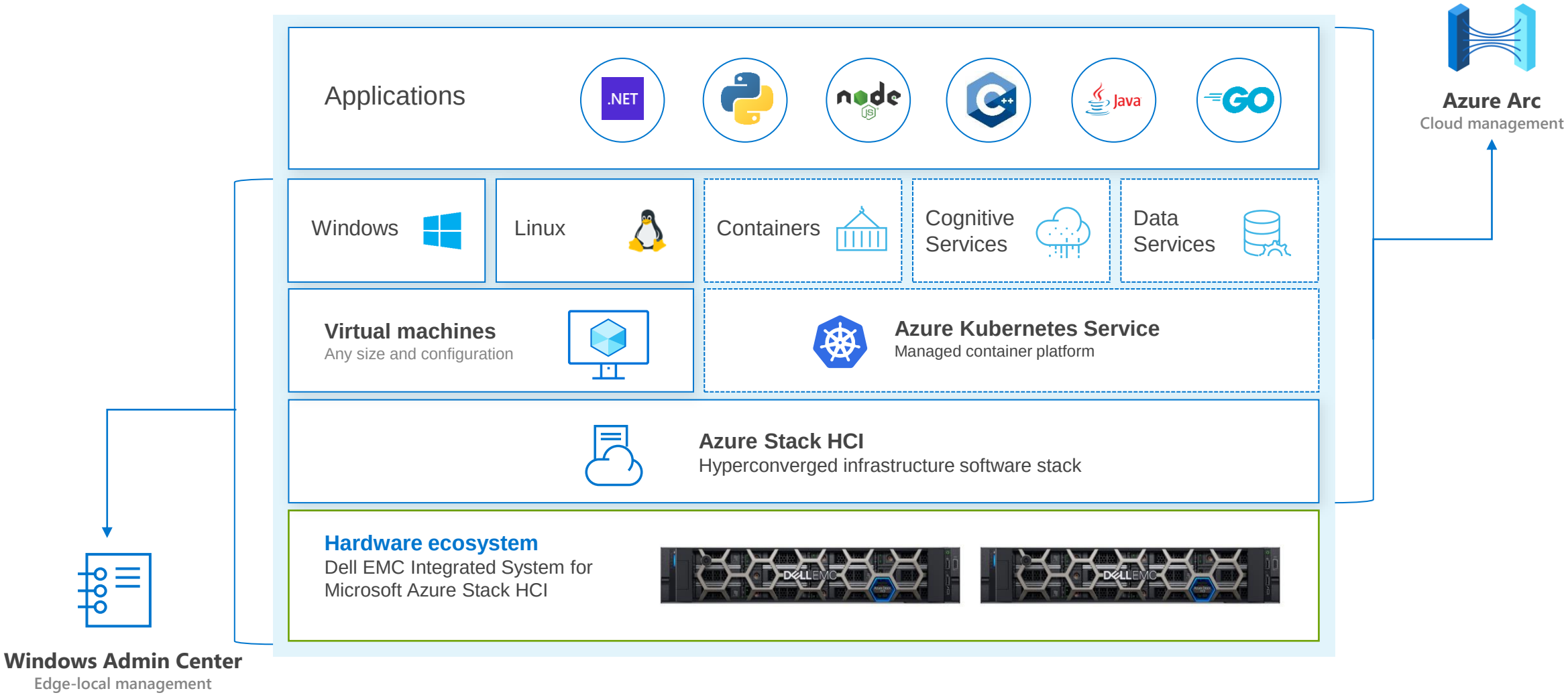
Streamline & Simplify Operations
Deliver Operational Efficiency

Cloud-like Flexibility
Enable an integrated Azure Experience

Be Confident
Rely on enterprise-class expertise

DELL Technologies

Azure Stack HCI solution architecture



Dell EMC Integrated System for Microsoft Azure Stack HCI

Designed for **99.9999% hardware availability***

Fully productized HCI solution with foundational AX nodes, network switches, support and deployment services

A **wide portfolio** of offerings optimized for multiple use cases, application performance and capacity needs

Integrated life cycle management including automated cluster creation and full stack updates of OS, BIOS, firmware, and drivers using Dell EMC OpenManage Integration with Windows Admin Center

High performance architecture that leverages technologies such as 25/100Gb RDMA networking and all flash storage

Global availability backed by Dell EMC trained technical support, deployment & consulting services professionals

