# WIR STARTEN IN KÜRZE

## WIR FREUEN UNS, DASS SIE DABEI SIND

# So geht Hybrid Cloud!

Wie Azure Stack HCI in Kombination mit Azure ARC ein Hybrid Cloud Betriebsmodell ermöglicht

Markus Nowak (base-IT) & Elmar Szych (DELL Technologies)

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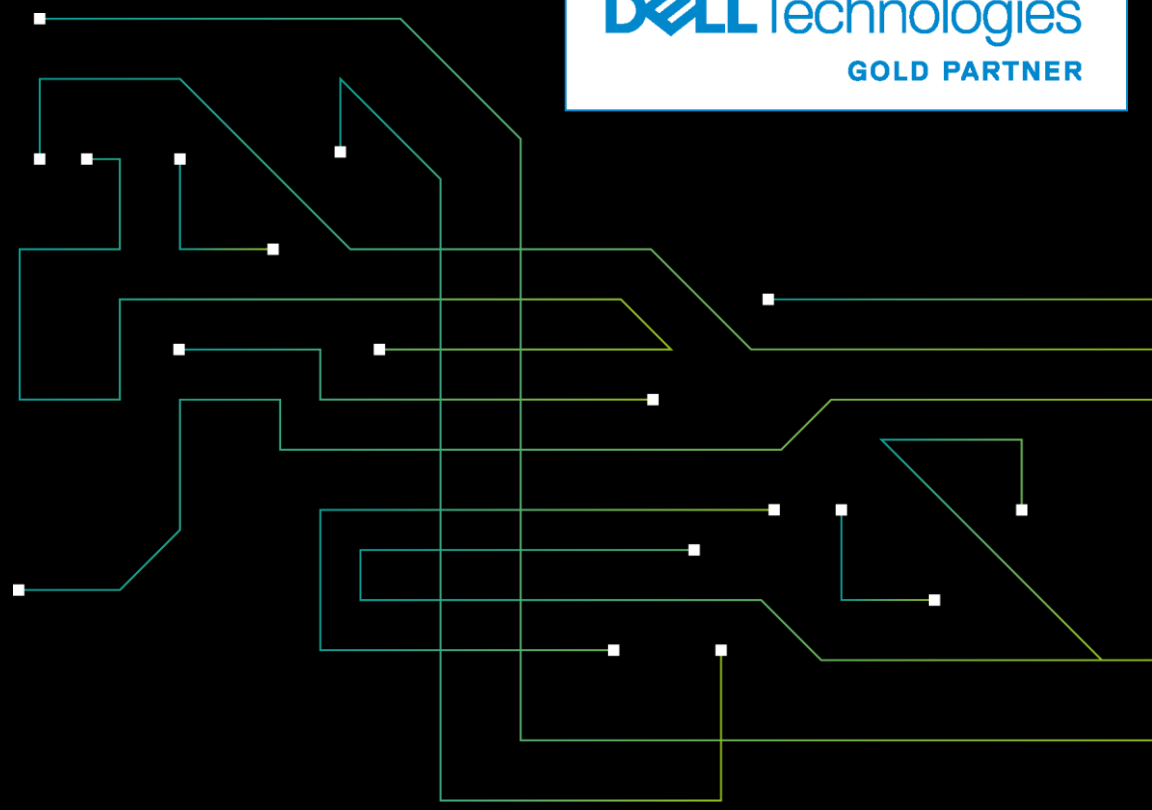
GOLD PARTNER

professional.
fast.
secure.

# Agenda

- Übersicht Azure ARC
- Azure Stack HCI – was steckt dahinter?
- base-IT Managed Service
- Lizenzierung
- DELL APEX Cloud Platform
  for Microsoft Azure



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# Customer environments and application requirements are evolving

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## Single control plane with Azure Arc

How to govern and operate across disparate environments?

How to ensure security across the entire organization?

How to best enable innovation and developer agility?

How to meet regulatory requirements and overcome technical hurdles?

### 100's–1,000's of apps

- VMs
- Databases
- Containers
- Serverless

.NET, JS, Java, GO, php

### Diverse infrastructure

- Datacenters
- Hosters
- Branch offices
- OEM hardware
- IoT devices
- Edge

### Hybrid & Multi-Cloud

Microsoft Azure

aws

Google Cloud

Alibaba Cloud

vmware

ORACLE

IBM Cloud

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Microsoft Azure

## Single control plane with Azure Arc

### Azure Arc-enabled infrastructure
Connect and operate hybrid resources as native Azure resources


### Azure Arc-enabled services
Deploy and run Azure services outside of Azure while still operating it from Azure


Multi-cloud

Datacenter

Edge

Microsoft Azure

# Azure Stack HCI

## The best infrastructure for hybrid and datacenter modernization

# Hybrid portfolio

Windows Server

Azure Stack HCI

Azure Stack Hub

Azure Stack Edge

# Modernize datacenters with Azure Stack

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## 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

# Expanding the Azure Stack portfolio

## Azure Stack Edge

*Cloud-managed appliance*
*focused on accelerated AI*
*inferencing and storage gateway*


## Azure Stack HCI

*Hyperconverged infrastructure*
*with hybrid management / services integration*
*and support for a variety of form factors*

## Azure Stack Hub

*Cloud-native integrated system*
*focused on autonomous and*
*disconnected scenarios*

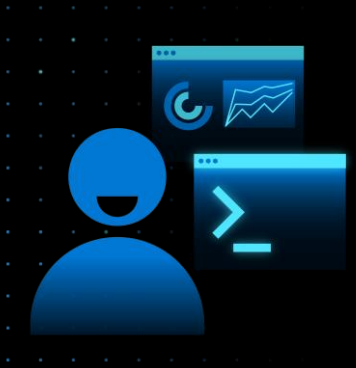
Learn more at
**Azure.com/AzureStack**

# Azure Stack HCI

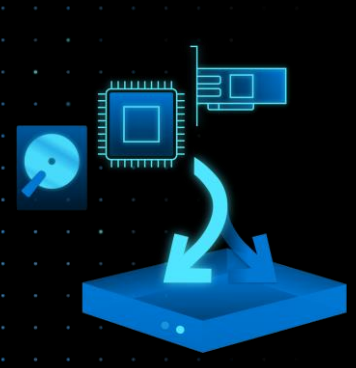
Modern subscription for flexible, familiar hyperconverged infrastructure

Azure hybrid by design

Enterprise scale and price performance



Familiar management and operations



Choice of deployment options

# What is hyperconvergence?

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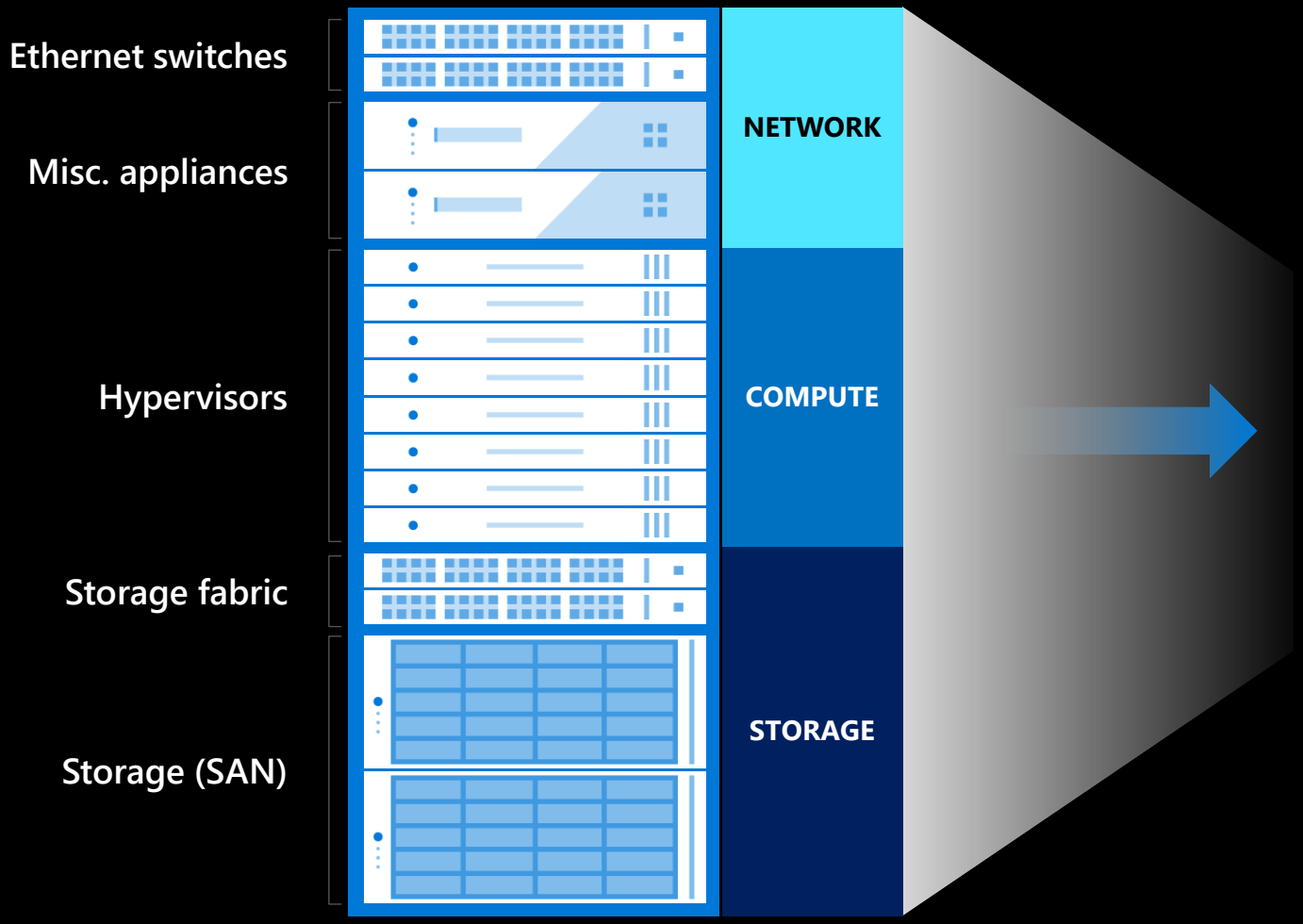
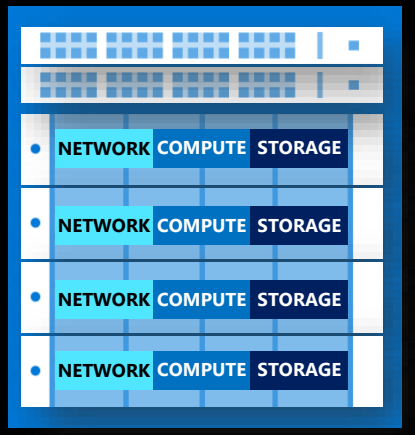
## Legacy “three tier” infrastructure




