Microsoft

# Azure Stack HCI

## An adaptive cloud realization of distributed compute with low latency and central cloud management

Updated January 2024

# Agenda

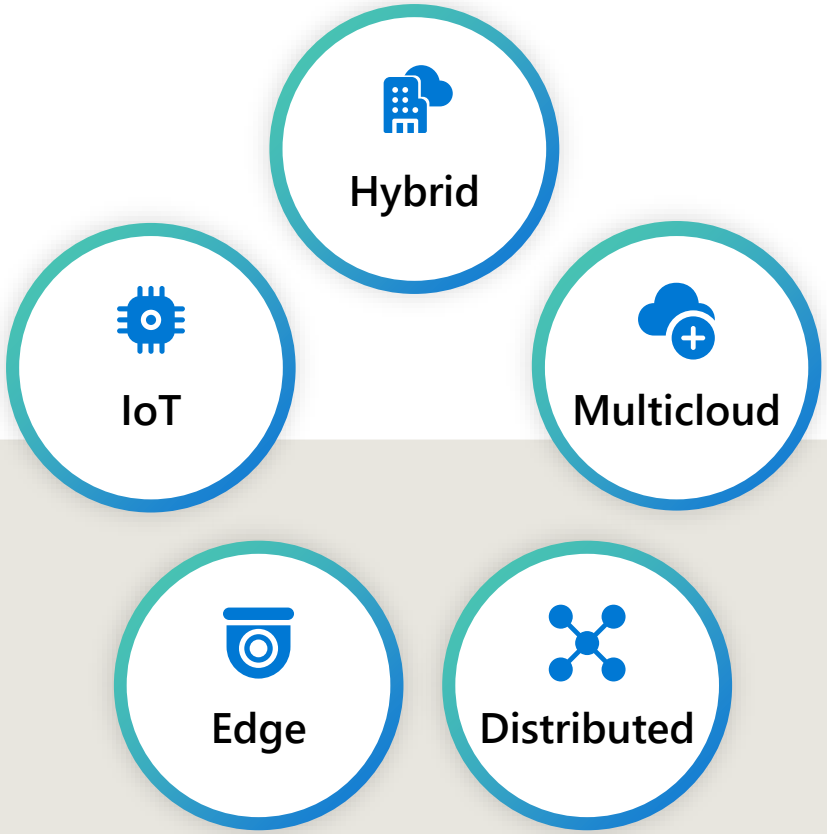
- Accelerating transformation
- How to mitigate initative proliferation
- Microsoft adaptive cloud approach
- What is Azure Stack HCI and what it's used for
- Azure Kubernetes Service infrastructure overview
- Microsoft sustainability for hybrid infrastructure
- Security overview
- What's new in the latest Azure Stack HCI release
- General availability: Azure Virtual Desktop for Azure Stack HCI
- Customer momentum
- Hardware form factors
- Licensing and how to buy Azure Stack HCI
- ESU for Azure Stack HCI
- Resources

# Accelerating transformation

Get control of sprawling strategies

Foster IT, Dev, and OT collaboration

Maximize new and existing investments

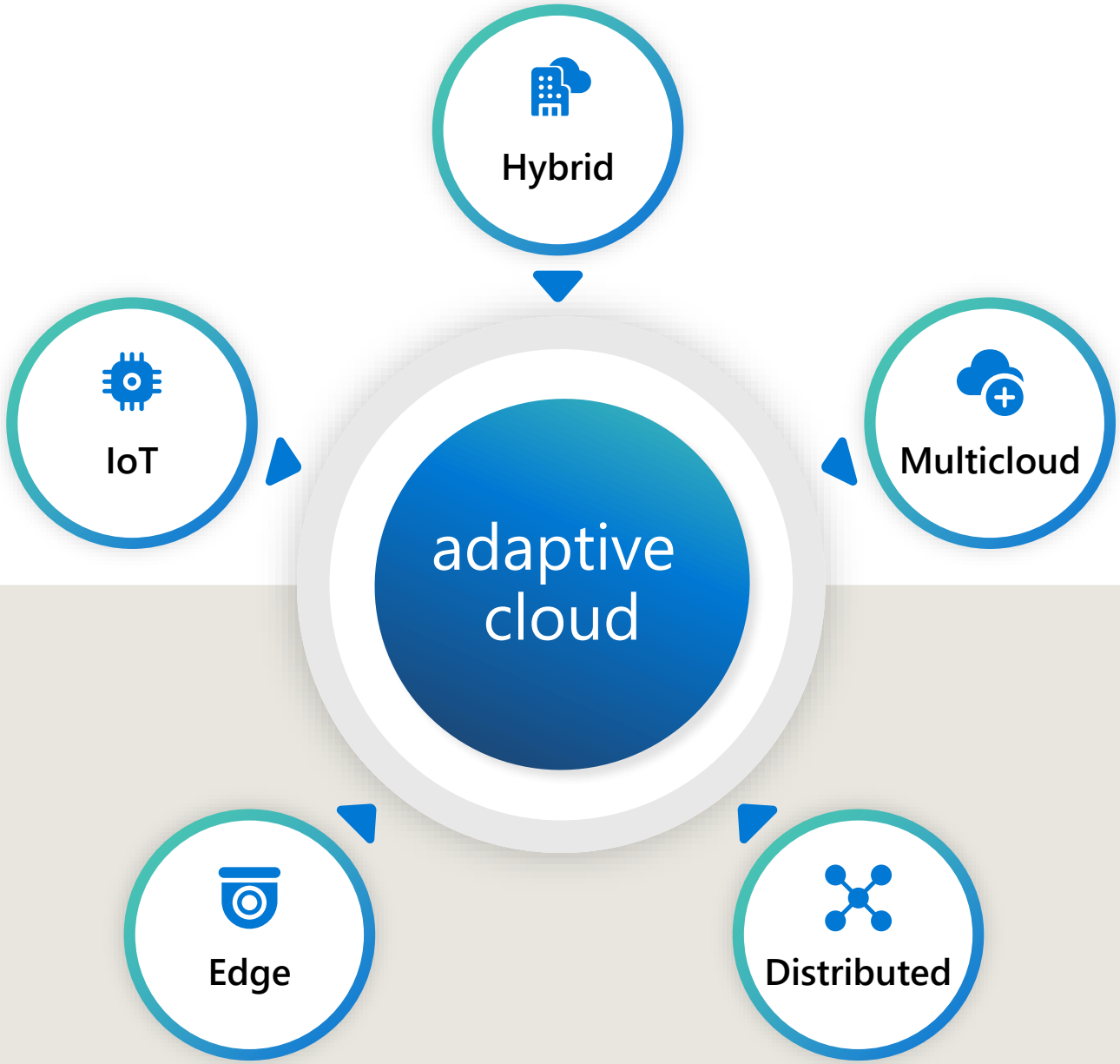



# Initiative proliferation

Sprawling systems

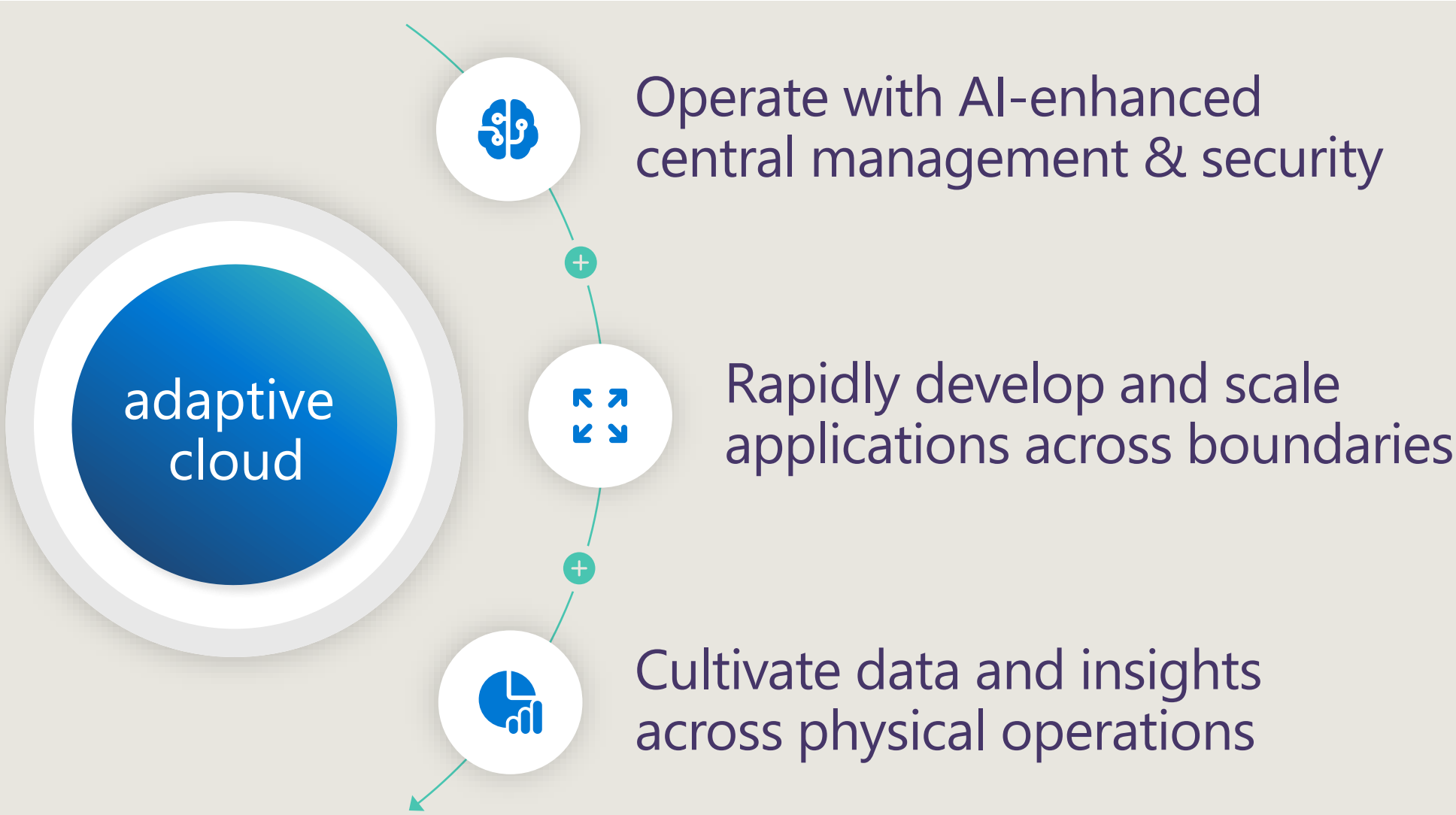
Information and process silos

Increased technical debt




# Advancing hybrid cloud to adaptive cloud

Thrive in dynamic environments by unifying teams, sites, and systems across hybrid, multicloud, edge, and IoT.


adaptive cloud
Operate with AI-enhanced central management & security
Rapidly develop and scale applications across boundaries
Cultivate data and insights across physical operations

# Enabling adaptive cloud with Azure Arc

*Preview

# An adaptive cloud strategy with cloud native drives innovation and growth

## Organizations that harness data, the cloud, and AI outperform their peers[1]

**~2x** operating margin

**$100M** additional operating income

**50%**
Developer efficiency

**Speed**
Deploy in minutes

**Cost**
Infrastructure

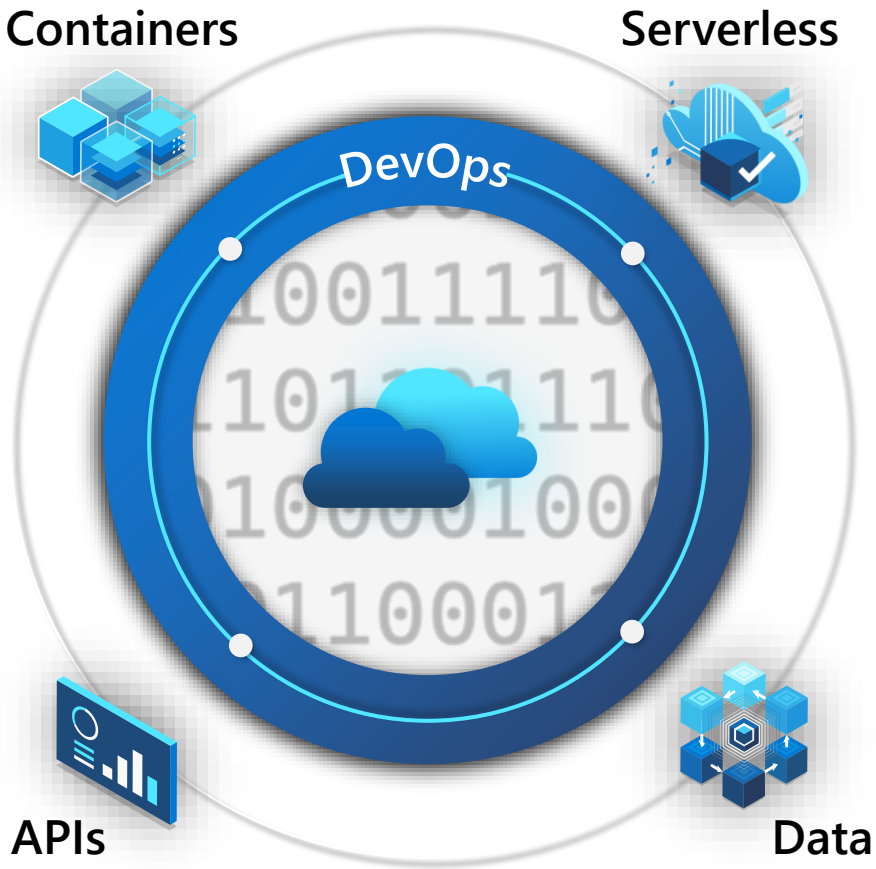
[1]The Total Economic Impact™ Of Microsoft Azure Platform-As-A Service, Forrester Consulting, June 2019

# What is cloud-native?

Scale to meet any demand

Achieve greater resiliency

Deliver better apps faster



# Azure cloud-to-edge infrastructure

## Connect, manage and operate on any infrastructure with consistent and familiar tools

### Azure Arc

aws | Windows Server | suse | vmware | Windows IoT | ORACLE | Google Cloud | Red Hat | Azure Stack HCI | Azure IoT Operations

#### Reach

Windows and Linux

VM and bare metal

At scale searchable inventory

#### Configure

Consistent VM extensions

Centralized agent management—monitoring, security, update management

#### Govern

Built-in Azure policies

Compliance across environments

Audit and enforce OS settings

#### Secure

Azure Active Directory Managed Identity

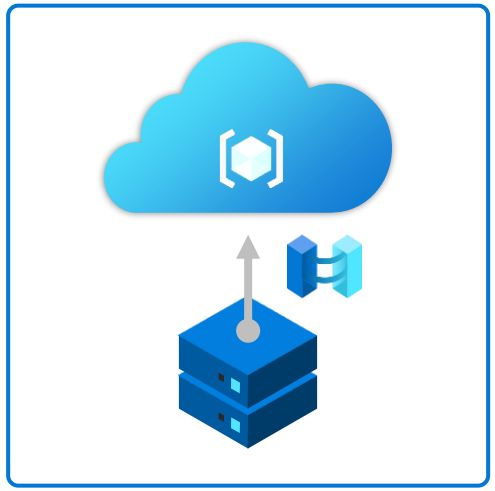
Server security baselines

Role-based access control

# Arc built into Azure Stack HCI: What does it mean?

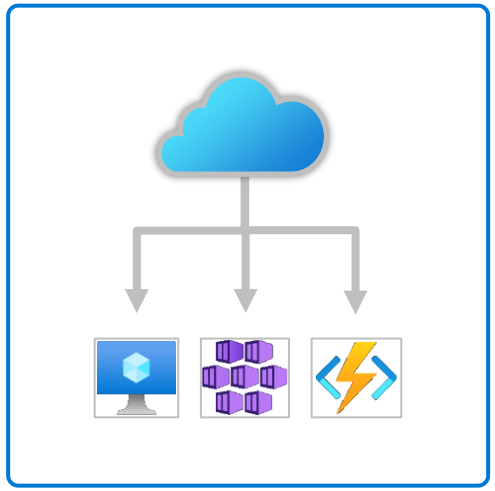
1

Deploy Azure Stack HCI and it appears immediately as Azure Arc enabled resource in the Azure portal



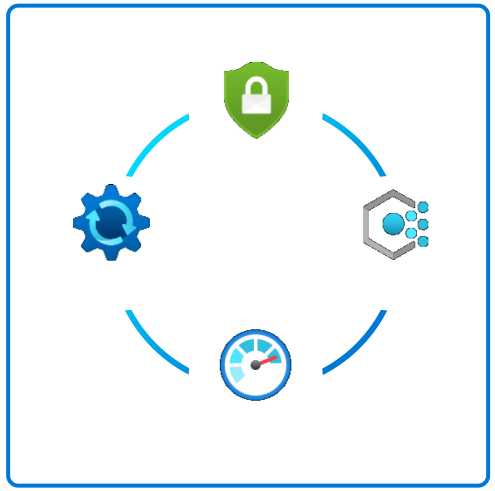
2

From Arc in the Portal, you can deploy containers, virtual machines, and services



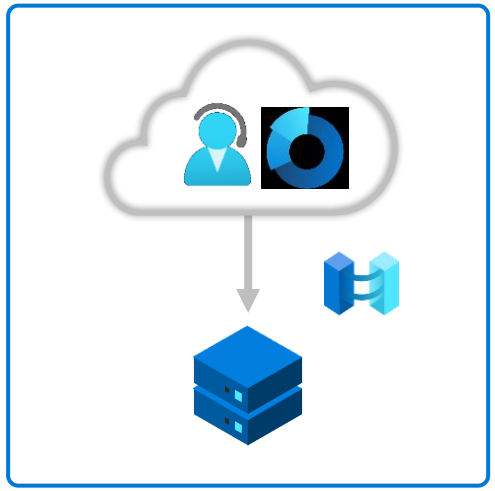
3

Deployed resources appear in the Portal via Arc too, so you can manage, secure, govern them



4

Support, observability, and updates for Azure Stack HCI provided through Arc



# Azure Stack HCI

What is it and what is it used for?