Dell EMC Integrated System for Microsoft Azure Stack HCI

Deliver operational efficiency

- End-to-end LCM
- Monitor and manage at scale
- Flexible consumption options

Enable an integrated Azure experience

- Always up-to-date
- Azure Hybrid Services
- Built-in disaster recovery

Rely on enterprise-class expertise

- #1 Proven mature leader
- Flexible configurations
- World-class support and services

Monitor and Manage clusters at scale

Dell EMC OpenManage Integration with Windows Admin Center

Azure management and governance services

Edge-local management console, always available

- Cluster creation and expansion
- Full stack life cycle management with cluster-aware Updating
- CPU core management
- Deep hardware monitoring and inventory
- Troubleshooting

Management at scale with Azure Portal, Azure Arc, and other Azure Services

- Global visibility – monitoring at scale
- Billing information
- Integrate other Azure services like Azure Monitor and Azure Security Center
- Apply governance constructs like tags and access controls

Complementary and consistent

Orchestrated End-to-end Lifecycle management

Dell EMC OpenManage Integration with Microsoft Windows Admin Center (OMIMSWAC)

Native integration with rich UI and anywhere access

Full-stack cluster-aware lifecycle management

Single reboot per cluster node during updates

Real time health status

82%
Reduction in manual steps*

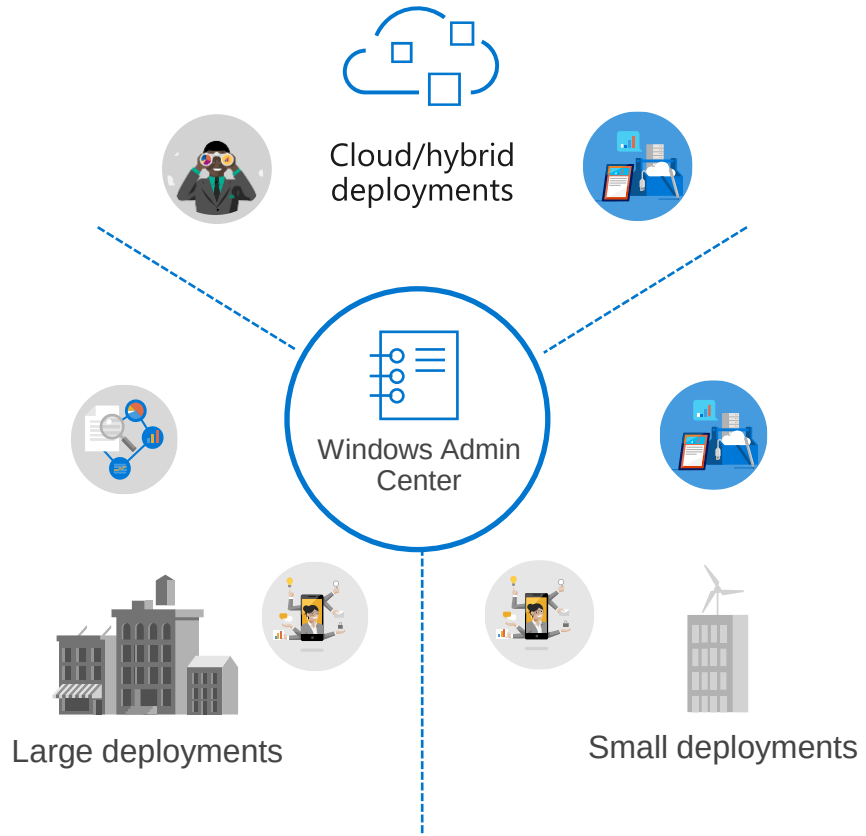
40%
Reduction in required maintenance*

* Internal Dell Technologies lab review of OpenManage integration with Windows Admin Center. Taken from *Dell EMC Solutions for Microsoft Azure Stack HCI: Life Cycle Management Approach Comparison Benefits of Automating the Azure Stack HCI Hardware Update Process*, August 2020

OpenManage Integration with Microsoft Windows Admin Center

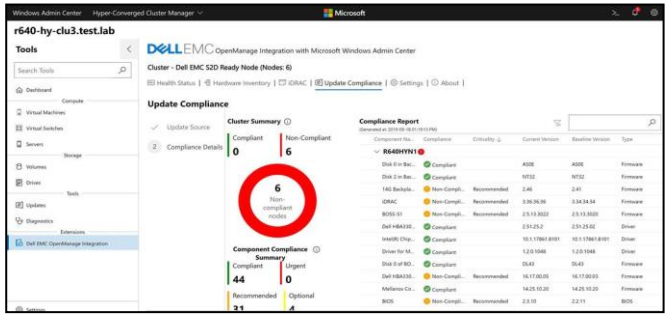
Windows platform management – servers, clusters, HCI management with a simplified modern application

