

# Azure Stack HCI

## Wprowadzenie



Marek Serba 11.05.2023

# Marek Serba

Pracuje w IT od przeszło 14 lat

Azure Cloud Platform Manager

w firmie:

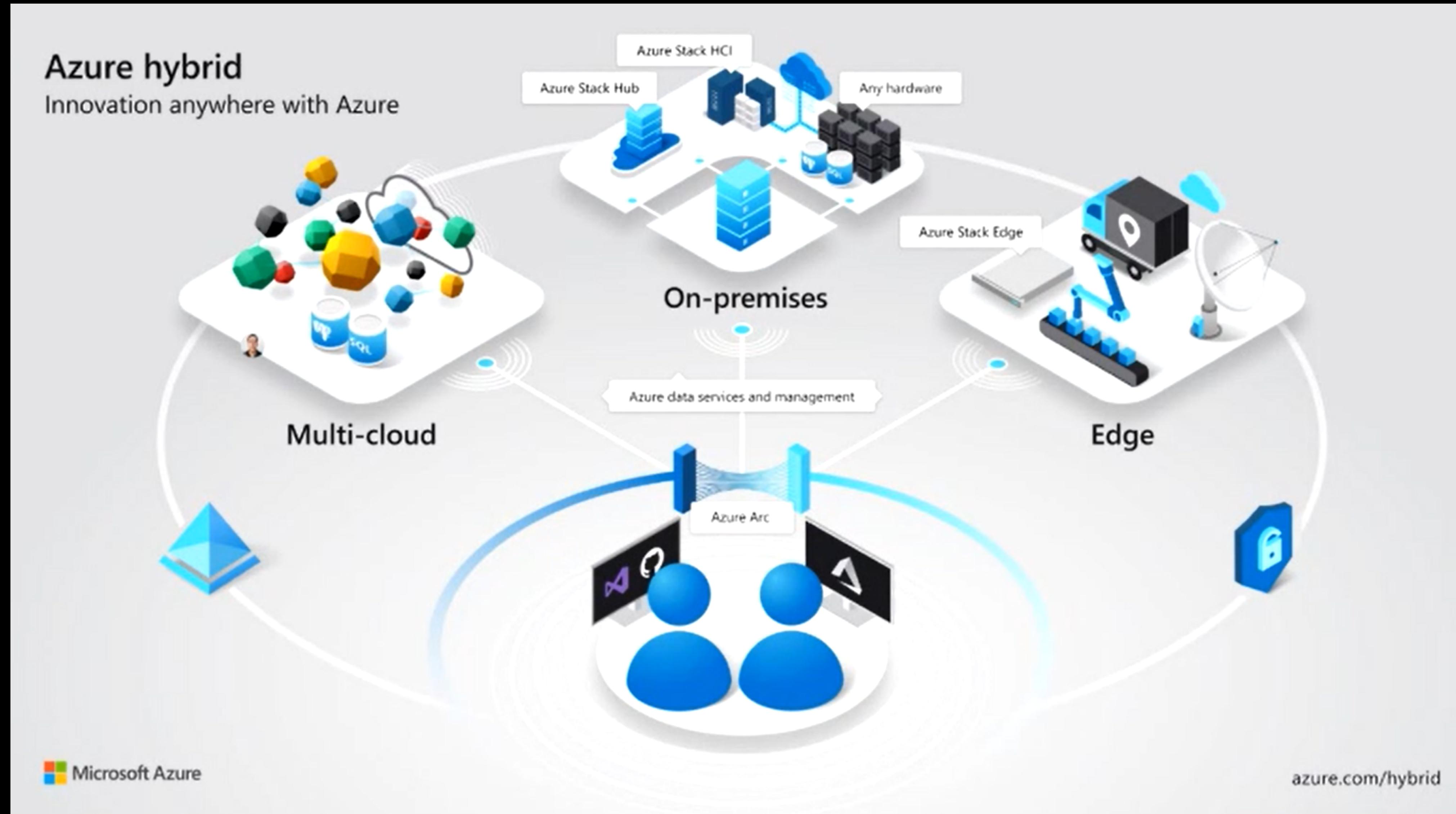


Links:

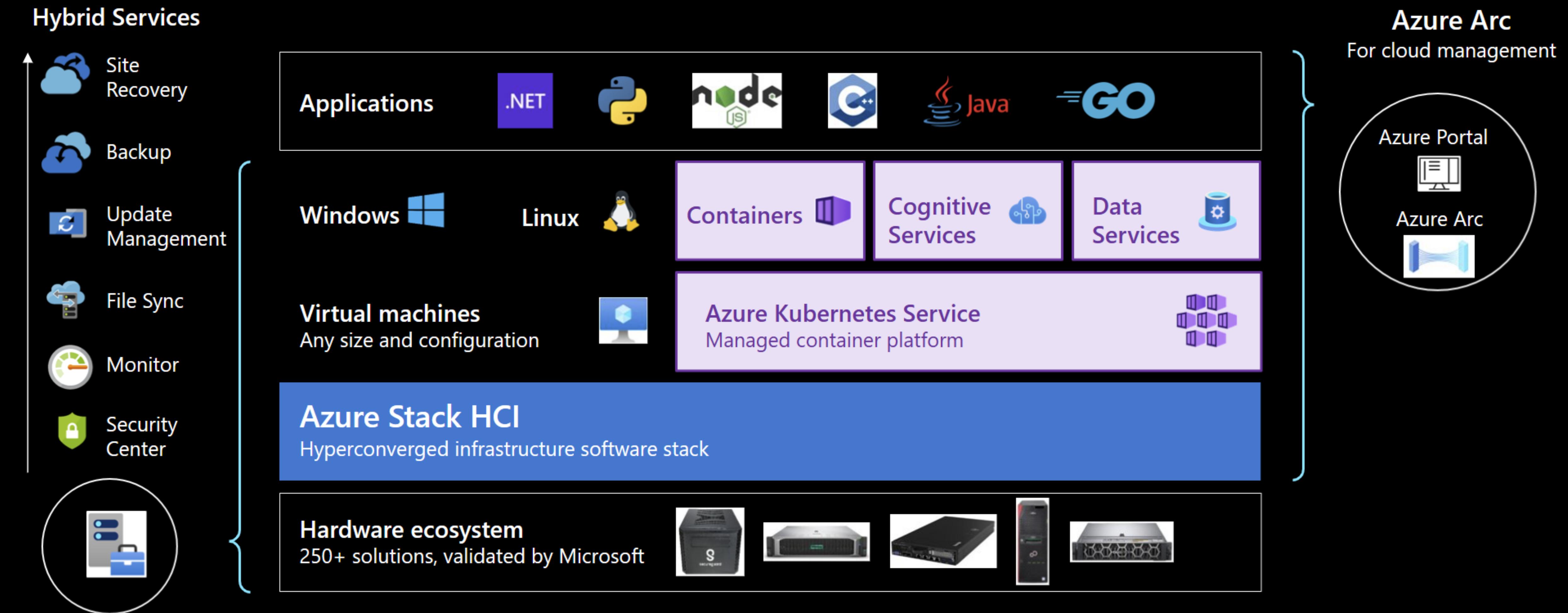
- [linkedin.com/in/techfellow](https://linkedin.com/in/techfellow)
- [github.com/technicalflow](https://github.com/technicalflow)
- [twitter.com/technicalflow](https://twitter.com/technicalflow)
- [mysmall.cloud](https://mysmall.cloud)



