Azure Stack HCI - die neue Version 21H2

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THOMAS KRENN

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Themen heute

- **Neuerungen in Azure Stack HCI 21H2**
- **Migration eines bestehenden Azure Stack HCI Clusters auf die Version 21H2**
- **Ausblick auf die künftige Entwicklung von Azure Stack HCI**

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HCI-Grundlagen

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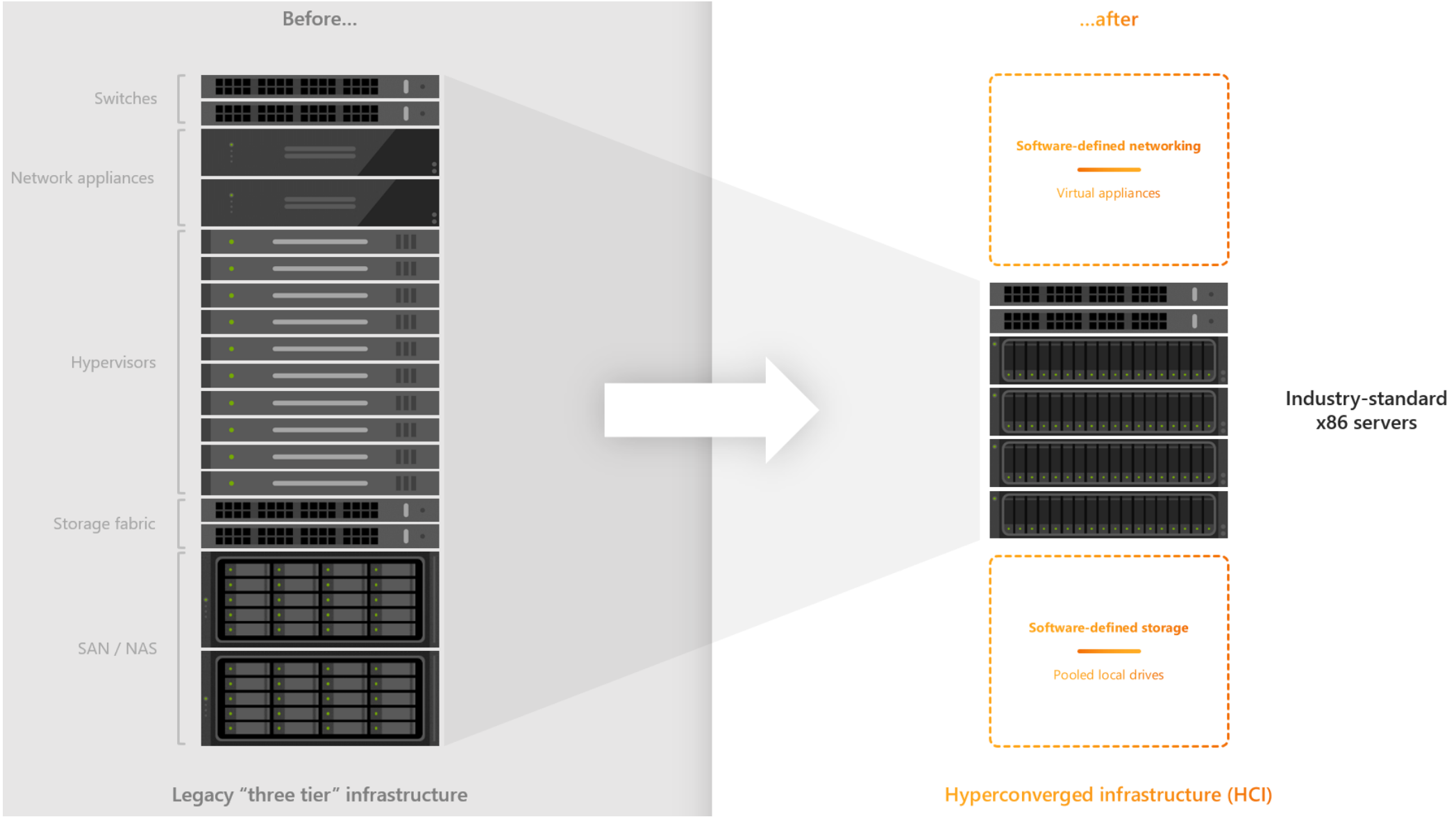
Hyper-Converged Infrastructure (HCI) - Grundlagen



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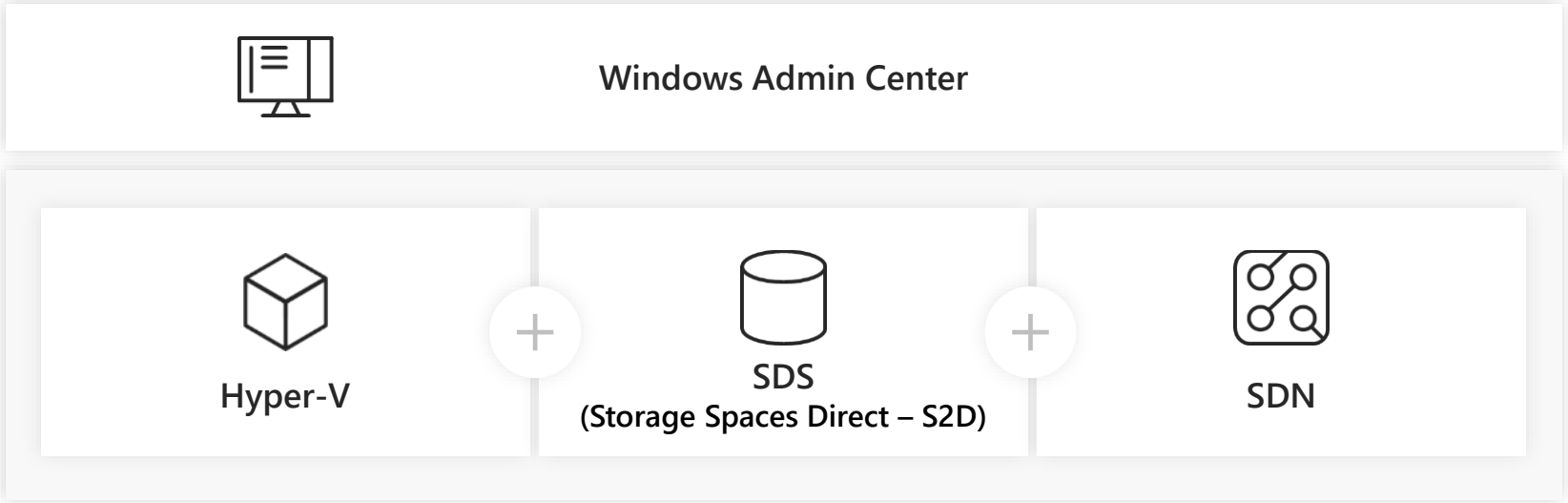
Die Technologie hinter Azure Stack HCI



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Growing Azure Stack HCI into its own product line

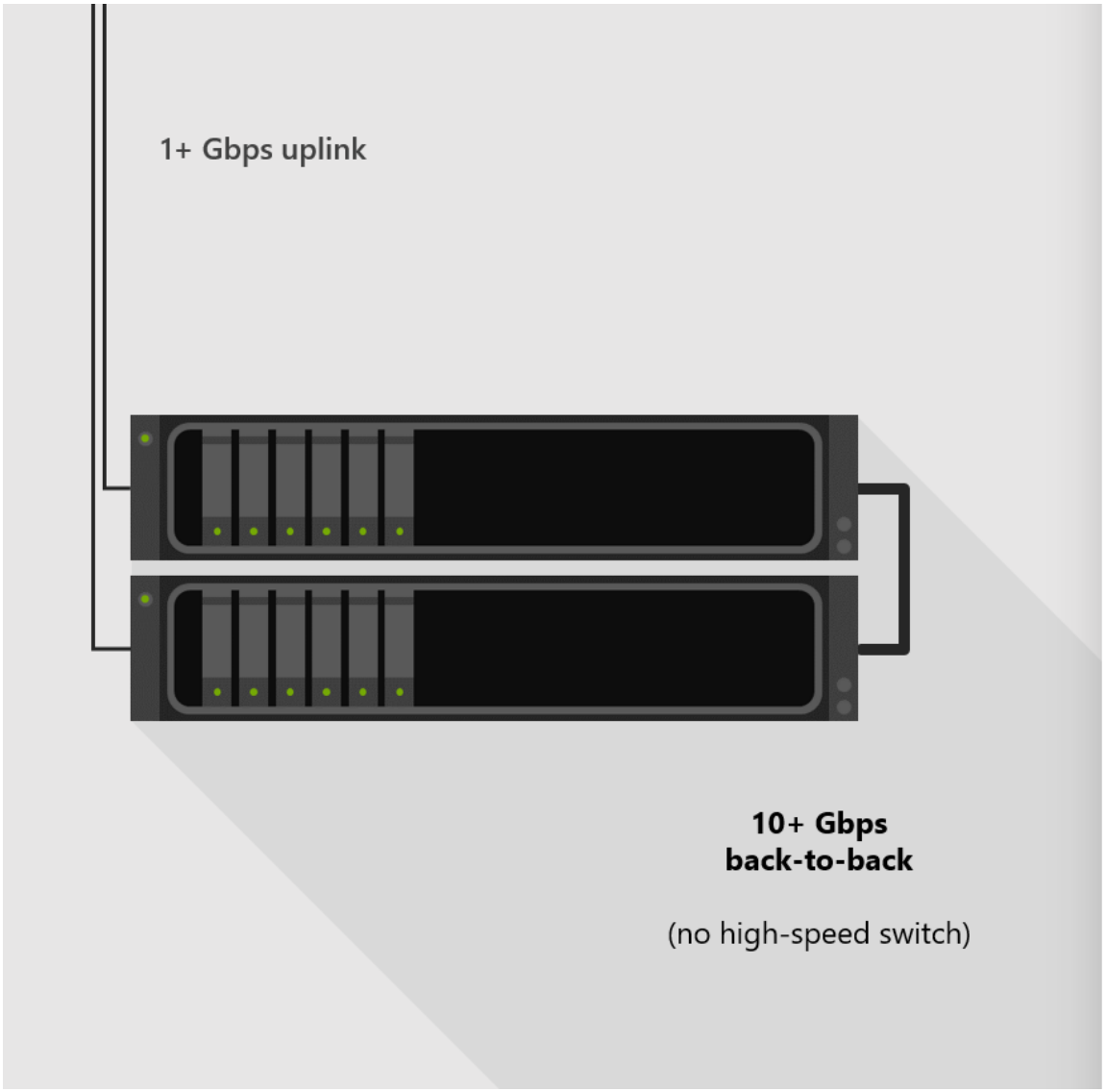
Azure Stack HCI

- Exciting roadmap of new 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**