## Hyperconverged infrastructure (HCI)




Ethernet switches

Standard x86 servers
+
Local drives
+
The magic of software

HCI is a software-defined, unified system that combines all the disparate and siloed elements of a traditional datacenter

# Better together: Azure Stack HCI and Windows Server

**Applications**

Windows

Linux

Containers

App services

Data and AI services

**Virtual machines (VMs)**
Any size and configuration

**Azure Kubernetes Service**
Managed container platform

**Azure Stack HCI**
Hyperconverged infrastructure software stack

**Hardware ecosystem**
250+ solutions, validated by Microsoft

**Windows Admin Center**
Edge-local management

**Azure Arc**
For cloud management

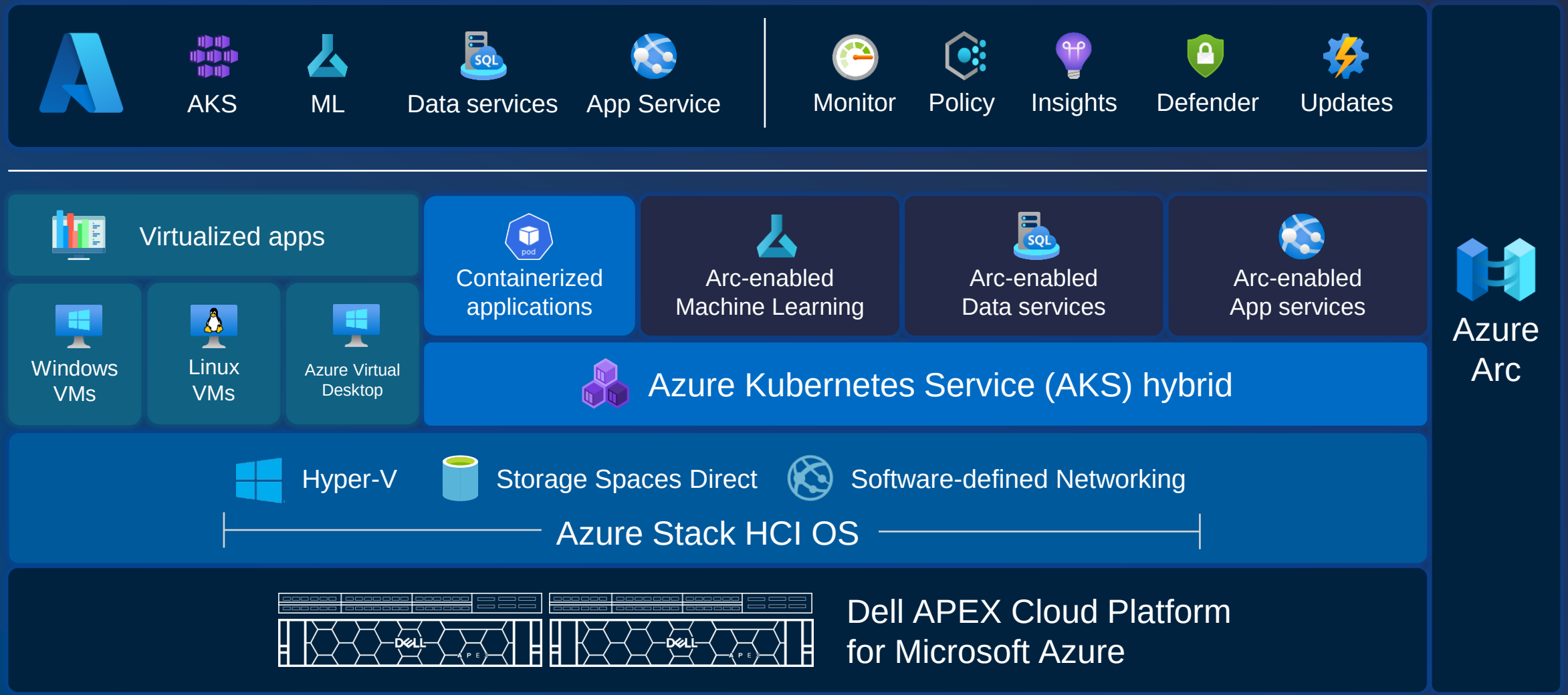
Azure Portal

Azure Arc

**Hybrid services**

- Site recovery
- Backup
- Update management
- File sync
- Monitor
- Security center

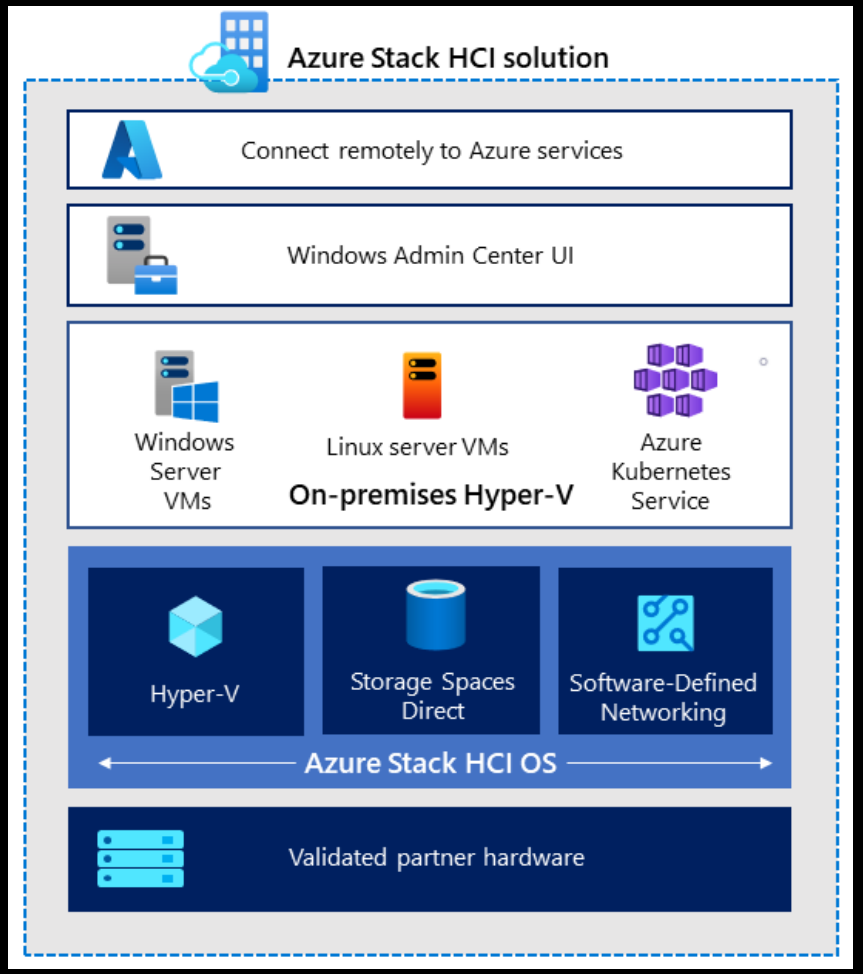
# Agile hybrid infrastructure with Azure Arc



# Azure Stack HCI “under the hood”

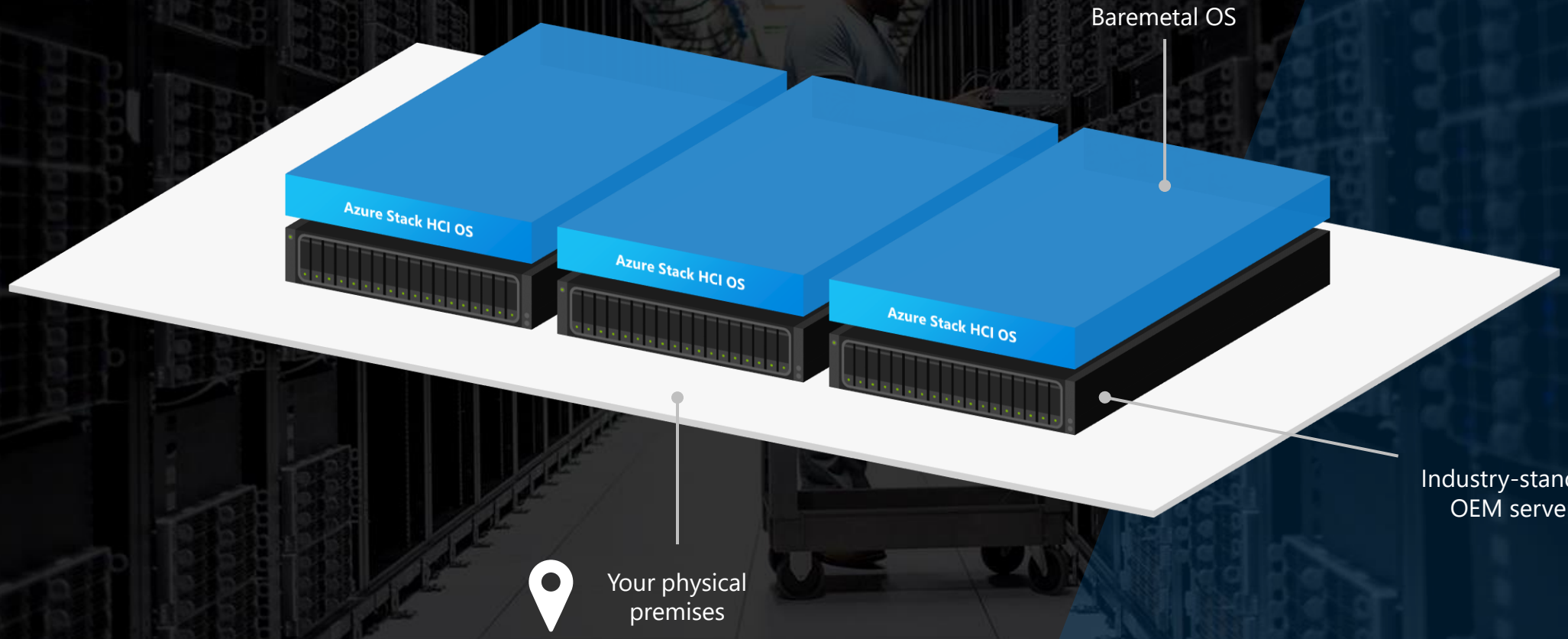
Azure Stack HCI OS is build on known technologies:

