NIC Cloud Connect

Oslo Spektrum
November 7 - 9

Cloud Connect

Jan Egil Ring

Hybrid cloud with Azure Arc

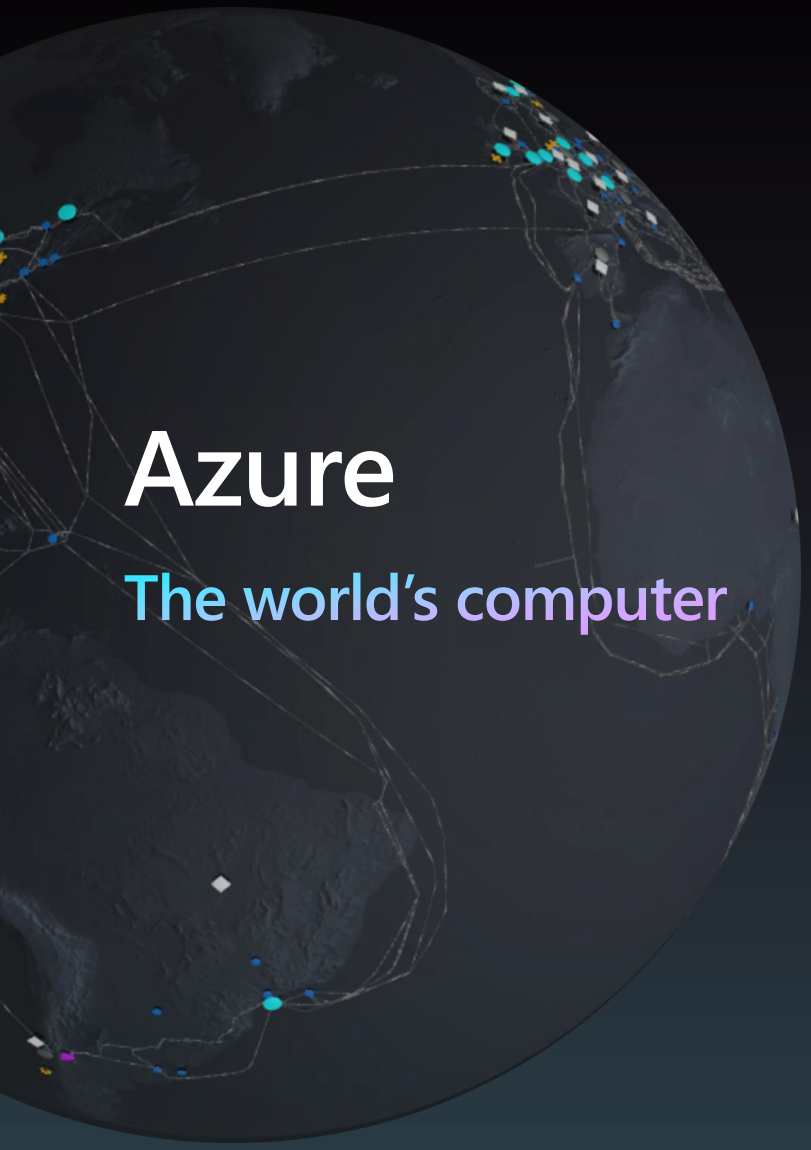
nic Cloud Connect

AGENDA

- Introduction
- Arc-enabled Servers
  - SSH access
  - Private Link
- Azure Arc Jumpstart
  - ArcBox
  - HCIBox
    - Arc-enabled Kubernetes
    - SQL Managed Instance
  - Agora
- Summary