Die Technologie hinter Azure Stack HCI



Start small…

Minimal footprint

Just 2 servers minimum

(4 × SSD) or **(2 SSD + 4 HDD)** per server

No minimum processor and memory

1 × 10 Gbps network adapter

SATA, DOM, M.2

Made possible by

Lightweight quorum

Cloud, file share, or USB key

No costly Witness VM Appliance

Nested resiliency

Withstand multiple failures

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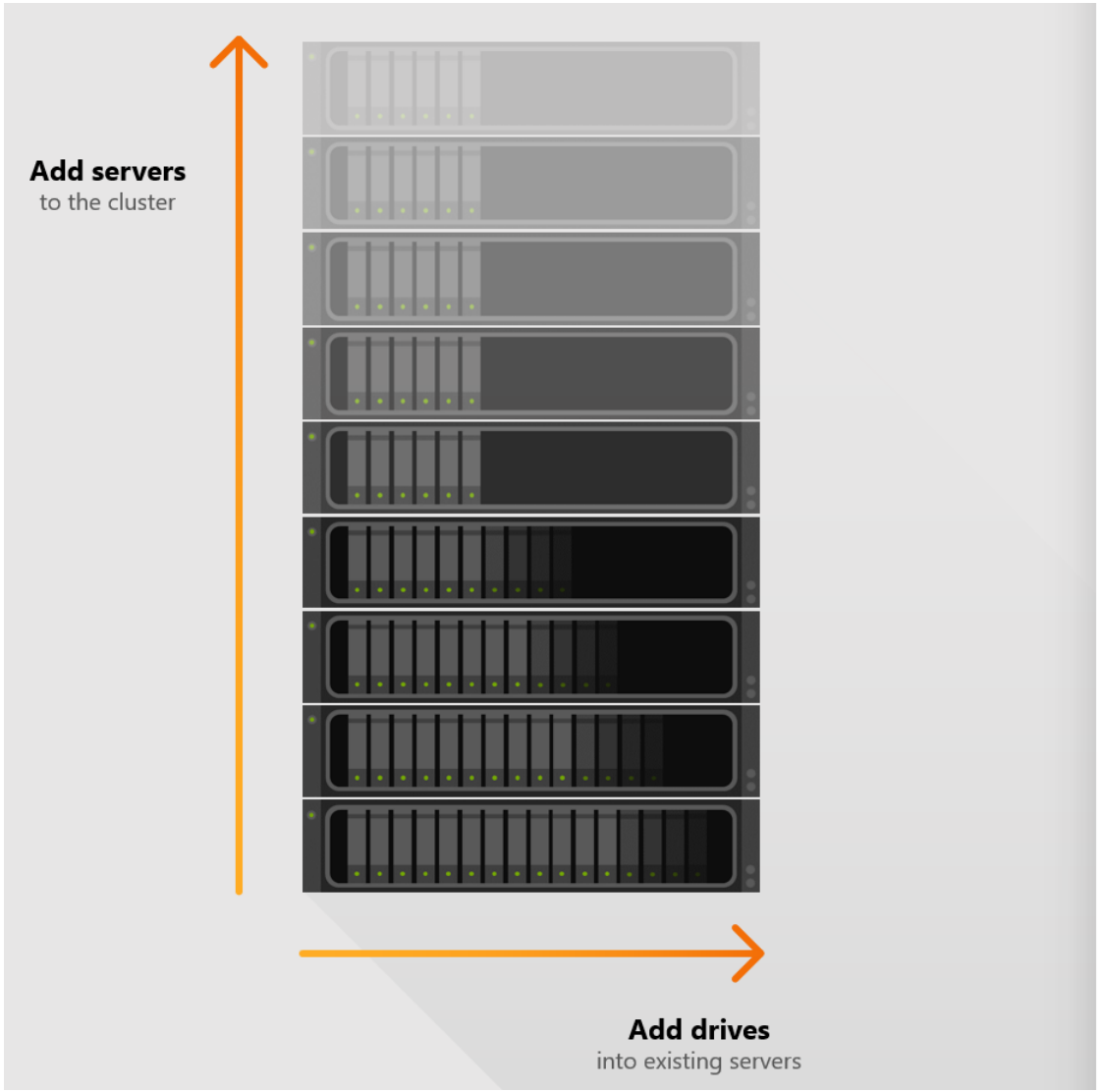
Die Technologie hinter Azure Stack HCI



Scale with your needs

Scale up, scale out

Up to 16 servers per cluster

Limited by rack and switch ports

Up to 4,000 TB storage capacity per cluster

Store all of Wikipedia in every language 50 times

With no downtime

Automatic VM load balancing

Automatic storage rebalancing

Neuerungen in Azure Stack HCI 21H2

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GPUs with clustered VMs

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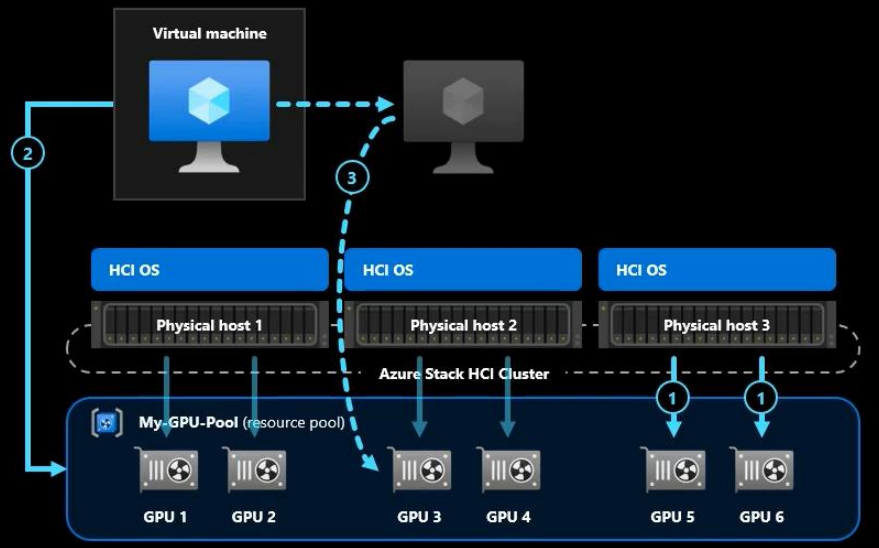
How it works: GPU pools

Group GPUs for high availability

1. On every node, create PCI Express resource pool with same name and add GPUs to the pool
2. Assign VM to GPU pool instead of individual GPU
3. During failover or move, cluster will start VM on another host if there are GPUs available in the pool



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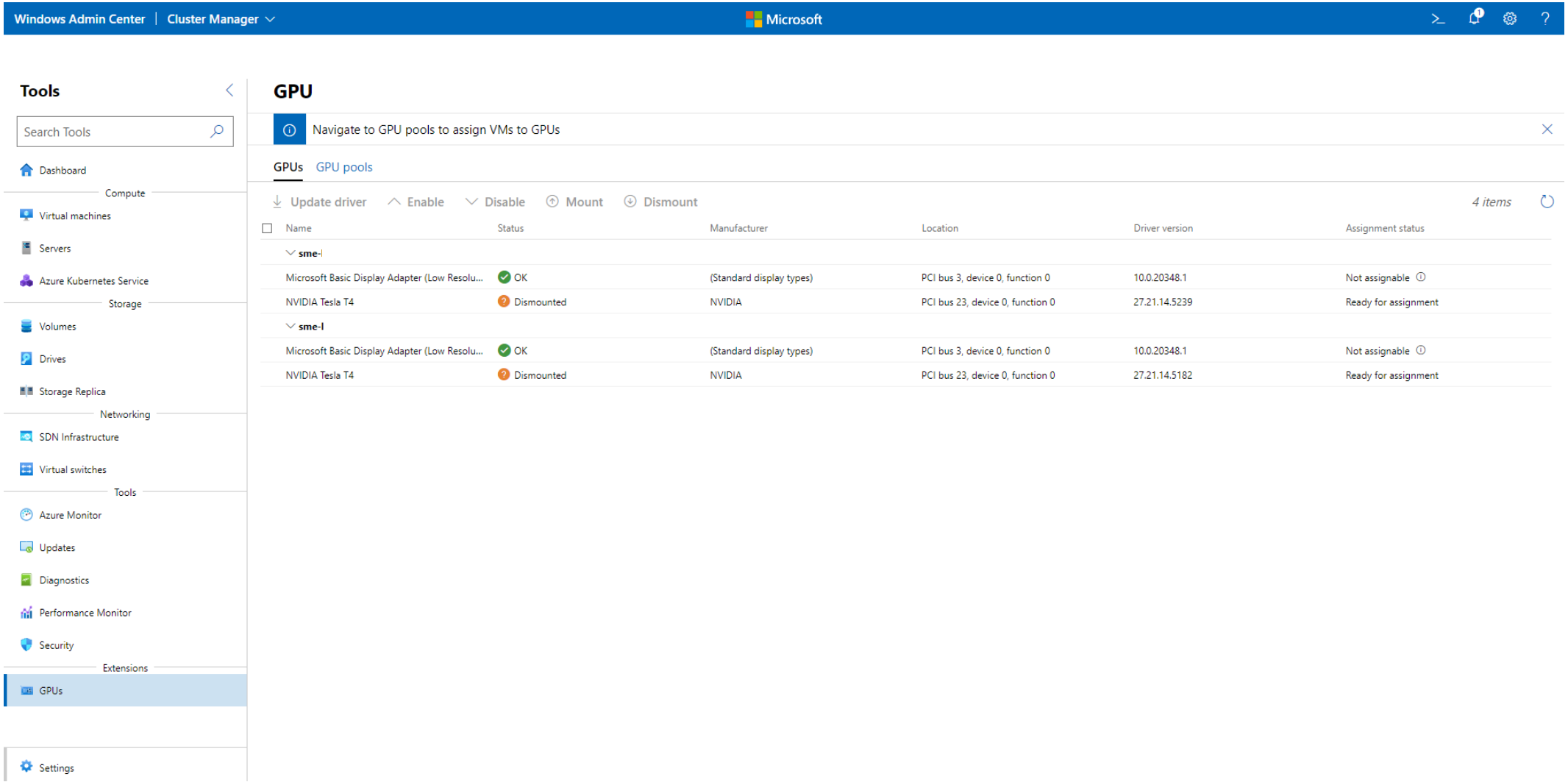

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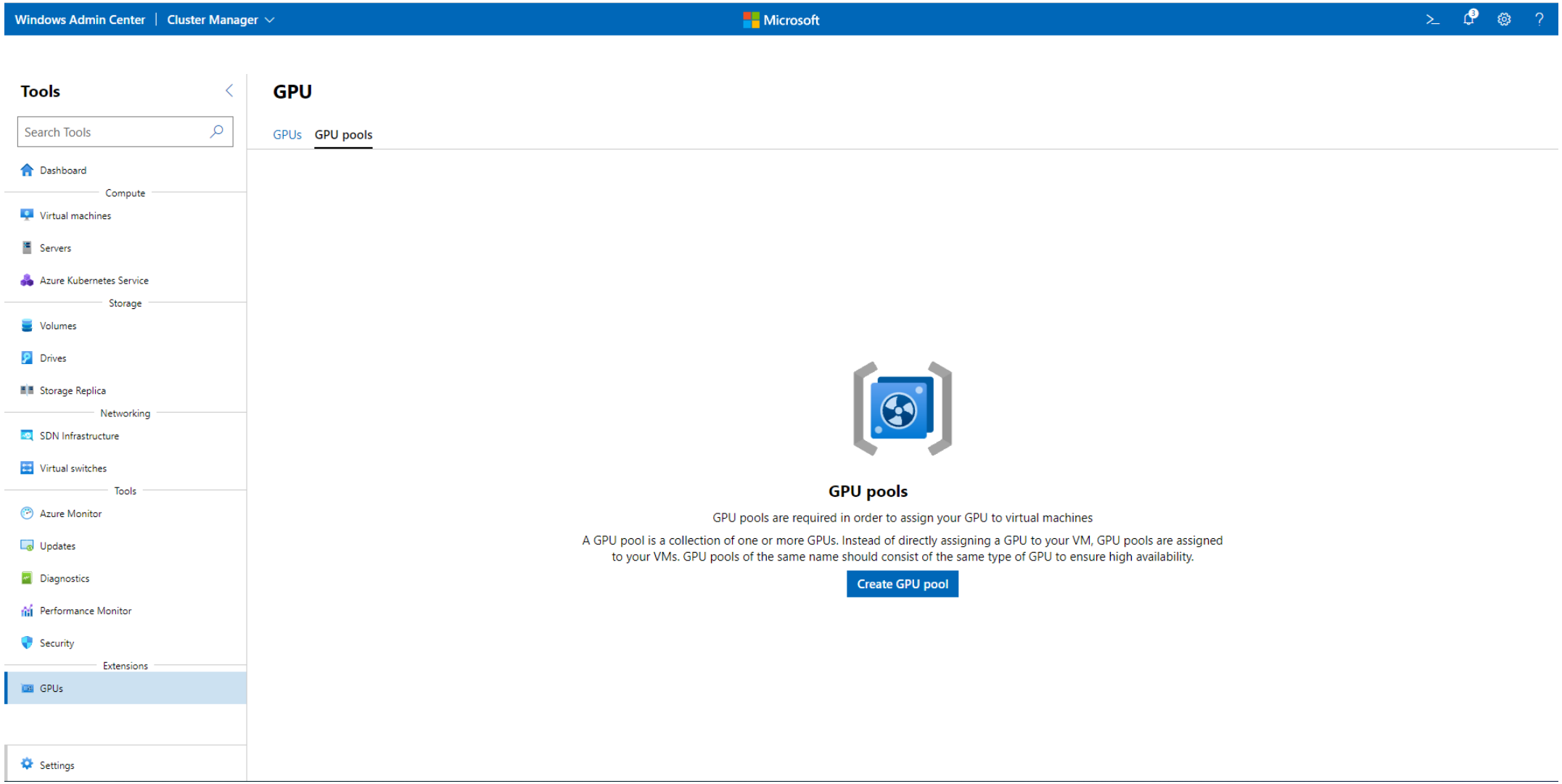