# Azure Hybrid



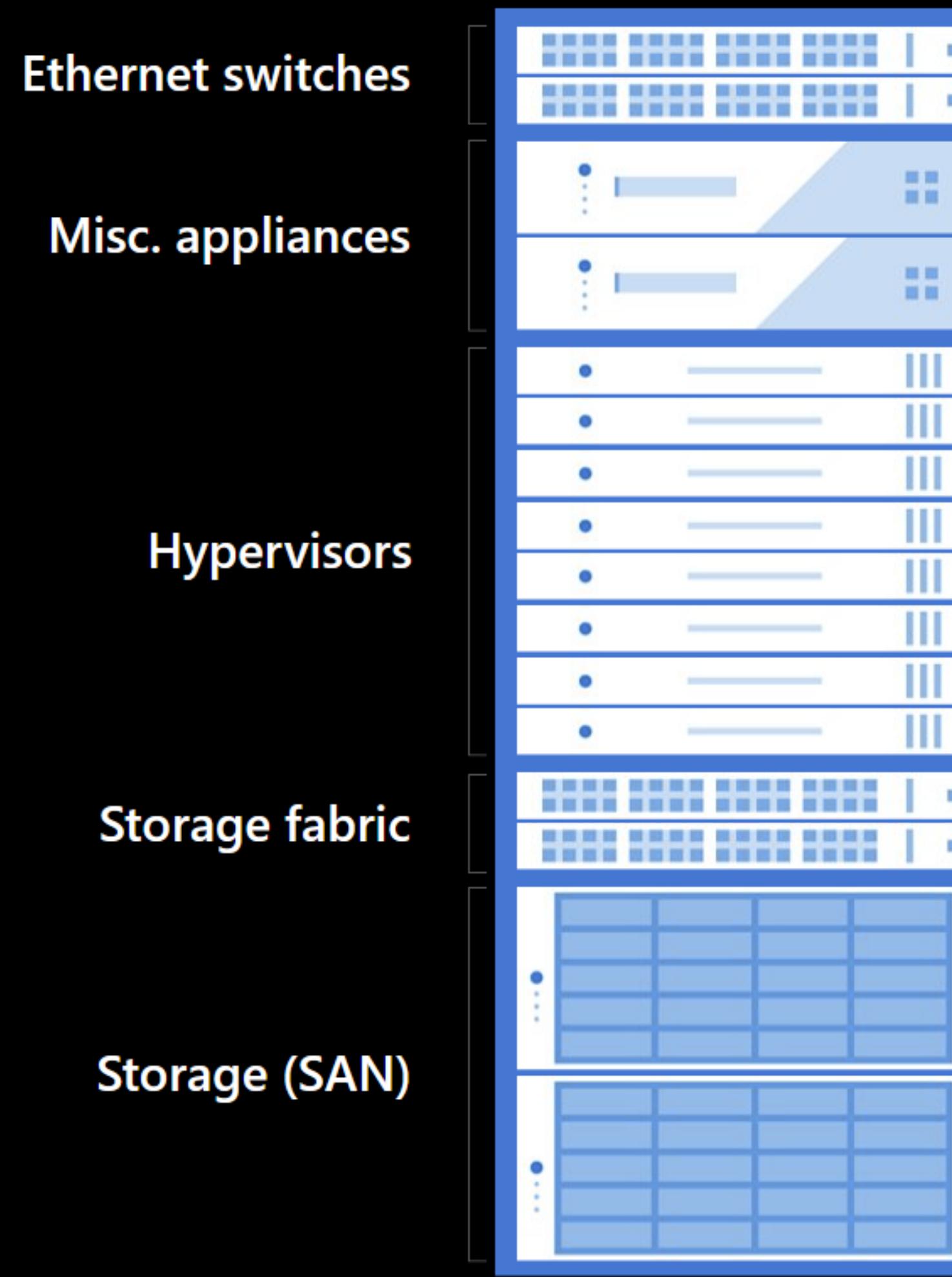
# Integration of Azure Stack HCI for hybrid all up



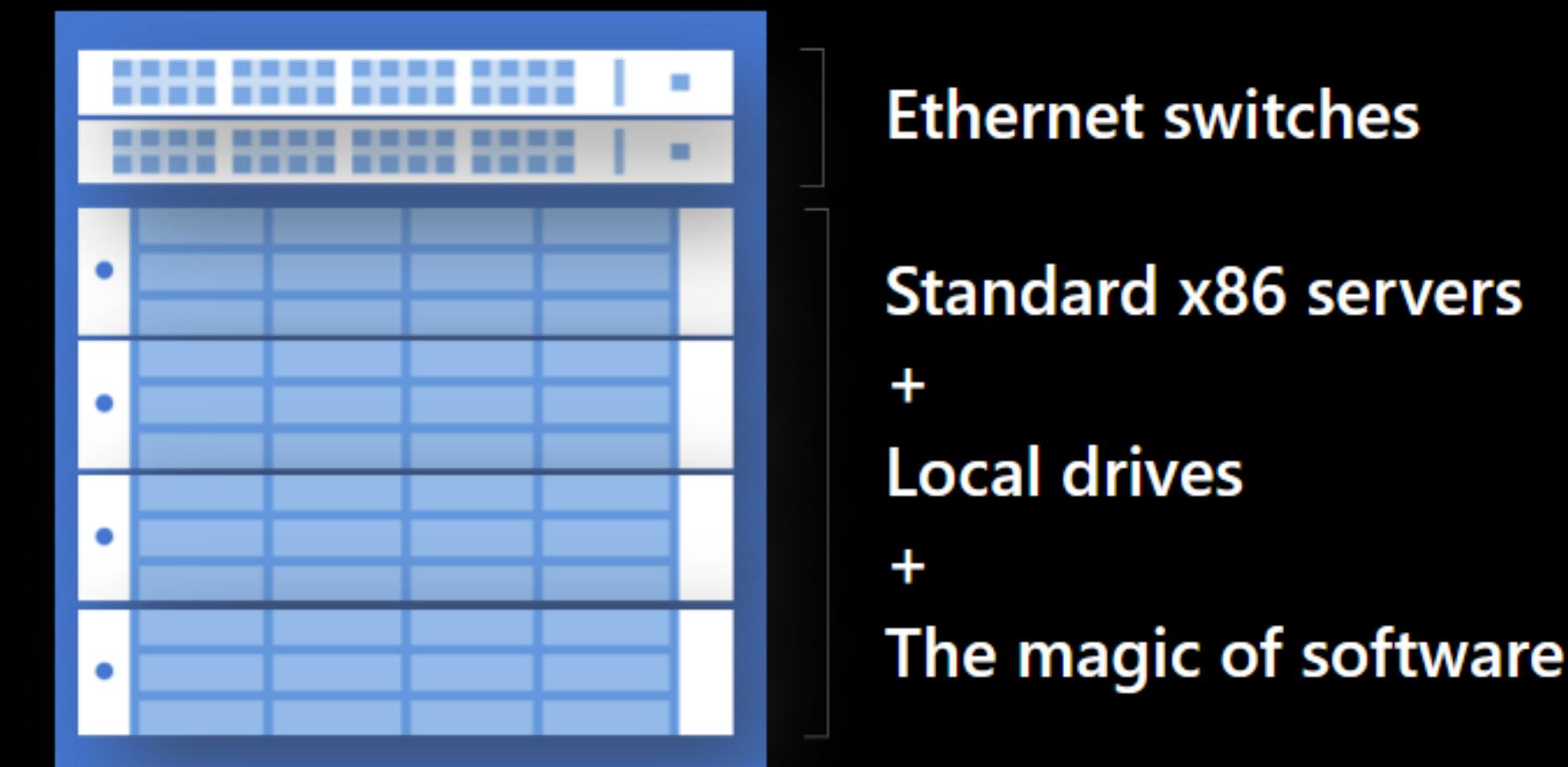
Windows Admin Center  
Edge-local management