# Azure Stack HCI and Windows Server better together

## Azure Stack HCI

- Exciting roadmap of new HCI focused releases
- Innovation focused on being the **best virtualization host**
- **Future of Hyper-V virtualization**, software-defined storage and networking
- Run apps inside Windows or Linux virtual machines
- Runs on **your hardware**

## Windows Server

- 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
- Runtime for Windows apps like SQL Server
- Runs **anywhere**

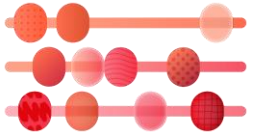
# Azure Stack HCI

## Modern infrastructure to deploy cloud native solutions anywhere

Cloud native anywhere

Secure and run all workloads from cloud to edge

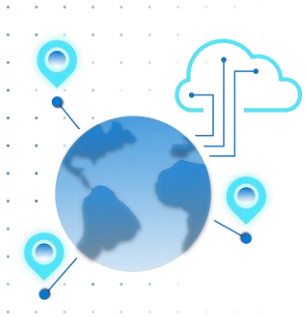
Familiar management and operations



Deploy with flexible options at the right price/performance point

# When to use Azure Stack HCI

## Distributed compute anywhere for low latency with central cloud management



Affordably run intelligent edge and remote branch office solutions

Industry-best performance for SQL Server databases

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

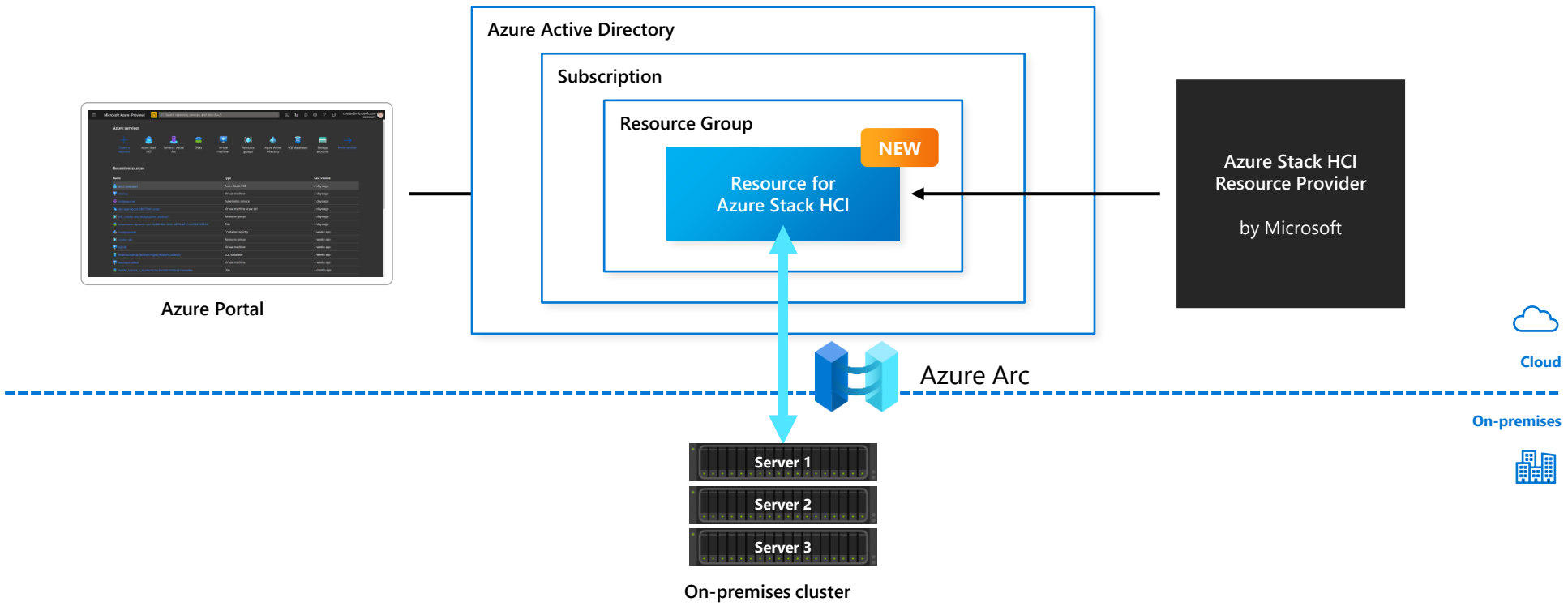
Best in class virtual desktop experience with Azure Virtual Desktop for Azure Stack HCI

# Simplify hybrid with native Azure integration

Azure Resource Manager (ARM) resource represents each on-premises Azure Stack HCI cluster

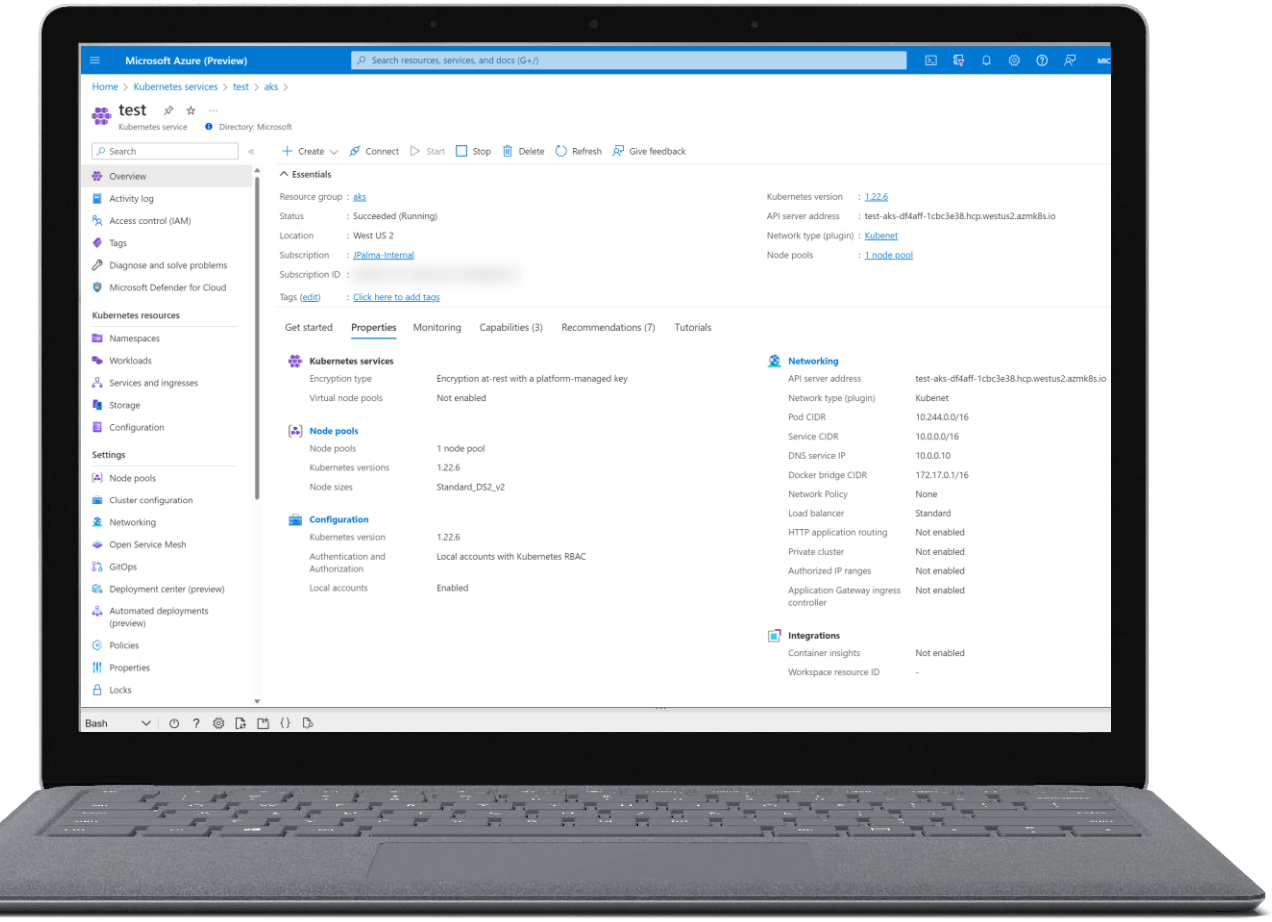
Visibility in the Azure portal and foundation for hybrid management

No fuss with agents or scripts – it's built-in!



# Azure Kubernetes Service

## Infrastructure overview



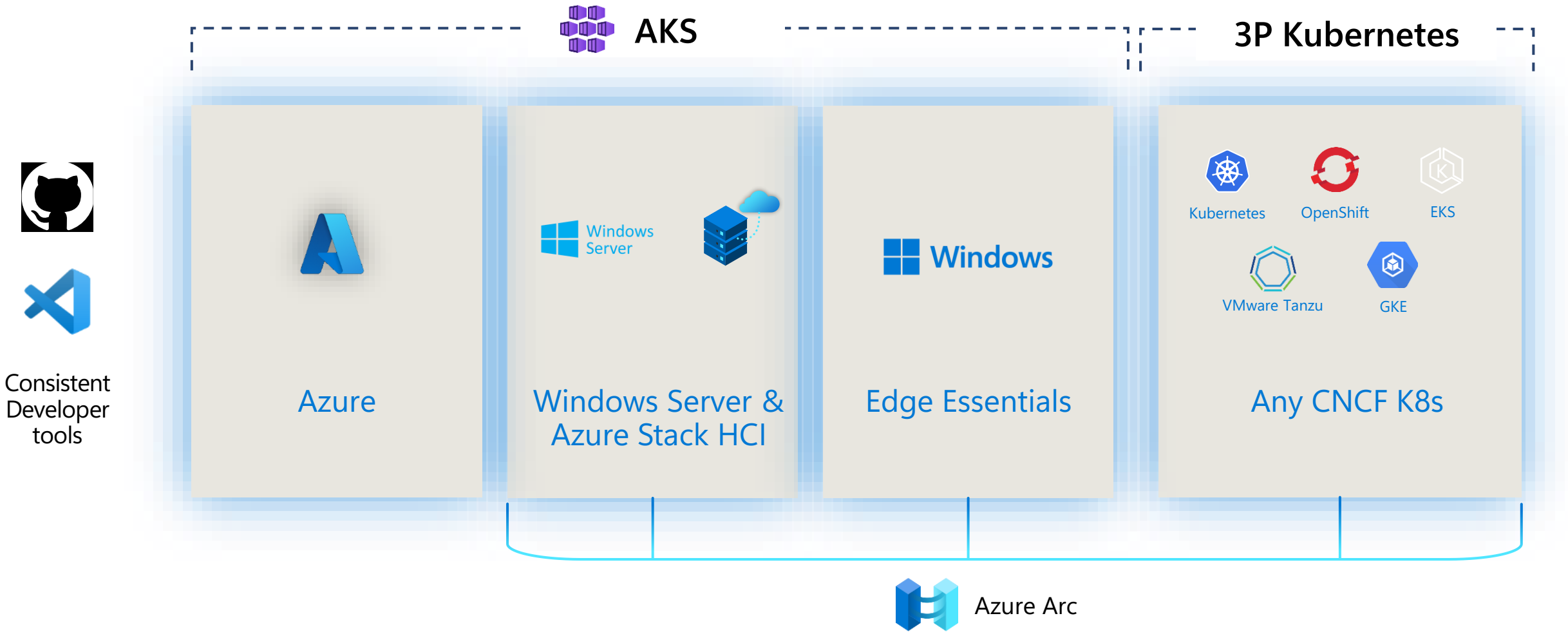

# Azure Kubernetes Service (AKS)

## Fully managed Kubernetes

- Fully managed Kubernetes clusters in 4 minutes
- Seamless DevSecOps with CI/CD integration
- Enterprise-grade security and policy controls
- Standard Kubernetes at the operational edge
- Cost efficient for your applications
- Availability in more regions than any other cloud provider
- Fully automated day 2 operations (scaling, upgrades, monitoring, healing)