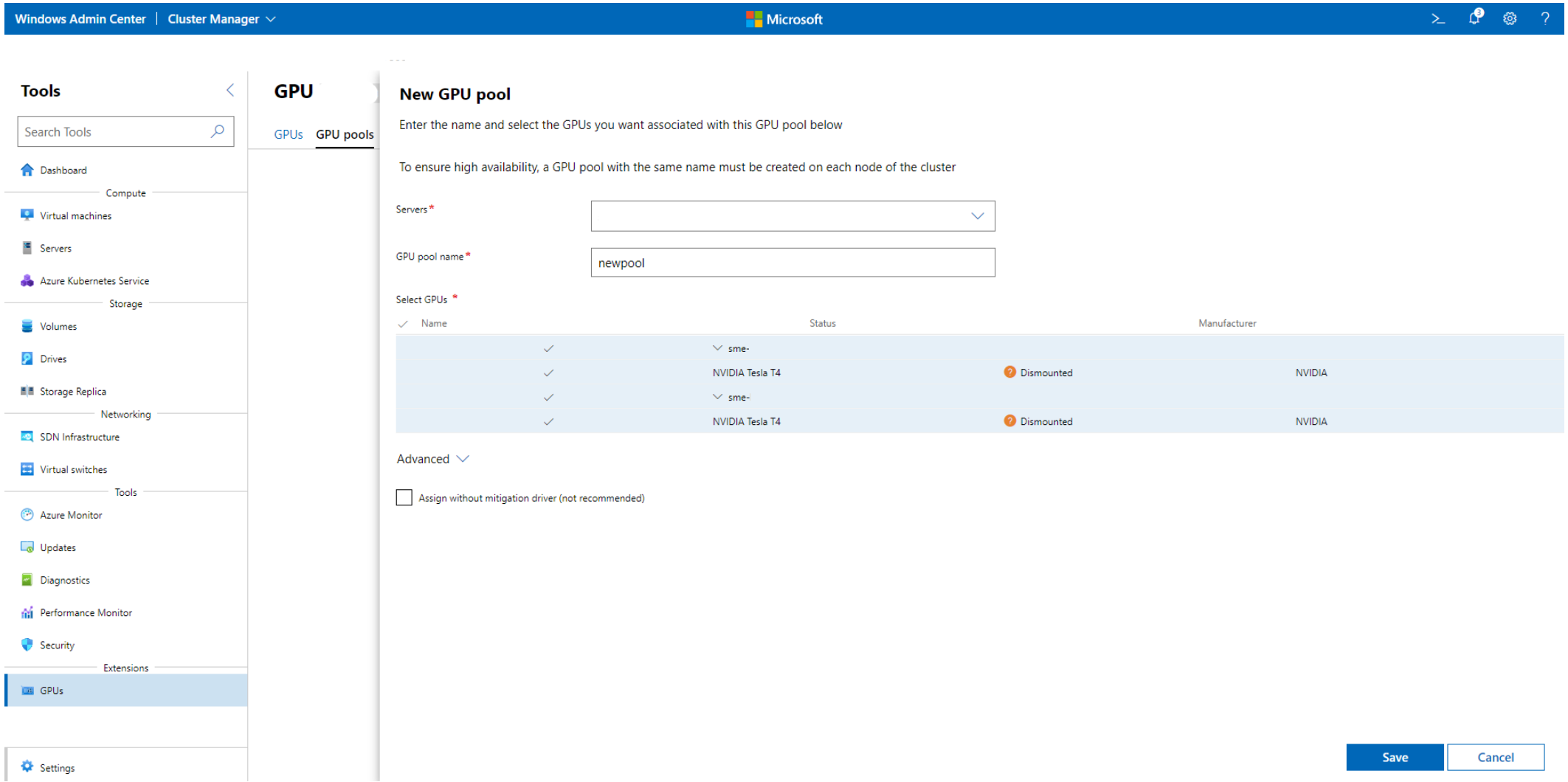

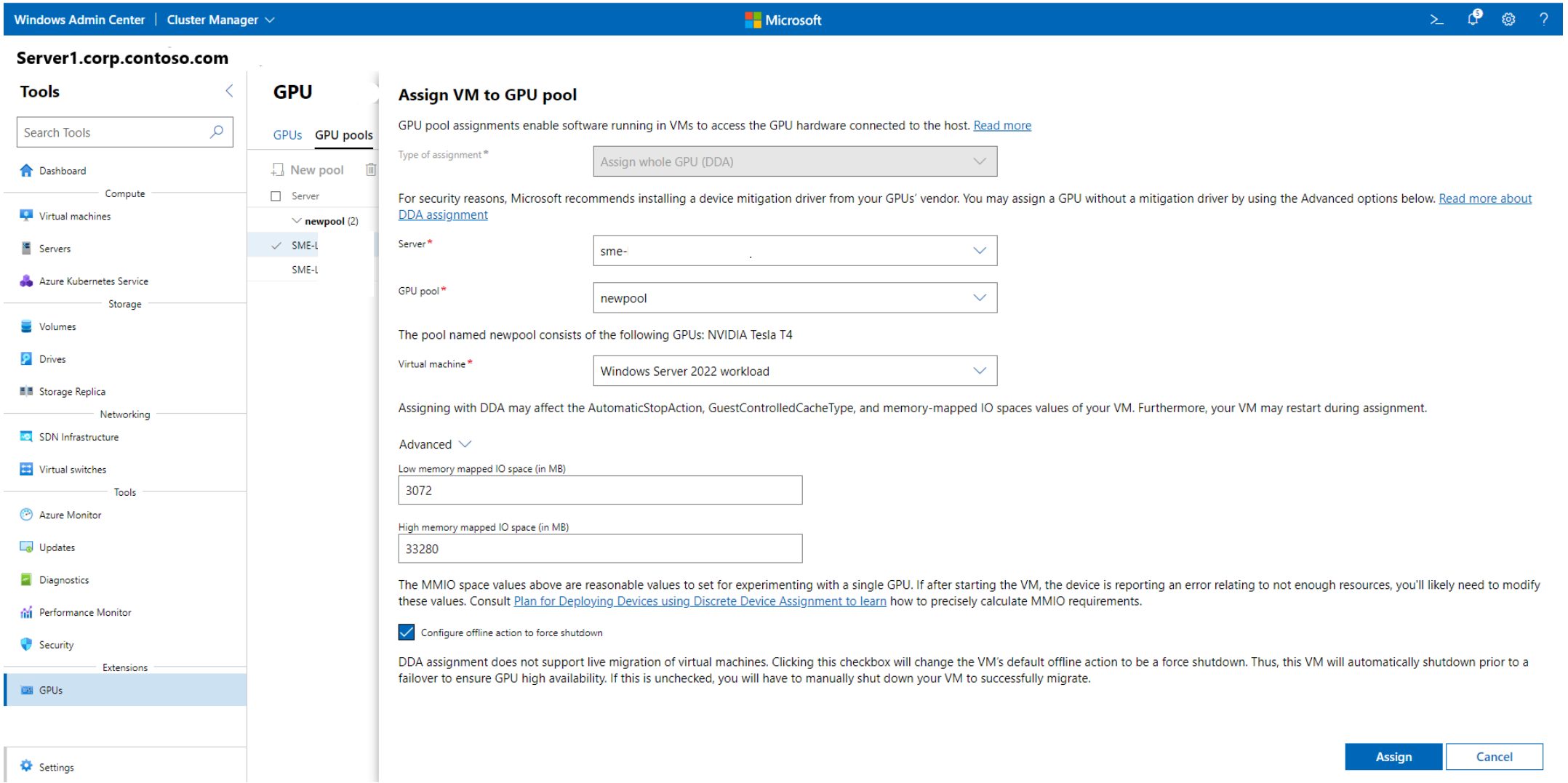

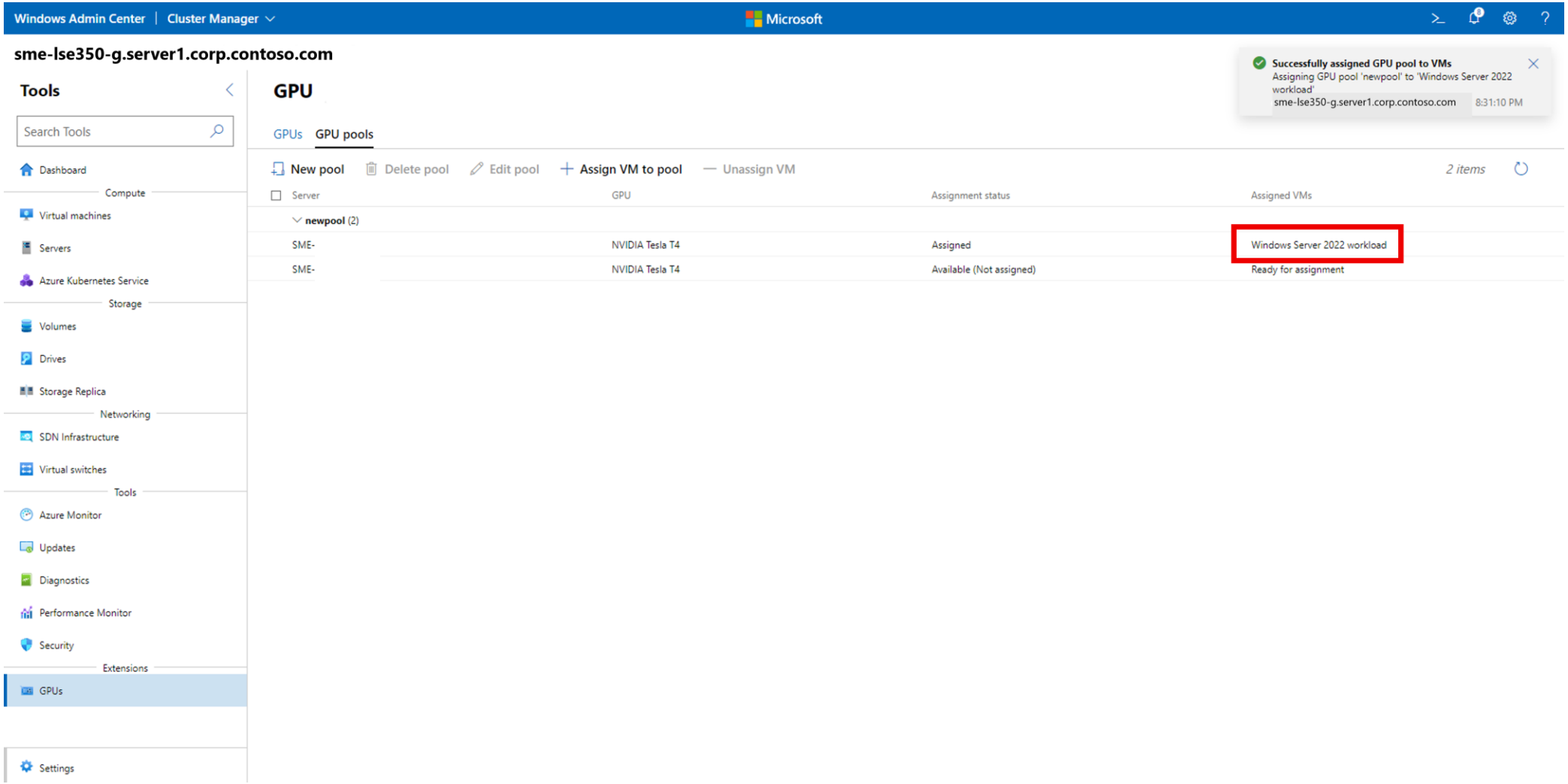

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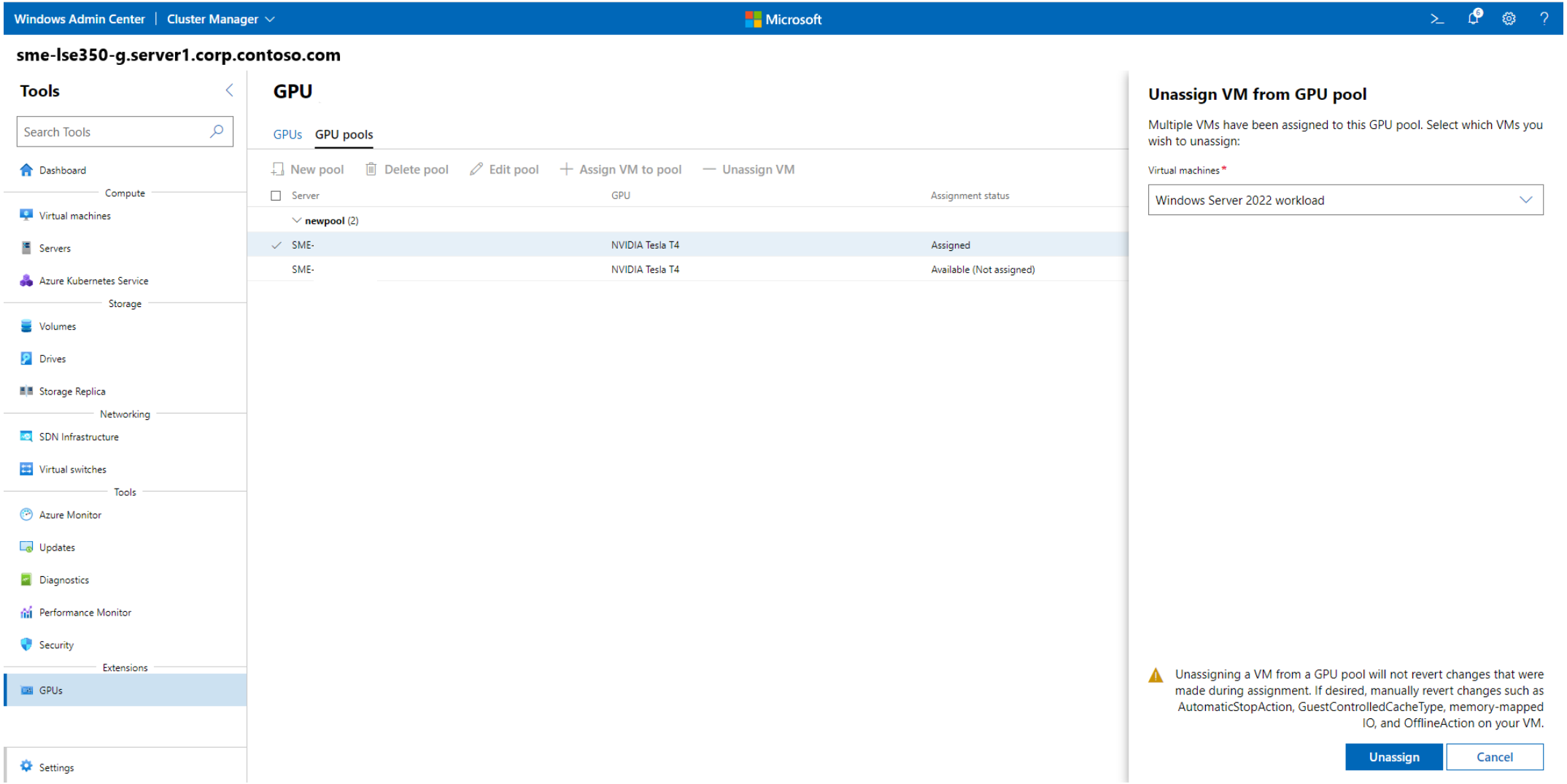

Dynamic processor compatibility mode

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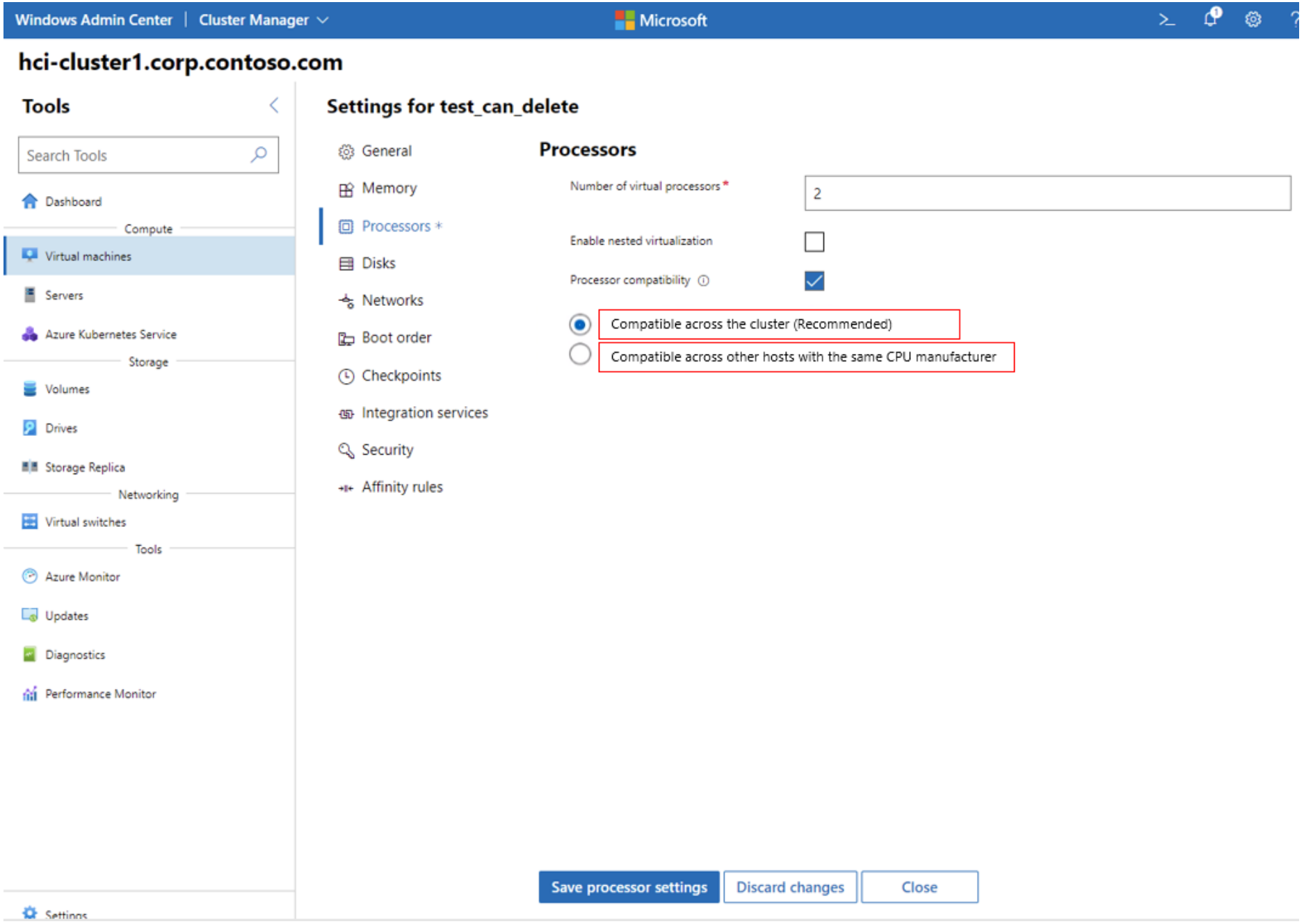

Live Demo