Microsoft Windows Admin Center



Lightweight, browser-based local & remote management
1:1 Depth for troubleshooting, configuration manage

Dell EMC OpenManage Integration



Lifecycle Management

- **Inventory** – Hardware, Firmware
- **Monitoring** – Realtime health
- **Update** Compliance, Remediation, CAU
- **iDRAC** Integrated Management

Server Management

Cluster Management

HCI Management

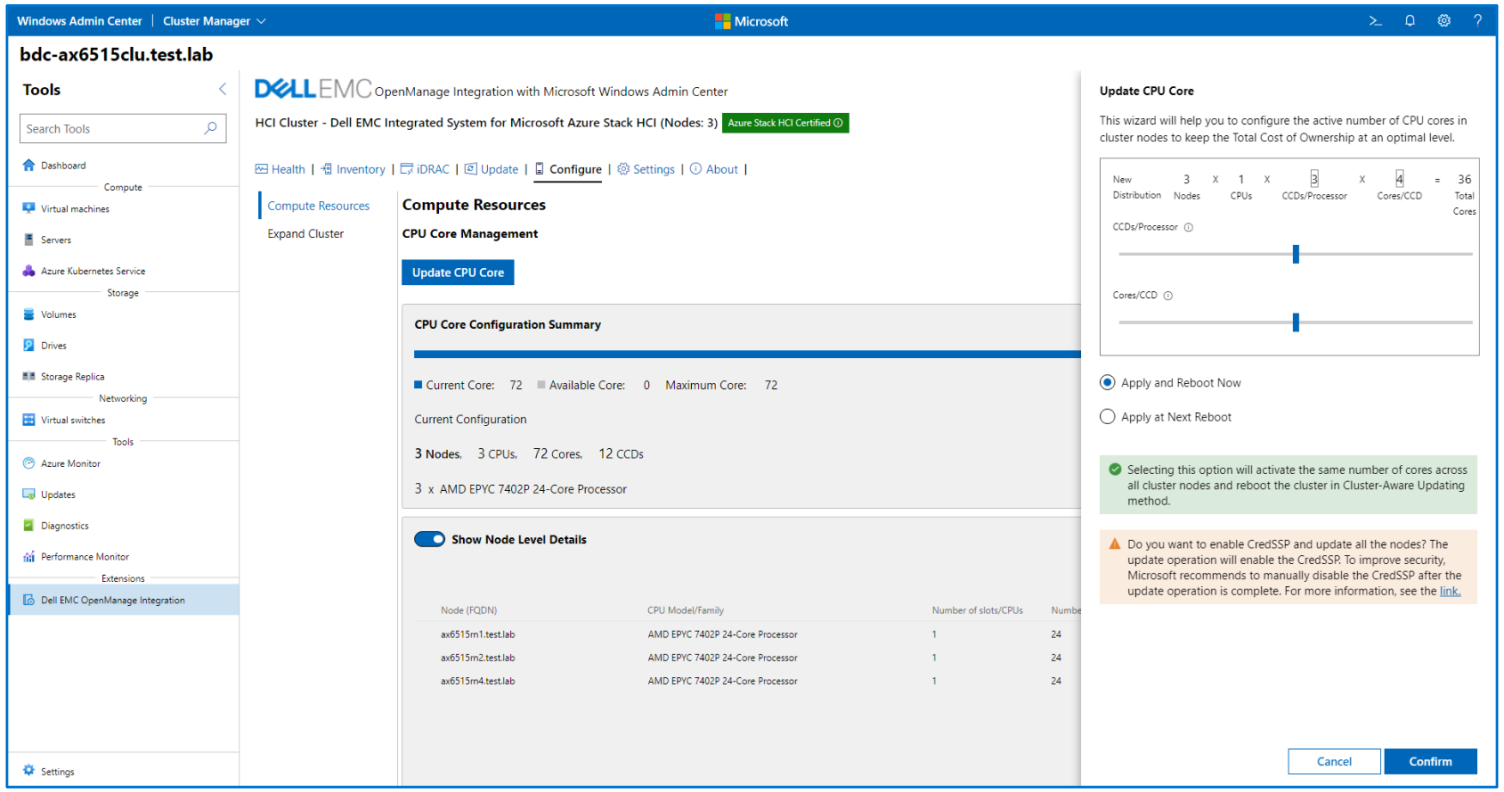
CPU cores management for MSFT HCI Solutions

Right size CPU - Hybrid Cloud Infrastructure to reduce subscription costs based on workload

NEW!