- Hyper-V
- Storage Spaces Direct



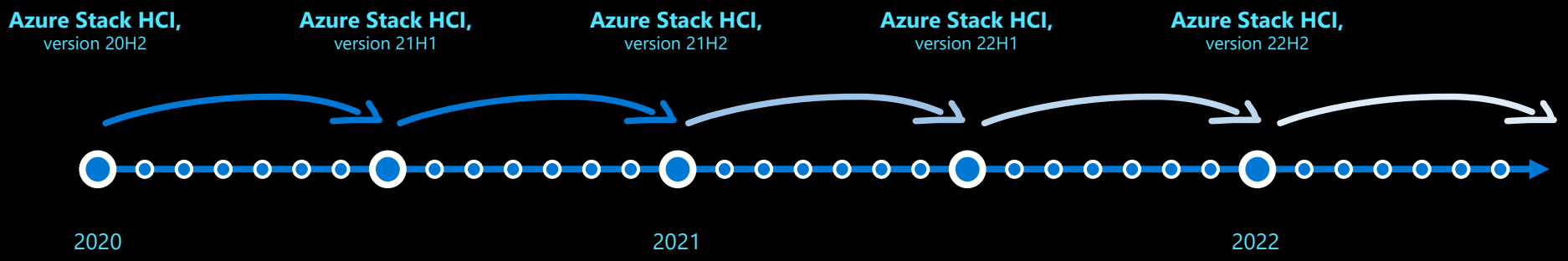
# Runs on your servers, on your premises

Learn more at Azure.com/HCI



# Always up-to-date subscription

Yearly major releases planned for 2020, 2021, 2022, and beyond

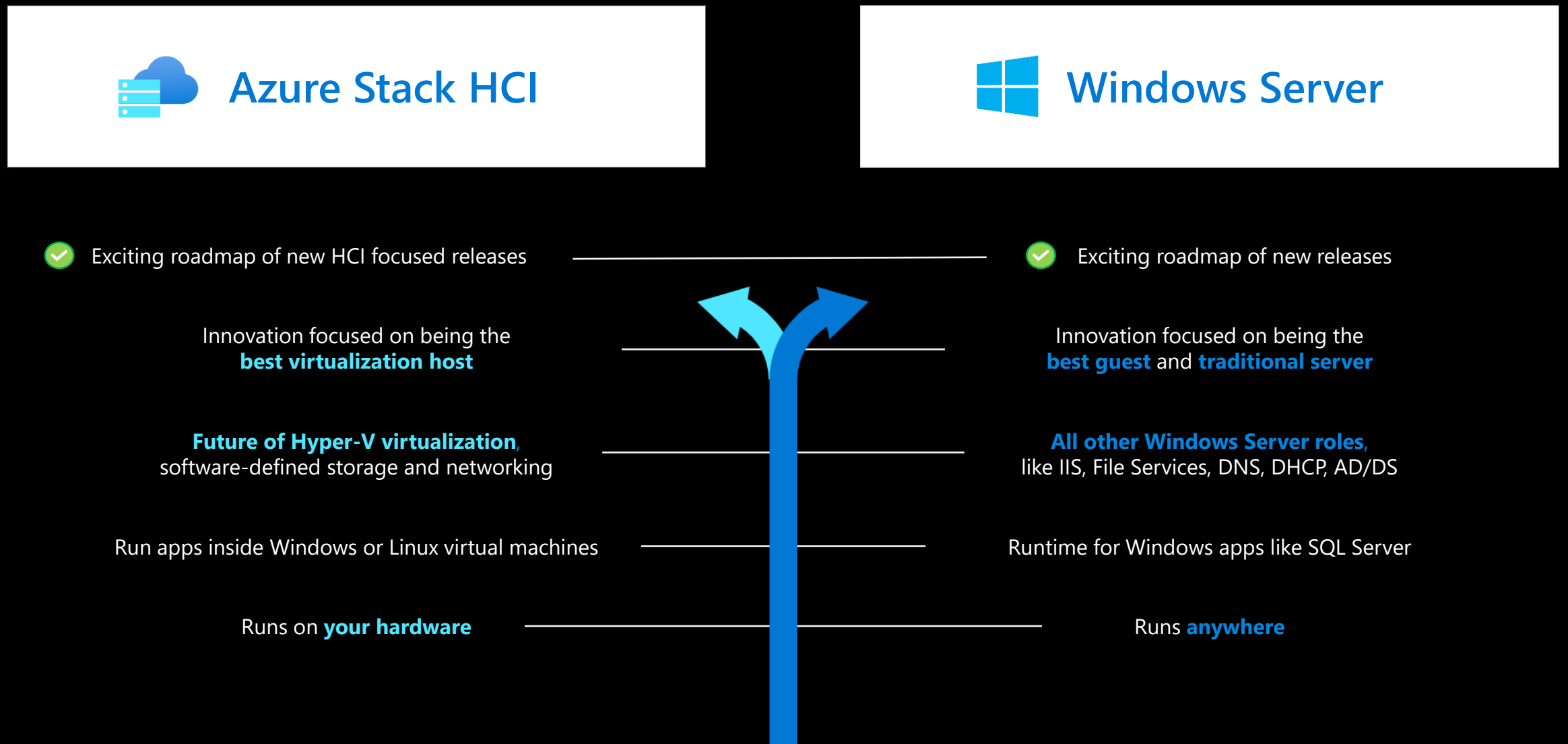



Subscription business model = customers are always entitled to updates

**Update cadence:**

- Monthly security and quality updates, on the same "Patch Tuesday" timeline as Windows proper
- Occasionally, once or twice per year, the monthly update will be what's called a "Feature Update" with new features
- OEM firmware/driver packages are typically available quarterly

# Growing Azure Stack HCI into its own product line



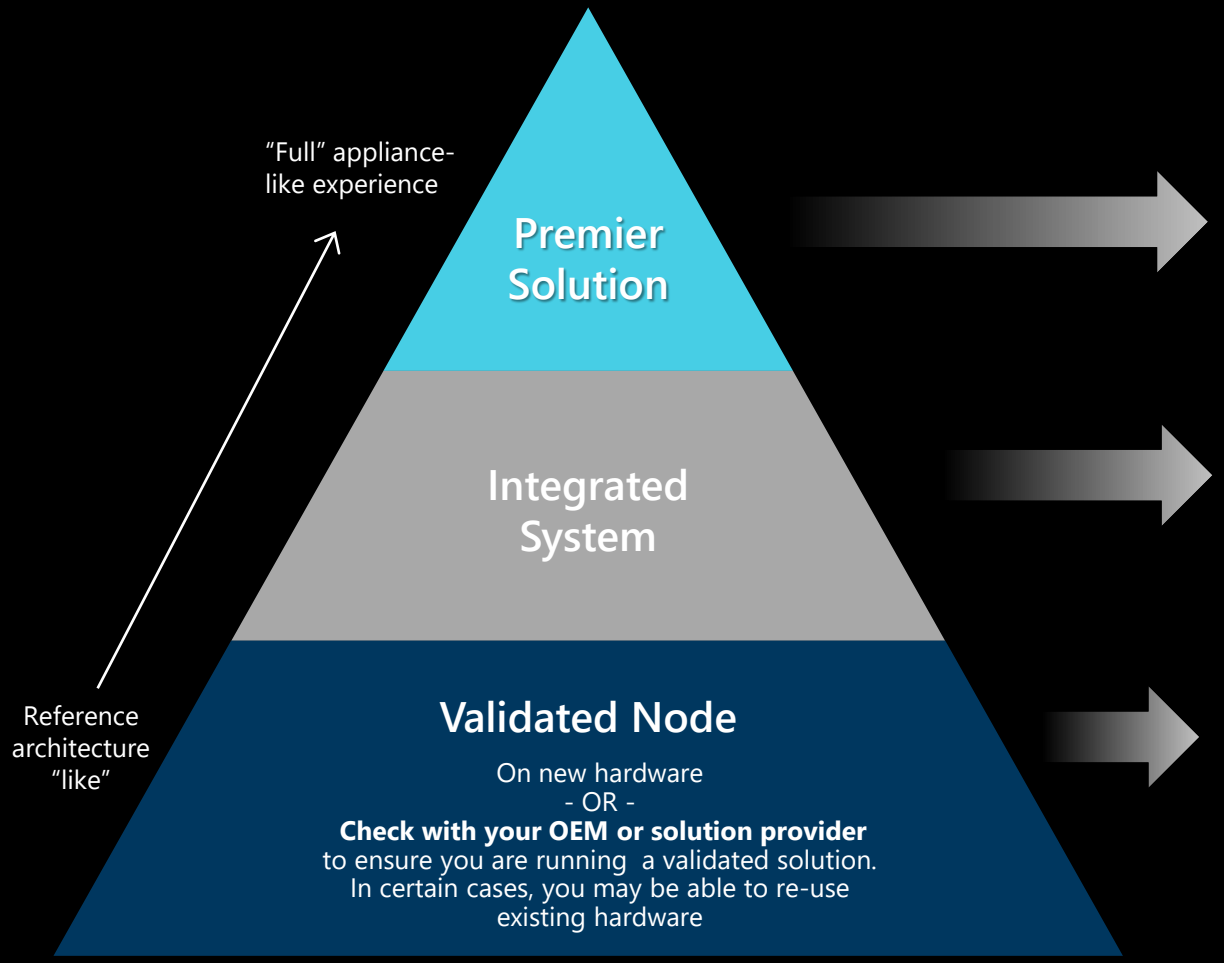
# Examples of tools your team already knows

| | | | | |
|---|---|---|---|---|
| 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 Solution Categories




## Turnkey Azure Stack HCI solution

- Deepest integration and highest level of automation, built through deep engineering collaboration between Microsoft and solution partners
- Continuous testing by Microsoft and our partners, to ensure higher reliability and minimal downtime
- End-to-end deployment workflows that make it easy to deploy one cluster or a thousand clusters

## Single purpose system with pre-installed software

- Optimized hardware selection with regular testing for ongoing reliability
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## Broadest choice of hardware components

- Choose from a diverse selection of validated hardware from more than 30 partners, or re-use existing validated hardware
- Engage with preferred SI for deployment and integration, as needed

Visit the Azure Stack HCI Catalog to discover the current hardware solutions available to fit your edge needs

# AZURE STACK HCI USECASES

## Anforderungen aus diversen Kundenprojekten

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- Modernisierung Datacenter
  - Standardisierung der Komponenten
  - Verkleinern des Hardwarefootprints
  - Reduzierung Komplexität in der Betriebsführung
  - Hybrid Azure Dienste enablen
    - Steigerung der Security (Defender for Cloud)
    - Single Point of View von Ressourcen
- Zukunftssichere Infrastruktur Architektur
  - Hybrid Cloud Betriebsmodell
  - Plattform welche sowohl VMs als auch PaaS Dienste betreiben kann
    - Cloud ready / future proofed
- Extended Security Updates
  - Gratis Extended Security Updates für Windows und SQL-Server 2012/2012R2
- Einsparung von VMWare Lizenzkosten
  - Durch Übernahme von Broadcom ist eine Unsicherheit vorhanden
  - Bestehender MS Lizenzinvest kann voll ausgeschöpft werden (SA-Benefits)