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Storage Thin Provisioning

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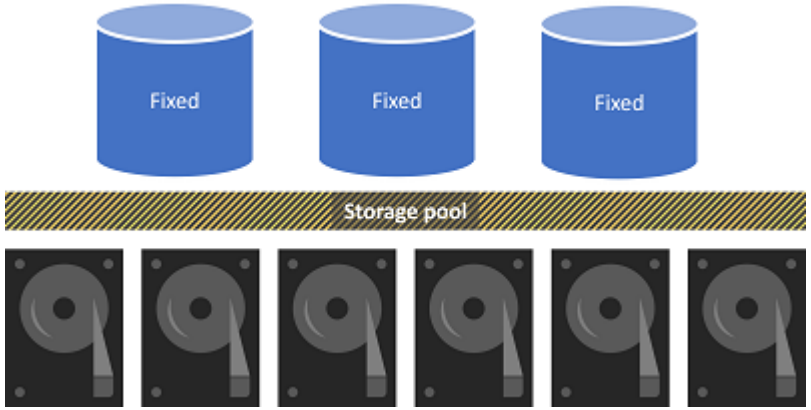
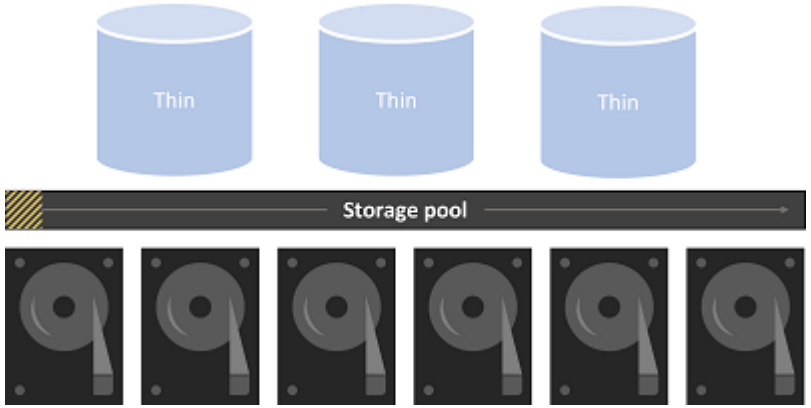
Thin vs. fixed provisioned volumes





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Live Demo

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Adjustable storage repair speed