Azure

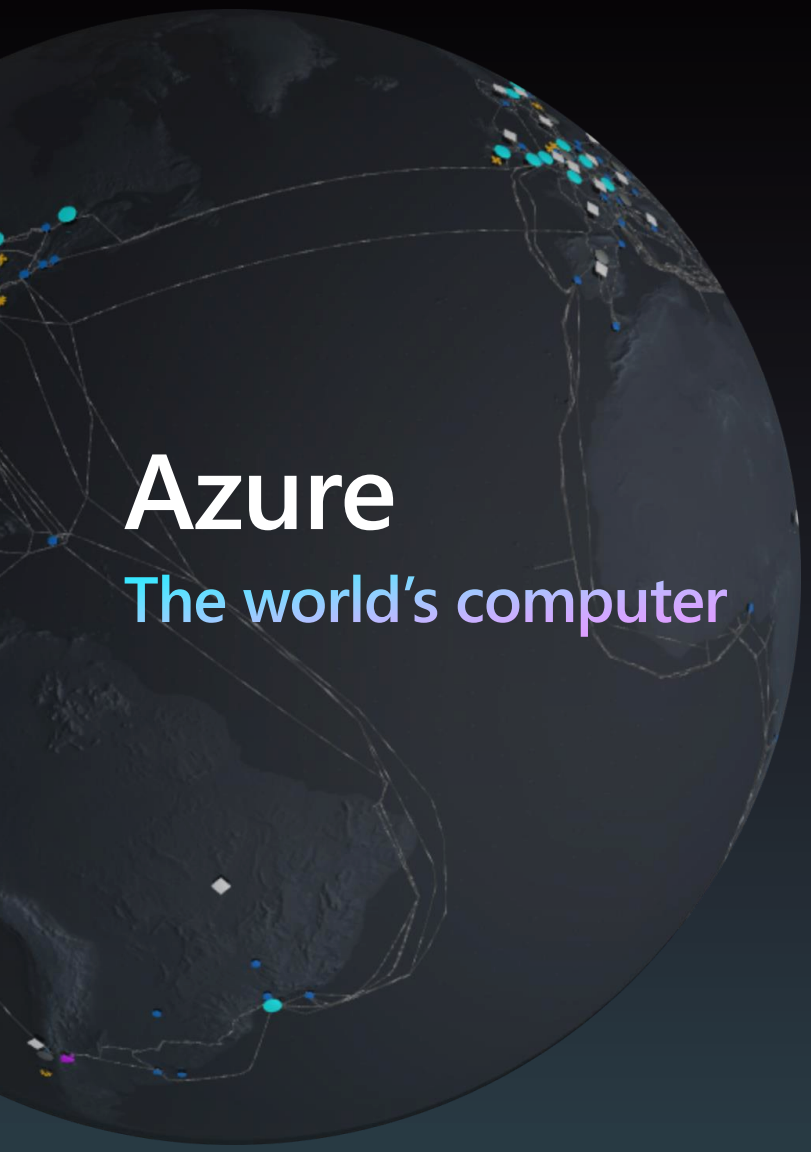
The world's computer



Azure

The world's computer

1. Services for all workloads
2. Intelligent data and AI
3. DevOps tools and experiences
4. Security, identity, and governance
5. Continuous cloud-to-edge computing fabric



Azure

The world's computer

1 Services for all workloads

2 Intelligent data and AI

3 DevOps tools and experiences

4 Security, identity, and governance

Azure Arc

bridging services/apps to continuous computing fabric

5 Continuous cloud-to-edge computing fabric

Global infrastructure | Enterprise core | Operational edge

Arc-enabled Infrastructure

Consistent governance, security, and visibility for your hybrid and multi-cloud compute.