# What is hyperconvergence? The de-facto standard in new infrastructure projects

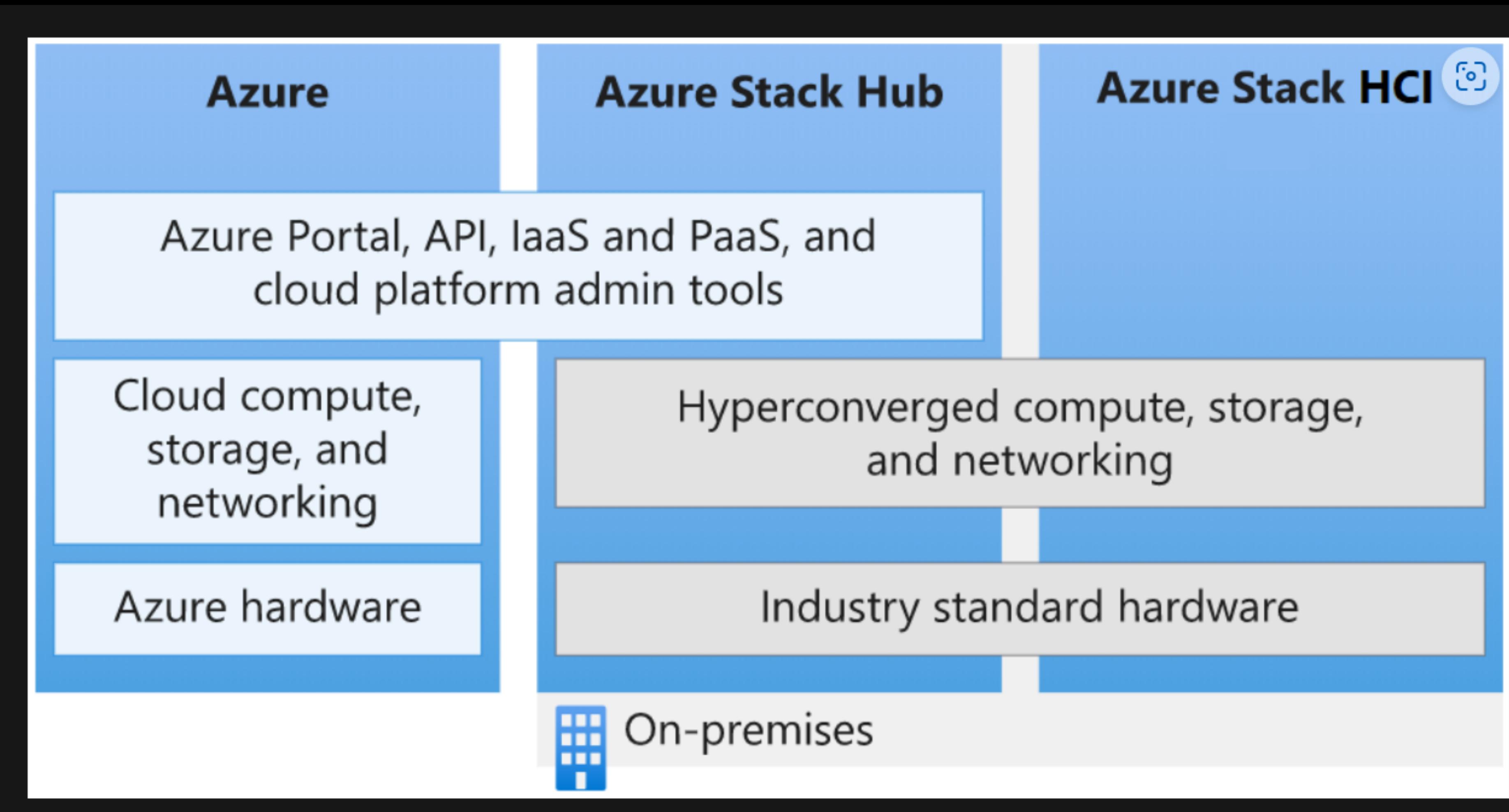
Legacy “three tier” infrastructure



Hyperconverged infrastructure (HCI)



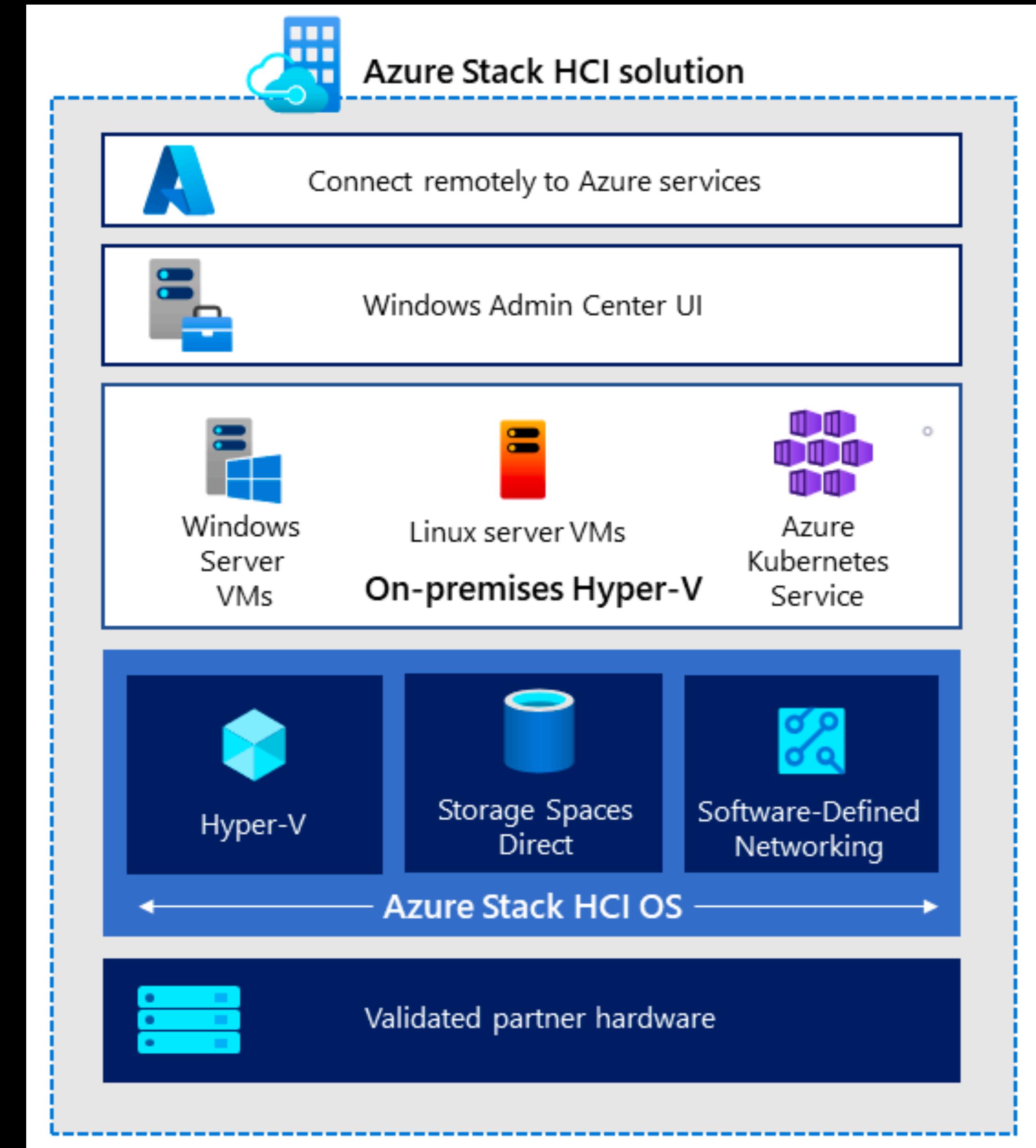
# Co na wierzchu ?