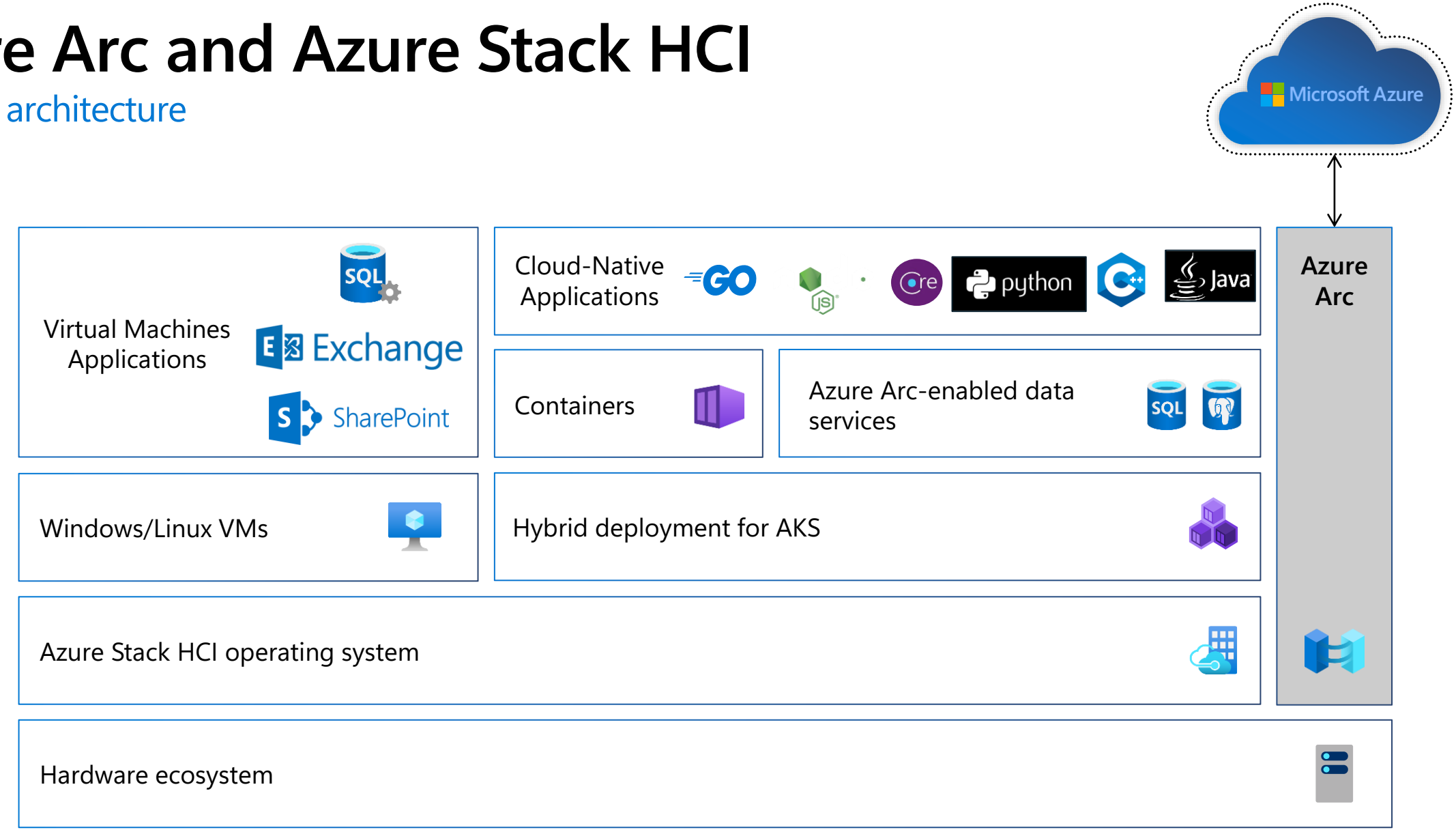
# Managed Kubernetes from cloud to edge

## Flexible deployment options on the infrastructure of your choice



# Azure Arc and Azure Stack HCI

## Platform architecture



# Flexible deployment options for cloud-native apps

| Configuration: | AKS | AKS on Azure Stack HCI & Windows Server | AKS Edge Essentials | Arc-enabled Kubernetes | AKS on VMware |
|---|---|---|---|---|---|
| Deployment Options | Azure Regions | Azure Stack HCI<br>Windows Server 2019/2022 | Windows IoT devices<br>Windows Server 2019/2022<br>Windows 10/11 Pro<br>Azure Stack HCI | Any CNCF Kubernetes | Public Preview<br>Calendar Year 2024/Q1 |
| Value | Fully managed Kubernetes in the cloud, elastic cloud compute that scales up/down and provides full HA | Elastic compute that scales up/down within limits of the edge HW, provides full HA | Small, easy to install, manage, and update, HA workloads & customer provided HA storage | Connect, manage, and operate your third-party Kubernetes clusters running anywhere with Azure Arc | |
| Functionality | Virtualized storage, networking & compute, clusters are dynamic with increasing, decreasing, and migrating nodes, fleet manager for multi-cluster at-scale management | Virtualized storage, networking & compute, clusters are dynamic with increasing, decreasing, and migrating nodes, full HA with workload, storage, and node/VM failover | Fixed memory, networking, & compute, nodes are static & stay on each machine, basic HA support via workload failover and BYO HA storage | Security with Microsoft Defender for Containers and Microsoft Sentinel, monitoring and observability, consistent policies, RBAC, and management | |
| Target Devices | Azure Regions and datacenters | Server class IT devices | OT or IoT devices costing e.g., NUC gateway w/ core i3 | On-prem hardware and clusters, AWS clusters, GCP clusters | |
| Min HW Config | N/A | 32GB free ECC RAM, 16 vCPUs | 4GB free RAM (8GB recommended), Core i3, standard NIC, 2 vCPUs | N/A | |
| Supported OS | Windows & Linux (containers & VMs) | Windows Server, Azure Stack HCI | Windows IoT Enterprise, Pro, Windows 10, Windows 11, Windows workstations | OpenShift, EKS, GKE, Tanzu, Rancher, Nutanix, Canonical, WNDRVR, kublr, Mirantis, + more | |
| Exists in Azure Resource Manager? | Yes | Yes, via Arc | Yes, via Arc | Yes, via Arc | |

# Sustainability benefits of Microsoft hybrid solutions

# Sustainability is a business imperative

- Sustainability has become a **top-10 business priority** for the first time ever, with more than triple the interest from last year.[1]
- **61%** of Fortune Global 200 companies created senior management and executive positions to lead sustainability programs.[2]

[1] Accenture and United Nations Global Compact. "Reimagining the Agenda: Unlocking the Global Pathways to Resilience, Growth, and Sustainability for 2030." www.accenture.com/us-en/insights/sustainability/ungc.
[2] Forrester Consulting. "The State Of Environmental Sustainability In The Fortune Global 200, 2022." October 2022. www.forrester.com/report/the-state-of-environmental-sustainability-in-the-fortune-global-200-2022/RES178120.

# Microsoft's commitment to sustainability

- Carbon-negative
- Water-positive
- Zero-waste
- Healthy ecosystems

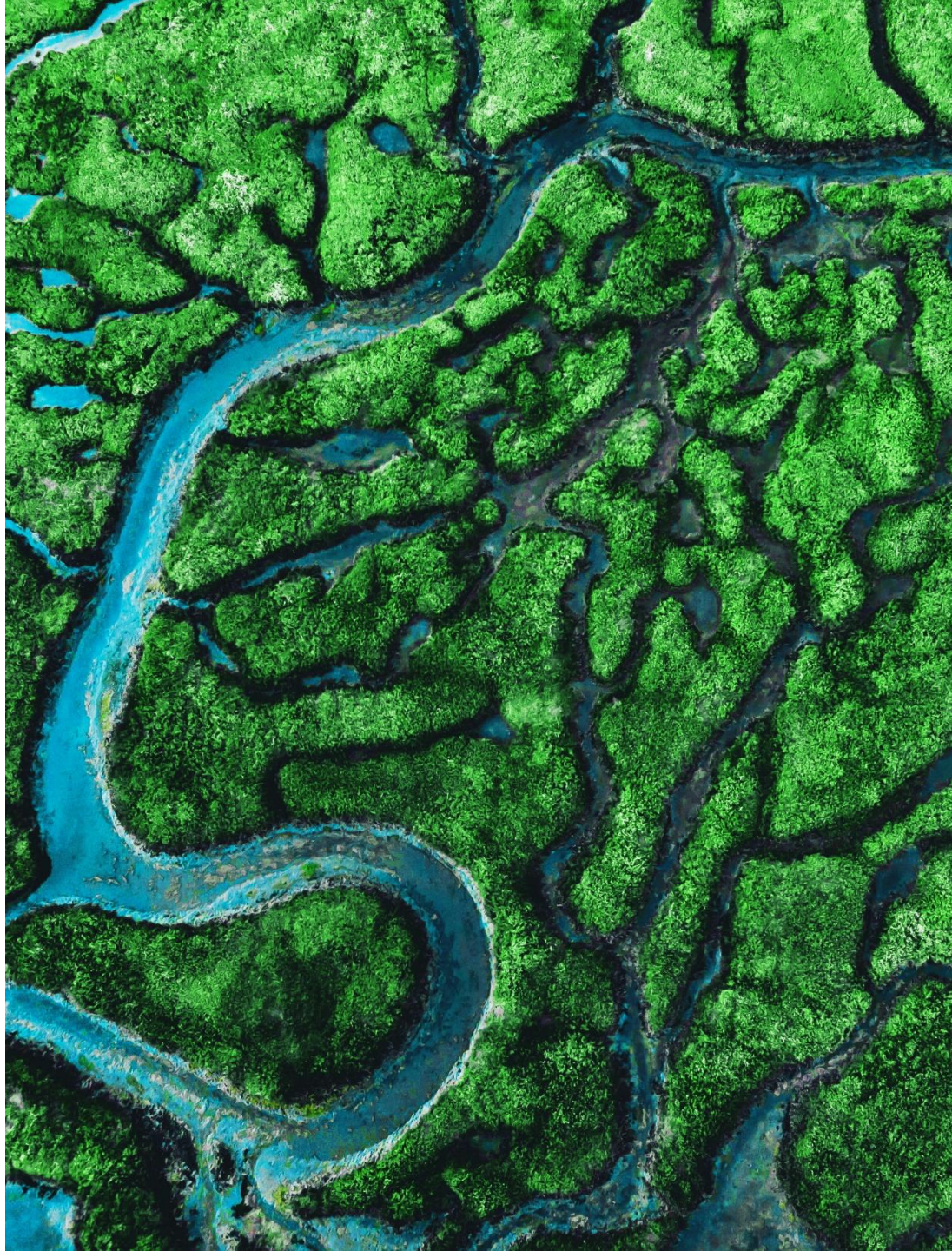
*"This is the decade for urgent action, for Microsoft and for all of us to take bold steps forward to address our most pressing challenges. We hope you will join us on this journey."*[1]

—Satya Nadella

[1] Microsoft. "Microsoft CEO Satya Nadella on Microsoft's Commitment to Become Carbon Negative by 2030." January 2020. www.youtube.com/watch?v=LeQxTI-s48A.

# Hybrid solutions with Azure Arc accelerate sustainability progress

- **Modernize** infrastructure for business agility while reducing energy usage and IT costs.
- **Optimize** your workloads for security, reliability, cost efficiency, and sustainability.
- **Reinvest** savings to accelerate sustainability progress and repurpose resources to gain efficiency and minimize environmental impact.



# Hybrid solutions with Azure Arc bring efficiency benefits

## Azure Arc–enabled SQL Managed Instance

- Lift and shift apps to Azure Arc–enabled data services with minimal changes.
- Improve existing hardware utilization, which will result in less power usage and fewer resources needed.
- Increase performance to improve efficiency.

## Azure Stack HCI

- Optimize resource utilization on-premises.
- Benefit from more energy-efficient hardware than is found in most legacy hardware deployments.
- Drive better resource utilization and lower energy consumption with centralized Azure Arc management built in.

# Retail

## United Kingdom–based retailer modernized on-premises servers to Azure Stack HCI

### Reduced power consumption

by 100,000 kWh per year[1]

[1] Microsoft. "SSP unifies its hybrid infrastructure with Azure Stack HCI and saves more than 100,000 kilowatt hours." February 2023 https://customers.microsoft.com/en-us/story/1605636596879000415-ssp-group-retailers-azure-stack-hci.

# Manufacturing

## Dutch tile manufacturer deployed Azure Stack HCI

Consolidated two racks of servers per datacenter to half a rack, reducing the company's hardware and carbon footprints.[1]

## Swedish industrial giant unveils factory of the future on Azure hybrid cloud

Approximately 40% lower costs and a 30% reduction in machinery-related IT/OT downtime.[2]

## South African resource company adopted a single monitoring solution

Azure Arc–enabled servers provided centralized visibility into all deployments.[3]

[1] Microsoft. "Royal Mosa reduces carbon footprint and enhances performance with centralized, cloud-native management through Azure Arc–enabled Azure Stack HCI." December 2022. https://customers.microsoft.com/en-us/story/1580186360678778121-royal-mosa-manufacturing-azure.
[2] Microsoft. "Longtime innovator SKF unveils the factory of the future on Azure hybrid cloud." August 2021. https://customers.microsoft.com/en-us/story/1340375893662173818-skf-azure-arc-manufacturing
[3] Microsoft. "Exxaro unites on-premises and cloud infrastructure into a single monitoring solution with Azure Arc." December 2022. https://customers.microsoft.com/en-us/story/1514037136829768161-exxaro-energy-azure-arc.

# Public sector

## “Smart city” in Taiwan managed with Microsoft hybrid solutions

Built-in high-availability (HA) capabilities reduced deployment time and management overhead.[1]

## Transport authority in the United Kingdom moved to hybrid infrastructure

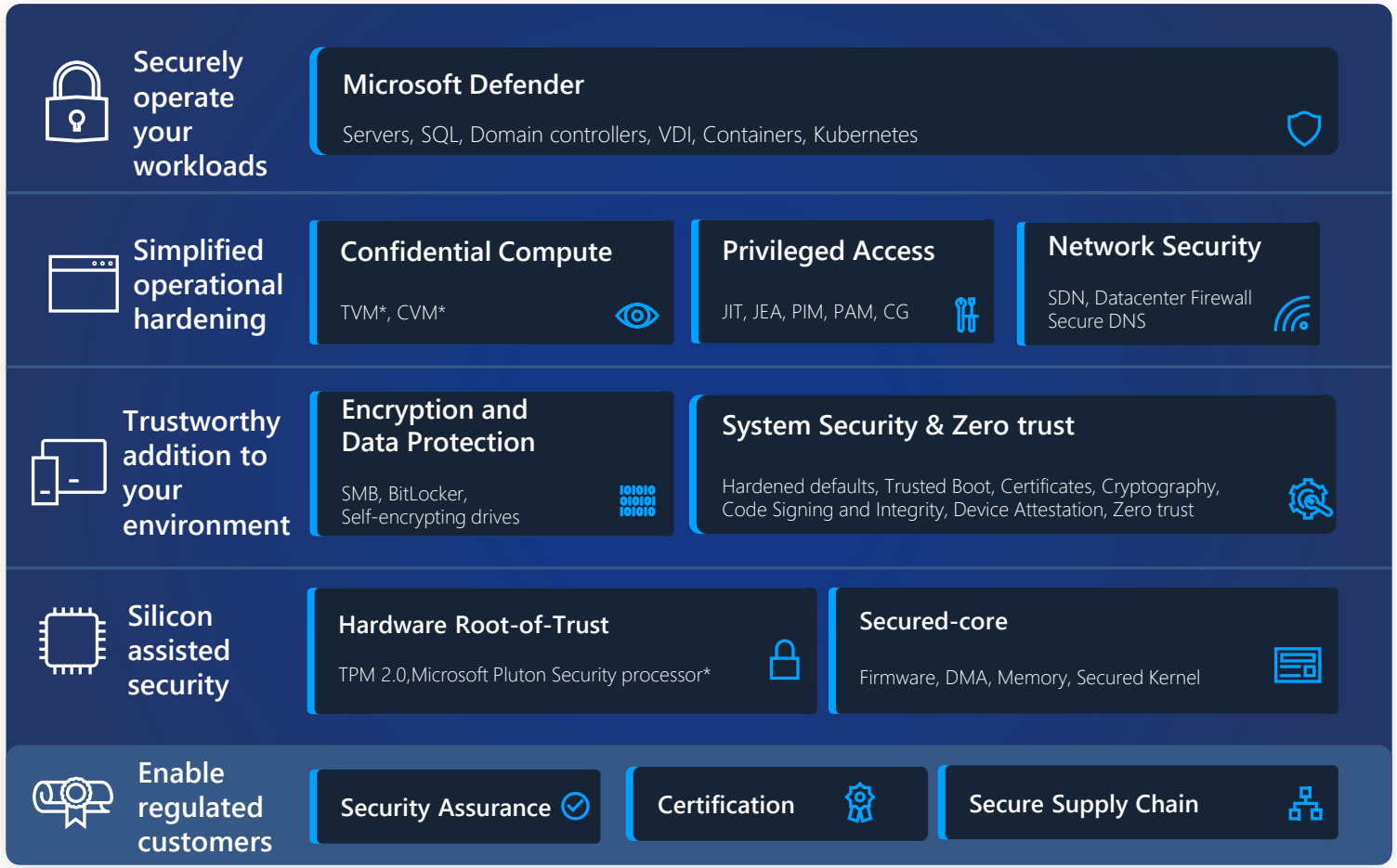
Reduced on-premises server footprint and reduced energy consumption 30–35%.[2]

[1]Microsoft. “Taoyuan Builds Smart City with Microsoft Hybrid Cloud.” January 2023. https://customers.microsoft.com/en-us/story/1597030753468723113-taoyuancitygovernment-azurearc.
[12]Microsoft. “Transportation, driven by data: Transport for Greater Manchester keeps its millions of residents on the go.” June 2022. https://customers.microsoft.com/en-us/story/1505711025888306180-transport-for-greater-manchester-government-azure-stack-hci

# Azure Stack HCI

Security Overview

# Layered security built-in




## Industry leading built-in security

Microsoft's security products are industry leading in several Gartner magic quadrants.

## Security built for the Azure datacenter

Azure Stack HCI security derives learnings from our hyperscale cloud and brings it to your datacenter.

## Silicon assisted security

Unique differentiation delivered with our Silicon and OEM partners via Secured-core.