Hybrid Cloud deployments

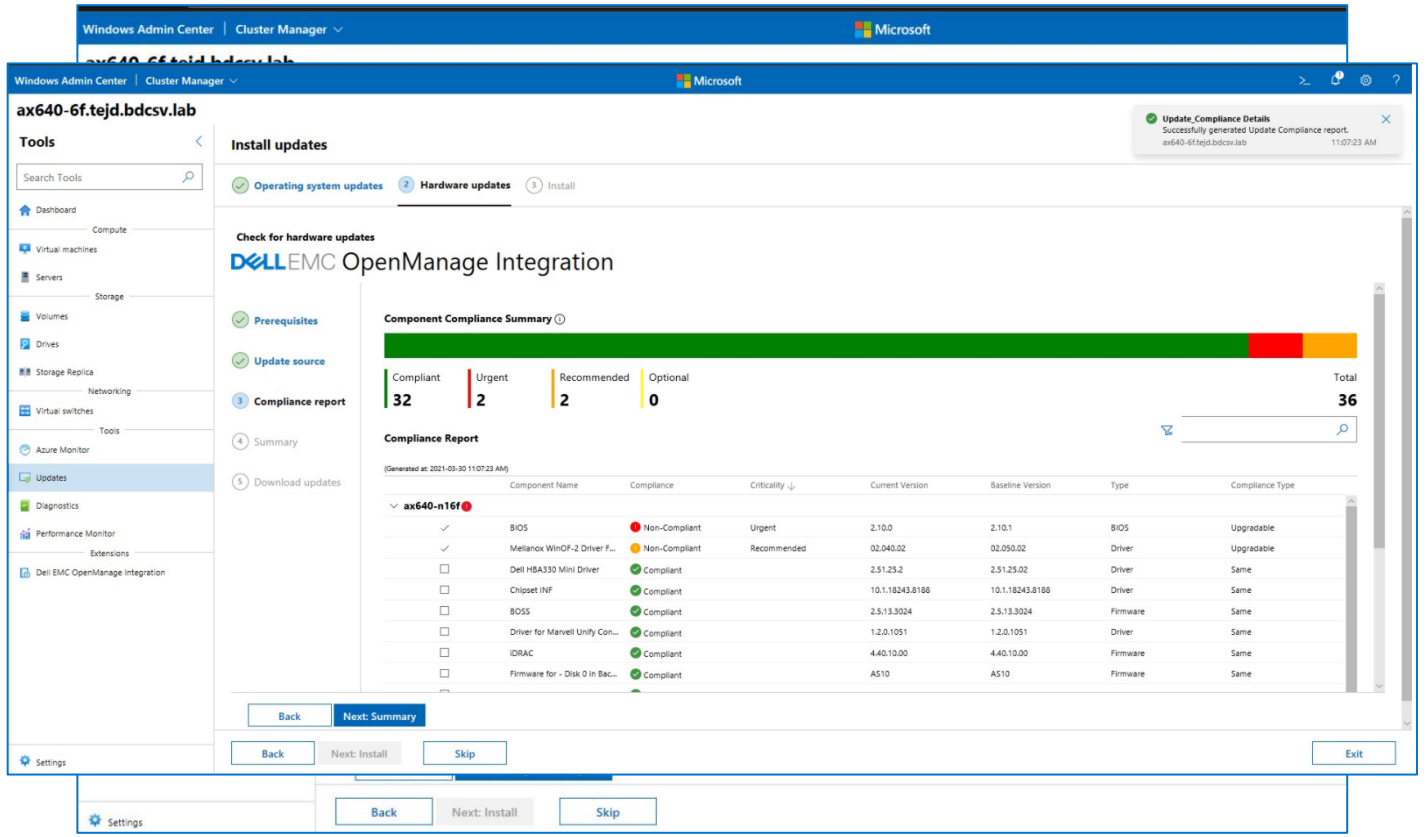
- Right size CPU cores for workload performance and reduce **Hybrid core-based subscription** cost
- CPU sizing applied at Cluster level for cluster nodes, **no workloads interruption**
- Ability to apply CPU core changes **immediate** or at **next reboot**
- Fully automated experience optimizing **TCO**, visibility to current & total CPU cores
- Supported for **MSFT HCI Solutions** based of AX nodes, S2D Ready Nodes and PowerEdge Servers (node level)