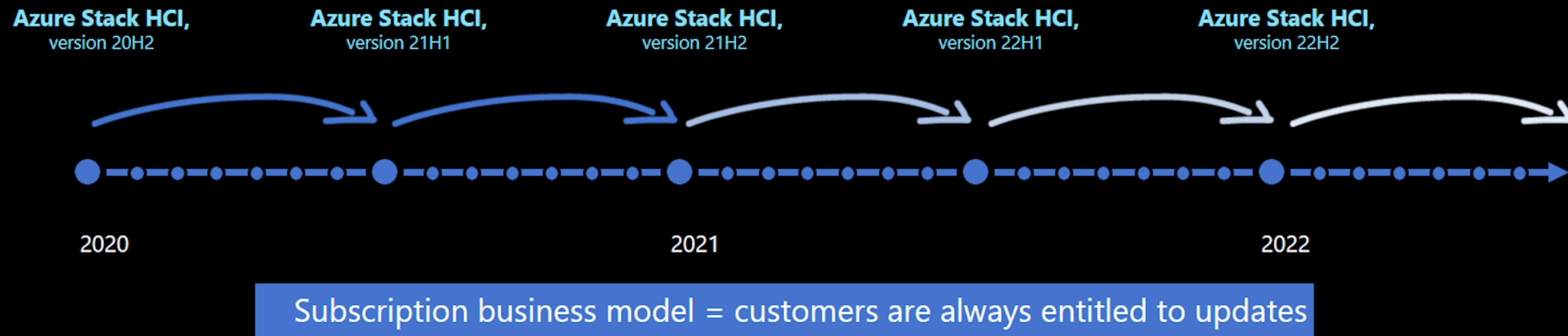
# A co pod spodem ?

## Azure Stack HCI Solution

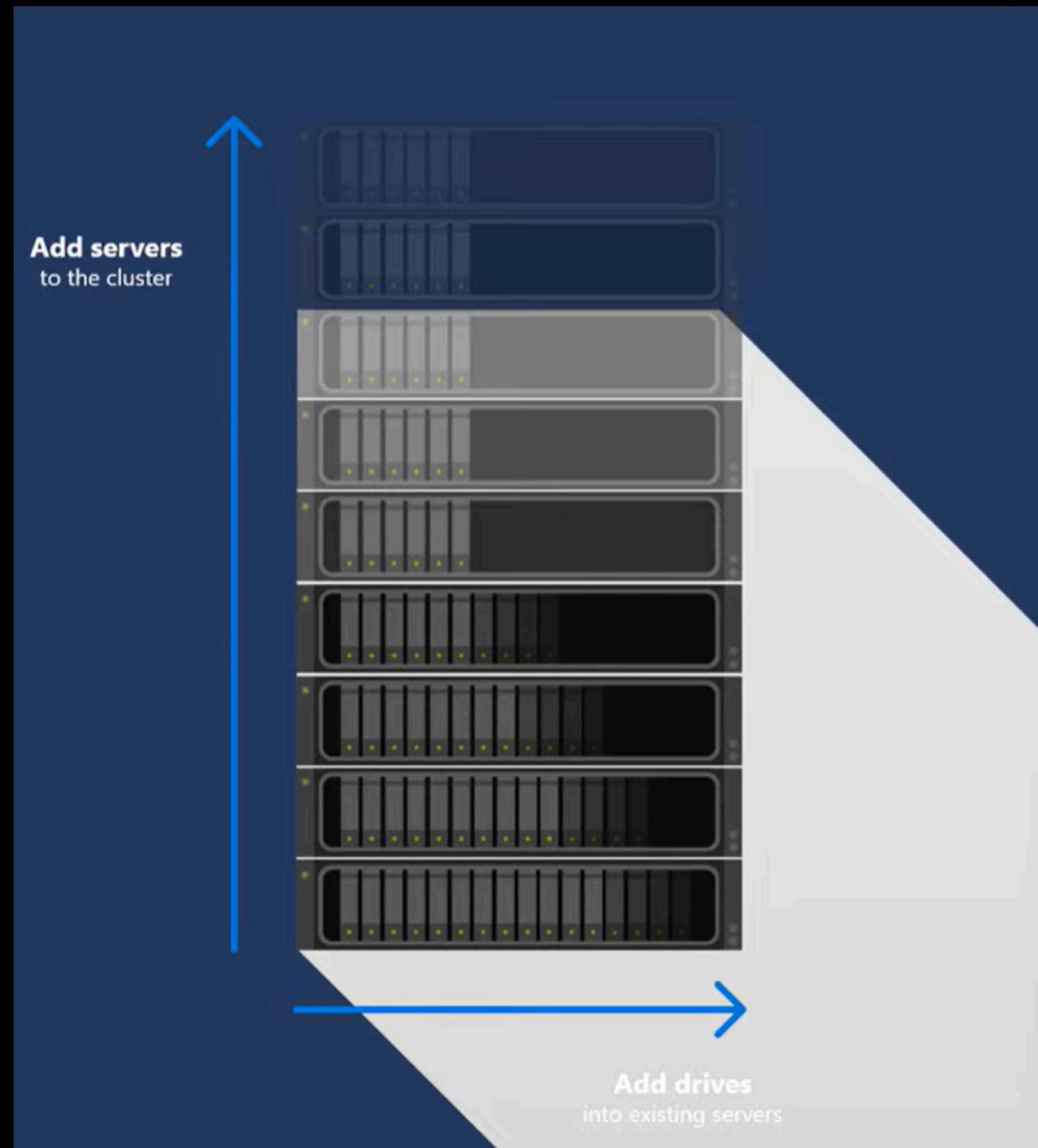
- Połaczenie do usług Azure
- Windows Admin Center
- Infrastruktura HCI
  - Hyper-V
  - Storage Spaces Direct
  - Software Defined Networking
- Azure Stack OS
- Hardware



# Azure Stack HCI - release plan



# Jakie wymagania ?



Infrastruktura od 2 do 16 nodów

Storage:

Minimum 4x SSD lub 2 SSD + 4 HDD

CPU

Any “Modern” CPU

Memory

Minimum 32GB per node

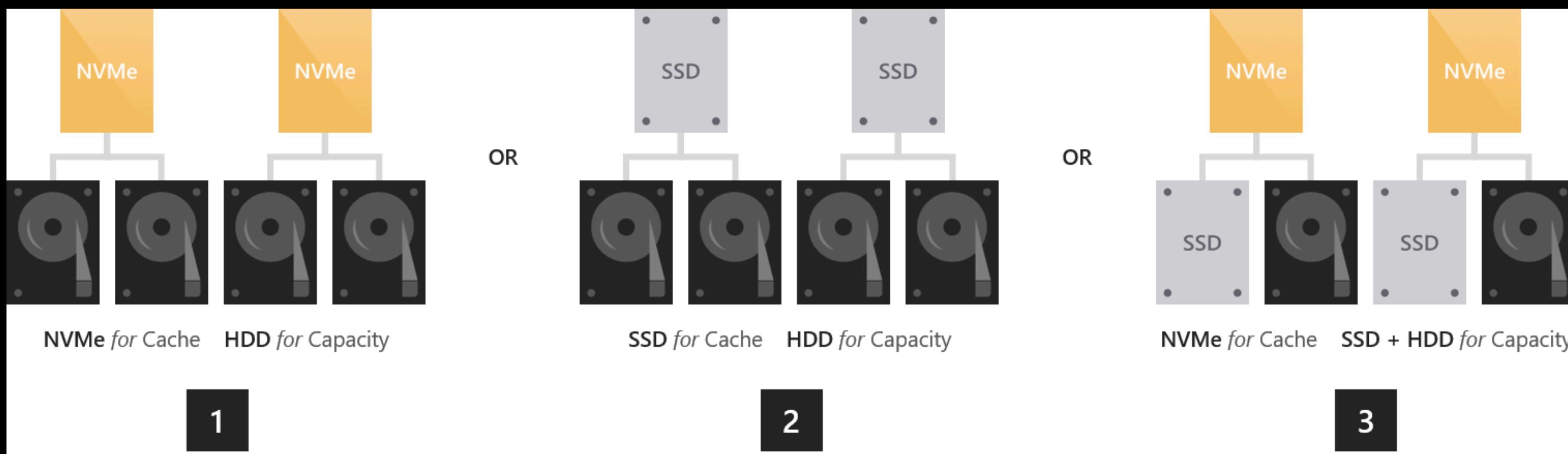
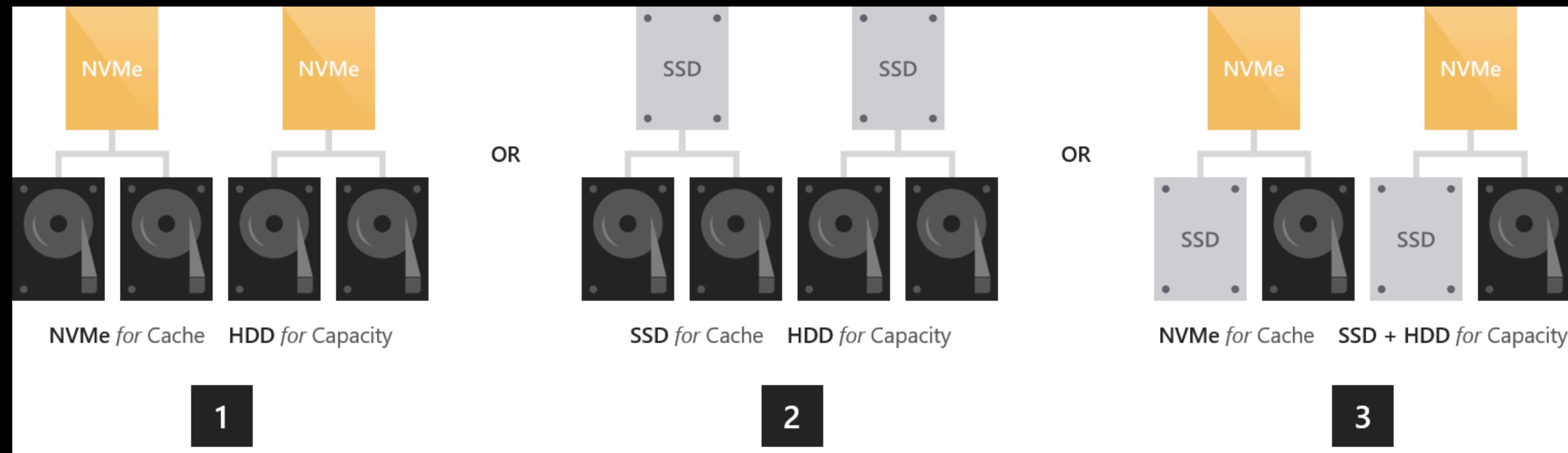
Sieć