# Azure Stack HCI

New Feature Release Overview

# Now Available

## What's new

1. Simpler, repeatable deployment
2. Update management
3. VM extensions including Microsoft Defender for Cloud
4. New Site manager construct in Azure Arc to help organize resources
5. Improvements to core stack and hypervisor
6. Stronger security posture
7. Support for Azure Virtual Desktop for Azure Stack HCI production workload

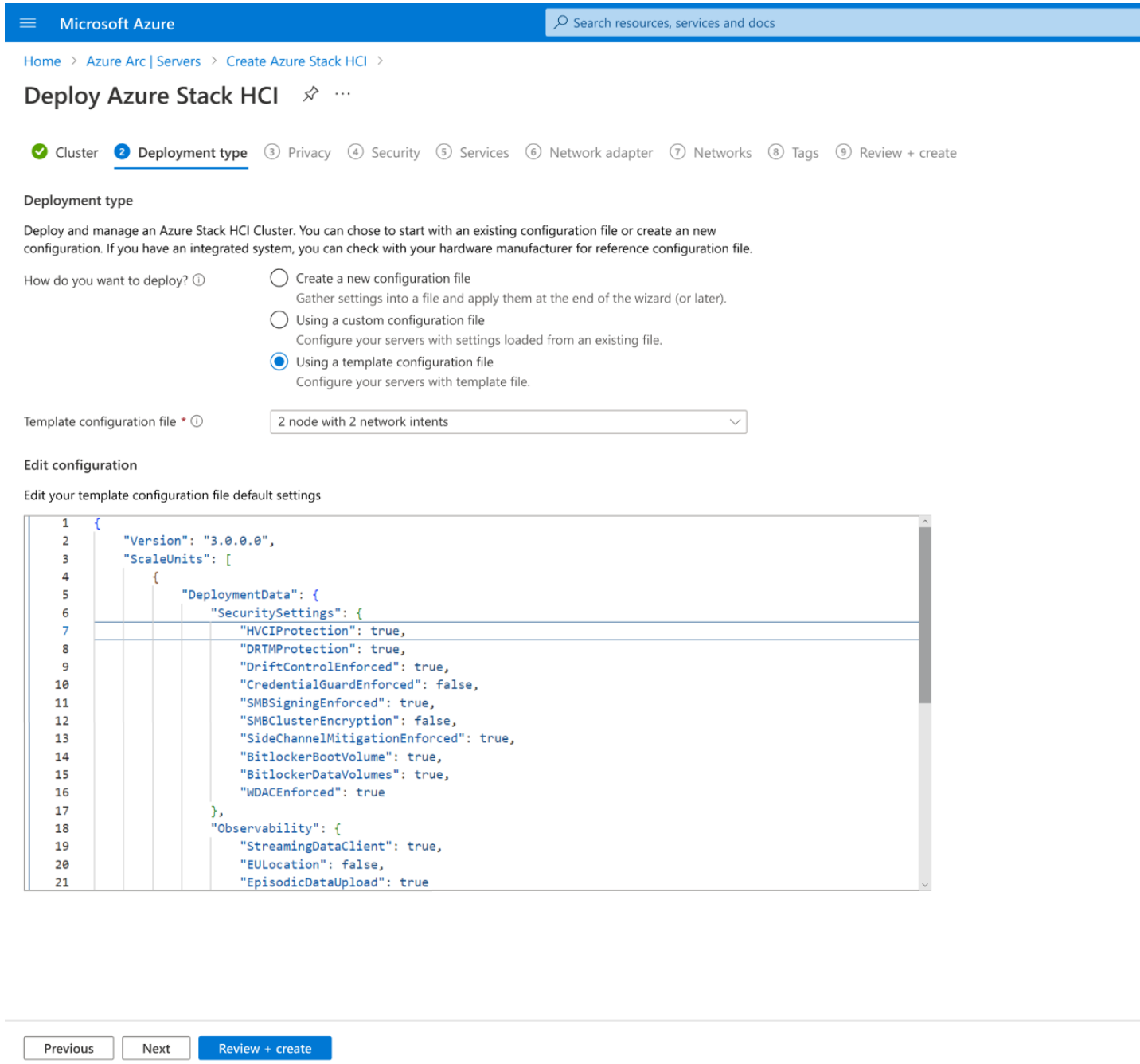
# What's new
# 1 of 7

Simplified cluster deployment, with new Lifecycle Manager feature

Azure Arc (Resource Bridge) set up automatically for provisioning VMs

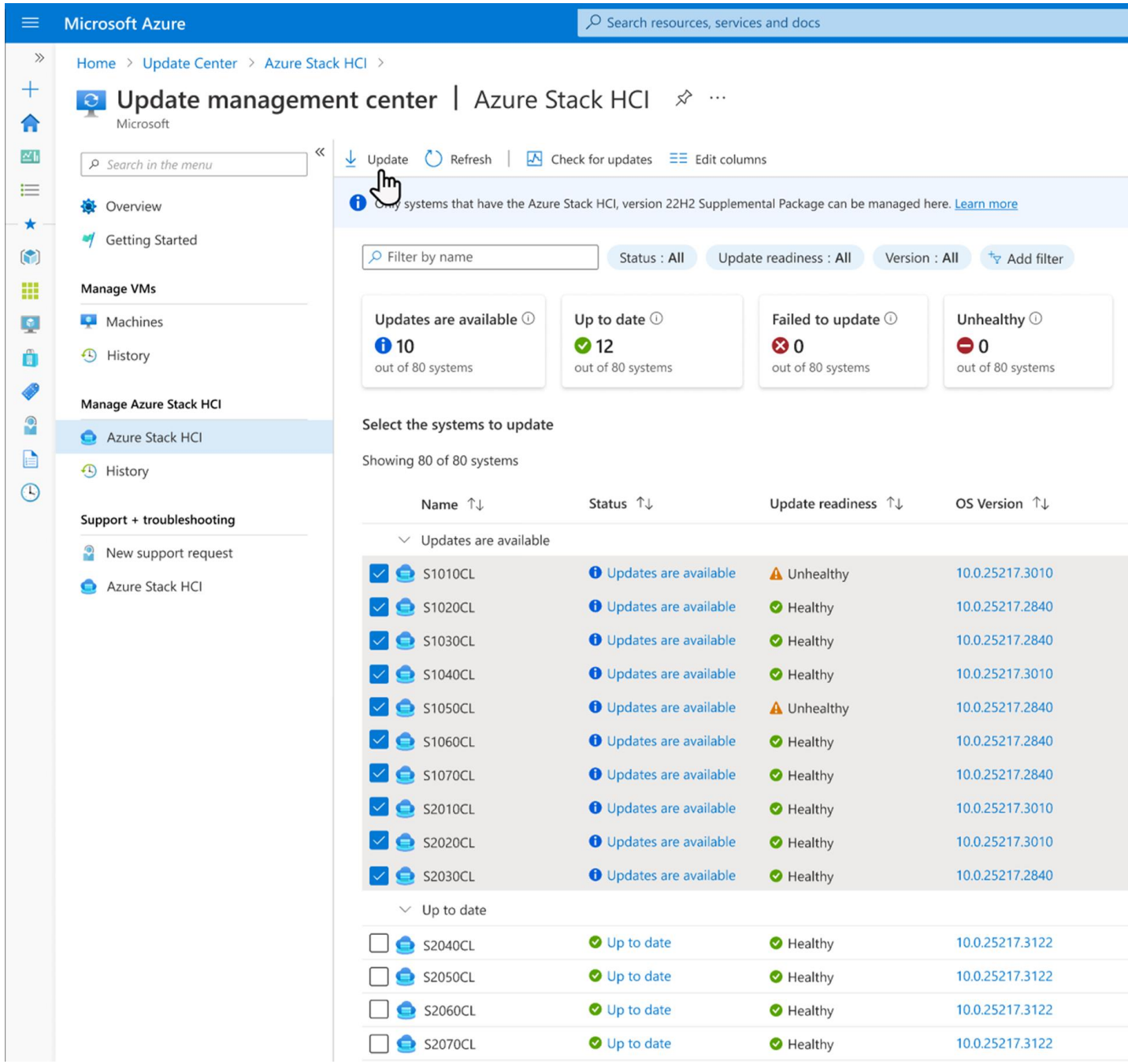
Templatize clusters in ARM and deploy onto minimally-configured servers

Azure Arc (Resource Bridge) set up for provisioning Kubernetes clusters



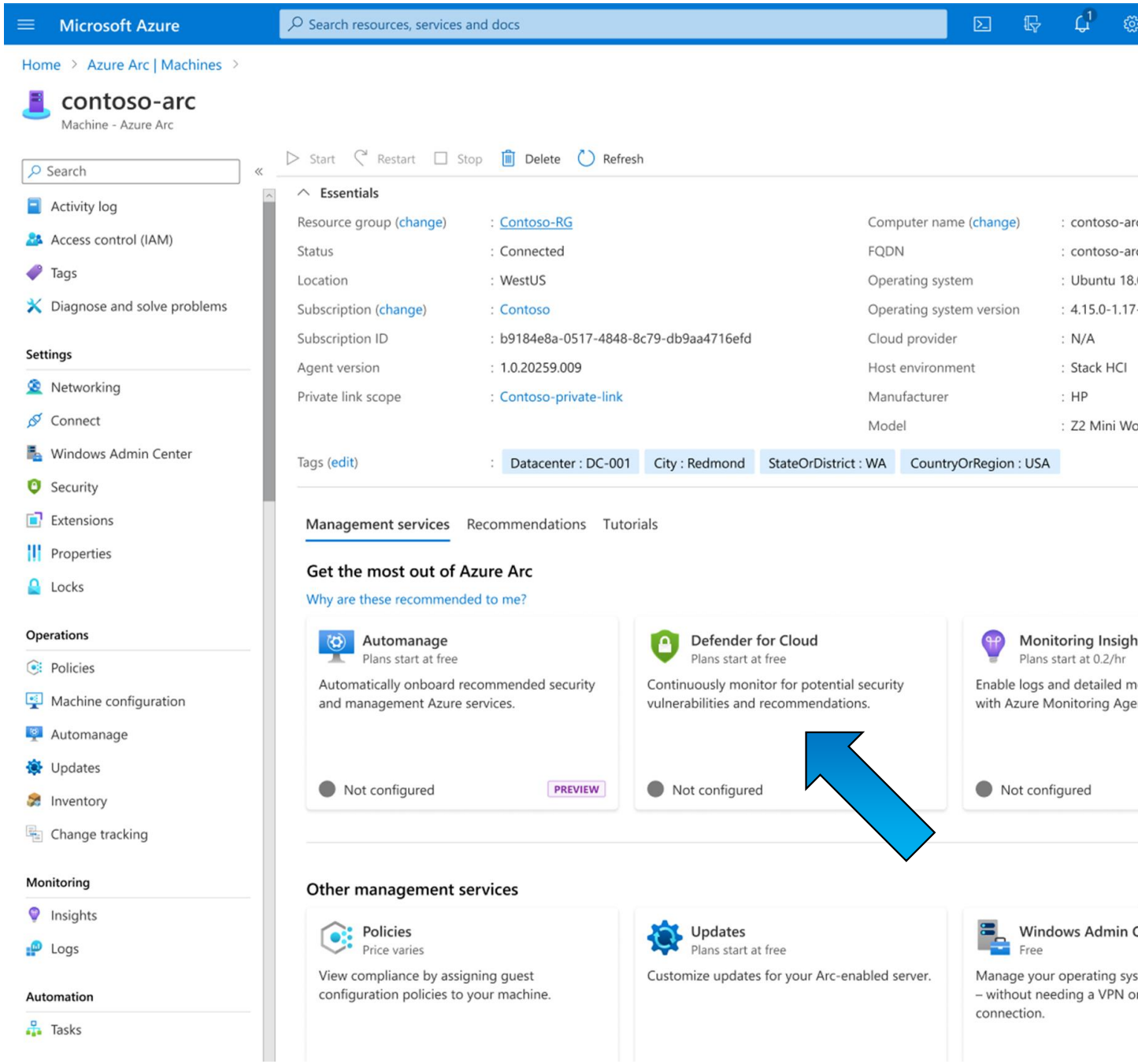
# What's new
# 2 of 7

Manage updates for Azure Stack HCI clusters from the Azure portal, including at-scale (~100s)



# What's new
# 3 of 7

Expanded VM Extensions support including Microsoft Defender for Cloud, Azure Monitor, and Azure Update Management

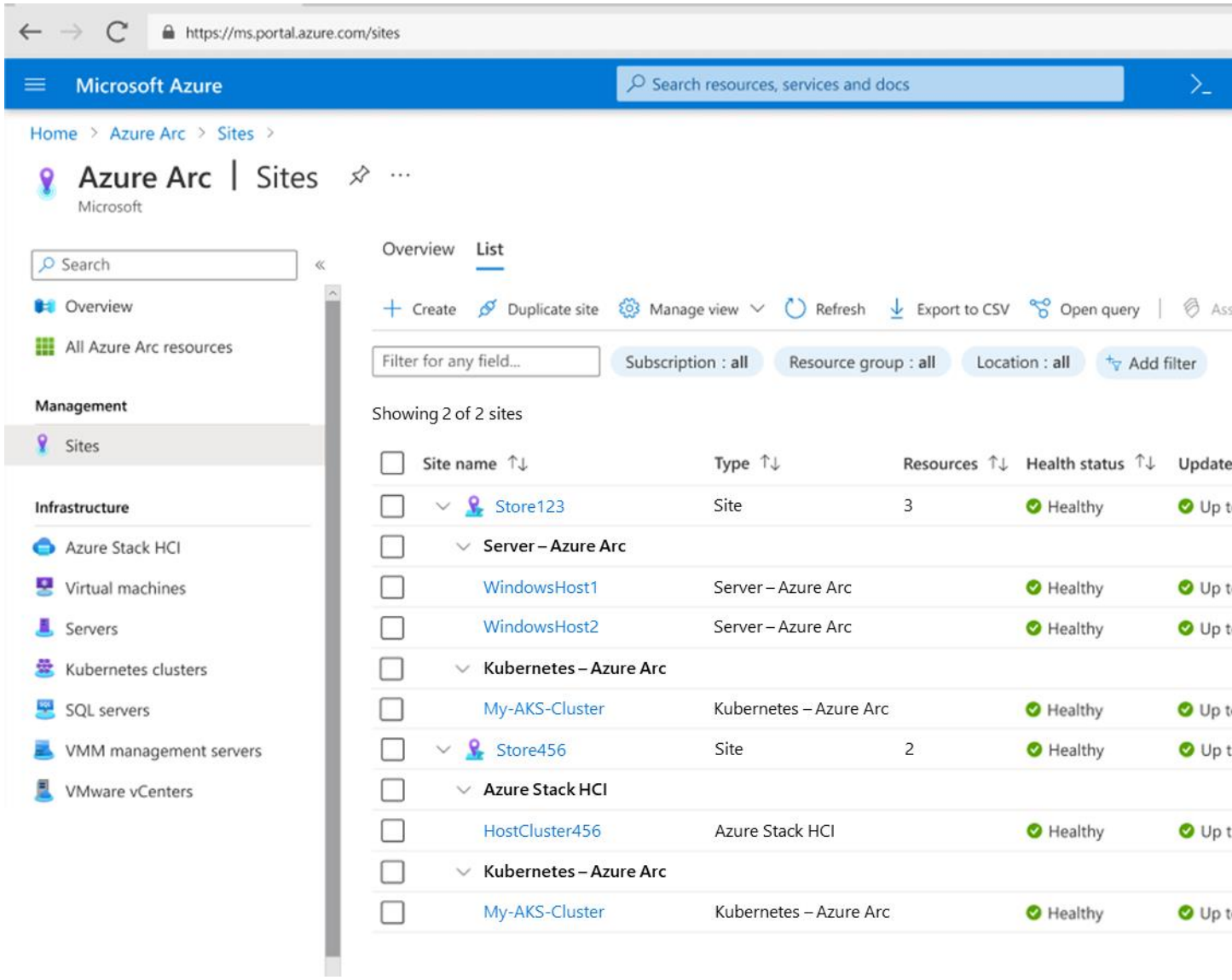


# What's new
# 4 of 7

New Site manager to help you organize resources in Azure Arc by location

Define your Sites and associate resources to them (hosts, AKS clusters, etc)