Microsoft Defender

Azure Monitor

Microsoft Sentinel

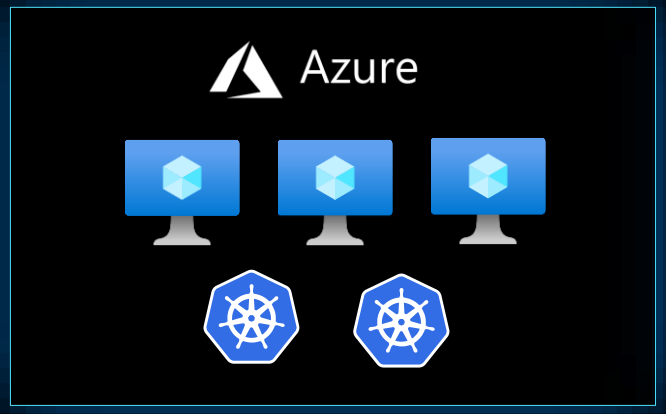
Azure Policy

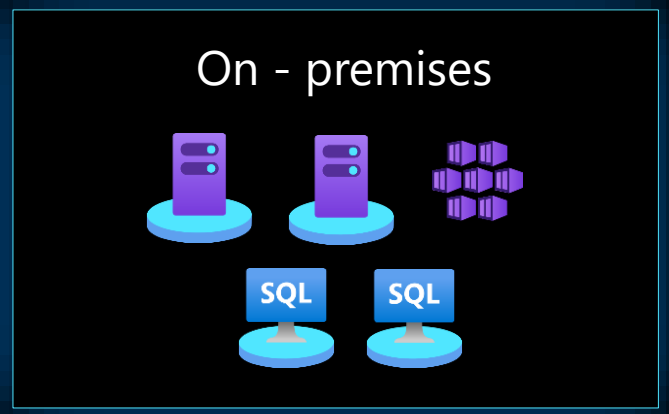
Update Manager

Inventory Management

Azure Automanage

Azure Services across your infrastructure





Azure Arc-enabled servers

GENERALLY AVAILABLE

Bring Azure capabilities to your on-premises and multicloud servers with Azure Arc