Minimum 1x1Gb I 2x10Gb

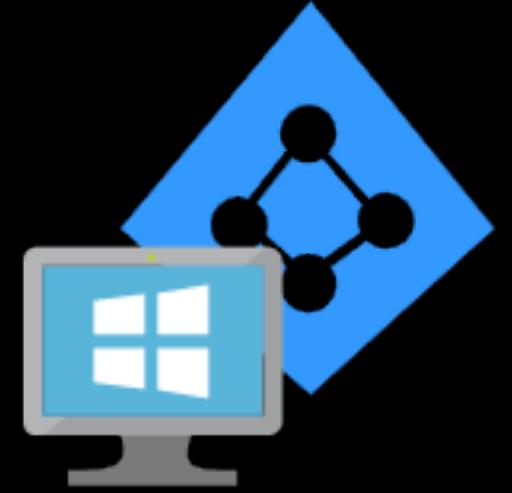
To rozwiązanie kosztuje

Co 30 dni kontakt z chmurą Azure

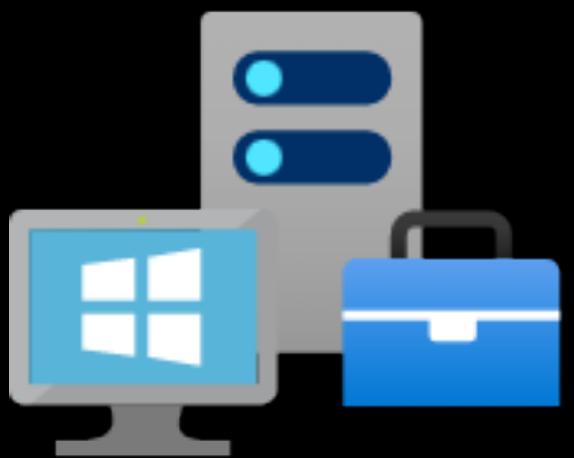
# Storage



# Co jeszcze jest potrzebne ?



Lokalny kontroler domeny Active Directory



Windows Admin Center Gateway



Rejestracja providerów: Microsoft.HybridConnectivity  
Microsoft.AzureStackHCI Microsoft.AzureArcData

Rola “Azure Stack HCI registration role” na Subskrypcji

# Czy lab można zrobić w domu ?



# Czy lab można postawić w chmurze ?



# Czas zaczynać

The screenshot shows a Windows command prompt window titled "Administrator: C:\Windows\system32\cmd.exe". It displays the "SConfig" setup wizard for Azure Stack HCI. The window includes a title bar with standard window controls (minimize, maximize, close) and a scroll bar on the right side.

```
Administrator: C:\Windows\system32\cmd.exe
WARNING: To stop SConfig from launching at sign-in, type "Set-SConfig -AutoLaunch $false"

=====
Welcome to Azure Stack HCI
=====

1) Domain/workgroup:           Workgroup: WORKGROUP
2) Computer name:             WIN-21ESF3HUPSV
3) Add local administrator
4) Remote management:         Enabled
5) Update setting:            Download only
6) Install updates
7) Remote desktop:            Disabled
8) Network settings
9) Date and time
10) Telemetry setting:        Off
12) Log off user
13) Restart server
14) Shut down server
15) Exit to command line (PowerShell)

Enter number to select an option:
```

# Windows Admin Center

Windows Admin Center | Cluster Creation ▾ Microsoft > ⓘ ⓘ ⓘ ?

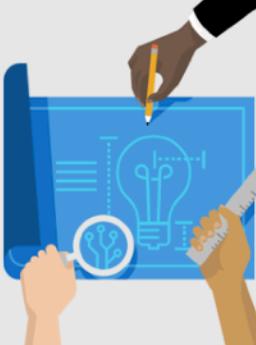
## Deploy an Azure Stack HCI cluster

1 Get started 2 Networking 3 Clustering 4 Storage 5 SDN

1.1 Check the prerequisites

1.2 Add servers  
1.3 Join a domain  
1.4 Install features  
1.5 Install updates  
1.6 Install hardware updates  
1.7 Restart servers

**Check the prerequisites** [Review the complete requirements](#)



**On your Windows Admin Center system**

- ✓ [Register with Azure](#) (optional)
- ✓ An Azure Stack HCI, Windows Server 2019 Datacenter or Windows Server 2016 Datacenter operating system VHD for creating Software Defined Networking VMs (optional)

**On the servers**

- ✓ At least two servers with supported hardware
- ✓ One or more network adapters with static IP addresses per server for management, and separate adapters for other traffic
- ✓ The Azure Stack HCI operating system installed on each server
- ✓ An account that's a member of the local Administrators group on each server

**On your network**

- ✓ An Azure subscription and internet connectivity for each server
- ✓ An Active Directory domain and an account that can join servers to the domain
- ✓ Configure your network switches for the VLANs you're using (required) as well as for Data Center Bridging (if required by RDMA)

<

Back Next Exit

# Tworzenie klastra

Windows Admin Center | Cluster Creation ▾ Microsoft > 🔍⚙️❓

## Deploy an Azure Stack HCI cluster

1 Get started 2 Networking 3 Clustering 4 Storage 5 SDN

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1.4 Install features  
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1.6 Install hardware updates  
1.7 Restart servers

### Add servers

Specify the administrator account to use when connecting to servers. ⓘ

Username \* ⓘ techfellow\dcadmin

Password \* .....  
Enter the computer name, IP address, or fully qualified domain name of each server.

server.example.domain.com Add

⟳ Refresh

Server name	Status	Operating system	OS version	Model
mseazs1.techfellow.it	Validating			
mseazs2.techfellow.it	Validating			

⚠️ To use the Network HUD feature to monitor and address network issues, apply update via KB 5020032 or later. [Learn more.](#) ↗

# Tworzenie klastra - instalacja usług

Windows Admin Center | Cluster Creation ▾ Microsoft ⚡ 🔔⚙️?