# BASE-IT SERVICES

## Wie kann die base-IT unterstützen?

- Ihr **Trusted Advisor** Hybrid Cloud Partner
  - We know Azure Stack HCI!
    - Über 100 implementiere Azure Stack HCI Projekte
    - Seit 2019 Azure Stack HCI als strategisches Hybrid Cloud Produkt im Portfolio
  - Wir beraten gesamtheitlich
    - Gesamtheitlich bedeutet für uns Berücksichtigung von allen Rahmenbedingungen beim Kunden (aktuelle Infrastruktur, Budget, Ressourcen)
    - Wir bieten eine Gesamtlösung aufgrund der Anforderungen des Kunden an
  - Wir übernehmen Verantwortung
    - Von der Ist-Analyse und Projekt bis zur Betriebsführung können wir alles übernehmen
    - Wir sind da wenn es brennt. Unser Team steht Ihnen unterstützend zur Seite
    - Azure Stack HCI Managed Service Pakete bis 24x7 sind einzeln sowie auch als AddOn zu ihrem bestehenden Rahmenvertrag möglich

# BASE-IT SERVICES

## Wie kann die base-IT unterstützen?

- Möglicher Projektablauf mit Base-IT
  - Ist-Analyse
  - Erstellung Architekturkonzept
    - Technisches Solution Design
    - Gesamtkostenkalkulation (Dienstleistung und Lizenzen)
  - Präsentation des Konzepts und Erstellung Fahrplan
  - Umsetzung Konzept
    - Installation + Konfiguration Azure Stack HCI (Einbindung in „Randysteme“)
  - Migration der virtuellen Maschinen und Applikationen
- Übernahme der Systeme in Managed Service
  - Proaktive Betriebsführung (Monitoring sowie Patching)

# Provision and manage VMs from the Azure Portal

with Arc-enabled VM management for Azure Stack HCI

### 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

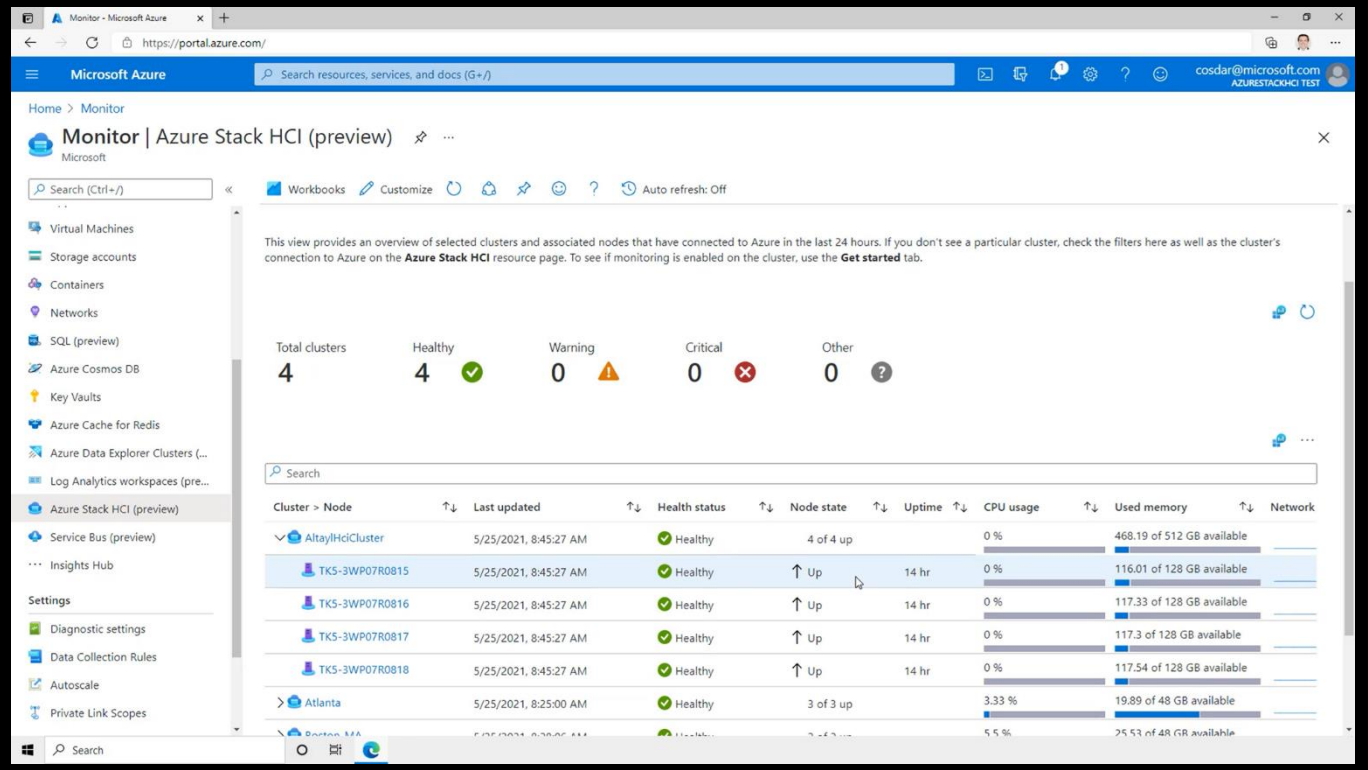
### Arc-enabled guests

Manage and monitor the guest OS and apps

# Multi-cluster monitoring in the Azure Portal

with Azure Monitor Insights for Azure Stack HCI

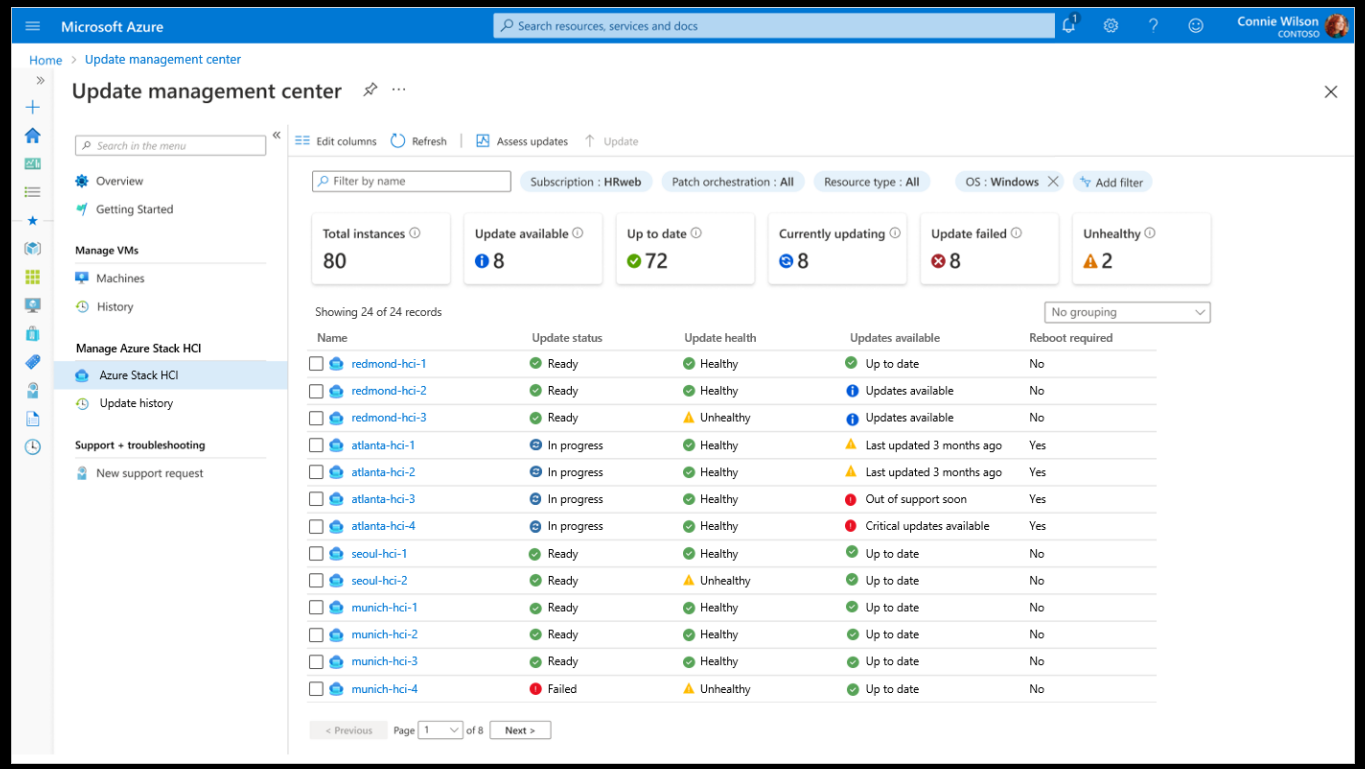
- ✓ **Azure-native solution**
  Nothing to integrate, no database or third-party software to manage
- ✓ **Highly scalable**
  Scales to 100s of clusters, independent of domain or physical location
- ✓ **Customizable**
  Visualizations and underlying queries are extensible by users or integrators



# Centralized update management

## Azure Update Management extends to Azure Stack HCI

- ✓ **Update at scale**
  Bulk select clusters, with filters, groups, tags
- ✓ **Cluster-aware updating**
  Familiar underlying rollout mechanism
- ✓ **All your resources**
  Azure VMs, HCI VMs, and HCI hosts together
- ✓ **Snappy UI performance**
  Proactive background scan for updates
- ✓ **Included**
  No additional cost



# Options for your workloads going end of support

**Free Extended Security Updates on Azure & Azure Stack HCI**
for Windows Server 2012 and 2012 R2
and SQL Server 2012

**One more year of free Extended Security Updates only on Azure (ends in January 2024)**
for Windows Server 2008 and 2008 R2
and SQL Server 2008 and 2008 R2

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# Azure Virtual Desktop

## for Azure Stack HCI

New

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# Azure Virtual Desktop for Azure Stack HCI