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

Microsoft Entra ID Managed Identity

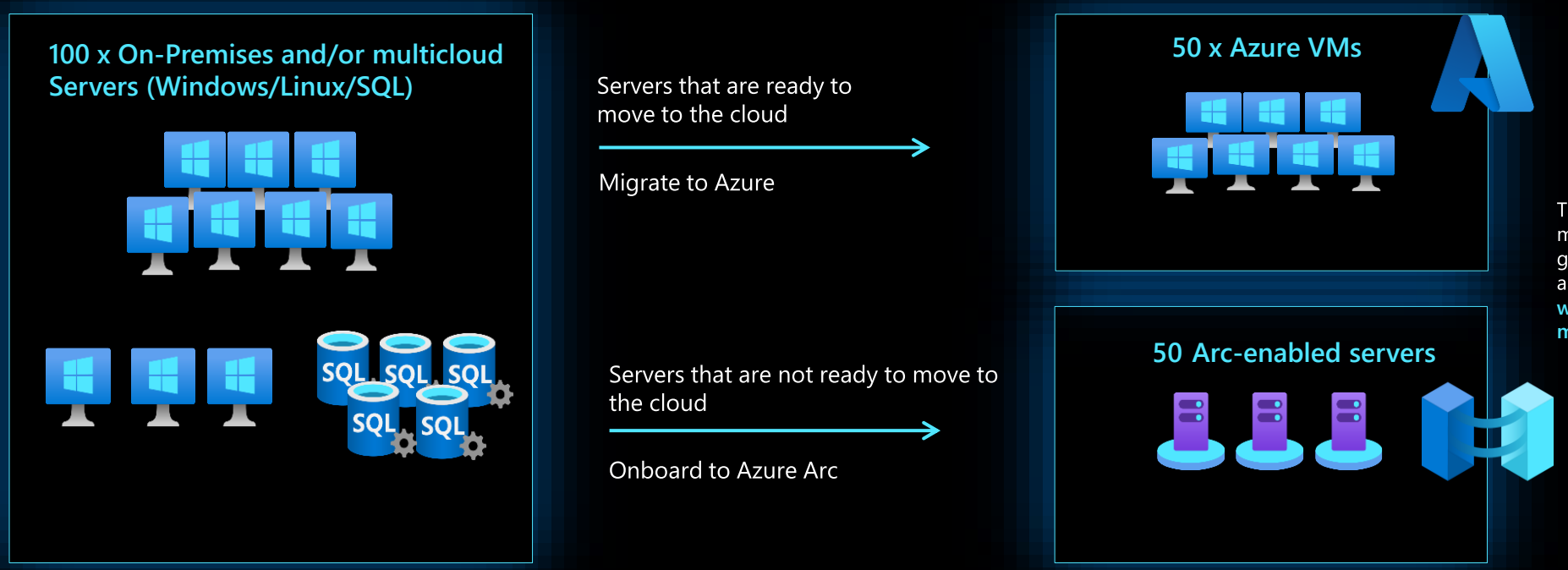
Server security baselines

Role-Based Access control

Any infrastructure, familiar tools

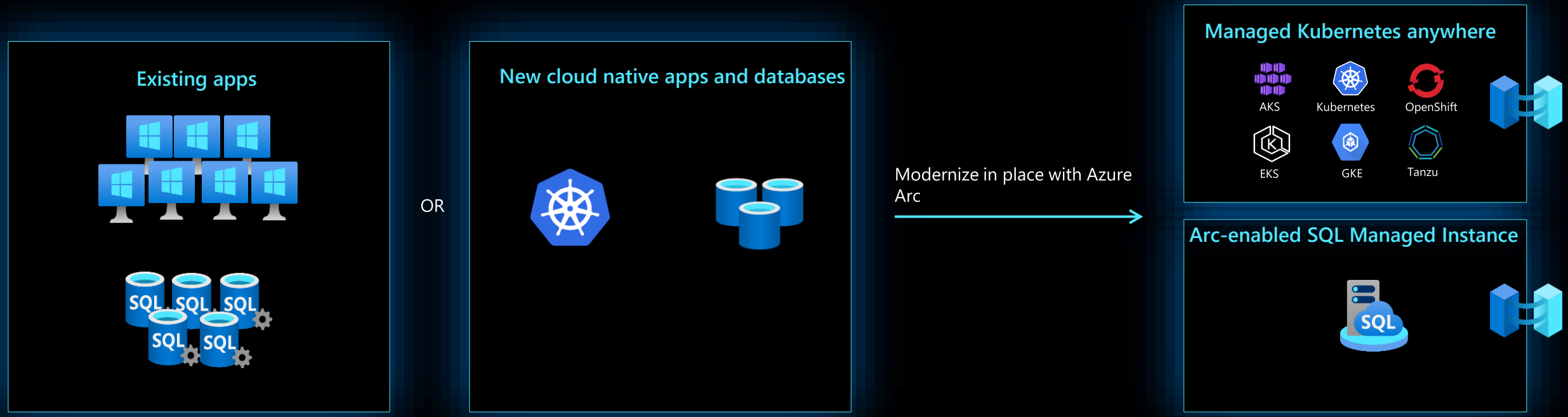
Migrate and Modernize to Azure on your own terms

Azure Arc helps you consistently secure and govern infrastructure across hybrid environments as you migrate and modernize.