Deploy an Azure Stack HCI cluster

1 Get started 2 Networking 3 Clustering 4 Storage 5 SDN

1.1 Check the prerequisites  
1.2 Add servers  
1.3 Join a domain  
**1.4 Install features**  
1.5 Install updates  
1.6 Install hardware updates  
1.7 Restart servers  
1.8 Choose host networking

**Install required features**

We'll install any features that are required for this type of cluster.

⟳ Refresh

Features	Status
mseazs1.techfellow.it	⚠ Not installed
Data Deduplication	⚠ Not installed
Hyper-V	⚠ Not installed
BitLocker Drive Encryption	⚠ Not installed
Data Center Bridging	⚠ Not installed
Failover Clustering	⚠ Not installed
Network ATC	⚠ Not installed
Active Directory module for Windows PowerShell	⚠ Not installed
Hyper-V Module for Windows PowerShell	⚠ Not installed
> mseazs2.techfellow.it	⚠ Not installed

⚠ To use the Network HUD feature to monitor and address network issues, apply update via KB 5020032 or later. [Learn more.](#) ↗

**Install features**

Back Next Exit

# Tworzenie klastra - networking

Windows Admin Center | Cluster Creation ▾ Microsoft ⚡ 🔍 🌐 ?

## Deploy an Azure Stack HCI cluster

1 Get started 2 Networking 3 Clustering 4 Storage 5 SDN

1.1 Check the prerequisites  
1.2 Add servers  
1.3 Join a domain  
1.4 Install features  
1.5 Install updates  
1.6 Install hardware updates  
1.7 Restart servers  
1.8 Choose host networking

### Choose how to configure host networking

Select how networking settings for each server in the system are set up and maintained.

We strongly recommend that you use Network ATC to configure networking as per Microsoft best practices. Use of Network ATC will simplify and shorten the networking deployment and reduce errors.

Automatically configure networking on all servers (Strongly recommended)

- Deploy a single network configuration and ensure consistency across the cluster
- Monitor and reapply network settings that drift
- Automatically configure networking for added or replaced servers

Manually configure host networking

- Specify network settings for each server in the cluster
- No automatic remediation of network settings will occur
- No automatic configuration will happen later for new servers

# Tworzenie klastra - networking

Windows Admin Center | Cluster Creation ▾ Microsoft > 🔍 ⚙️ ?

## Deploy an Azure Stack HCI cluster

Get started **Networking** Clustering Storage SDN

**2.1 Check network adapters**

**Check the network adapters**

Make sure that the correct network adapters are enabled and disable any you're not using. If there are USB network adapters reserved for other uses, exclude them here.

Select Refresh if you make changes to the adapters outside of this wizard.

Refresh Enable Disable + Include - Exclude

Description	Speed	MAC address	Name	Status
▼ mseazs1.techfellow.it (3)				
vmxnet3 Ethernet Adapter	10 Gbps	00-0C-29-AD-9C-6E	Ethernet1	Up
vmxnet3 Ethernet Adapter #3	10 Gbps	00-0C-29-AD-9C-82	Ethernet3	Up
vmxnet3 Ethernet Adapter #2	10 Gbps	00-0C-29-AD-9C-78	Ethernet2	Up
▼ mseazs2.techfellow.it (3)				
vmxnet3 Ethernet Adapter #2	10 Gbps	00-0C-29-BE-1F-7B	Ethernet0	Up
vmxnet3 Ethernet Adapter	10 Gbps	00-0C-29-BE-1F-85	Ethernet1	Up
vmxnet3 Ethernet Adapter #3	10 Gbps	00-0C-29-BE-1F-8F	Ethernet2	Up

Some of these adapters do not support VLAN ID and will possibly not be available for compute/storage adapter teaming.

Verification is complete. When you're ready, select Next.

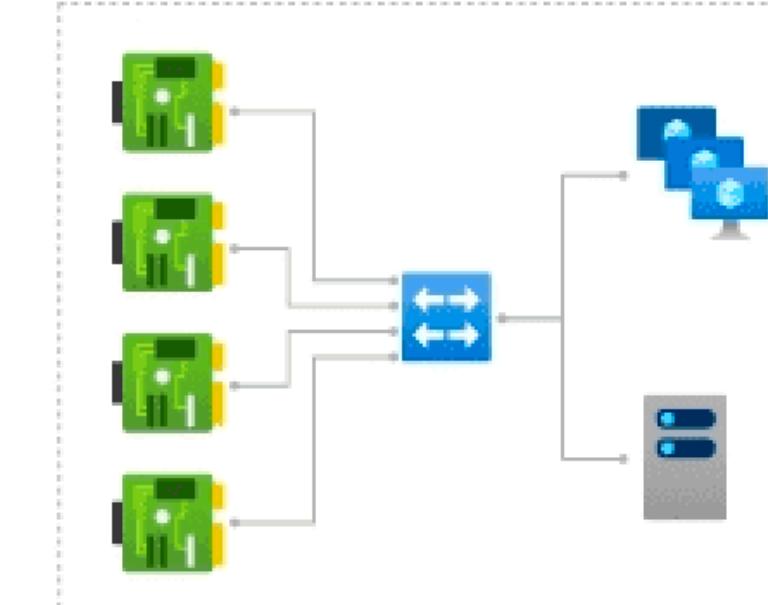
# Tworzenie klastra - networking

**Virtual switch**

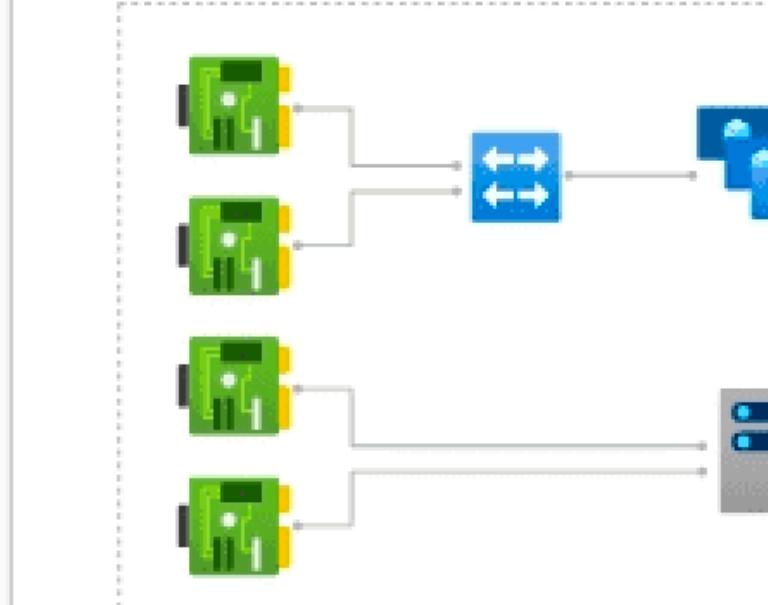
Skip Virtual switch creation

Please choose your preferred configuration:

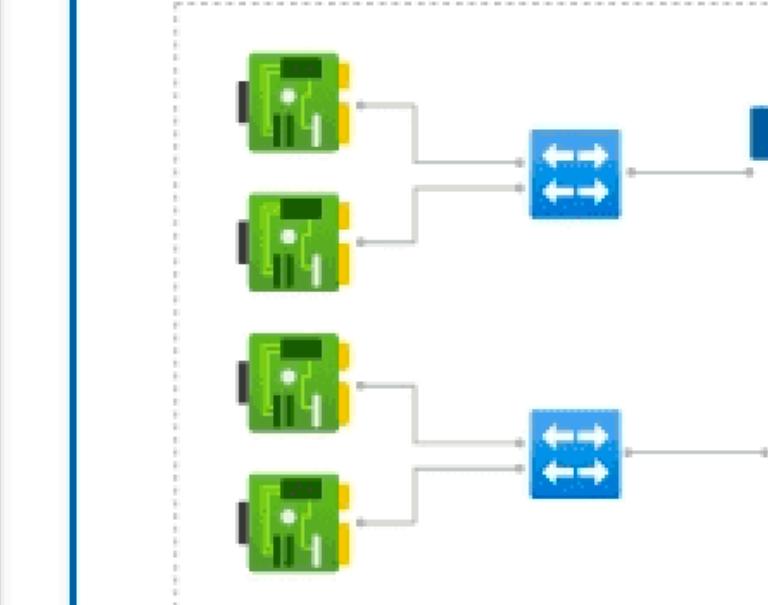
Create one virtual switch for compute and storage together



Create one virtual switch for compute only



Create two virtual switches



**Virtual switch 1 of 2: Compute**

Which network adapters should be used by virtual machines?