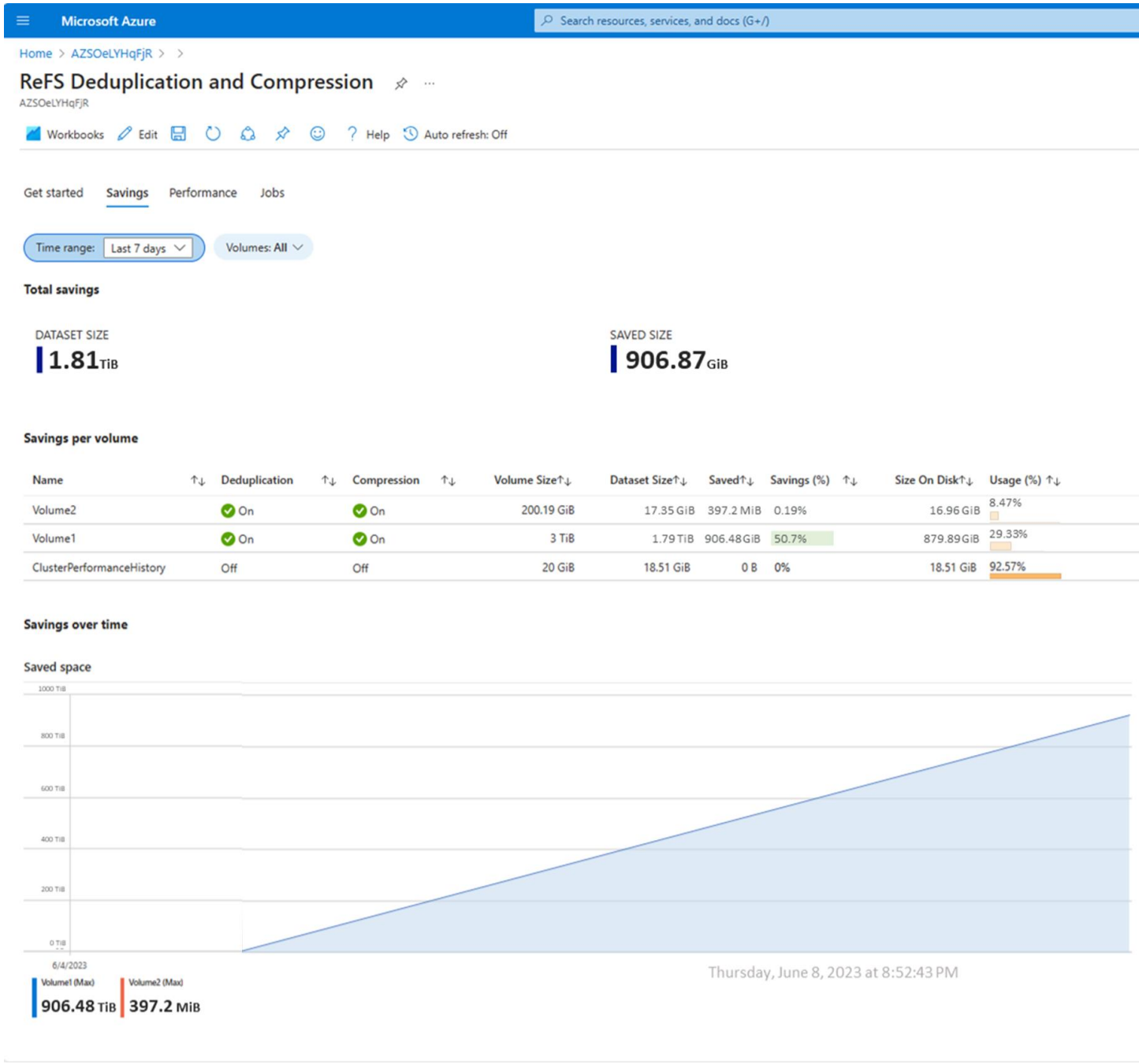
Supports new (Azure Stack HCI) and existing (Arc-enabled Windows Server) resources




* Conceptual rendering, subject to change

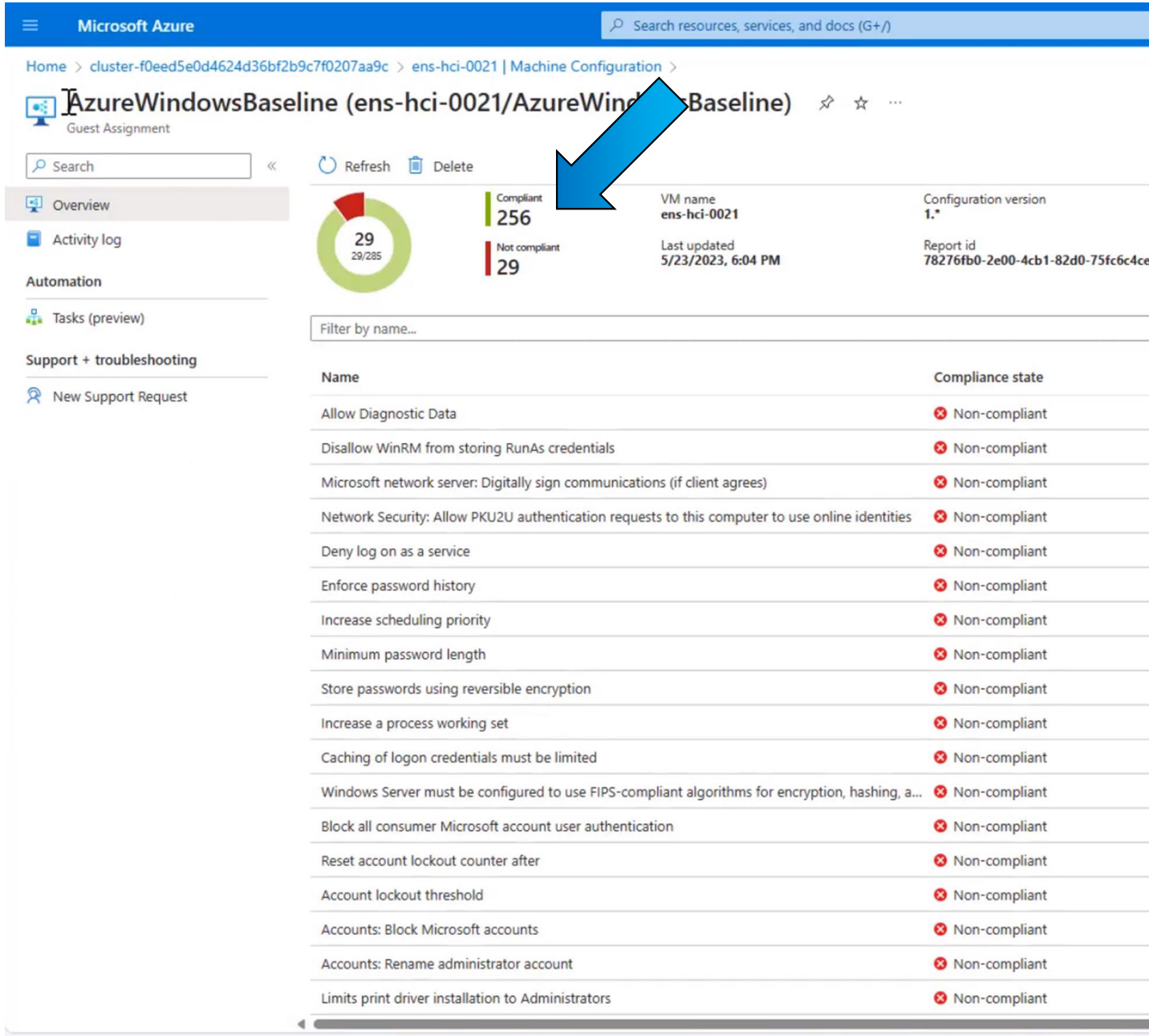
# What's new
# 5 of 7

Annual update for core stack (hypervisor, storage, etc.) with new deduplication and compression, Trusted Launch VMs, improved GPU support



# What's new
# 6 of 7

Stronger default security posture: new clusters score >90% on Azure security baseline



# Generally Available Now
# Azure Virtual Desktop for Azure Stack HCI

# Azure Virtual Desktop is a cloud Virtual Desktop Infrastructure (VDI) solution designed to meet the challenges of distributed workforces

## Enable a secure, remote desktop experience from anywhere

Access Windows 11 and Windows 10 from anywhere

Maintain full control over configuration and management

Get the security and reliability of Azure

Optimize cost with multi-session and pay for only what you use

# Azure Virtual Desktop for Azure Stack HCI now generally available

- Designed for customers who need **secure on-premises virtualized apps and desktops**
- Combines the **benefits of Azure Virtual Desktop and Azure Stack HCI**
- Customers can **deploy in their datacenters** to **extend their on-premises infrastructure** to Azure
- All while enjoying many of the **key benefits of Azure Virtual Desktop on Azure**, such as **Azure portal, Windows 11 and Windows 10 multi-session**

# Azure Virtual Desktop for Azure Stack HCI extends the benefits of cloud VDI to on-premises

## Secure anywhere

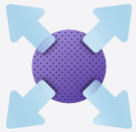
- Run virtualized desktops and apps securely with Entra ID, conditional access, and MFA
- Simplify VDI deployment
- No need to manage brokers, gateways, or underlying servers and storage

## Windows 11 and 10 multi-session

- Windows 11 and 10 multi-session or single-session support
- Achieve high utilization & lower operation costs

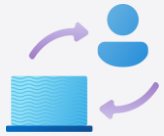
## Prime performance

- Enjoy optimized Microsoft 365/Teams/Windows App experiences
- Run graphic-intensive workloads with GPU support
- Built for sensitive low-latency workloads



## Full control

- Satisfy data locality requirements
- On-premises storage and data residency



## Scale cloud and on-premises

- Manage and scale deployments across both Azure and Azure Stack HCI through a single management experience
- Use the familiar Azure portal and admin experience

## Optimize for cost

- Use existing eligible Windows licenses
- No need to manage overhead licenses for Remote Desktop Services (RDS)
- Save with Windows 11 and 10 multi-session support

# Drivers of Azure Virtual Desktop for Azure Stack HCI deployments

## Security and compliance

Secure, high performance cloud platform for financial institutions that meets compliance requirements

## Data sovereignty

Cloud functionality that can meet the data sovereignty and data gravity requirements for public sector entities

## Low latency workloads

High performance and low latency cloud capabilities that can meet the compute requirements for the most demanding workloads

## Virtual Desktop Infrastructure (VDI) modernization

Migrate existing VDI workloads to Azure using Azure Stack HCI

# Customer momentum

# Azure Stack HCI customer momentum

"Our Azure Stack HCI deployment has delivered a savings of roughly £400,000 a year on power and cooling alone compared with the C7000 blades we were running."

**Scott Robertson, Principal Enterprise Architect for Foundation Technology Co-op Group**

Read the story

"Tapping into Azure, we now have a very Rolls Royce kind of system for a similar cost to what we were paying for the average family car."

**Gavin Lacey, Group Chief Operating Officer CHPK Property and Construction Consultants**

Read the story

"We wanted to manage our whole environment with a single solution. That's what we got with Azure Stack HCI—the flexibility to run workloads in the cloud or on-premises and decide at each moment where we want our resources."

**Marc Colman, IT Infrastructure Manager Picanol Group**

Read the story

"By moving to Azure Stack HCI, we've gone from three full racks of hardware down to less than half a rack. We had a big, power-hungry infrastructure before, but now we can run more efficiently and cost-effectively."

**Ewan Campbell, Technical and Delivery Lead Officer Fife Council**

Read the story

"We've verified energy savings and reduced our carbon footprint since deploying Azure Stack HCI, which is not only a cost saving for our company—it's important sustainability legislation that we must follow."

**Roland Reiter: Chief Information Officer Franz Morat Group**

Read the story

CARNIVAL CORPORATION&PLC.

**Cu**
Ca

**Industry:**
Travel and Transportation

**Size:**
10,000 +employees

**Country:**
United States

**Products and services:**
Azure
Azure Arc
Azure DevOps
Azure Digital Twins
Azure IoT Edge
Azure Key Vault
Azure Kubernetes Service
Azure Monitor
Azure Pipelines
Azure SQL Database
Azure Stack
Azure Stack HCI
Windows Server

Read full story here

Microsoft

"Azure Kubernetes Service and Azure Arc … [have] the potential to provide a strong reduction in the time required to roll out new software to multiple ships."

—Stefano Zunino, IT Architectures and Solutions Director, Carnival Corporation

## Situation:

Carnival Corporation has a fleet of 94 vessels across nine cruise line brands. Although it relies on satellite connectivity, it wanted to tap into a hybrid, multicloud environment for maritime and environmental compliance.

## Solution:

Two Carnival ships, the Costa Toscana and Seabourn Venture, are using Microsoft Azure Stack HCI along with Azure Kubernetes Service (AKS) and Azure Arc to improve processes like fleet and crew management and support sustainability efforts.

## Impact:

Carnival Corporation is positively affecting the operations and safety of its ships and crews. And its customers ultimately benefit from more efficient back-end operations, more ships getting to port on time, and fewer disrupted itineraries. It's now exploring new ways to wow guests using Azure Digital Twins for its ships.

# Hardware form factors

# Multiple form factors from various partners for any environment

## Remote Office Branch Office

Tower form factor-for no rack environments

## Edge computing scenarios

Super small footprint for edge scenarios-can be ruggedized

## Datacenter modernization

Industry rack mounted servers in various height-for datacenter modernization

## Workload flexibility

Composable architecture and blade server for ultimate in provisioning and workloads flexibility

# Azure Stack HCI Solution Categories

## Premier Solutions

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

## Integrated Systems

Single purpose system with pre-installed software

- Optimized hardware selection with regular testing for ongoing reliability
- Delivered with software pre-installed and security set by default
- Validated full-stack updates and native hardware management tools

## Validated Nodes

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
- On new hardware - OR - Check with your OEM or solution provider to ensure you are running a validated solution. In certain cases, you may be able to re-use existing hardware

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

# Hardware deployment comparison

| Feature | Validated Nodes | Integrated Systems | Premier Solutions |
|---|---|---|---|
| Validated solution with certified hardware configuration | ✓ | ✓ | ✓ |
| Solution committed to 5 years of hardware support | ✓ | ✓ | ✓ |
| Solution testing requirement | Once | 2-4 times/year | Continuously |
| Ease of deployment and updates | Manual | Double-click | Single-click, seamless |
| HCI software pre-installed or on-site deployment services | | ✓ | ✓ |
| Solution available as multi-node | | ✓ | ✓ |
| Support from Microsoft and hardware solution partner | | ✓ | ✓ |
| Security settings and features enabled by default | | ✓ | ✓ |
| Validated by Microsoft in our own labs | | | ✓ |
| One stop for Level 1 and Level 2 support for HCI software | | | ✓ |
| Call home support service option available | | | ✓ |
| Global availability (solution and services in 100+ countries) | | | ✓ |
| White glove deployment services available | | | ✓ |
| As-a-service purchasing option available | | | ✓ |
| Optimal customer use case | Customers who run multiple operating systems or want to manage their own firmware, driver, and OS updates | Customers seeking some level integration and validation from Azure Stack HCI for multi-node clusters | Customers requiring turnkey, enterprise-wide deployments across their global portfolio with simplified management |

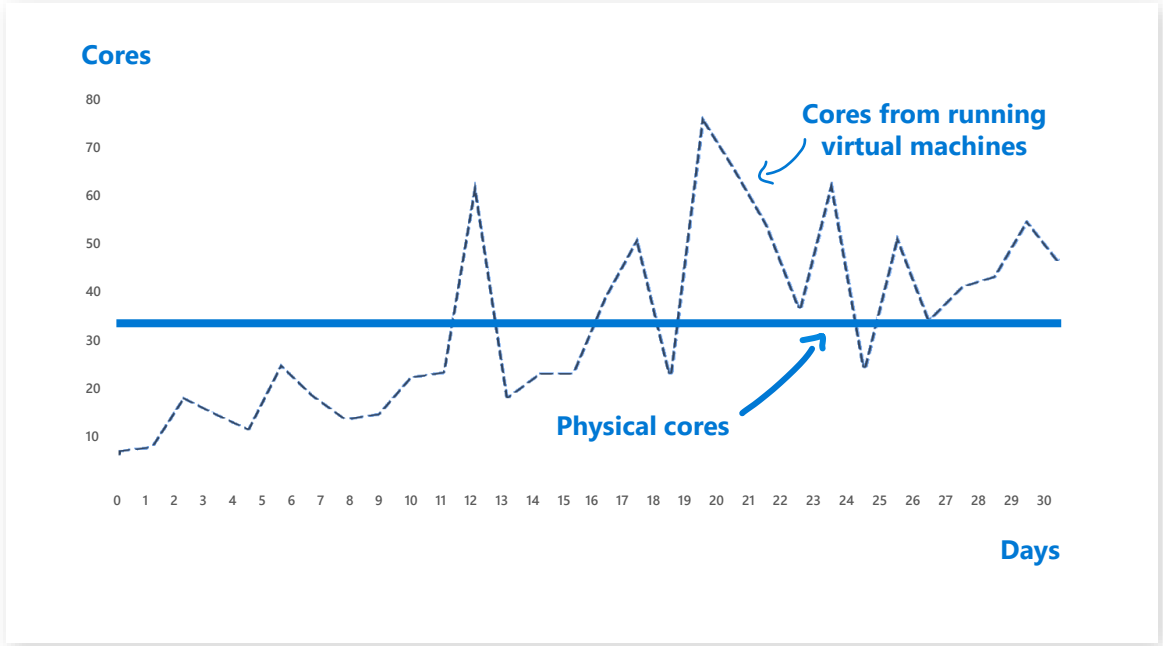
# Licensing

# 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

# Costs scale predictably from edge to datacenter

## Example of scale based on actual offering – not reflective of all OEM solutions

FUJITSU

PRIMERGY TX1330 M4

**4 cores**

Cost per server

**$40** /month

Lenovo

ThinkAgile MX1021

**8 cores**

Cost per server

**$80** /month

DELL EMC

Integrated System AX-640

**16 cores**

Cost per server

**$160** /month

Hewlett Packard Enterprise

ProLiant DL 380 Gen 10

**24 cores**

Cost per server

**$240** /month

**No minimum or maximum**

(starts from 1 core for 1 day)

# Azure Stack HCI delivers simplicity and flexibility for licensing [aka.ms/azurestackhcipricing](aka.ms/azurestackhcipricing)

**Host**
Subscription

**Guest:**
Perpetual or subscription

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**
**persistent licensing**

What you buy:

**Validated OEM HW**

**+**

**Azure Stack HCI**

**+**

**Windows Server 2022 Standard(s)**

What you want to run:

**Unlimited Windows Server roles or applications**
**persistent licensing**

What you buy:

**Validated OEM HW**

**+**

**Azure Stack HCI**

**+**

**Windows Server 2022 Datacenter**

What you want to run:

**Unlimited Windows Server roles or applications**
**guest subscription licensing**

What you buy:

**Validated OEM HW**

**+**

**Azure Stack HCI**

**+**

**Latest Windows Server subscription guest licensing**

# Expanding Azure Hybrid Benefits to the edge

Each 16-core license covers:

Windows Server 2016

+

**Software Assurance**

**On-prem**

Windows Server ++

+

**Cloud**

AHB for Azure

Reduced WS VM pricing (base compute only) for either:

- 2 instances of <8 cores
- 1 instance of <16 cores

+

**Containers**

Latest

AHB for AKS

**16 vCPU of AKS on either:**

- Azure Stack HCI
- Windows Server

**OR**

Latest

AHB for Azure Stack HCI

**Exchange for Azure Stack HCI cores**

**What are the benefits for Azure Stack HCI?**

1 core license entitles you to use 1 physical core of HCI at no additional cost

**What licenses are eligible?**

Windows Server Datacenter 2016 or later with active Software Assurance

(Note for AKS-HCI/WS: either Standard/DC)

**Are existing deployments eligible?**

Yes!