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

### Cloud control plane

Fully managed, cloud-hosted VDI management plane

### End-user experience

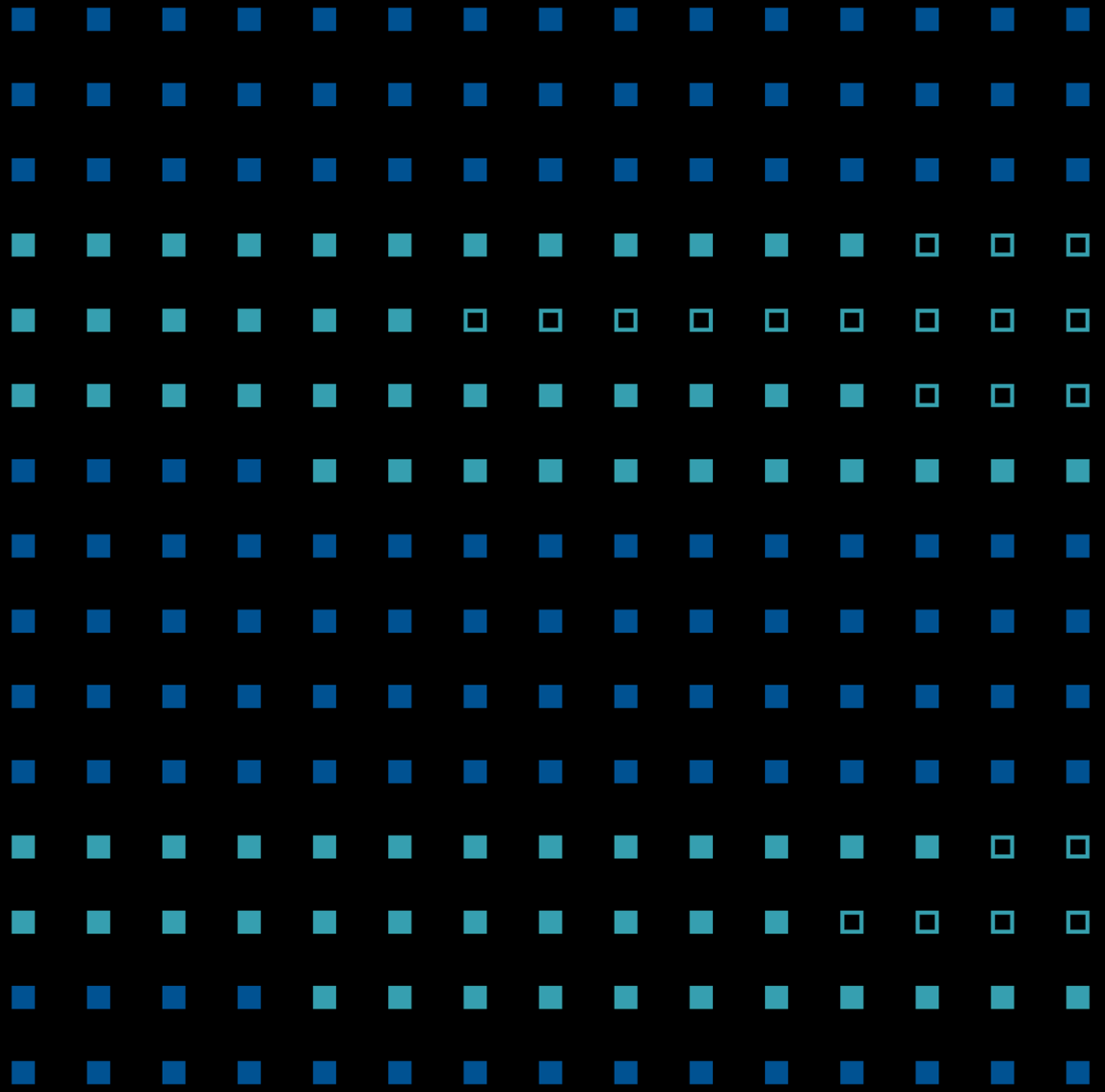
Windows 10 and 11 Enterprise multi-session

### Lower latency

Direct access to local session hosts with RDP Shortpath

Microsoft Azure

# Licensing

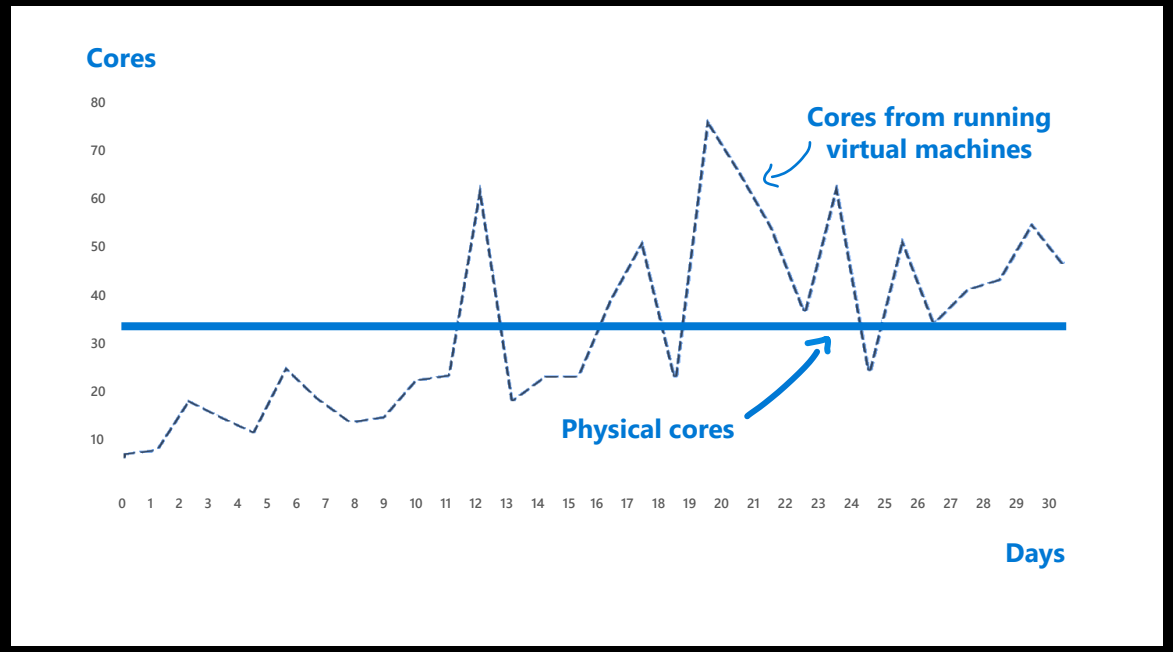


# What does Azure Stack HCI charge for?

**USD $10/month**

per physical processor core*

**Does not include Guest OS licensing*




**Predictable**
Doesn't vary with consumption, more VMs doesn't cost more

**Simple**
No math with memory, storage, or network ingress/egress

**Efficient**
Virtualize efficiently, with higher v-to-p density

# Azure Hybrid Benefit for Azure Stack HCI

| | |
|---|---|
| **How do I qualify?** | You qualify if you have active Software Assurance for Windows Server Datacenter. |
| **What is the benefit?** | Exchange your Windows Server cores for Azure Stack HCI cores at no additional cost. Get the host fee and optional Windows Server subscription fee waived for a reduced TCO of Azure Stack HCI |

## Deployment

### Existing Windows Server hosts

Exchange your Windows Server cores for Azure Stack HCI cores with 180 days of concurrent use rights while migrating servers.

### Unlimited virtualization

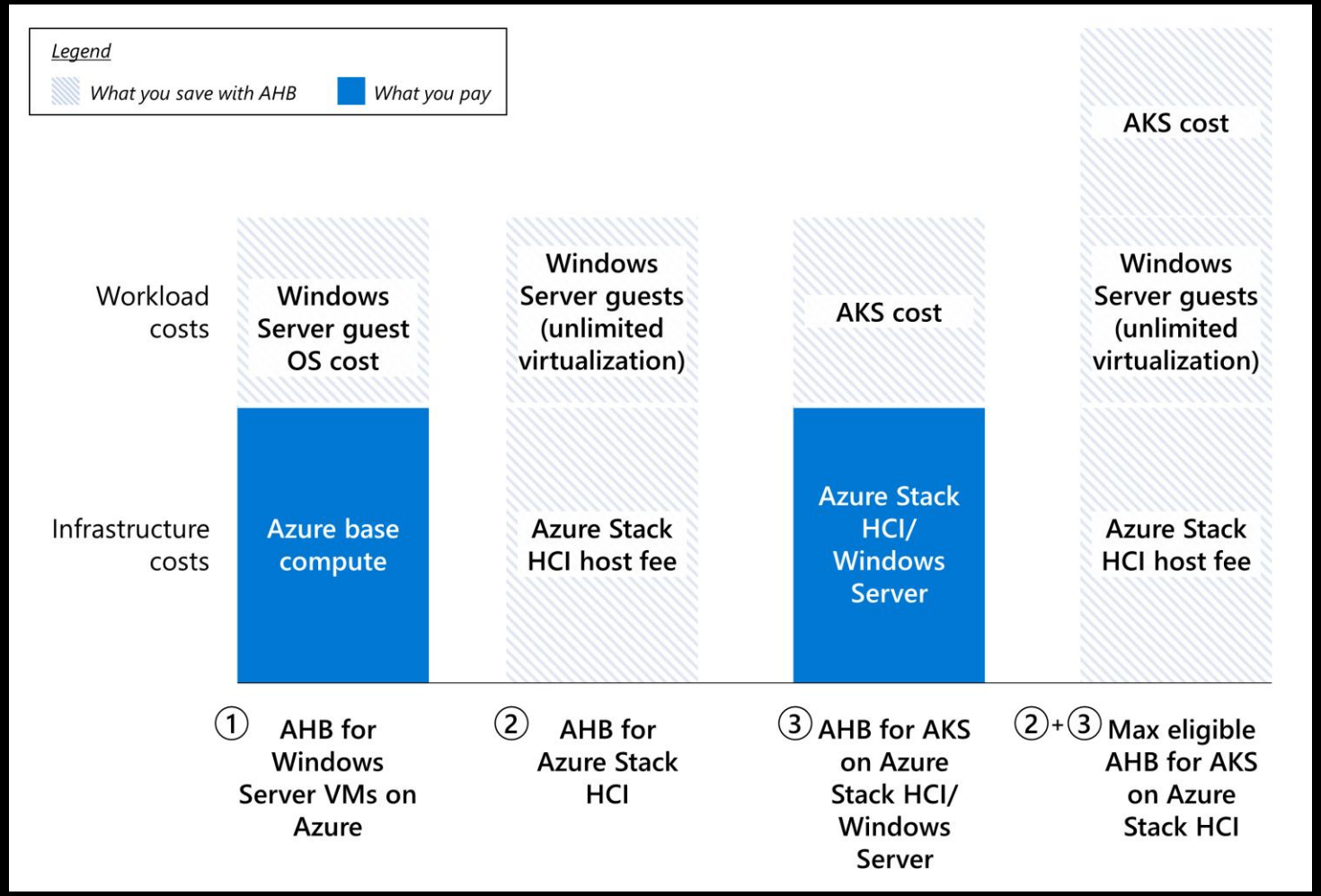
Get unlimited virtualization rights for the Windows Server guests running on Azure Stack HCI.

### Azure Arc enabled

Get the latest security, performance, and hybrid capabilities such as Microsoft Defender for Cloud, Azure Backup, and more.