**Server: azurestack01.cloud.local**

<input type="checkbox"/> Description	Speed	Name	IP address	Subnet mask	VLAN ID	Status
Intel(R) 82574L G...	1 Gbps	Net02	192.168.60.1	24		

# Utworzony klaster

Windows Admin Center | Cluster Manager

mseazs.techfellow.it

Tools

- Dashboard
- Configuration
- Settings
- Azure Arc
- Security

Operations

- Updates

Cluster resources

- Virtual machines
- Servers
- Volumes
- Drives
- Storage Replica
- Azure Kubernetes Service

Networking

- Virtual switches
- SDN Infrastructure

Support + Troubleshooting

Microsoft

**Dashboard**

**Alerts (Total 0)**

✓ There are no alerts

**Azure Arc**

✖ Windows Admin Center must be registered and signed in to Azure. [Register with Azure](#)

Azure Stack HCI registration ⓘ      Arc-enabled servers ⓘ      Azure resource -

?

Not configured ([details](#))      Not configured ([details](#))

**Servers (Total 2)**

All servers healthy

✓

**Virtual machines (Total 0)**

Running

0

**Drives (Total 12)**

All drives healthy

✓

**Volumes (Total 1)**

All volumes healthy

✓

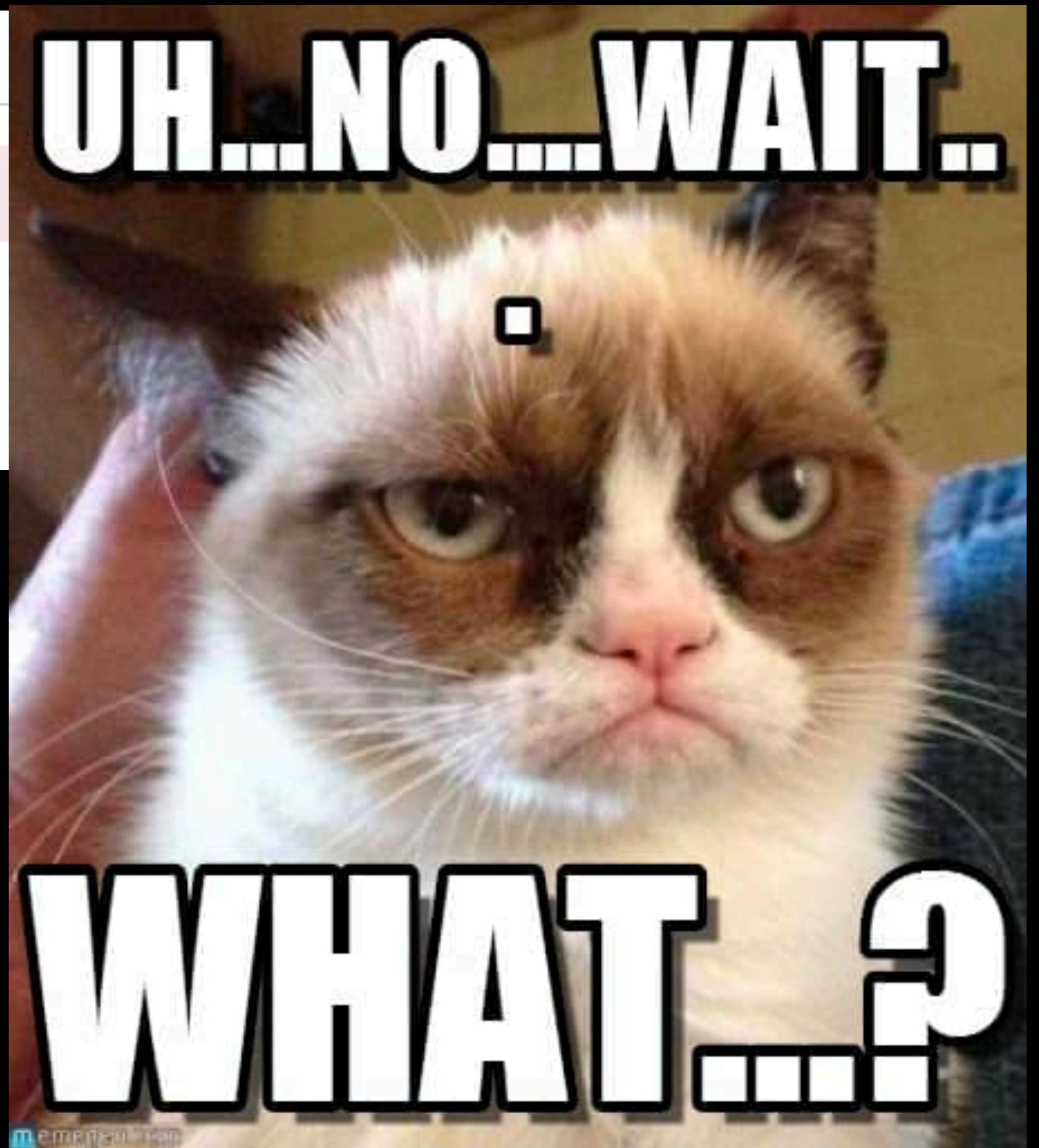


# Aktywacja klastra

Azure Arc

✖ Windows Admin Center must be registered and signed in to Azure. [Register with Azure](#)

Azure Stack HCI registration ⓘ	Arc-enabled servers ⓘ	Azure resource -
?	?	-
Not configured <a href="#">(details)</a>	Not configured <a href="#">(details)</a>	



# Proces aktywacji

## Dodanie konta Azure do WAC

Windows Admin Center | Settings ▾ Microsoft ⚡ ?

**Settings | Register**

Search Settings

Migrate your Windows Server VMs to Azure and save with the Azure Hybrid Benefit

User

- Account
- Language / Region
- Personalization
- Suggestions

Development

- Advanced
- Performance Profile

Gateway

- Access
- Diagnostic & feedback
- Extensions
- General
- Internet Access
- Proxy
- Register
- Shared Connections
- Updates

**Register with Azure**

To use Azure services with Windows Admin Center, register it with Azure.

[Which Azure services integrate with Windows Admin Center? ↗](#)

**Register**

**Get started with Azure in Windows Admin Center**

To use Azure services with Windows Admin Center, complete the following one-time registration.

If you don't already have an Azure account, first [create an account ↗](#)

Select an Azure cloud.

Azure Global

Copy this code.

C6X **Copy**

Enter the code. ↗

Connect to Azure Active Directory. ⓘ

Azure Active Directory (tenant) ID  
9f1

Azure Active Directory application

Create new  Use existing

Now connected to Azure AD

5. Sign in to Azure

**Sign in**

**Cancel**

# Proces aktywacji

## Aktywacja w portalu WAC



### Azure Stack HCI registration

Azure account  
techfellow@outlook.com

Azure subscription\* ⓘ

AzureFreeSubscription

Azure region\* ⓘ

A screenshot of a web-based registration form titled "Azure Stack HCI registration". The "Azure account" field contains "techfellow@outlook.com". The "Azure subscription\*" field has "AzureFreeSubscription" selected. The "Azure region\*" field is open, showing a dropdown menu with several options: "Australia East" (which is highlighted in blue), "Canada Central", "Central India", "Central US", "East Asia", "East Central US", "East US", "North Europe", and "West Europe". At the bottom of the form are two buttons: "Register" and "Cancel".