1-Click Full Stack LCM using Cluster-Aware Updating

Streamline and automate Day 90/180 maintenance operations

- Single workflow orchestrates OS, BIOS, firmware, and driver updates
- One reboot per cluster node with no interruption to workloads
- Node validation checks ensure cluster update readiness
- Fully automated experience with online solution catalog
- Dell EMC Repository Manager created solution catalog for edge/disconnected scenarios
- Compliance report and remediation



Portfolio “at a glance”

Feature (per node)	AX-640	AX-740xd	AX-6515	AX-7525	AX-650	AX-750
Processors	Intel Xeon Scalable 1st Generation Intel Xeon Scalable 2nd Generation		2nd Gen AMD EPYC Processor 3rd Gen AMD EPYC Processor		Intel Xeon Scalable 3rd Generation	
Core Count	16 to 52	16 to 52	16 to 64	16 to 128	16 to 64	16 to 64
Memory	96 GB to 1.5 TB	96 GB to 1.5 TB	64 GB to 1 TB	128 GB to 2 TB	128 GB to 4 TB	128 GB to 4 TB
Max Storage	Up to 76.8 TB	Up to 192 TB	Up to 61.44 TB	Up to 184.3 TB	Up to 76.8 TB	Up to 184.3 TB
Secured Core				✓ (3rd Gen)	✓	✓
Vectorized AES			✓	✓	✓	✓
GPU Capable				✓	✓	✓
Azure Stack HCI Only						
Stretched Clusters	✓	✓	✓	✓	✓	✓
Kernel Soft Reboot	✓	✓	✓	✓	✓	✓

✓ Available Now

✓ Available with Azure Stack HCI, 21H2

✓ Coming Soon

Getting the most out of Azure Stack HCI

Unrivaled Performance: Use **single-tier**, **all-flash** drive configuration. For storage networking, configure **RDMA** over **25 GbE** connections – **iWARP** recommended.

Manageability: Full stack **life cycle management** of OS, BIOS, firmware, and drivers. Manage at scale with **Azure Resource Manager** and **Azure Arc**, and natively integrate with other Azure services.

Scalability: Scale to 16 nodes in a cluster. Cluster nodes must be **homogenous**. Two-node and switchless storage cluster scale-out not supported, but **Cluster Sets** can be leveraged. Use cluster expansion preparation feature in OpenManage Integration.

Simplicity: Productized and **validated** AX nodes. Create clusters following our Deployment Guide or using automated cluster creation in Windows Admin Center. Leverage **ProDeploy** and **ProSupport** creates turn-key, solution-level experience.

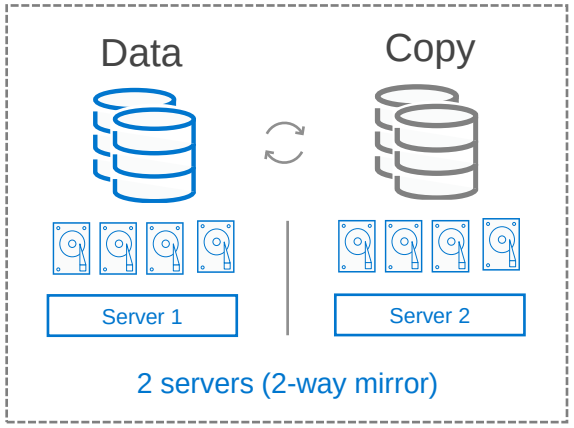
Resiliency: Start with **4-node or greater** clusters. Disaster recovery with stretch clustering available with integrated system.