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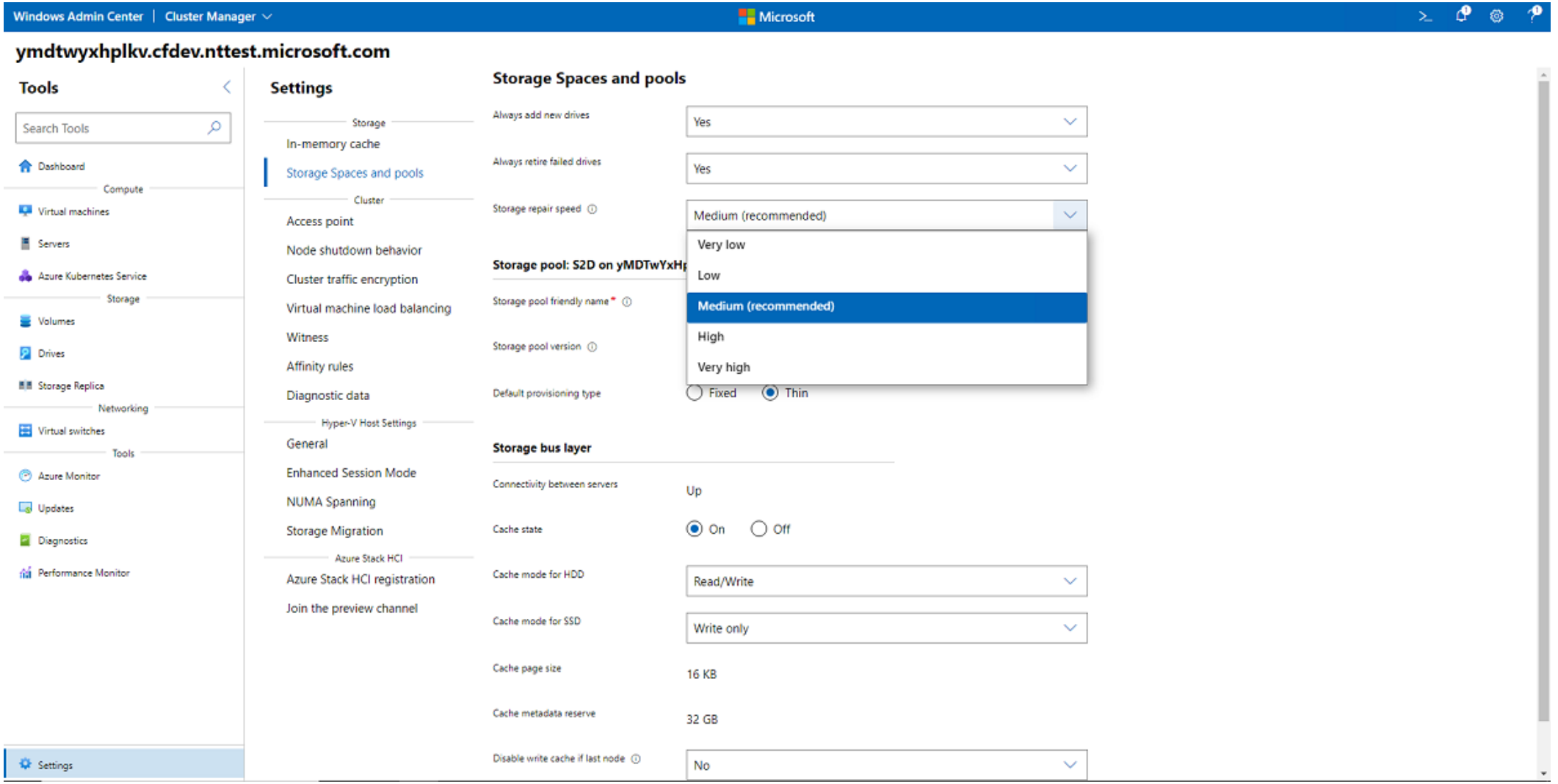

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Live Demo

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Nested virtualization on AMD

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Nested virtualization on AMD

Azure Stack HCI, version 21H2 adds support for nested virtualization on AMD processors. Now you can run nested virtualization on first generation EPYC processors or newer generations (Naples, Rome, Milan).

Prerequisites:

- Azure Stack HCI, version 21H2
- VM configuration version 10.0 or greater
- An AMD EPYC processor with SVM enabled

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Migration eines bestehenden Azure Stack HCI Clusters auf die Version 21H2

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Was kostet Azure Stack HCI OS?

Instanz	Zahlungsintervall	Preis
Azure Stack HCI	Monatliche Dienstgebühr	€9/physischer Kern/Monat

Azure Stack HCI offers a free trial for the first 60 days after registration. You will be charged the monthly service fee after your first 60 days using the service.

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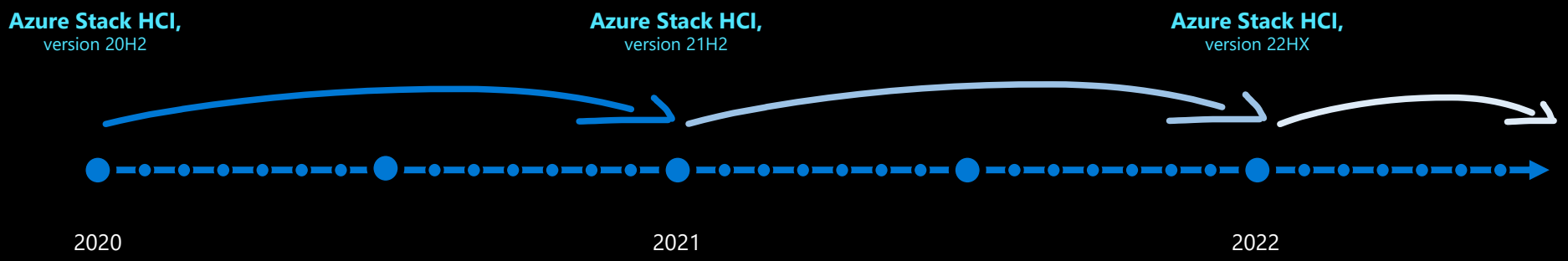
Azure Stack HCI has an always up-to-date subscription

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



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

d114-ashcicl21.mhdemolab.de

Tools

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Updates PREVIEW

Available updates | History

Updates are available

Microsoft recommends applying these updates now.

Feature update for Azure Stack HCI, version 21H2

Get faster performance, stronger security, and new features with today's update to Azure Stack HCI, version 21H2. New features include GPU support for clustered virtual machines, improved processor compatibility, adjustable storage resync speed, thin provisioning for storage volumes, intent-based cluster network configuration, and AES-256 encryption. Learn more

Install | Check for updates | Cancel the install

Select update type

(•) Feature update (Recommended) ( ) Quality updates only

Name	OS version	State
d114-ashcin01	10.0.17784	Available
Feature update to Microsoft server operating system, version 21H2		
d114-ashcin02	10.0.17784	Available
Feature update to Microsoft server operating system, version 21H2		

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Install

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d114-ashcin02	10.0.17784	Available
Feature update to Microsoft server operating system, version 21H2		

Feature updates include quality updates

You don't need to install them separately. You do have to install feature updates within six months of release to stay supported.

Got it Cancel

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Install updates

1 Readiness Check | 2 Install

Condition	Result
Every server has enough free space on the boot volume.	Passed
CPU resources are available to move VMs.	Checking...
Cluster validation: cluster configuration	Checking...
Cluster validation: Hyper-V configuration	Checking...
Cluster validation: system inventory	Checking...
Memory is available to move VMs.	Checking...
Cluster validation: network	Checking...
Every server uses the same OS release channel.	Passed
All volumes are healthy with full resilience.	Passed
Cluster validation: Storage Spaces Direct	Checking...
Cluster validation: system configuration	Checking...

Checking that the cluster is ready to be updated...

Check again

Back | Next: Install | Exit

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Install updates

1 Readiness Check | 2 Install

Condition	Result
Every server has enough free space on the boot volume.	Passed
CPU resources are available to move VMs.	Passed
Cluster validation: cluster configuration	Warning Details
Cluster validation: Hyper-V configuration	Passed
Cluster validation: system inventory	Passed
Memory is available to move VMs.	Passed
Cluster validation: network	Passed
Every server uses the same OS release channel.	Passed
All volumes are healthy with full resilience.	Passed
Cluster validation: Storage Spaces Direct	Passed
Cluster validation: system configuration	Warning Details

Please review warnings before updating.

Check again

Back | Next: Install | Exit

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Install updates

Readiness Check | 2 Install

Review the updates listed below. When you're ready, select Install to start the update.

If an update requires restarting servers, we do so one at a time, moving cluster roles such as VMs between servers to prevent downtime.

Name
d114-ashcin01
Feature update to Microsoft server operating system, version 21H2
d114-ashcin02
Feature update to Microsoft server operating system, version 21H2

This update contains new features and could take longer than other updates.

Update the cluster functional level to enable new features

Back | Install | Exit

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Starting the update run...

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Updates PREVIEW

Available updates | History

Installing updates
Wait until updating is complete before using any other tools to update this cluster.

Install | Check for updates | Cancel the install

Name	OS version	State
d114-ashcin01	10.0.17784	Waiting
d114-ashcin02	10.0.17784	Scanning

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Available updates | History

Installing updates

Wait until updating is complete before using any other tools to update this cluster.

Install | Check for updates | Cancel the install

Name	OS version	State
d114-ashcin01	10.0.17784	Waiting
d114-ashcin02	10.0.17784	Installing new OS

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Updates PREVIEW

Available updates | History

Installing updates
Wait until updating is complete before using any other tools to update this cluster.

Install | Check for updates | Cancel the install

Name	OS version	State
d114-ashcin01	10.0.17784	Staging
d114-ashcin02	10.0.20348	Updates applied

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Installing updates
Wait until updating is complete before using any other tools to update this cluster.

Install | Check for updates | Cancel the install

Name	OS version	State
d114-ashcin01	10.0.17784	Installing new OS
d114-ashcin02	10.0.20348	Updates applied

s2dclusterwd.mhdemolab.de

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Hyper-V Host Settings
- General
- Enhanced Session Mode
- NUMA Spanning
- Storage Migration

Azure Stack HCI
- Azure Stack HCI registration
- Activate Windows Server VMs
- Join the preview channel