Azure region
Australia East
Canada Central
Central India
Central US
East Asia
East Central US
East US
North Europe
West Europe

Register

Cancel

# Proces aktywacji - cz2

## POWERSHELL

```
Administrator: C:\Windows\system32\cmd.exe - powershell
 1 WinRM1      mseazs10      RemoteMachine  Opened      Microsoft.PowerShell  Available
PS C:\Users\Administrator.TECHLOCAL> New-PSSession -ComputerName mseazs20
  Id Name          ComputerName   ComputerType    State       ConfigurationName Availability
  -- --           ---           ---           ---           ---           ---           ---
  2 WinRM2      mseazs20      RemoteMachine  Opened      Microsoft.PowerShell  Available

PS C:\Users\Administrator.TECHLOCAL> Register-AzStackHCI -SubscriptionId "98
erName mseazs10 -Region "westeurope" -TenantId "9f6
WARNING: To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code DCND6LKWW
to authenticate.

ClusterAgentStatus      : Success
Result                  : Success
AzurePortalResourceURL : https://
                         9-3eea-4
                         sters/ms
AzureResourceId         : /Subscri
                         soft.Azi
Details                 : Azure Stack HCI is successfully registered. An Azure resource representing Azure Stack HCI
                         has been created in your Azure subscription to enable an Azure-consistent monitoring,
                         billing, and support experience.

PS C:\Users\Administrator.TECHLOCAL>
```

Czy to wszystko ?



# Prawie ...

Witness - Udział sieciowy albo chmurowy

**Witness**

Select a quorum witness type for your cluster. [Learn more](#)

Witness type

Cloud witness

None

**Cloud witness**

File share witness

Azure storage account name \*

Azure storage account key \*

Azure service endpoint

## Software Defined Networking



**Software Defined Networking (SDN)**

Create (overlay) virtual networks for network isolation, apply network policies to virtual networks and traditional VLAN-based networks, add software load balancing, and add gateways to connect to other networks. [Learn more](#)

**Get started**

## Cluster Shared Volume

### Create volume

Name \*

Volume01

Resiliency

Two-way mirror

Size on SSD \*

0

Size units

GB

Maximum volume size on SSD ⓘ

0 B

### More options

Provisioning type, integrity checksums, encryption

# Azure Resource Bridge



## Set up Arc-enabled Azure Stack HCI for VM provisioning & management

Use Azure portal to provision and manage on-premises Windows and Linux virtual machines (VMs) running on Azure Stack HCI clusters. Delegate permissions and roles to enable self-service VM management.

Deploy Arc Resource Bridge to represent Azure Stack HCI cluster as a Custom Location in Azure portal.

[Arc Resource Bridge overview & Setup guide](#)

# Koszty

## Opłata za obsługę hosta

Wystąpienie	Czas	Cena	Cena z korzyścią użycia hybrydowego platformy Azure
Azure Stack HCI	Miesięczna opłata za usługę	\$10/rdzeń fizyczny/miesiąc	\$0/rdzeń fizyczny/miesiąc

Usługa Azure Stack HCI oferuje bezpłatny okres próbnego przez pierwsze 60 dni po rejestracji. Po pierwszych 60 dniach korzystania z usługi będzie naliczana miesięczna opłata za usługę.

## Obciążenia dodatków (opcjonalnie)

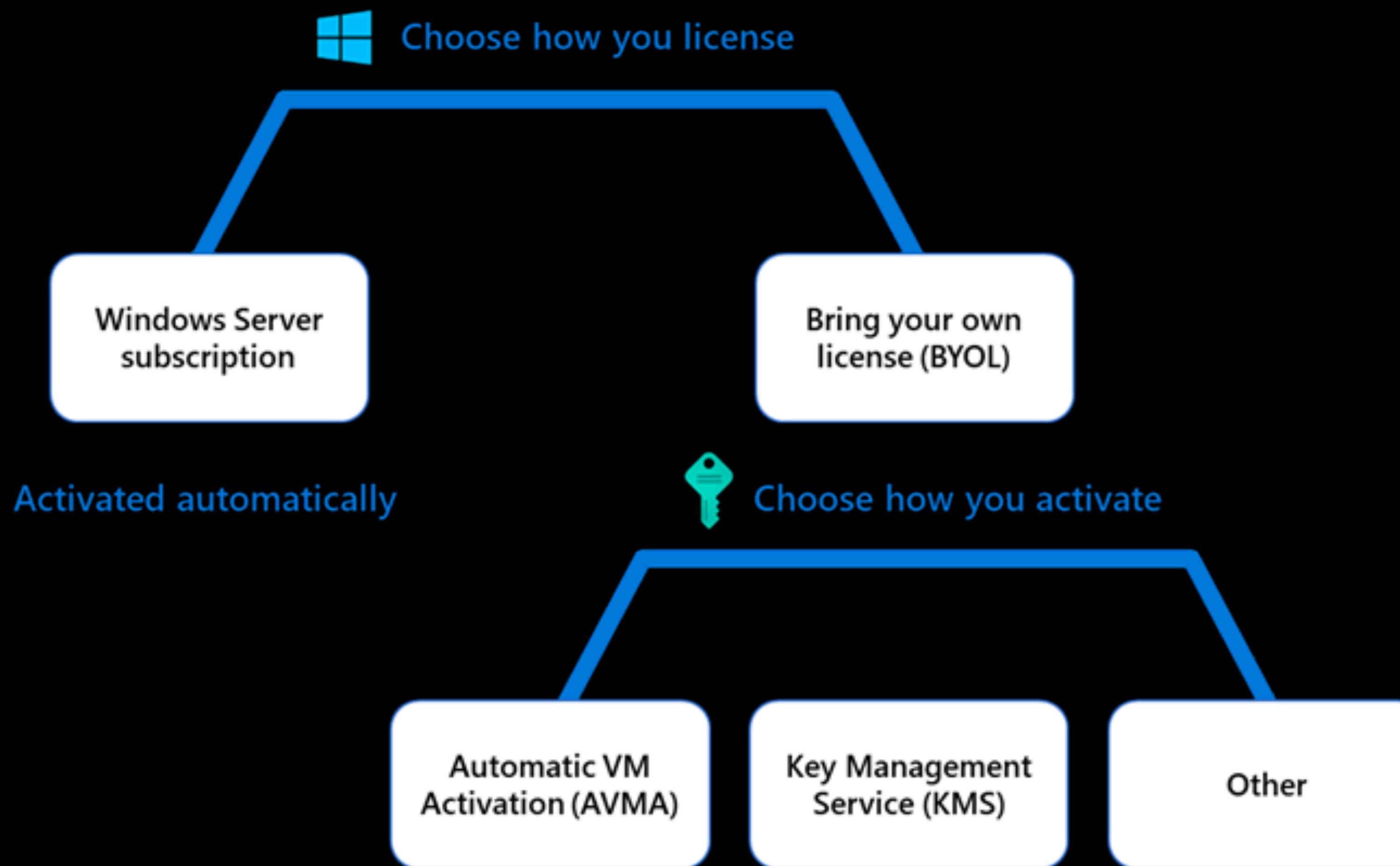
Wystąpienie	Czas	Cena	Cena z korzyścią użycia hybrydowego platformy Azure
Subskrypcja systemu Windows Server (dla gości)	Monthly service fee	\$23,3/rdzeń fizyczny/miesiąc	\$0/rdzeń fizyczny/miesiąc

Subskrypcja systemu Windows Server oferuje bezpłatną wersję próbную w ciągu pierwszych 60 dni od zarejestrowania rozwiązania Azure Stack HCI. Po upływie pierwszych 60 dni korzystania z rozwiązania Azure Stack HCI będą naliczane miesięczne opłaty z tytułu usługi.

**60 day trial**

Subskrypcja systemu Windows Server zapewnia nieograniczone prawa licencjonowania gościa systemu Windows Server za pośrednictwem platformy Azure. [Dowiedz się więcej](#).

# Koszty - licencjonowanie



# Q&A