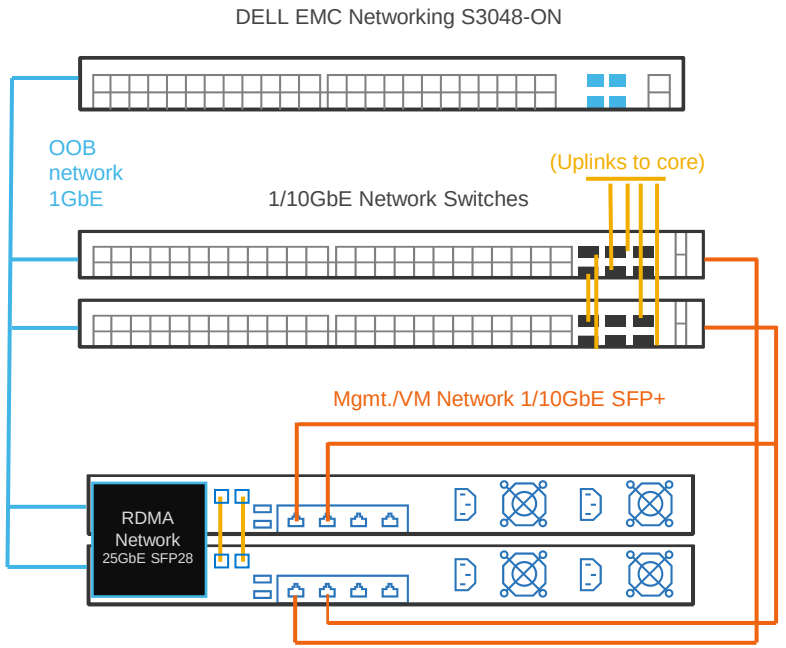
Resource Efficiency: Right-sized and future proofed. **Live Optics, HCI Sizing Tool, and Fabric Design Center** optimize price, performance, and capabilities. Use CPU core management in OpenManage Integration to achieve balance between cost and performance.

Example of Entry Offer for ROBO

Customer Requirements

- ROBO focused
- Cost conscious
- Small storage capacity (5 TB useable)
- Fleet management
- Existing network switching inadequate for RDMA requirements
- Space constraints
- Predictable performance
- Not looking to scale-out, but want to scale-up





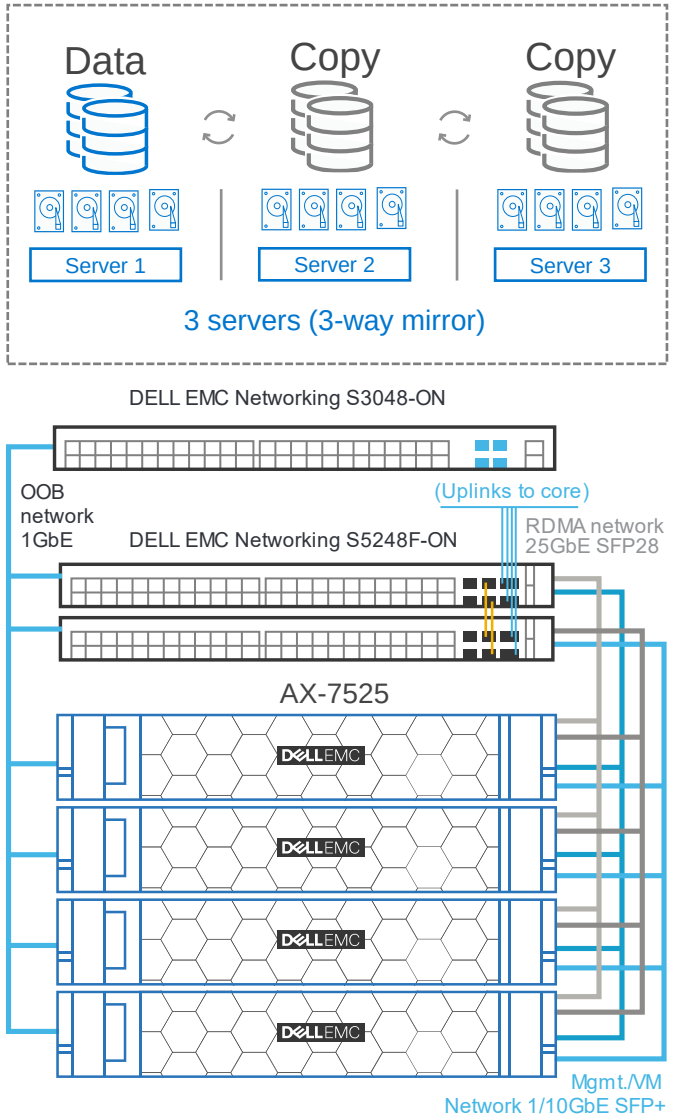
Recommended Configuration 2 x AX-650

- Dual-link full mesh switchless storage network topology
- All flash- 4 x 1.92TB MU SAS
- 2 x 4310 2.1GHz, 12 core (cores can be disabled in the BIOS to reduce cost)
- 256 GB RAM
- 1 x Mellanox ConnectX-5 (Dual Port 25 GbE)
- (Optional) Use Dell EMC PowerSwitch S Series 10GbE Switches, future proof your investment with 25GbE switch