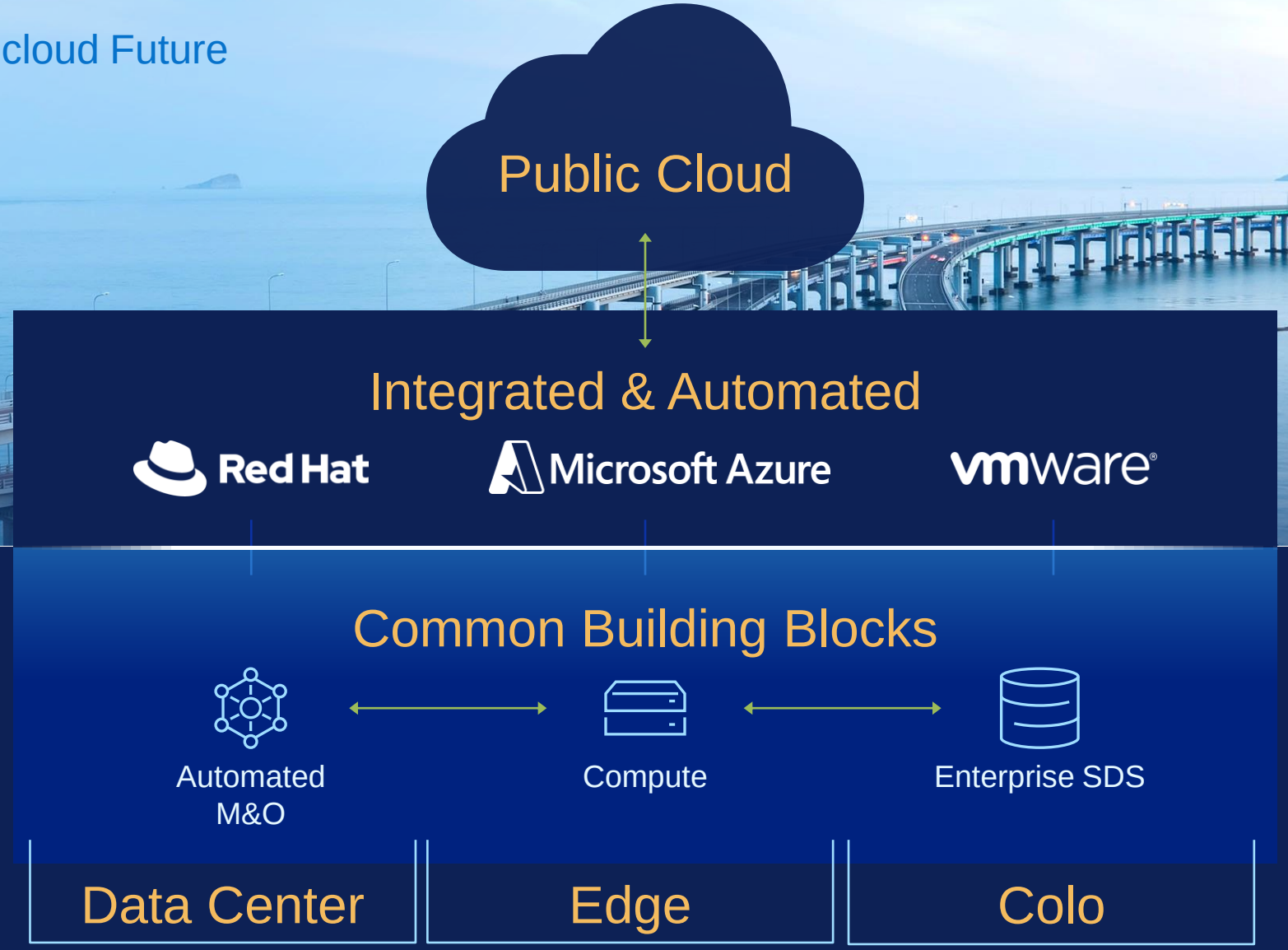
# Refresher: How much does Azure Stack HCI cost?

- Customers with Windows Server Software Assurance can use Azure Hybrid Benefit to maximize cost savings for Azure Stack HCI. Through Azure Hybrid Benefit, you waive:
  - **Azure Stack HCI host fee** (~~$10/physical core/month~~ à $0)
  - **Windows Server unlimited virtualization on Azure Stack HCI** (~~$23/physical core/month~~ à $0)
  - *(coming soon!)* **AKS on Windows Server/Azure Stack HCI** (~~$0.80/virtual core/day~~ à $0)

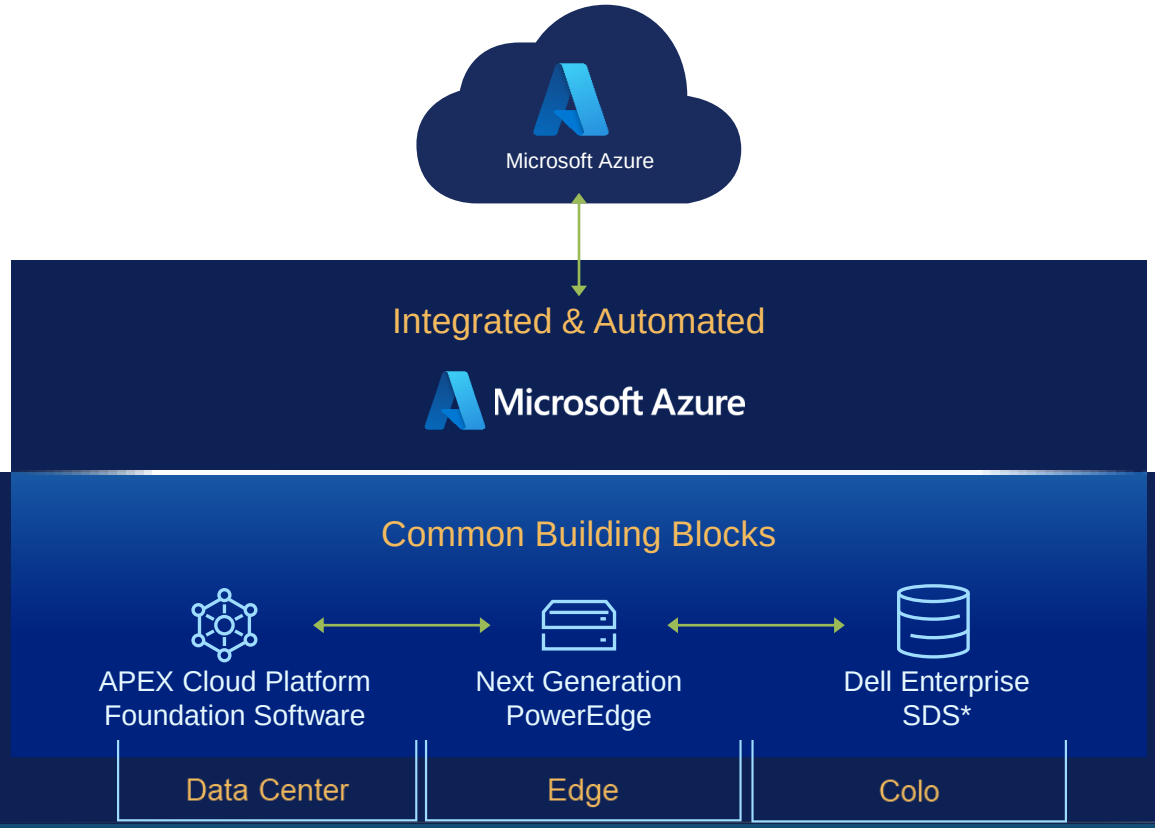


# APEX Cloud Platforms

## Built For Your Multicloud Future



# APEX Cloud Platform for Microsoft Azure




Collaboratively engineered with Microsoft to optimize Azure hybrid cloud experience

Deliver consistent Azure operations - everywhere

Accelerate productivity with familiar developer experiences

Enforce consistent Azure management and governance from cloud to edge

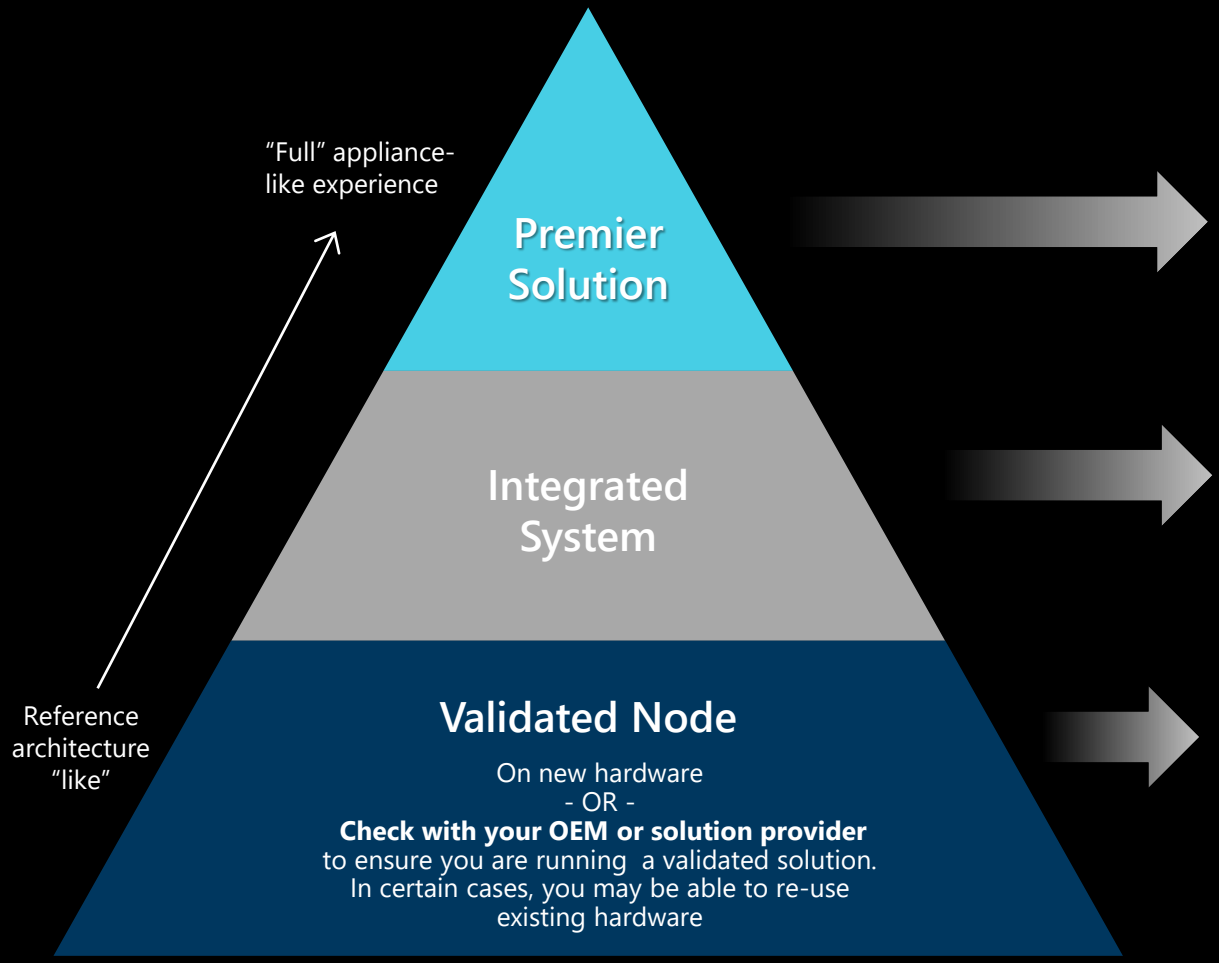
**1st** first offer for Premier Solutions for Microsoft Azure Stack HCI