Storage Spaces and pools

Always add new drives: Yes

Always retire failed drives: Yes

Storage pool: S2D on S2DClusterWD

Storage pool friendly name *: S2D on S2DClusterWD

Storage pool version: Windows Server 2019

Default provisioning type: Fixed

Storage bus layer

Connectivity between servers: Up

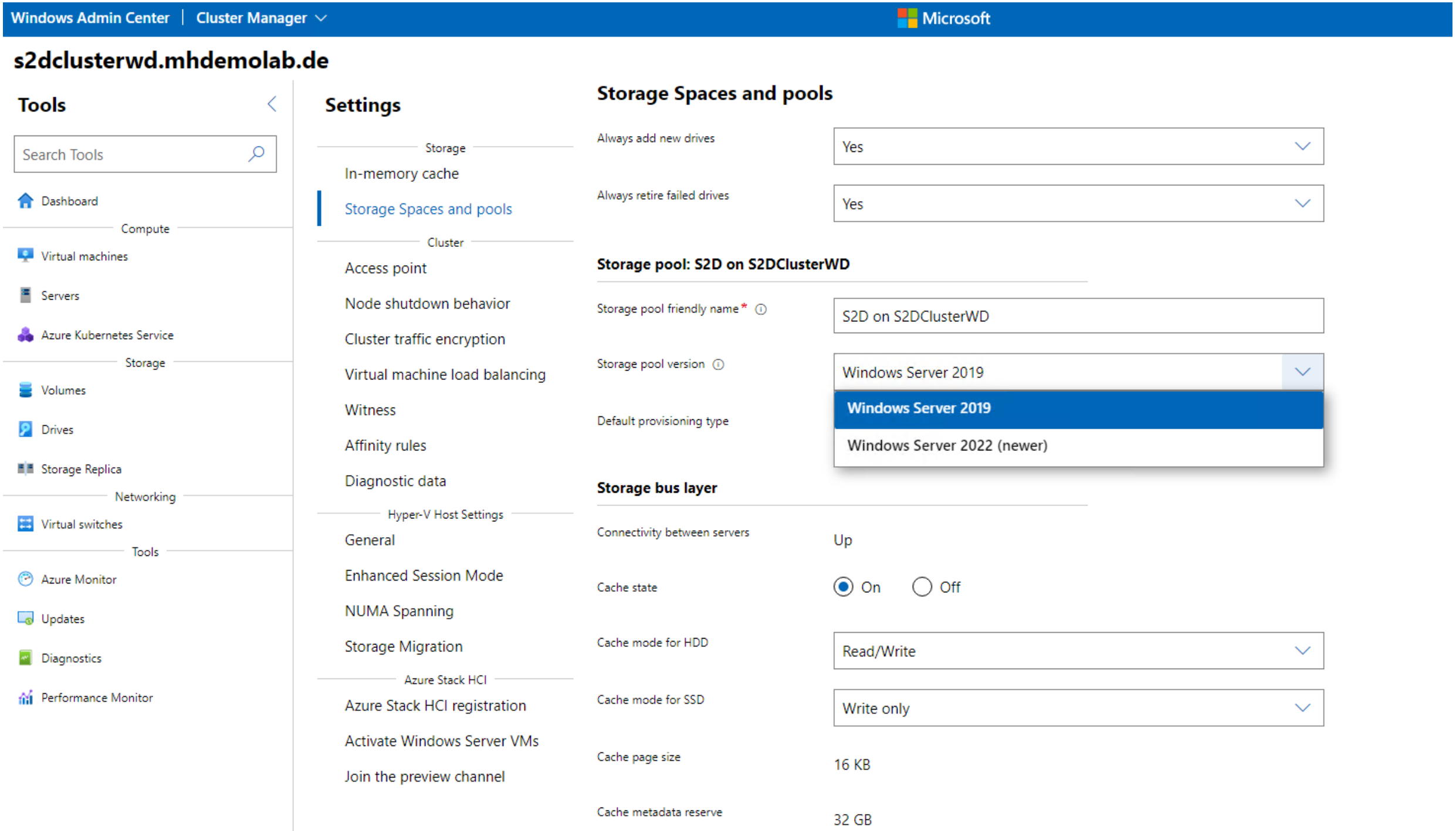
Cache state: (•) On ( ) Off

Cache mode for HDD: Read/Write

Cache mode for SSD: Write only

Cache page size: 16 KB

Cache metadata reserve: 32 GB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Storage Spaces and pools
Always add new drives
Yes
Always retire failed drives
Yes
Storage pool: S2D on S2DClusterWD
Storage pool friendly name*
S2D on S2DClusterWD
Storage pool version
Windows Server 2019
Windows Server 2019
Windows Server 2022 (newer)
Default provisioning type
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Connectivity between servers
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Storage Spaces and pools

Always add new drives: Yes

Always retire failed drives: Yes

Storage pool: S2D on S2DClusterWD

Storage pool friendly name *: S2D on S2DClusterWD

Storage pool version: Windows Server 2022 (newer)

⚠ Increasing the storage pool version can't be undone.

Default provisioning type: Fixed

Storage bus layer

Connectivity between servers: Up

Cache state: (•) On ( ) Off

Cache mode for HDD: Read/Write

Cache mode for SSD: Write only

Cache page size: 16 KB

Cache metadata reserve: 32 GB

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Storage Spaces and pools

Always add new drives: Yes

Always retire failed drives: Yes

Storage pool: S2D on S2DClusterWD

Storage pool friendly name *: S2D on S2DClusterWD

Storage pool version: Windows Server 2022

Default provisioning type: (•) Fixed ( ) Thin

Storage bus layer

Connectivity between servers: Up

Cache state: (•) On ( ) Off

Cache mode for HDD: Read/Write

Cache mode for SSD: Write only

Cache page size: 16 KB

Cache metadata reserve: 32 GB

Ausblick auf die künftige Entwicklung von Azure Stack HCI

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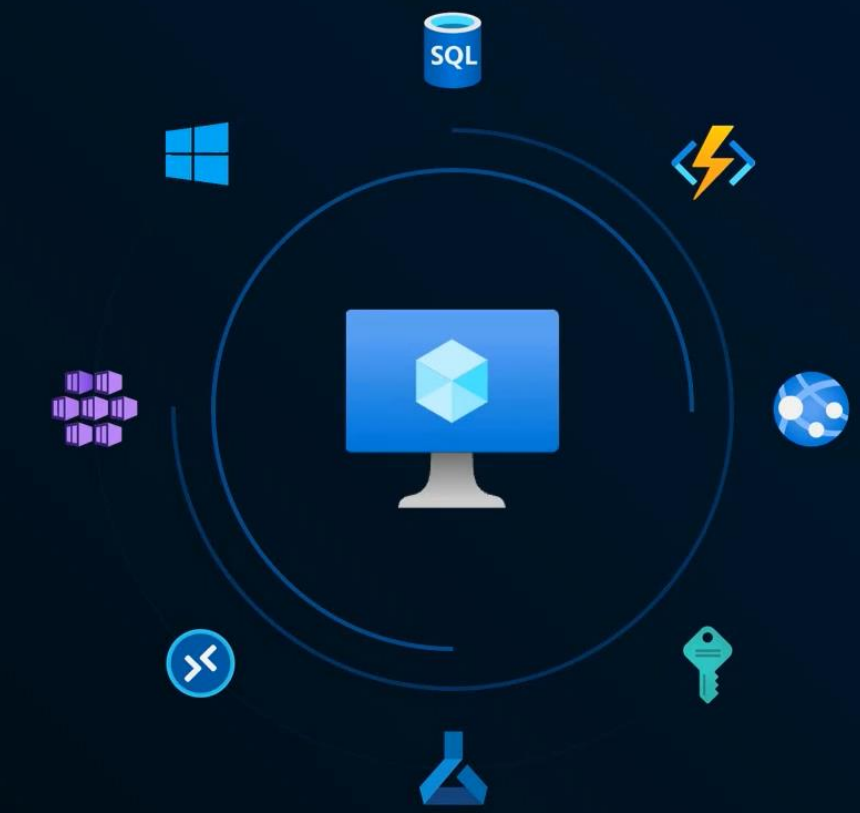
Azure workloads and benefits

on Azure Stack HCI



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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

Quelle: https://myignite.microsoft.com/sessions/7384a019-3100-4153-bd18-6a9520c11498?source=sessions

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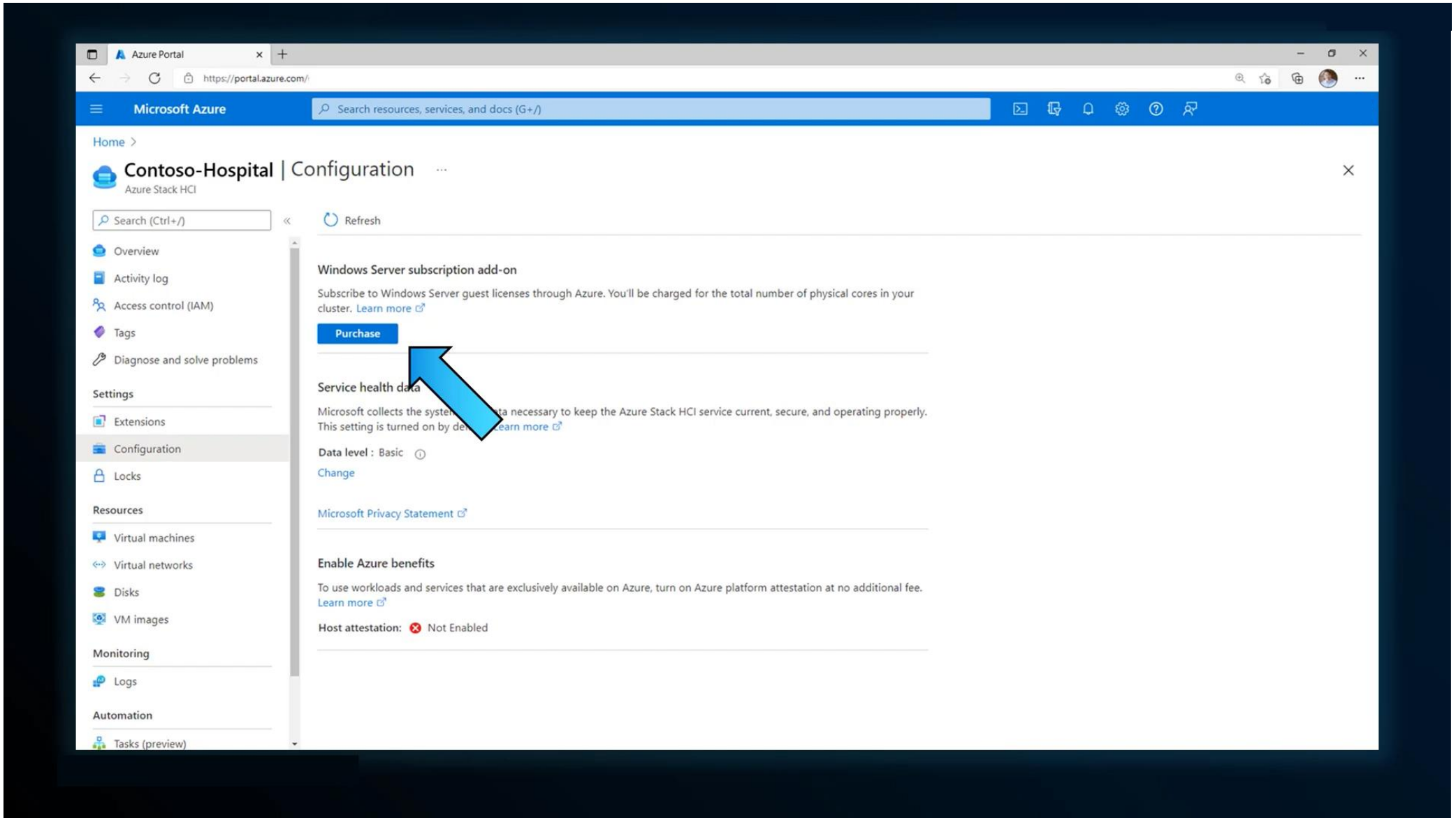

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Quelle: https://myignite.microsoft.com/sessions/7384a019-3100-4153-bd18-6a9520c11498?source=sessions

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

Quelle: https://myignite.microsoft.com/sessions/7384a019-3100-4153-bd18-6a9520c11498?source=sessions

Continuous Azure Kubernetes Service innovation

Monthly AKS-HCI releases since general availability in May 2021

June
2106 update

Prometheus integration
- Deploy Prometheus with -enableMonitoring parameter
- Deploy to existing workload with Install-AksHciMonitoring cmdlet

PowerShell fixes
- Fix upgrade path when target cluster exists
- Update yaml with KVA Version on upgrade

AKS-HCI infrastructure fixes and
- KVA version upgrade
- CSI upgrade before Cluster upgrade to fix upgrade hang
- Telemetry upgrade
- Block nodepool scale if there is OS upgrade available
- Make clusterAPI upgrade its own Phase of Upgrade
- kvactl http timeout fix

Security fixes
- Path traversal fix

Break glass scenario
- Token Rotation on AKS-HCI host Upgrade
- Admin token rotation in cloudagent
- Repair PowerShell cmdlets