Example of High Performance Offer for SQL

Customer Requirements

- High performance, low latency – sub millisecond latency
- Predictable, linear scale
- Scale-out / scale-up
- Response time consistent paramount
- Maintain peak performance even in the case of hardware failures
- 35 TB usable for databases



Recommended Configuration 4 x AX-7525

- All NVMe – 12 x NVMe-3.2TB-MU (for up to 42TB usable in 3-way mirror)
- 2 x 7302 3.0G, 16 core
- 1 TB RAM
- 1 x Mellanox ConnectX-5 (Dual Port 25 GbE)
- Use Dell EMC PowerSwitch S Series 25+GbE Switches for storage traffic and 10GbE or better for management/VM traffic

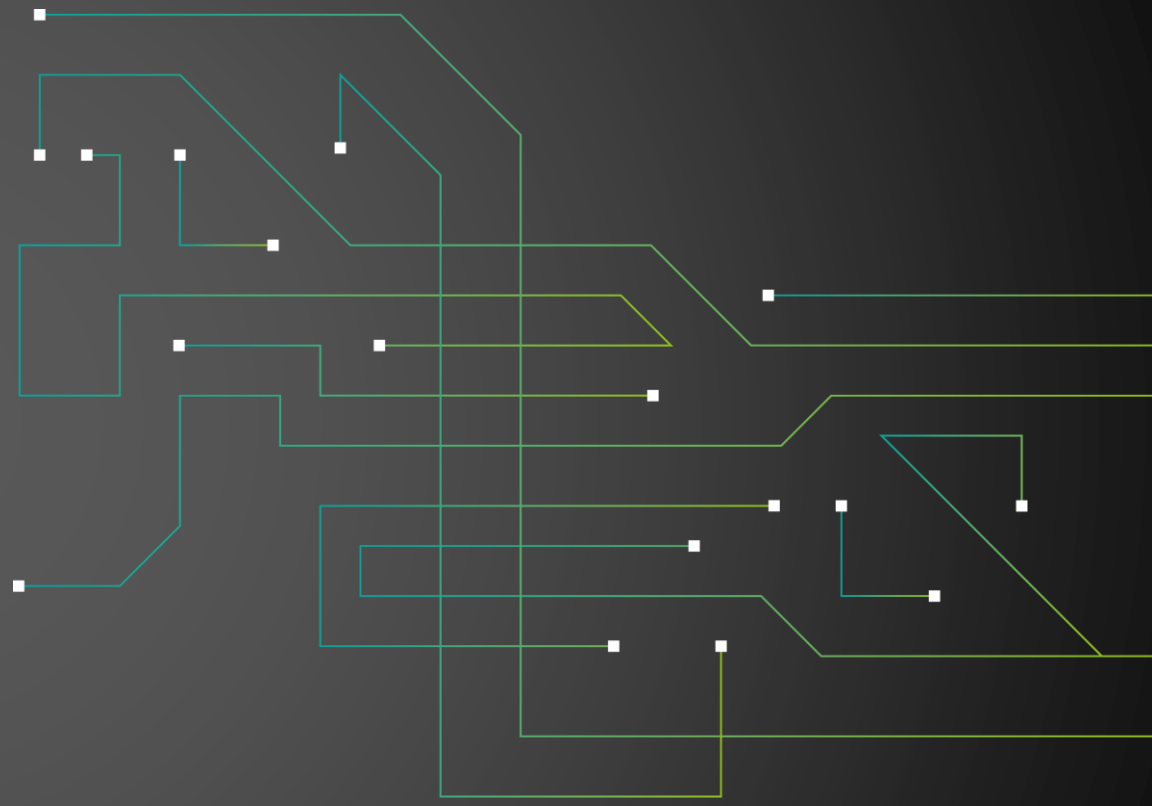
Azure Stack HCI with Dell Integrated Systems

Interactive Demo for OpenManage Integrations

https://www.delltechnologies.com/en-us/product-demos/openmanage-integration-with-microsoft-windows-admin-center/index.htm?ref=DemoCenter#

base it

Thank you!



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