# Keep workloads protected after support ends

## Extended Security Updates free in Azure or Azure Stack HCI for Windows Server and SQL Server

### July 9, 2022

SQL Server 2008, 2008 R2 Extended Security Updates end

Get one more year of ESUs free in Azure or Azure Stack HCI

### July 12, 2022

SQL Server 2012 End of Support

Buy Extended Security Updates to get 3 more years on-premises (free in Azure or Azure Stack HCI)

### January 10, 2023

Windows Server 2008 and 2008 R2 Extended Security Updates end

Get one more year of ESUs free in Azure or Azure Stack HCI

### October 10, 2023

Windows Server 2012 and 2012 R2 End of Support

Buy Extended Security Updates to get 3 more years on-premises (free in Azure or Azure Stack HCI)

# Assess your options for 2012 workloads

## Move to Azure

**Move apps and workloads to Windows Server and SQL Server on Azure Virtual Machines**

- Run securely with free Extended Security Updates for three more years after the deadline for Windows Server 2012 and 2012 R2 and SQL Server 2012
- Save with Azure Hybrid Benefit

**Modernize when ready**

- Modernize to PaaS with Azure services such as App Service, and Azure SQL Managed Instance. Never have to patch or upgrade again

OR

## Move to Azure  Stack HCI

**Move apps and workloads to Windows Server and SQL Server on Hyper-V VMs on Azure Stack HCI**

- Run securely with free Extended Security Updates for three more years after the deadline for Windows Server 2012 and 2012 R2 and SQL Server 2012

**Modernize when ready**

- Modernize to PaaS with Azure services such as App Service, and Azure SQL Managed Instance. Never have to patch or upgrade again

OR

## Upgrade on-premises

**Upgrade to latest version**

- Windows Server 2022
- SQL Server 2019

**Can’t meet the deadline? Protect server workloads**

- **Buy** Extended Security Updates to get 3 more years of security updates for Windows Server 2012 and 2012 R2 and SQL Server 2012

# Overview of Extended Security Updates (ESU) supported solutions

## Windows Server 2012 and 2012 R2 and SQL Server 2012

| | On premises | SPLA | Azure VMs and Azure Dedicated Host | Azure Stack HCI | Azure VMware Solution, Azure Nutanix Solution |
|---|---|---|---|---|---|
| **SQL Server** | Option to purchase ESU | Not available | Free ESUs | Free ESUs | Free ESUs |
| **Windows Server** | Option to purchase ESU | Not available | Free ESUs | Free ESUs | Free ESUs |

Learn more about Extended Security Updates
https://aka.ms/esupage

# Azure Stack HCI – In Summary

## VM, Containers, & Azure Cloud Services On-Premises

- Native Azure Integration
- Solution scales down to 2 nodes and can be “switchless”
- Integrated Full Stack Updates
- Industry leading HCI performance*
- Native DR with Stretch Clustering
- ESUs included at no cost

**Maximize performance**

**1M IOPS / SERVER**

Random 4k storage I/O per second from virtual machines

*“the fastest we’ve seen in a mid-market 4-node HCI cluster”*

- StorageReview.com

# How to try Azure Stack HCI

Buy a validated hardware solution from a trusted partner or check with your solution provider if existing hardware can be supported

**Browse solutions**

**AND**

Install Azure Stack HCI software with a free 60-day trial

**Download software**

Please note:
1. An Azure subscription is required to complete the full set-up on your server hardware
2. Integrated systems (and some validated nodes) come with Azure Stack HCI software pre-installed

# Microsoft Learning Paths

Learn new skills and discover the power of Azure Stack HCI with step-by-step guidance

## Azure Stack HCI Foundations

Modules:

- Introduction to Azure Stack
- Introduction to Azure Stack HCI core technologies
- Plan and deploy Azure Stack HCI
- Integrate Azure Arc and Azure Stack HCI

## Operate and Maintain Azure Stack HCI

Modules:

- Manage Azure Stack HCI clusters
- Integrate Azure services with Azure Stack HCI
- Manage Azure Stack HCI virtual machine workloads
- Manage Azure Kubernetes Service on Azure Stack HCI

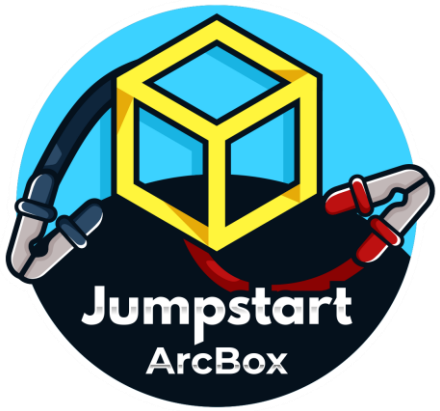
## Advanced learn modules for administrators

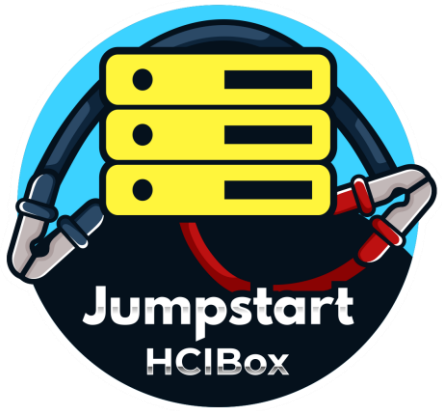
Modules:

- Implement Datacenter Firewall and Software Load Balancer on Azure Stack HCI
- Plan for and deploy SDN infrastructure on Azure Stack HCI

# Azure Arc Jumpstart

Rich, automated, open-sourced, community-driven

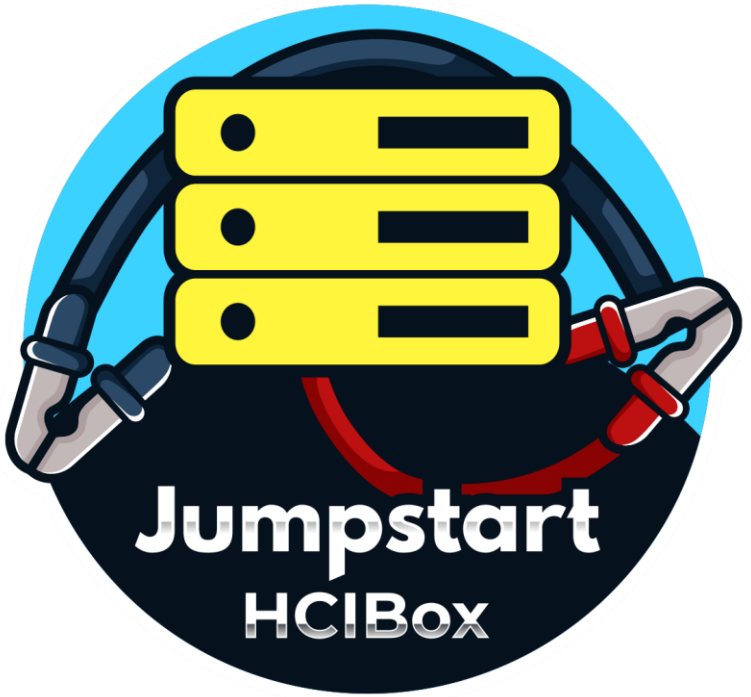




aka.ms/AzureArcJumpstart

# Jumpstart HCIBox

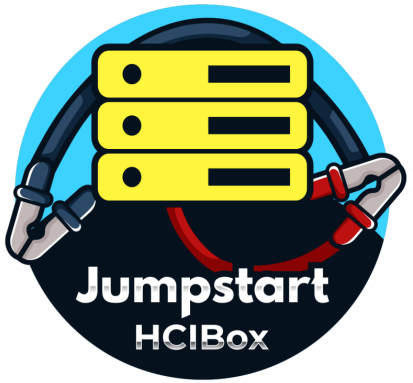
## Fully automated Azure Stack HCI sandbox



# Jumpstart HCIBox

## Challenges and motivation

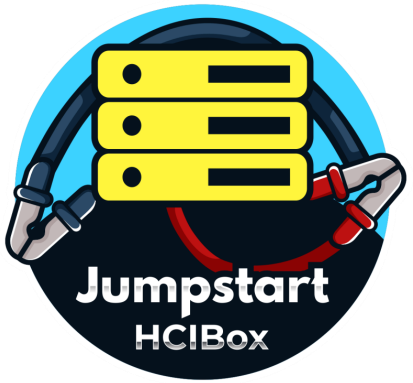
- Numerous HCI lab guides at varying levels of completeness or quality
- Lack of end-to-end automation to deploy HCI with integrated Azure Arc services
- Need to provide partners and customers with a complete sandbox for testing and training
- Need for faster times to test/POC without waiting for hardware procurement or other delays
- Laying the ground for future Azure Stack HCI Landing Zone Accelerator



# Jumpstart HCIBox

## Use Cases

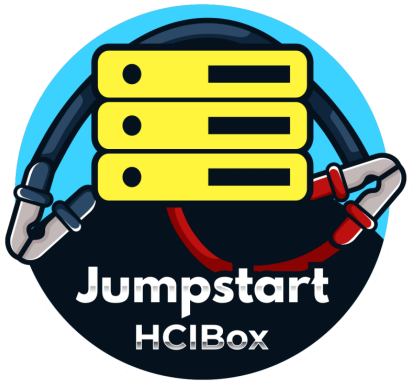
- Sandbox environment for getting hands-on with Azure Stack HCI without the need for physical hardware
- Accelerator for Proof-of-concepts or pilots
- Training tool for Azure Stack HCI and hybrid Arc skills development
- Demo environment for customer presentations or events
- Rapid integration testing platform



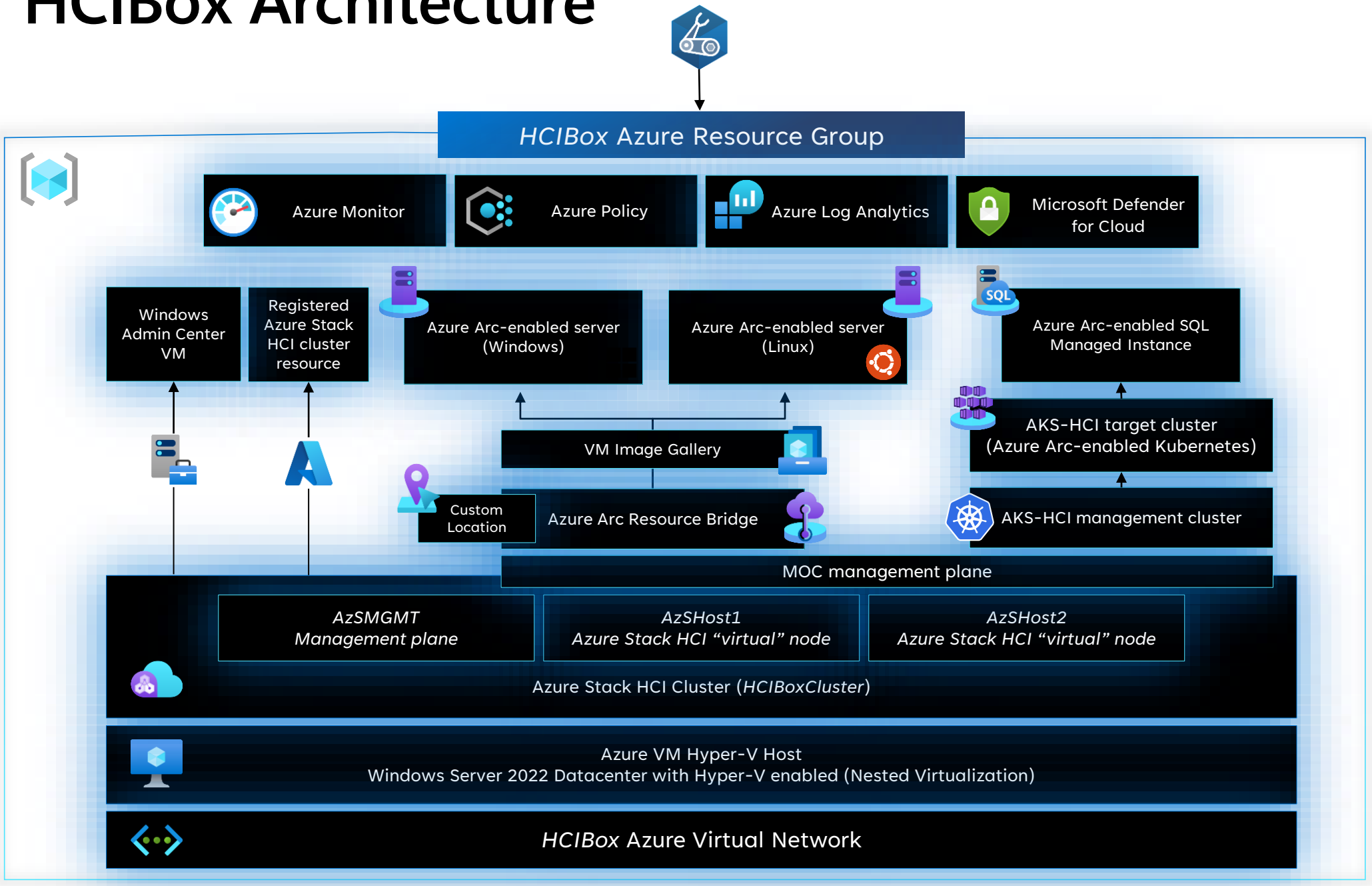
# Jumpstart HCIBox

## Design Principles

- A dedicated sandbox environment for testing **GA or public preview** capabilities of Azure Arc. **No private preview** features are included
- Self-contained in Azure with no dependencies on having physical hardware
- Showcase HCI integration with hybrid services and tools (Azure Arc and Windows Admin Center)
- Comprehensive, Repeatable, Reliable
- Modular flexibility and configuration for the user