**Fastest** path to Azure updates in a turnkey system

**Only** offer that supports independent scalability of storage resources*

*Available in future release

# Azure Stack HCI Solution Categories

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Visit the Azure Stack HCI Catalog to discover the current hardware solutions available to fit your edge needs

2015 — CPS Standard/Premium & Dell Hybrid Cloud System (DHCS)

2017 — Windows Server Software Defined (WSSD) Reference Architectures

2017 — Dell Integrated System for Microsoft Azure Stack Hub

2018 — Storage Spaces Direct (S2D) Ready Nodes

2019 — Dell OpenManage Integration with Windows Admin Center

2020 — Dell Integrated System for Microsoft Azure Stack HCI

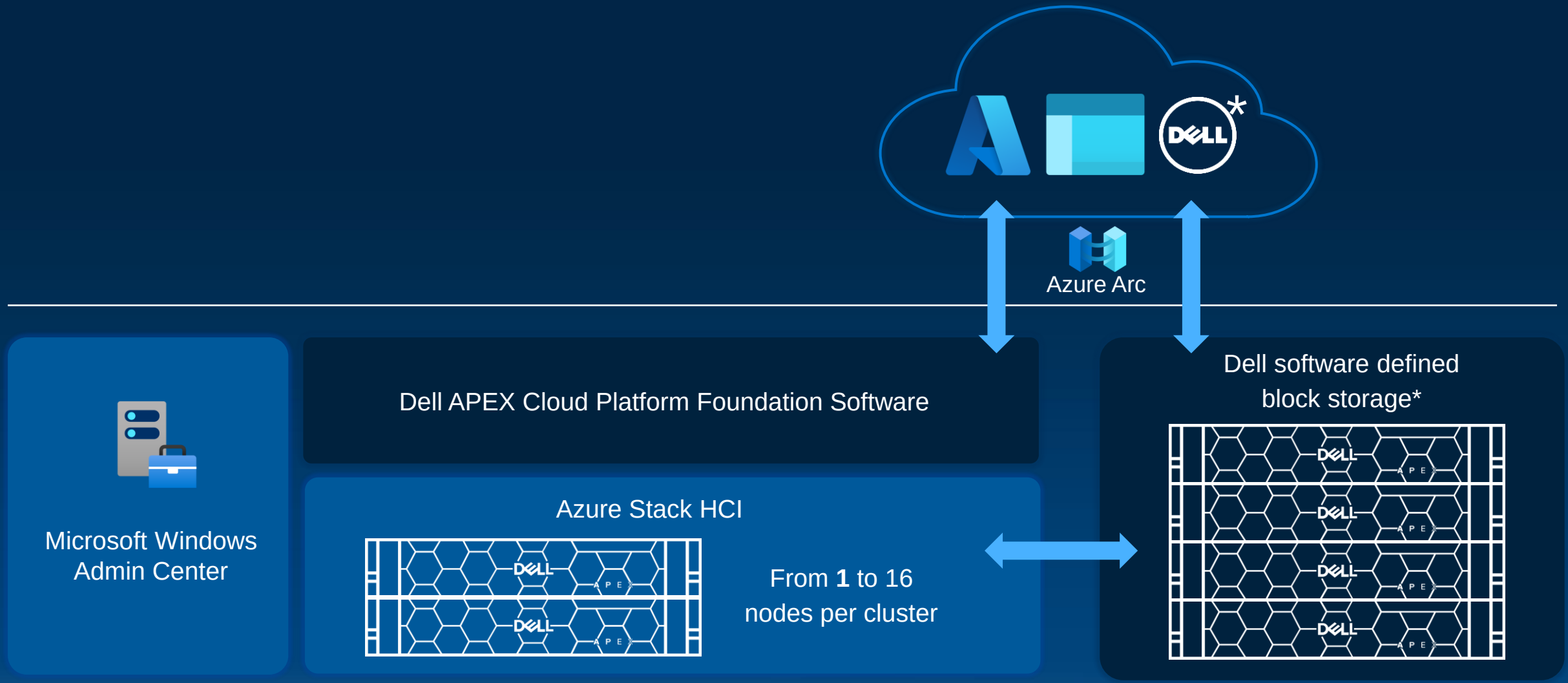
2022 — Azure Stack HCI 22H2

Dell HCP Policies for Azure using Azure Arc


2023 — Industry's first and only turnkey platform for Azure hybrid operations powered by Dell APEX Cloud Platform Foundation Software

# Next generation capabilities for Azure hybrid

## High-level solution architecture




*Delivered post GA

# Dell APEX Cloud Platform portfolio

# APEX Cloud Platform for Microsoft Azure

## Flexible, factory-ready configurations for datacenter, edge and ROBO

| | | | |
|---|---|---|---|
| |  |  |  |
| | CPU-dense nodes in a small 1U footprint | Balanced CPU/Storage for demanding workloads | Flexible, ruggedized multi-node edge solution |
| | **MC-660** | **MC-760** | **MC-4000x/45x0x*** |
| **Form factor:** | 1U rackmount | 2U rackmount | 2U rack or flex mount, ruggedized multi-node chassis |
| **Use cases:** | Compute-dense edge, ROBO and core use cases with moderate storage capacity | High performance app consolidation with balance of performance and capacity | Compute optimized for space-constrained, challenging edge and ROBO locations |
| **CPU cores:** | Intel 4th Gen - up to 112 | Intel 4th Gen - up to 112 | Intel 3rd Gen - up to 20 |
| **Memory:** | Up to 8TB | Up to 8TB | Up to 512GB |
| **Storage options:** | NVMe<br>SSD | NVMe<br>SSD<br>Hybrid | NVMe |
| **GPU:** | Yes (2 SW) | Yes (6 SW / 2 DW) | Yes (2 SW / 1 DW) |

*MC-4000x/45x0x available post initial launch with APEX Cloud Platform for Microsoft Azure

Microsoft

DELL Technologies

# Flexible configurations for datacenter, edge and ROBO

| | Compute Dense | Performance |
|---|---|---|
| **Model** | MC-660 – All Flash (SAS SSDs) | MC-660 All Flash (NVMe SSDs) |
| **Chassis Configuration** | 10 x 2.5" disk slots (up to 4 universal) | 10 x 2.5" NVMe |
| **Processor** | 2x Intel Sapphire Rapids Processors (up to 112 cores per node) | 2x Intel Sapphire Rapids Processors (up to 112 cores per node) |
| **Memory** | Up to 32 x DDR5 (128 GB – 8 TB) | Up to 32 x DDR5 (128 GB – 8 TB) |
| **Storage controller** | HBA355i | NA |
| **Storage configurations** | 3.2 TB – 76.8 TB SSD | 3.2 TB – 15.36 TB NVMe |
| **OS Boot** | BOSS N1 – 2 x 960 GB M.2 (RAID 1) | BOSS N1 – 2 x 960 GB M.2 (RAID 1) |
| **NIC** | PCIe– DP 25/100 GbE<br>Optional OCP 3.0 | PCIe– DP 25/100 GbE<br>Optional OCP 3.0 |
| **GPU** | Option for 2 SW | Option for 2 SW |
| **PCIe slots** | RC2 (R2P + R3P) = 3x LP (2x LP Gen5 + 1x LP Gen4)<br>RC3 (R1P + R4P) = 2x 16 FH (Gen5) | RC2 (R2P + R3P) = 3x LP (2x LP Gen5 + 1x LP Gen4)<br>RC3 (R1P + R4P) = 2x 16 FH (Gen5) |
| **Power** | 1100/1400/1800 W | 1100/1400/1800 W |

# Flexible configurations for datacenter, edge and ROBO




| | Performance | GPU Dense | Performance | Storage Dense |
|---|---|---|---|---|
| **Model** | MC-760 – All Flash (SAS SSD) | MC-760 – All Flash (SAS SSD) | MC-760 All Flash (NVMe SSD) | MC-760 Hybrid |
| **Chassis Configuration** | 24x2.5" (SAS4) with 4x Universal + 4x2.5" SAS/SATA rear | 24x2.5" (SAS4) with 8x Universal | 24x2.5" (NVMe) switch | 12x3.5" (SAS HDD) + 4x2.5" (NVMe)<br>12x3.5" (SAS HDD) + 4x2.5" (SAS) |
| **Processor** | 2x Intel Sapphire Rapids Processors (up to 112 cores per node) | 2x Intel Sapphire Rapids Processors (up to 112 cores per node) | 2x Intel Sapphire Rapids Processors (up to 112 cores per node) | 2x Intel Sapphire Rapids Processors (up to 112 cores per node) |
| **Memory** | Up to 32 x DDR5 (128 GB – 8 TB) | Up to 32 x DDR5 (128 GB – 8 TB) | Up to 32 x DDR5 (128 GB – 8 TB) | Up to 32 x DDR5 (128 GB – 8 TB) |
| **Storage controller** | HBA355i | HBA355i | NA | HBA355i |
| **Storage configurations** | 3.2 TB – 184.32 TB SSD | 3.2 TB – 184.32 TB SSD | 6.4 TB – 368.64 TB NVMe | 8 TB – 240+ TB HDD |
| **OS Boot** | BOSS N1 – 2 x 960 GB M.2 (RAID 1) | BOSS N1 – 2 x 960 GB M.2 (RAID 1) | BOSS N1 – 2 x 960 GB M.2 (RAID 1) | BOSS N1 – 2 x 960 GB M.2 (RAID 1) |
| **NIC** | PCIe – DP 25/100 GbE<br>Optional OCP 3.0 | PCIe – DP 25/100 GbE<br>Optional OCP 3.0 | PCIe – DP 25/100 GbE<br>Optional OCP 3.0 | PCIe – DP 25/100GbE<br>Optional OCP 3.0 |
| **GPU** | NA | Up to 4 SW GPU or Up to 2 DW GPU | Up to 4 SW GPU or Up to 2 DW GPU | N/A |
| **PCIe slots** | 2 - x16 LP slots and 2 - x8 FH slots-RC6 | 2 - x16 LP slots and 2 - x8 FH slots-RC6 for Storage Optimized Config<br>4 x8 FH (Gen5) + 2x 8 FH + 2 x16 LP - RC2<br>2 x16 LP + 2 x8 FH + 2 x16 DW (Gen5)– RC3-2 for DW GPU Optimized Configuration | 2 - x16 LP slots and 2 - x8 FH slots-RC6 for Storage Optimized Config<br>4 x8 FH (Gen5) + 2x 8 FH + 2 x16 LP - RC2<br>2 x16 LP + 2 x8 FH + 2 x16 DW (Gen5)– RC3-2 for DW GPU Optimized Configuration | 2 - x16 LP slots and 2 - x8 FH slots-RC6 |
| **Power** | 1100/1400/2400/2800 W | 1100/1400/2400/2800 W | 1100/1400/2400/2800 W | 1100/1400/2400/2800 W |

# Arc-enabled services on APEX Cloud Platform

## Run Azure platform services on-premises on APEX Cloud Platform for Microsoft Azure


### SQL managed instances

Fully managed SQL managed instance with built-in management capabilities to drastically reduce your management overhead.