July
2107 update

Features
- Node pool support for AKS-HCI (PowerShell only)
- Multiple Windows and Linux node pools of different sizes
- Separate Panic Traces to improve debugging of errors
- Storage container info
- Secure Boot enabled by default for all VMs
- Encrypt node agent's windows registry config store data
- Automatically spreading the VM data across all the CSVs in the environment to improve reliability
- Calico is now the default CNI plugin for target cluster
- Bump up latest Go version to 1.15.x
- Step upgrade support for users in GA to move to July update

Windows Admin Center
- Dynamic support for PowerShell versioning
- Accessibility updates
- Reliability improvements
- Bug fixes in upgrade scenarios

Bug fixes
- Fixed AKSHCI monitoring using PowerShell
- Fixed WAC error during update from GA build to newer version
- TLS Versions

August
2108 update

Features
- Support for ContainerD on Linux
- Continued GPU platform support (private preview)
- Enable/Disable-AksHciPreview to switch between rings
- KVA/Node pool status clear error reporting
- KVA Stage to Wait for Appliance IP
- Update CloudAgent service starts individual resources rather than group
- Check for cloudservicecidr parameters in static IP based deployments
- Security – Compiler flags
- Security – TLS versions

Linux
- ContainerD replacing Moby
- GPU drivers in CBL-Mariner

Windows
- Update calico, flannel and kube-proxy container image pipelines
- Update cloud operator to support WS 2022 worker node

Windows Admin Center
- Fixed CredSSP setup errors and DeploymentStatusComponent
- Node pool UI added in WAC
- UX to deploy arc appliance through WAC

Bug fixes
- Do not allow deletion of VHD in use
- Fixed CloudAgent crash during concurrent map access and write
- Fixed CloudAgent hang during vhd attach

Source: github.com/azure/aks-hci/releases

Quelle: https://myignite.microsoft.com/sessions/7384a019-3100-4153-bd18-6a9520c11498?source=sessions

Arc-enabled PaaS services on Azure Stack HCI

Each with their own scenarios and feature roadmap

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.

API management (preview)

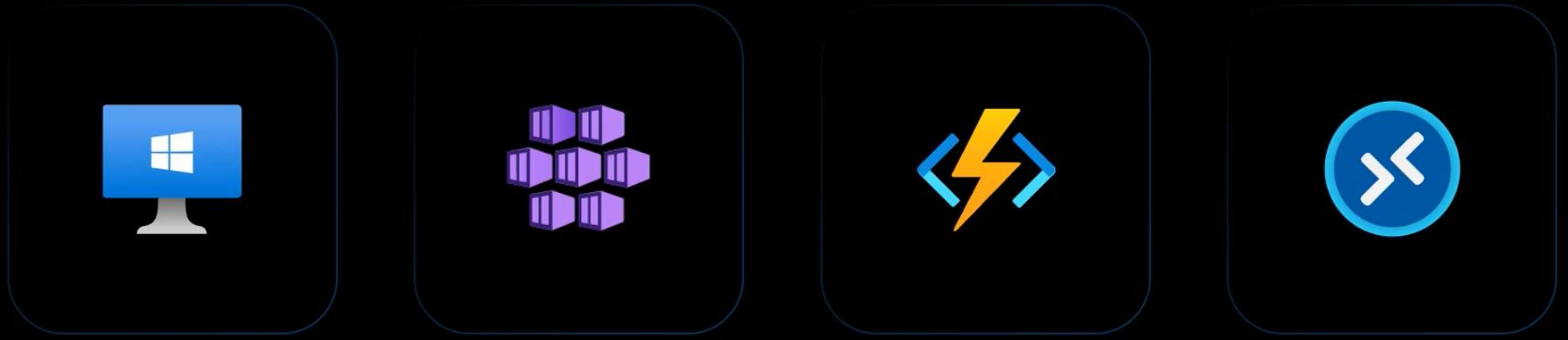
Move faster with unified management platform for APIs across hybrid, edge, multi-cloud, and all your environments.

Tutorials, demos and more: aka.ms/AzureArcJumpstart

Quelle: https://myignite.microsoft.com/sessions/7384a019-3100-4153-bd18-6a9520c11498?source=sessions

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

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Azure management and governance

for Azure Stack HCI

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Multi-cluster monitoring in the Azure Portal

with Azure Monitor Insights for Azure Stack HCI (preview)

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

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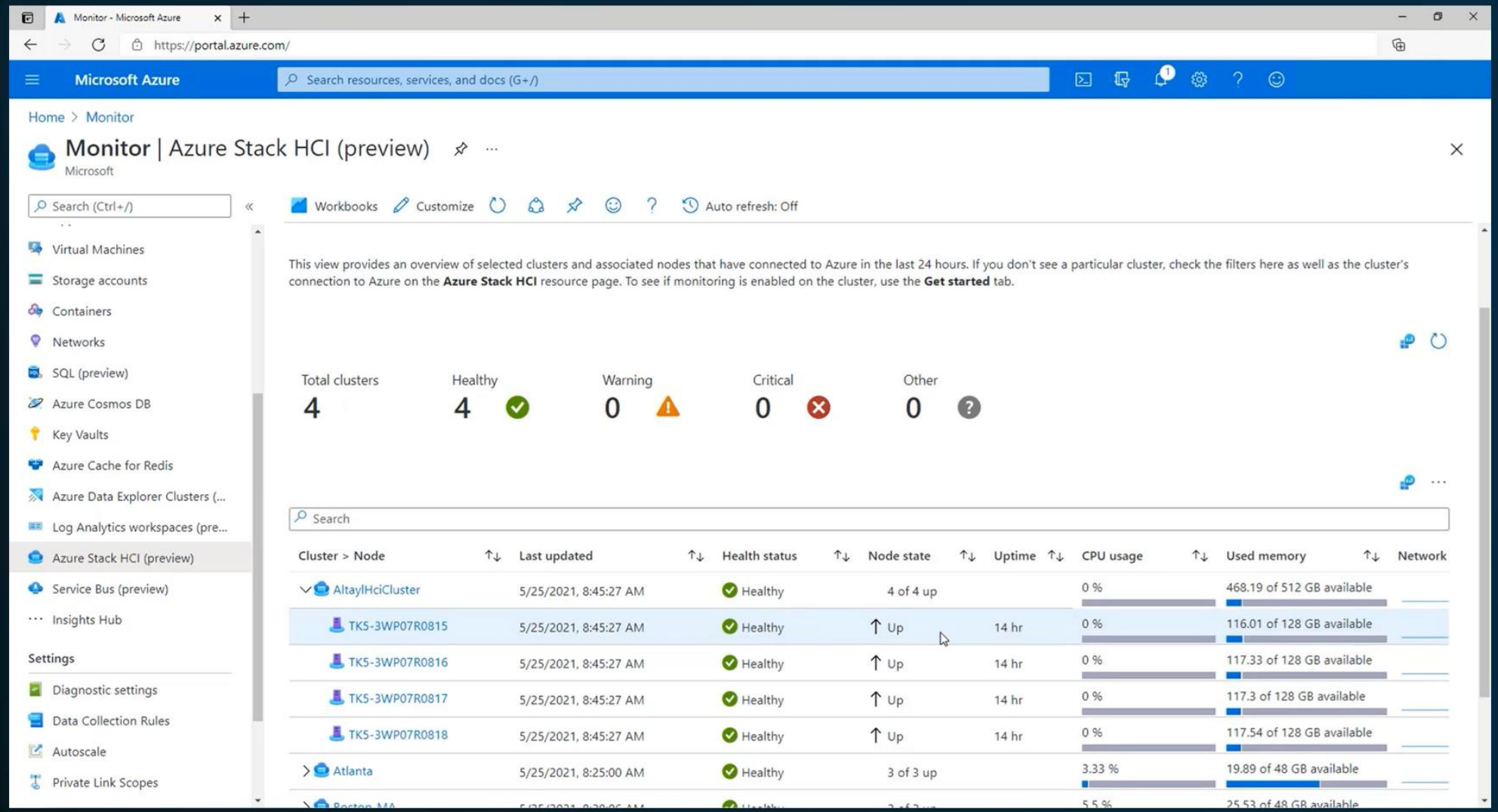
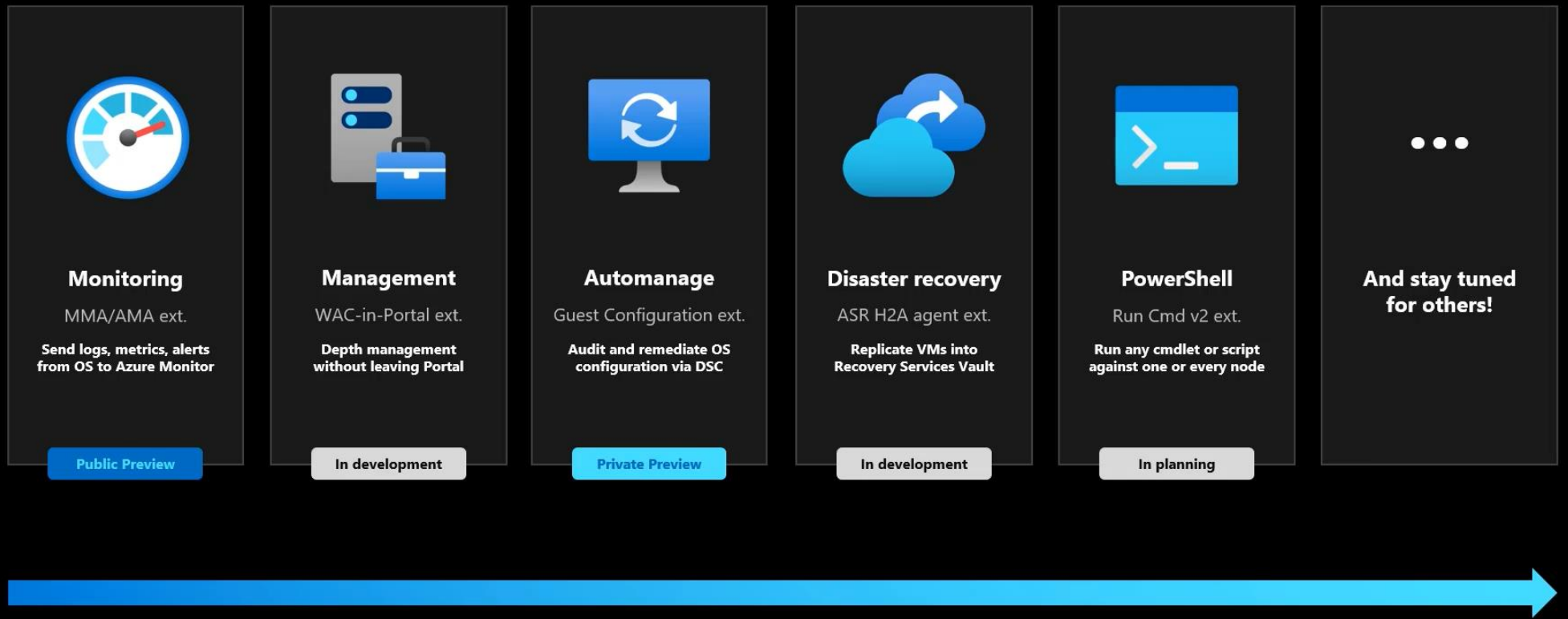


Quelle: https://myignite.microsoft.com/sessions/7384a019-3100-4153-bd18-6a9520c11498?source=sessions