# HCIBox Architecture



# Resources

## Read

**Azure Stack HCI Product Page** azure.com/hci

**Azure Stack HCI Security Book** aka.ms/ashcisecuritybook

**Azure Arc-enabled Infrastructure on Intel Whitepaper** aka.ms/arcinfraonintelwhitepaper

**Azure hybrid solutions sustainability Whitepaper** aka.ms/hybridsustainabilitywp

**Azure hybrid solutions sustainability infographic** aka.ms/hybridsustainabilityinfographic

**Secure your hybrid cloud with Intel Whitepaper** aka.ms/securehybridcloudwhitepaper

**Secure your hybrid cloud with Intel infographic** aka.ms/securehybridcloudinfographic

## Watch

**Extend your cloud with Azure Stack HCI** (youtube.com)

**Azure hybrid solutions sustainability** aka.ms/hybridsustainabilityvideo

**Security** Securing Azure Stack HCI with Azure Defender & Secured-core

**Demo:** Retail Edge Transformation with Azure Hybrid

**Azure Virtual Desktop for Azure Stack HCI** Azure hybrid updates - YouTube

**Product tour of Azure Stack HCI using WAC** aka.ms/deployhciwithwac

**Disaster Recovery with Stretch Clustering** aka.ms/stretchclustervideo

**Technical roadmap feature videos** Kernel Soft Reboot Every Node Arc-Enabled Intent Driven Networking GPU Management Multi-cluster Monitoring Automatic Virtual Machine Activation

## Do

**Download the free Azure Stack HCI 60-day trial** aka.ms/hci-download-sw

**Get started with the Azure Stack HCI Trial** aka.ms/evaluate-hci

**Visit Tech Docs to see how it all works** aka.ms/hci-docs

**Visit the Azure Stack HCI Catalog** aka.ms/azurestackhcicatalog

**Visit the Azure Stack HCI SI partner catalog to find partners for deployment support** aka.ms/arcsi

**Get training:**

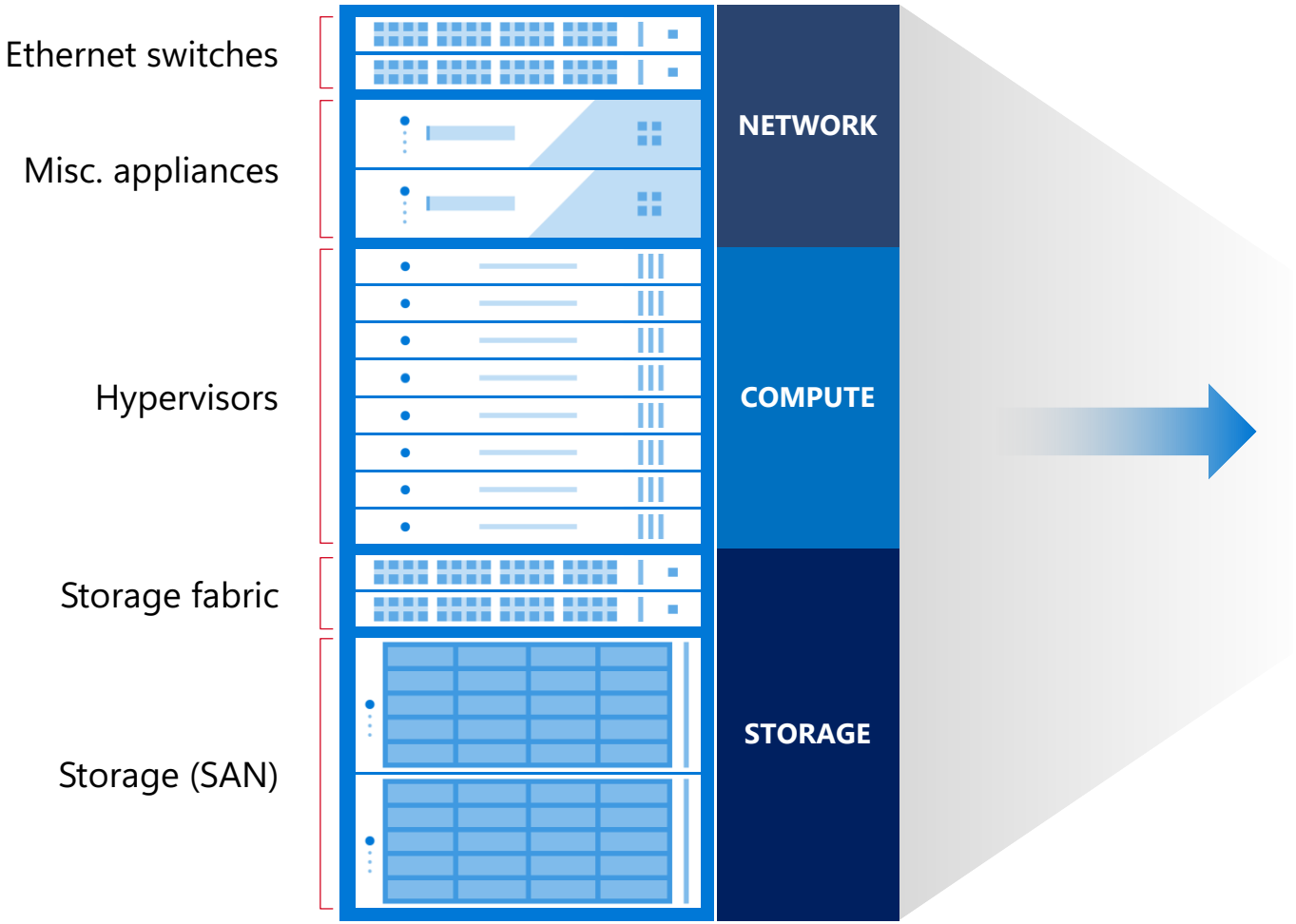
- Azure Stack HCI foundations - Learn | Microsoft Docs
- Operate and maintain Azure Stack HCI - Learn | Microsoft Docs
- Azure Arc-enabled Infrastructure Technical Event Series - Events | Microsoft Learn

Microsoft

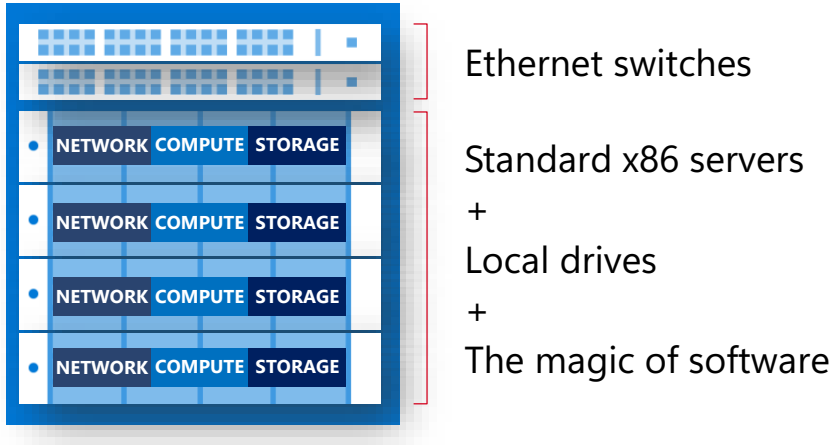
# Thank you

# Azure Arc-enabled infrastructure leverages hyperconvergence

## Legacy “three tier” infrastructure



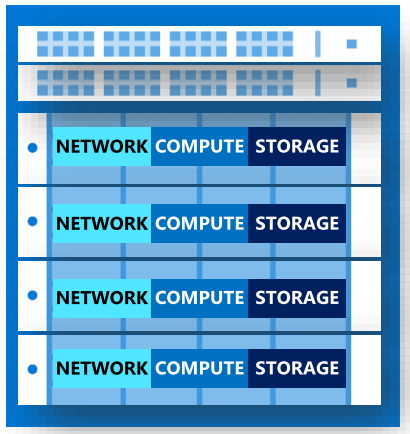

## Hyperconverged infrastructure (HCI)




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

# HCI: proven, popular way to enable hybrid cloud

## Hyperconverged infrastructure (HCI)



- Eases migration of data, VMs, and workloads
- Offers agility for digital transformation
- Software-defined HCI supports flexible deployment & unified management across on-premises & public cloud sites

# Have You Planned for Tomorrow's Infrastructure Needs?

Pressing demands on an organization's infrastructure

Application and data proliferation | Changing security requirements | OpEx and TCO constraints

## Start with building the right infrastructure, customized to your business

### Agile

A consistent hardware and software infrastructure creates agility across clouds

### Scalable

An infrastructure must be responsive and flexible to prepare for changes

### Flexible

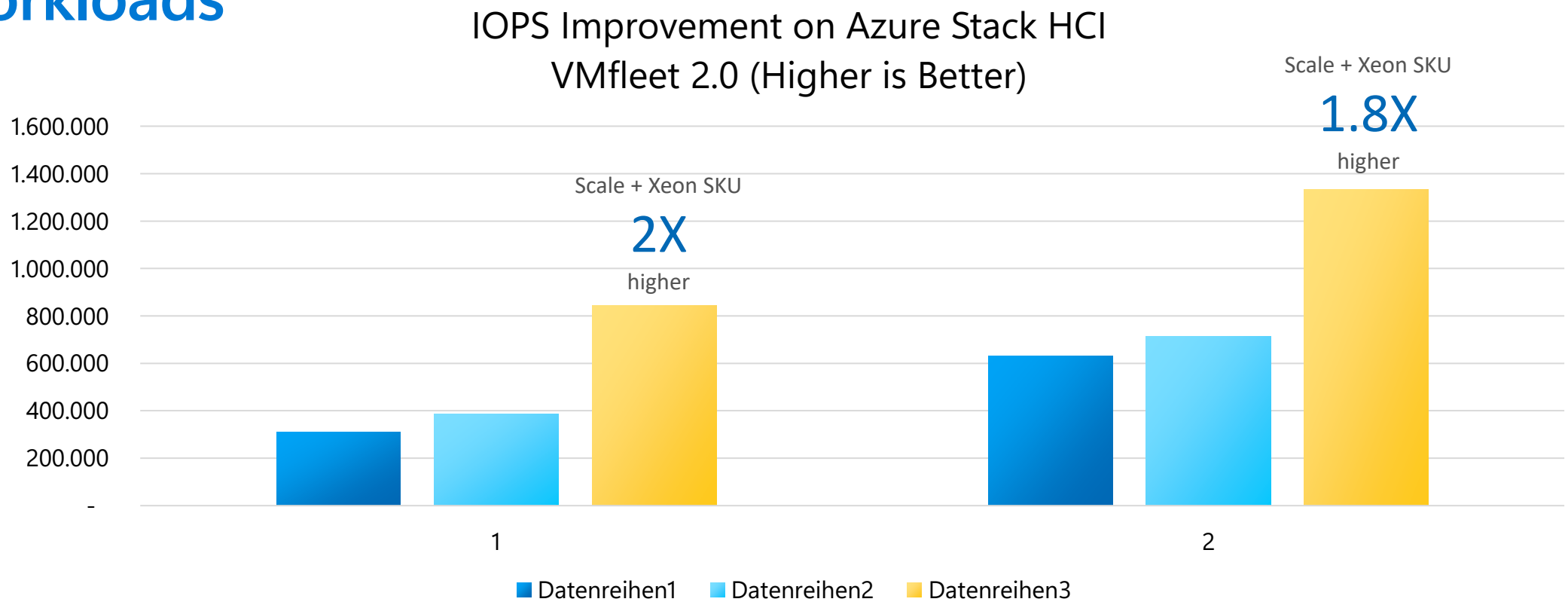
Flexible deployment options delivered by the broad ecosystem of Microsoft and Intel partners

### Secure

Hardware-integrated security helps secure the platform while maintaining workload integrity and performance

**Hybrid cloud provides the foundation for a best-in-class infrastructure**

# Microsoft Azure Stack HCI Using 4th Gen Intel® Xeon® Scalable Processors Delivers Performance for Demanding Workloads



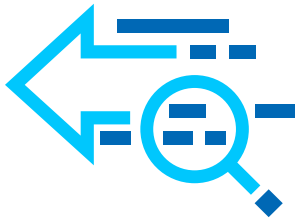

Performance increased gen-to-gen, scales with cluster size, and higher series of Xeon

Results using 4th Intel Xeon Processor - QS processors and silver systems. Performance varies by part, use, configuration and other factors. Learn more at www.Intel.com/PerformanceIndex. See backup for workloads and configurations. Results may vary.

# The AI/ML/DL Challenge

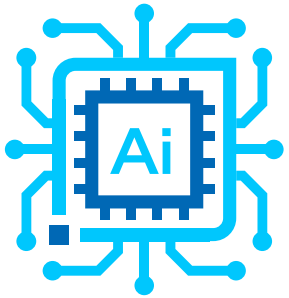
## Increased Needs across the End-to-End Pipeline

### Data Ingestion, Curation, Visualization



Traditional ML drives most AI cycles

### High Barrier of Entry



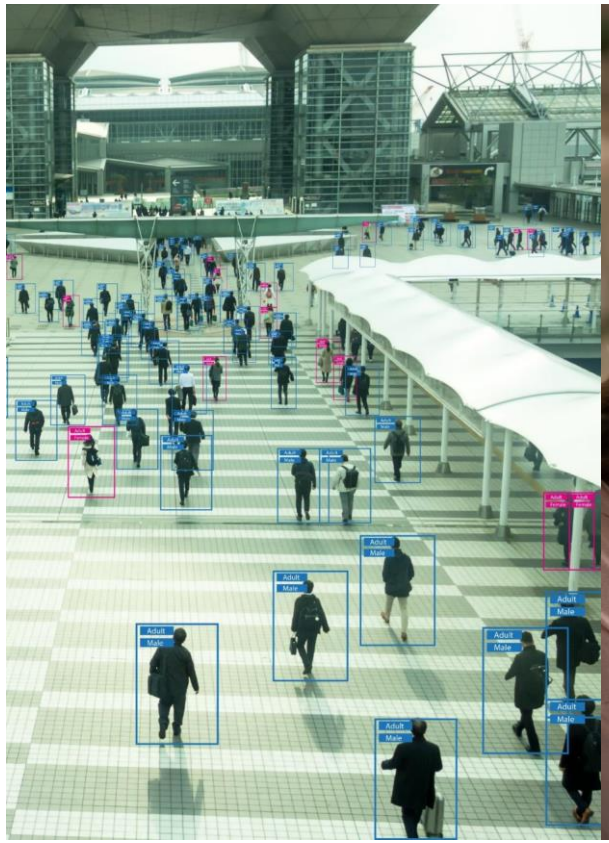

Preparing for AI

### Complexity of Scale

Edge to Cloud

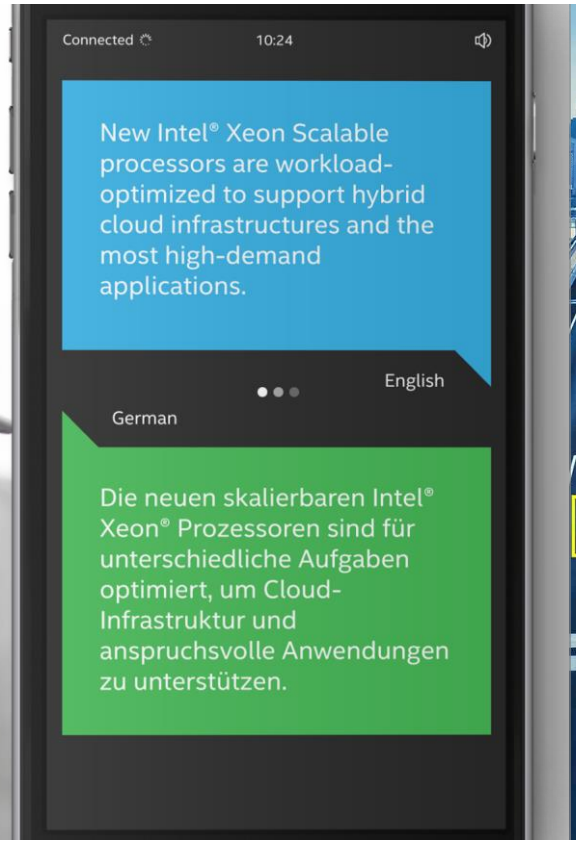
# Common Training and Inference Workloads Accelerated by Intel® Advanced Matrix Extensions (Intel® AMX)

Image Classification

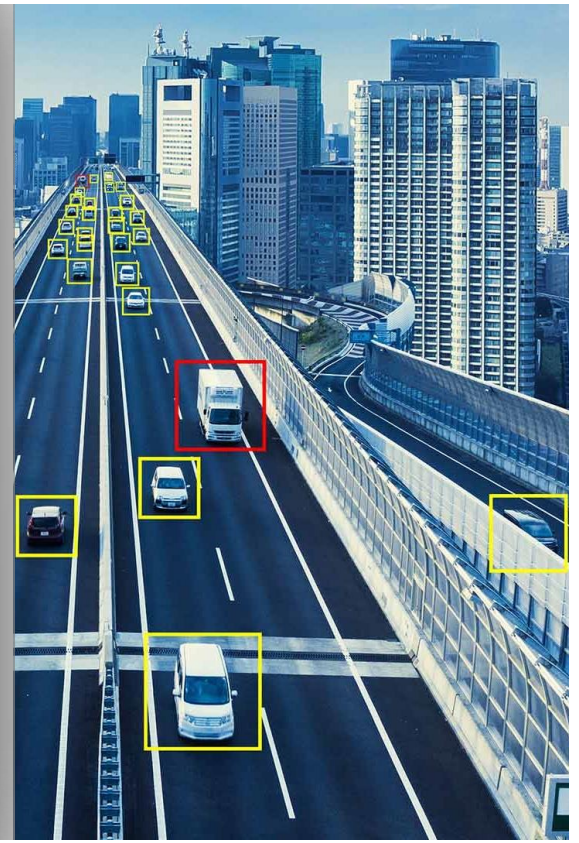


Speech Recognition

Language Translation

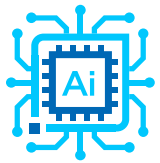



Object Detection



# Why Run AI Workloads on 4th Gen Intel® Xeon® Scalable Processors with Microsoft Azure Stack HCI?

## Any AI Code, Every Workload

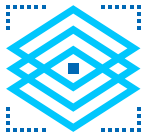



A broad array of modern business applications, from CRM and finance applications to security and infrastructure tools are now being augmented with AI. 4th Gen Intel® Xeon® processors feature Intel® Advanced Matrix Extensions (Intel® AMX), which gives your AI-enabled apps the ability to deliver flexible and efficient performance.