### PostgreSQL Hyperscale (preview)

Semi-managed PostgreSQL Hyperscale server group that meets your requirements of data residency and customer control.

### App services (preview)

Powerful web, mobile, and API apps. Build standards-based web apps and APIs using .NET, Java, Node.js, PHP, and Python.

### Functions (preview)

Process events with serverless code. Accelerate and simplify serverless application development with serverless compute.

### Logic apps (preview)

Quickly build powerful integration solutions. Create workflows leveraging hundreds of connectors and the visual designer.

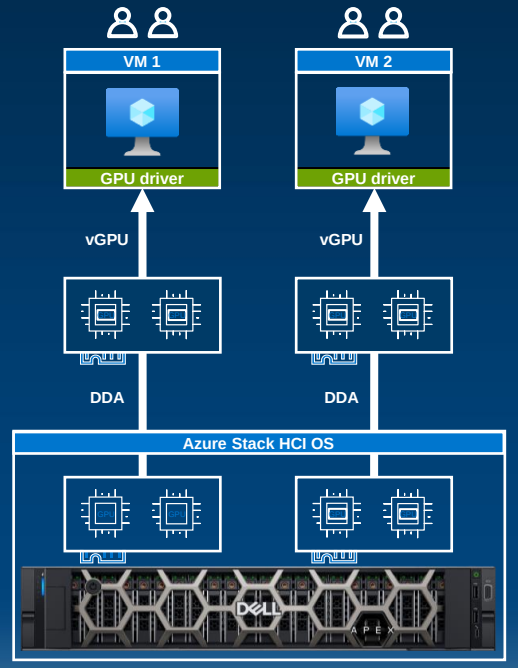
### Machine Learning (preview)

Build models with Azure Machine Learning anywhere.

# GPU options on APEX Cloud Platforms

## Discrete Device Assignment

- Target use cases: AI/ML, single VM VDI
- Workloads: AVD, AKS on HCI, Percept
- VM gets dedicated GPU (no sharing)
- Provision via PowerShell or WAC




Single wide:

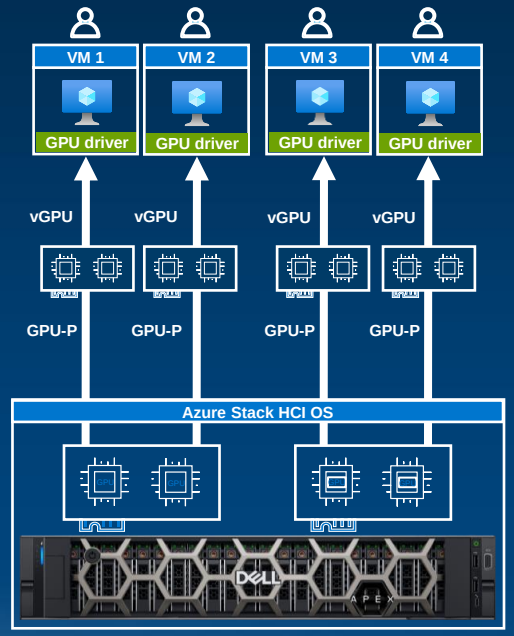
- A2*

Double wide:

- A16*
- A30
- A40*
- A100
- H100

## GPU-Partitioning

- Target use cases: VDI, AI/ML
- Benefits: Lower TCO, scale and density
- Hardware enforced isolation with SR-IOV
- *Supported on A2, A16, A40
- Cluster aware with failover clustering (live migration planned for 23H2)



# Microsoft Defender for Cloud and Azure Policy

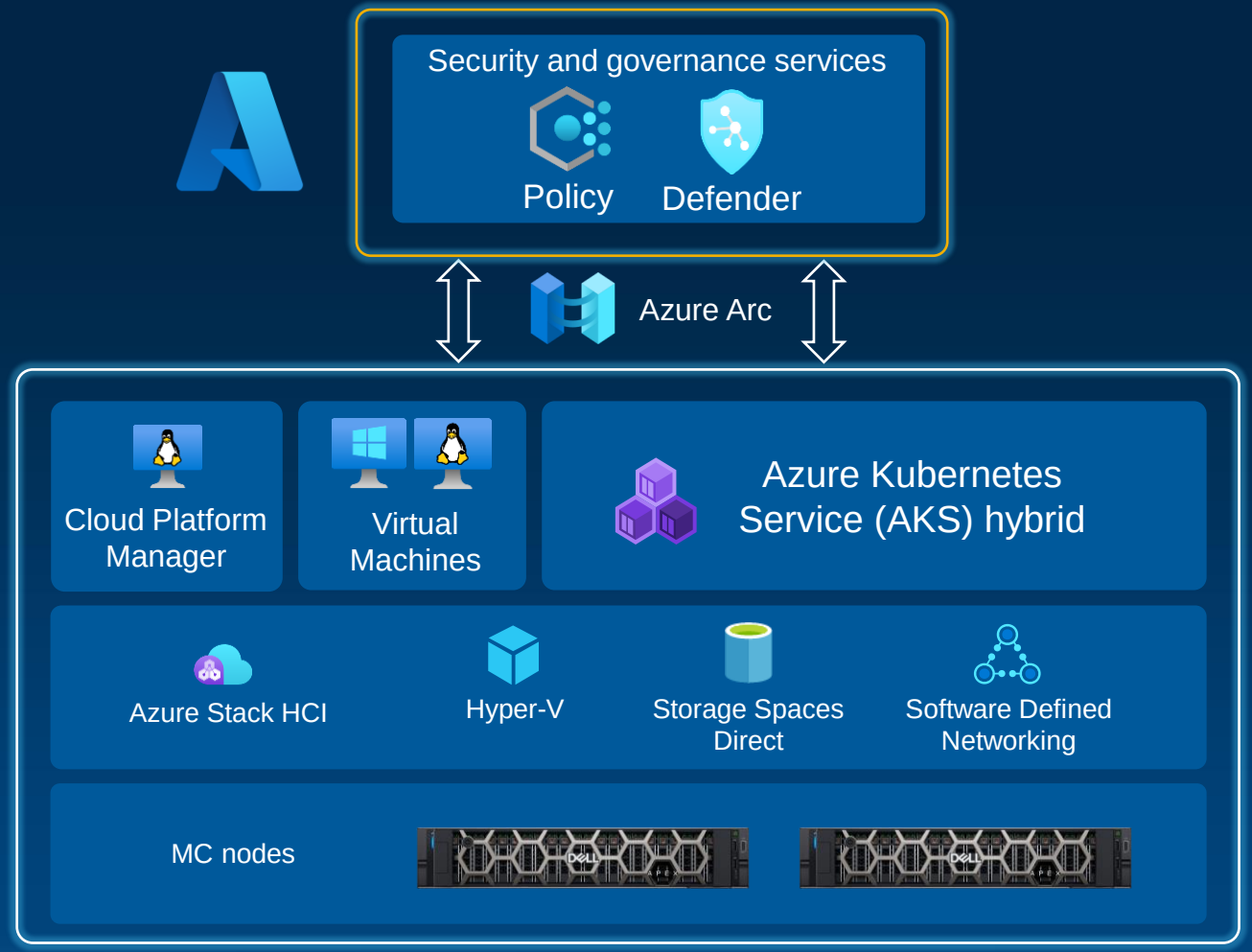
## Assess, secure, and defend APEX Cloud Platform for Microsoft Azure at-scale

**Continuously assess.** Understand your current security posture, identify and track vulnerabilities.

**Secure**. Harden connected resources and services by following customized and prioritized recommendations

**Defend**. Detect and resolve threats to those resources and services. With prioritized security alerts, focus on what matters the most and surface to the right audience

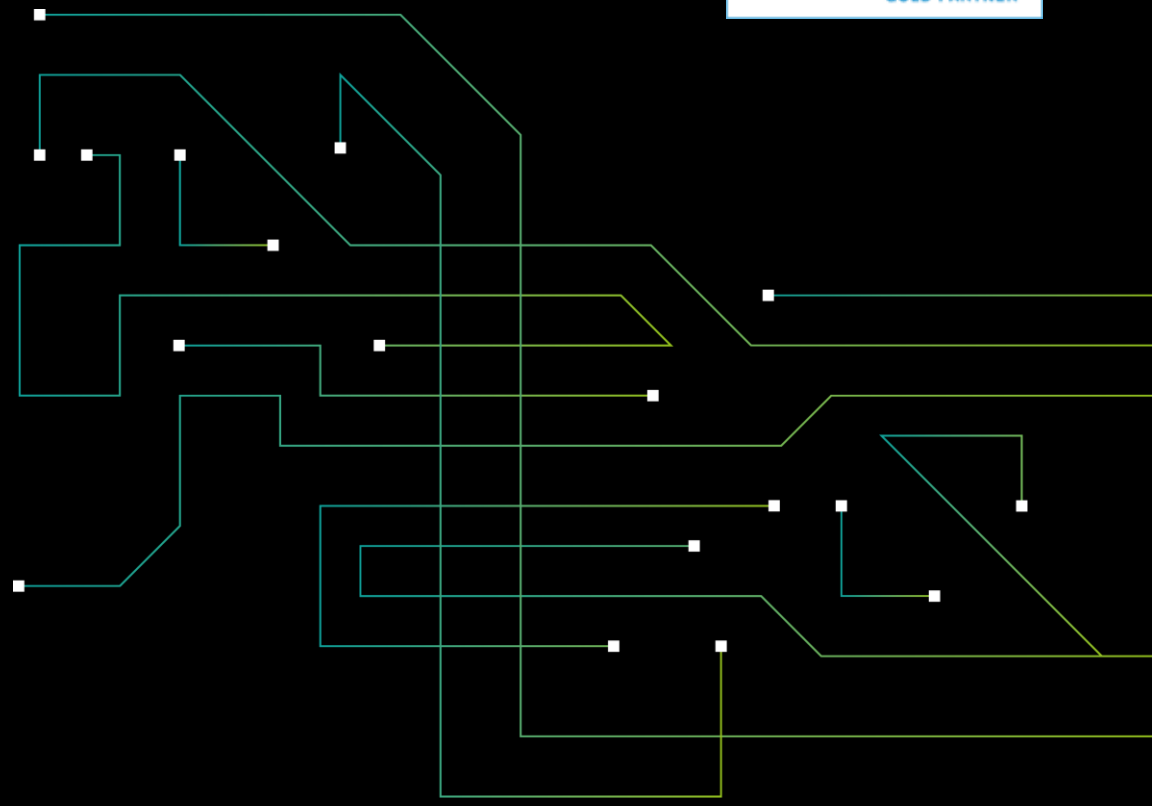
Covers the **entire solution stack** – Azure Stack HCI, VMs, AKS hybrid workload cluster, and virtualized and cloud-native applications



# THANK YOU!

base it

DELL Technologies GOLD PARTNER



professional.
fast.
secure.