Roadmap: Extensions planned for Azure Stack HCI

Adding powerful new functionality through the extension mechanism



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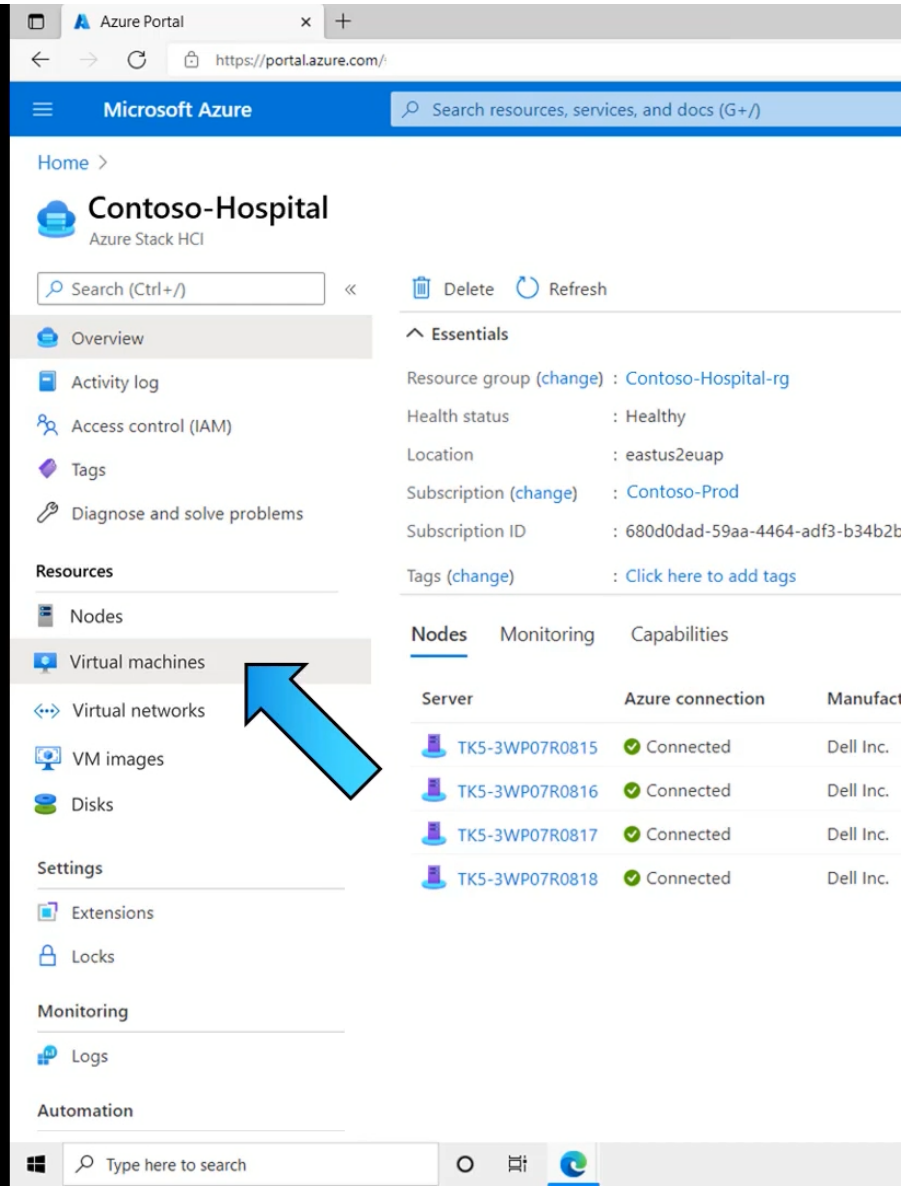
New

Provision and manage VMs from the Azure Portal



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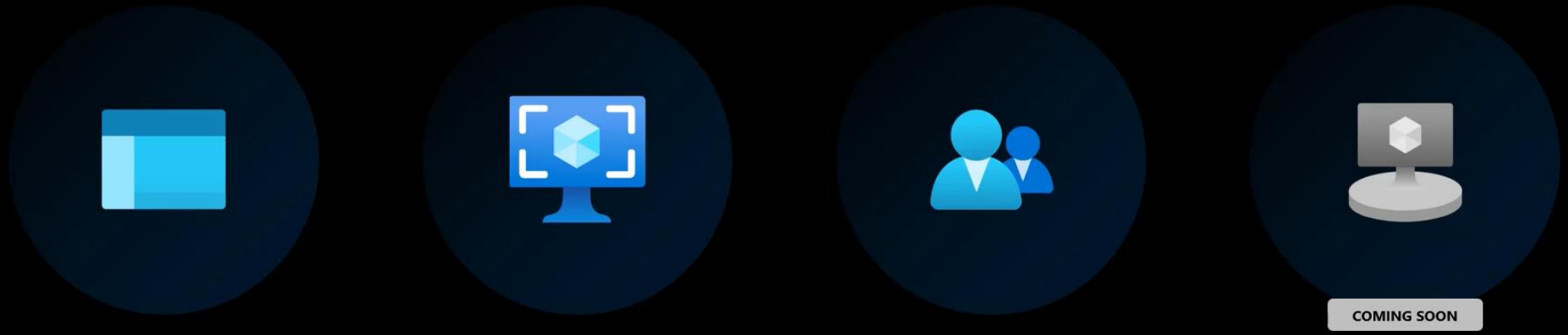
Provision and manage VMs from the Azure Portal

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

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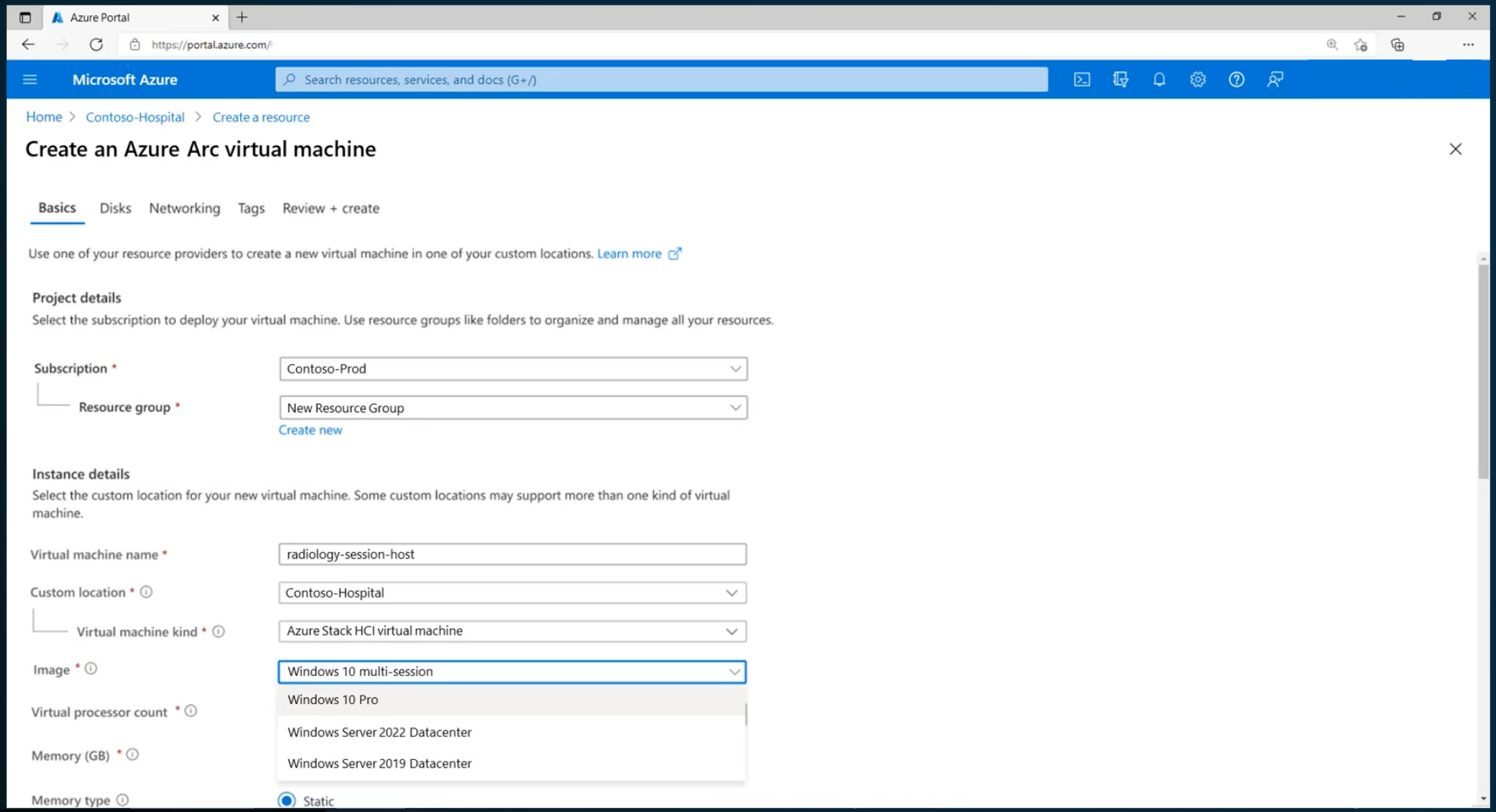

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Lösungen von Thomas Krenn für Azure Stack HCI

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Manfred Helber

Microsoft® MVP Most Valuable Professional

Lösungen von Thomas Krenn für Azure Stack HCI

Vergleichen

AzSHCI Series Dual-AMD 2U - RA22x

Thomas-Krenn.AG

Skalieren: 2 bis 4 Knoten
CPU: 16 bis 128 Kerne
RAM: 64GB bis 1TB

9 verschiedene Lösungen

Konfigurieren >

Vergleichen

AzSHCI Series Dual-Intel 2U - RI22x

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Skalieren: 2 bis 4 Knoten
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RAM: 64GB bis 1TB

9 verschiedene Lösungen

Konfigurieren >

Vergleichen

AzSHCI Series Dual-AMD 4U - RA24x

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6 verschiedene Lösungen

Konfigurieren >

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Skalieren: 2 bis 4 Knoten
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RAM: 64GB bis 1TB

6 verschiedene Lösungen

Konfigurieren >

Vergleichen

Azure Stack HCI Micro-Cluster

Thomas-Krenn.AG

Skalieren: 2 Knoten
CPU: 8 bis 16 Kerne
RAM: 128GB bis 128GB

1 Lösung

Konfigurieren >

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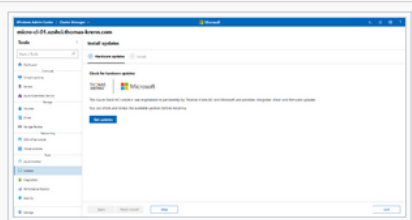
Thomas-Krenn Wiki

Driver & Firmware Updates - Windows Admin Center (WAC) Extension

Die **Windows Admin Center Extension** bietet eine einfache und zentrale Möglichkeit, **Treiber und Firmware Versionen zu installieren und upzudaten**. Dank der nahtlosen Integration in den Prozess des Cluster Aware Updating (CAU) Dienstes, sowie in den Cluster Creation Wizard (CCU) können bereits beim Deployment von Azure Stack HCI, bzw. bei der laufenden Wartung des HCI Clusters die Versionen gleich gehalten werden.

Die in der Extension verfügbaren Treiber und Firmware Versionen werden explizit mit den kompatiblen Systemen getestet und nach einem erfolgreichen Test für die Extension freigegeben. Somit können Sie immer auf Nummer sicher gehen, dass Sie genau die richtigen Versionen verwenden.

Inhaltsverzeichnis [Verbergen]



Start Screen der Driver & Firmware Updates Extension

Kompatibilität zu Thomas-Krenn-Systemen

Die Driver & Firmware Updates Extension ist zum aktuellen Zeitpunkt für folgende Systeme der Thomas-Krenn.AG kompatibel.

FRU und DMI-Namen der kompatiblen Systeme:

- Thomas-Krenn.AG AzSHCI Micro-Cluster TA

https://www.thomas-krenn.com/de/wiki/Driver_%26_Firmware_Updates_-_Windows_Admin_Center_(WAC)_Extension

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Vielen Dank!

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