## Build & Deploy Everywhere

Design and deploy AI projects quickly and efficiently with optimized training and inferencing. Intel AMX brings extensive hardware and software optimizations to enable fast and efficient AI for a range of use cases, including video analytics, industrial machine vision, and natural language processing.

## Implement Pre-Built Solutions

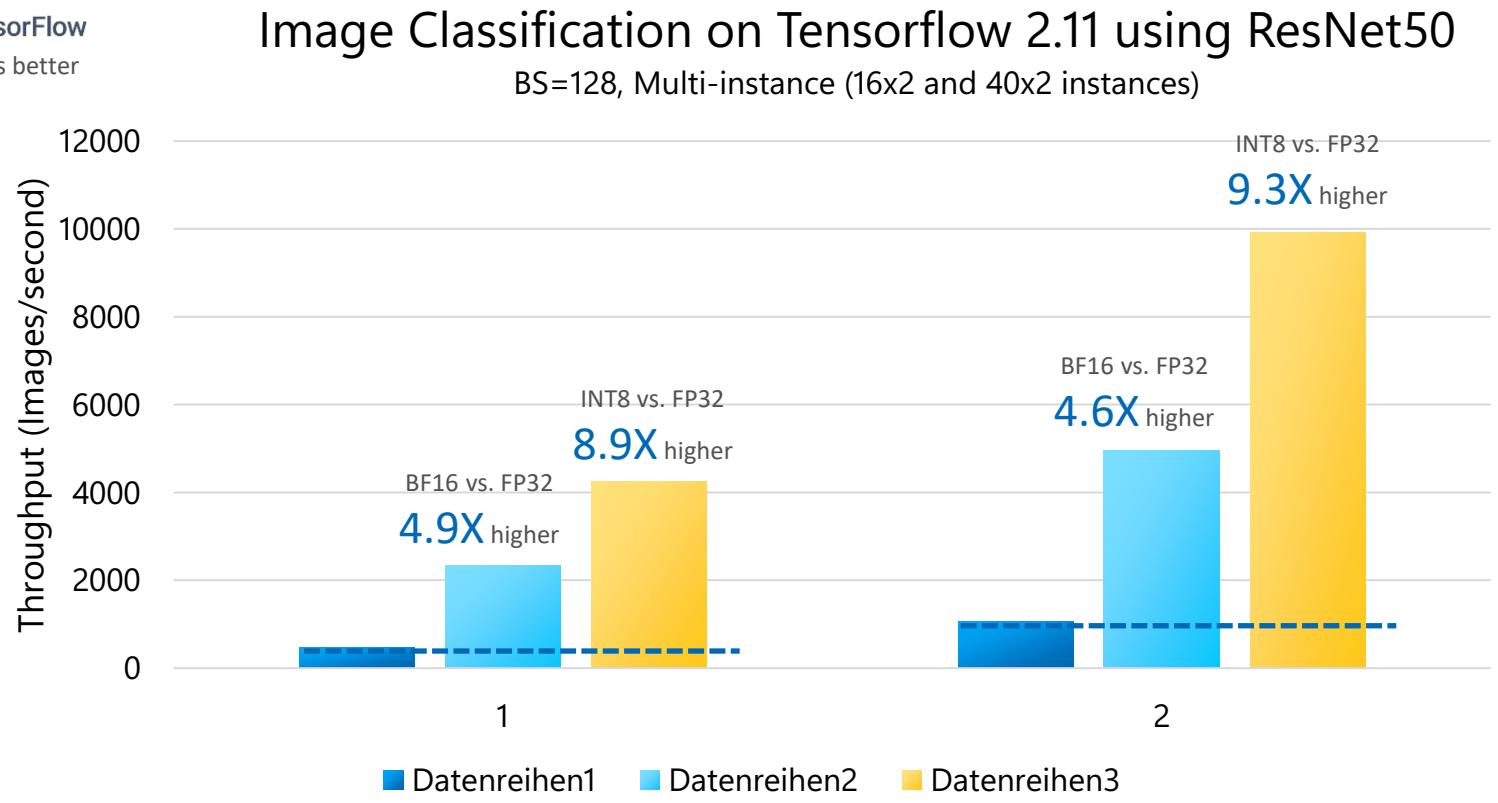


With the built-in AI accelerator, the result is an optimized pipeline on a single hardware and software platform that scales from data center to cloud to edge. Customers can scale AI everywhere by leveraging the broad, open, optimized libraries, frameworks and pre-trained models available to speed deployment.

**The flexibility of a standard Intel® Xeon® Scalable processor server, with the efficiency and performance of a built-in AI accelerator**

# Accelerate AI - Image Classification on Microsoft Azure Stack HCI using 4th Gen Intel® Xeon® Scalable Processors with Intel® AMX

TensorFlow
Higher is better

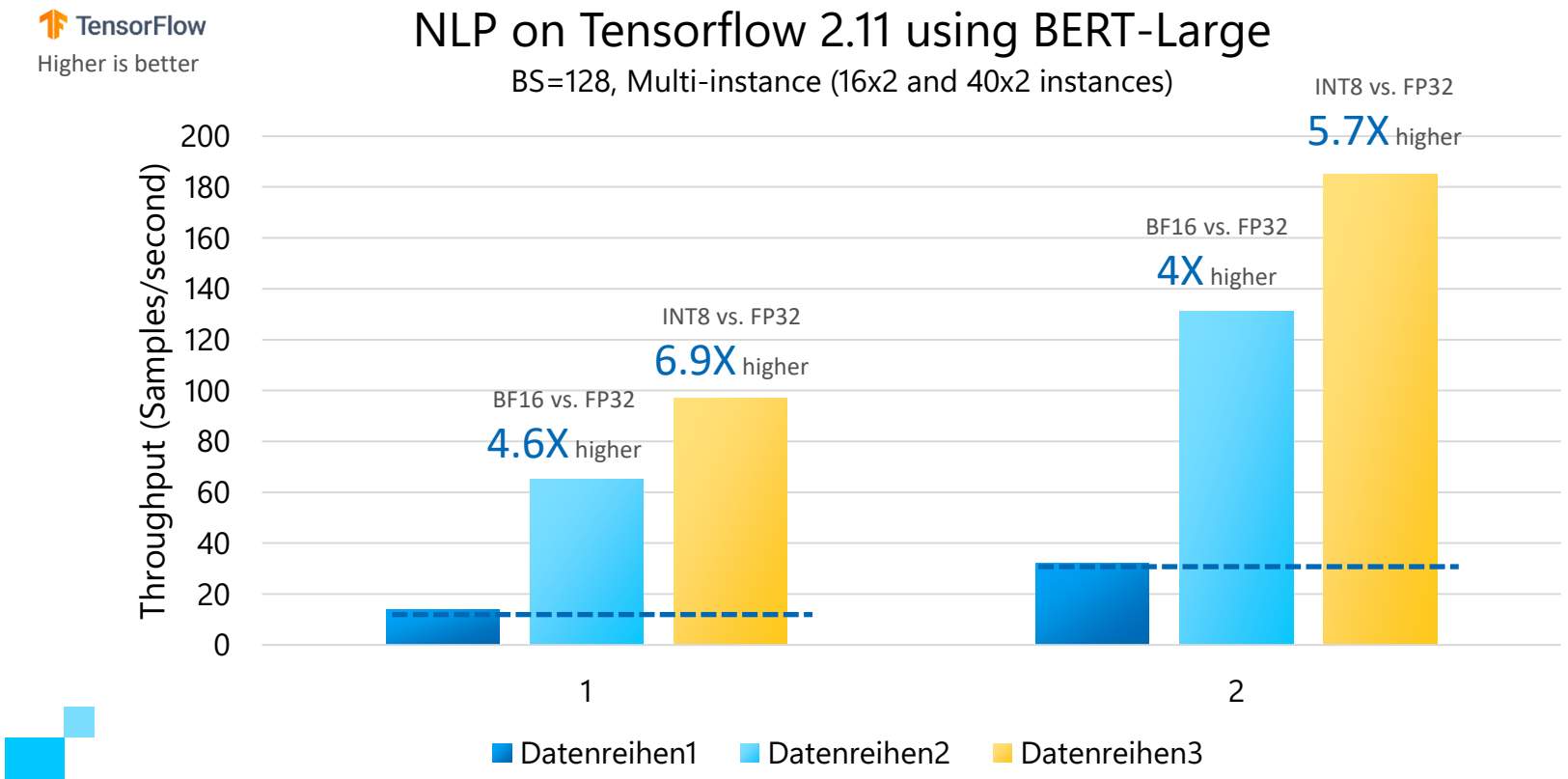



- The ResNet-50 benchmark measures image classification/vision workloads
- FP32 is a standard 32-bit floating point data type used to train deep learning models and for inferencing
- Bfloat16 is a truncated version of 32-bit floating point, used for both training and inference, offering similar accuracy but faster computation
- INT8 offers higher performance and is least computationally demanding for constrained environments, with minimal impact on accuracy
- Many DL workloads are mixed precision and 4th Gen Intel Xeon Scalable processors can seamlessly transition between Intel AMX and Intel AVX-512 to use the most efficient instruction set

**Increase performance with higher series of Intel Xeon processor or by changing precision**

Results using 4th Gen Intel Xeon Processor - pre-production processors and systems. Performance varies by part, use, configuration and other factors. Learn more at www.Intel.com/PerformanceIndex.
See backup for workloads and configurations. Results may vary. Intel AVX-512=Intel Advanced Vector Extensions 512, Intel AMX=Intel Advanced Matrix Extensions

# Accelerate Natural Language Processing (NLP) on Microsoft Azure Stack HCI using 4th Gen Intel® Xeon® Scalable Processors with Intel® AMX

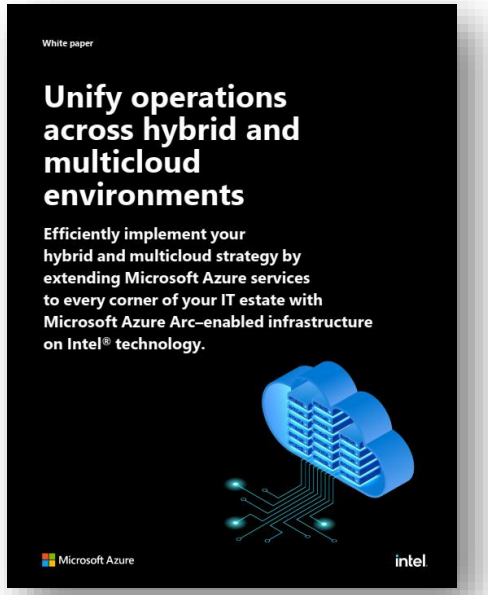



- BERT-Large is a pretrained model used for Natural Language Processing
- FP32 is a standard 32-bit floating point data type used to train deep learning models and for inferencing
- Bfloat16 is a truncated version of 32-bit floating point, used for both training and inference, offering similar accuracy but faster computation
- INT8 offers higher performance and is least computationally demanding for constrained environments, with minimal impact on accuracy
- Many DL workloads are mixed precision and 4th Gen Intel Xeon Scalable processors can seamlessly transition between Intel AMX and Intel AVX-512 to use the most efficient instruction set

**Increase performance with higher series of Intel Xeon processor or by changing precision**

Results using 4th Gen Intel Xeon Processor - pre-production processors and systems. Performance varies by part, use, configuration and other factors. Learn more at www.Intel.com/PerformanceIndex.
See backup for workloads and configurations. Results may vary. Intel AVX-512=Intel Advanced Vector Extensions 512, Intel AMX=Intel Advanced Matrix Extensions

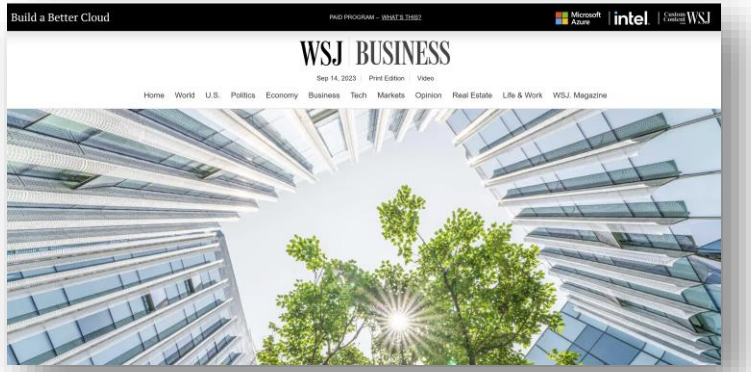
# Microsoft and Intel Resources



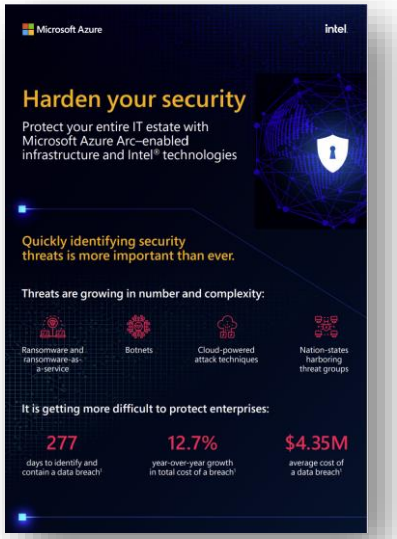

[Azure Arc-enabled Infrastructure on Intel Whitepaper]

[Case Study:  written + video]

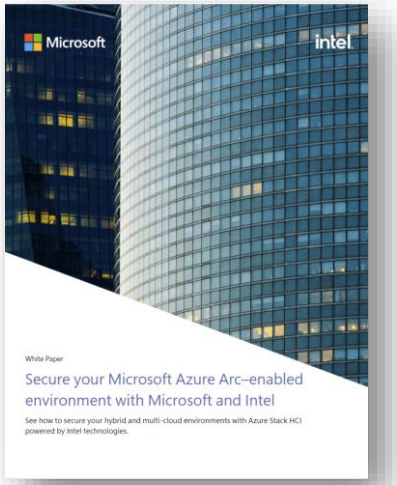
WSJ: [The Path to Greener IT in a Hybrid Cloud World]



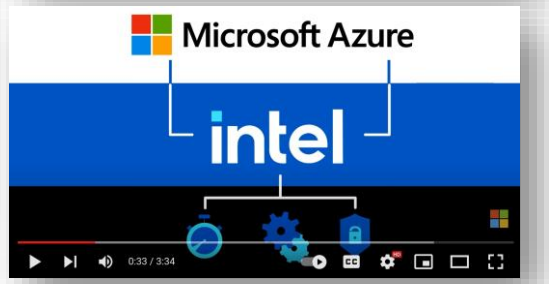

WSJ: [Driving Sustainability for IT Infrastructure]




[Security Infographic]




[Security White paper]



[Security Video animation]

Microsoft

© Copyright Microsoft Corporation. All rights reserved.