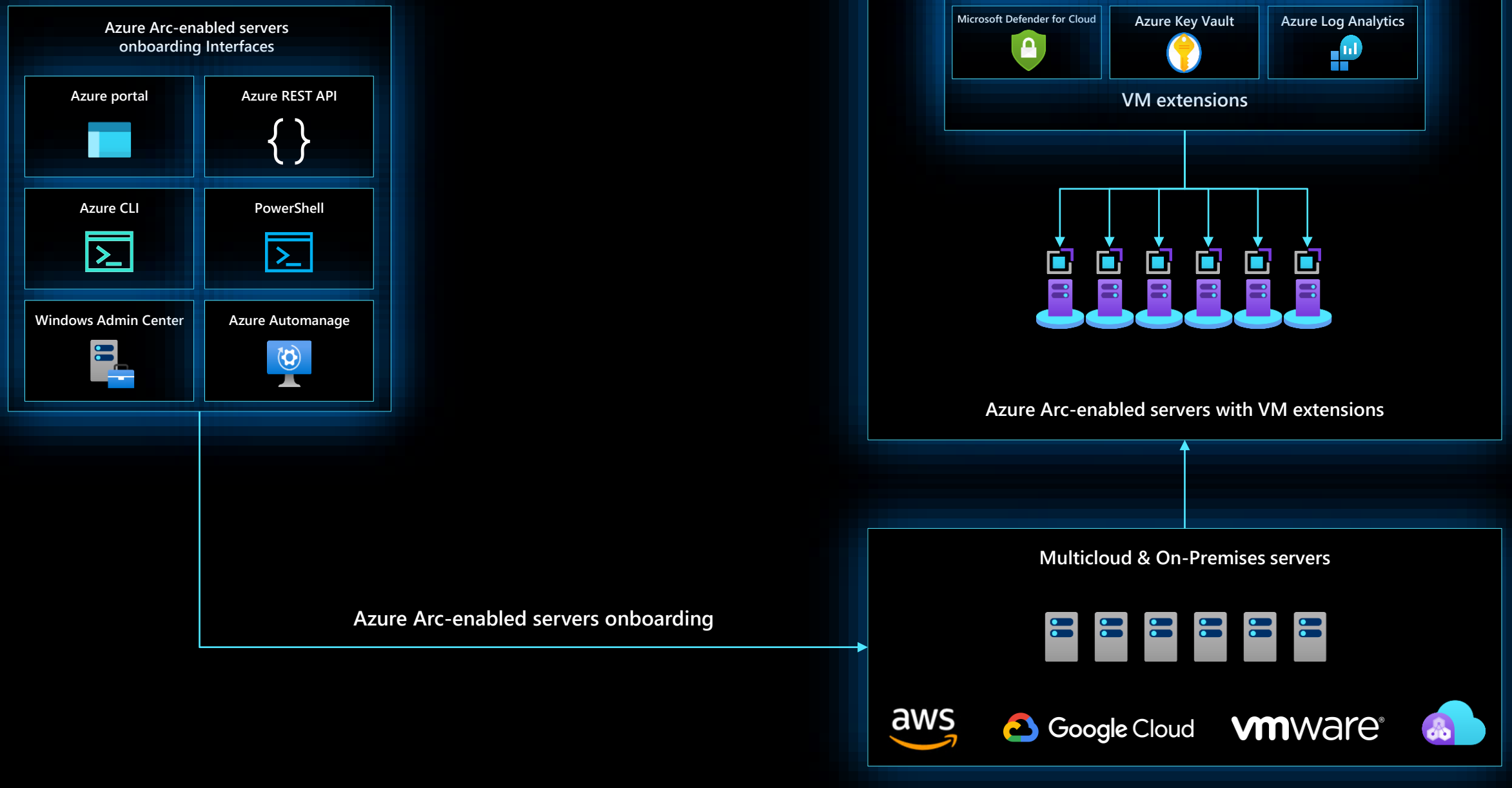


Migrate and Modernize to Azure on your own terms

Azure Arc helps you modernize your existing apps as well as build new cloud native apps anywhere

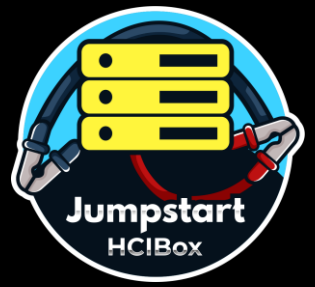


Azure Arc-enabled servers
VM extension integration



Demo

The “Jumpstart Universe”



Website

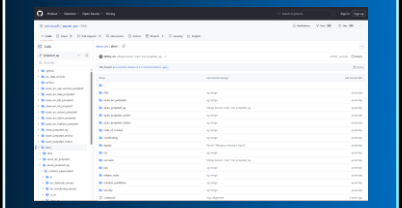
Discover & Learn
Explore

YouTube Channel

Jumpstart Lightning
Technical Demos

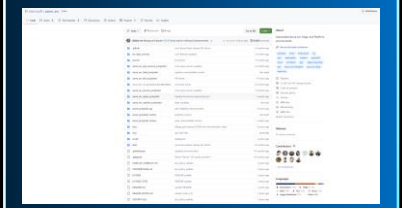
Documentation

Technical Diagrams
How To Instructions



GitHub Repo

Open Source
Technical Diagrams

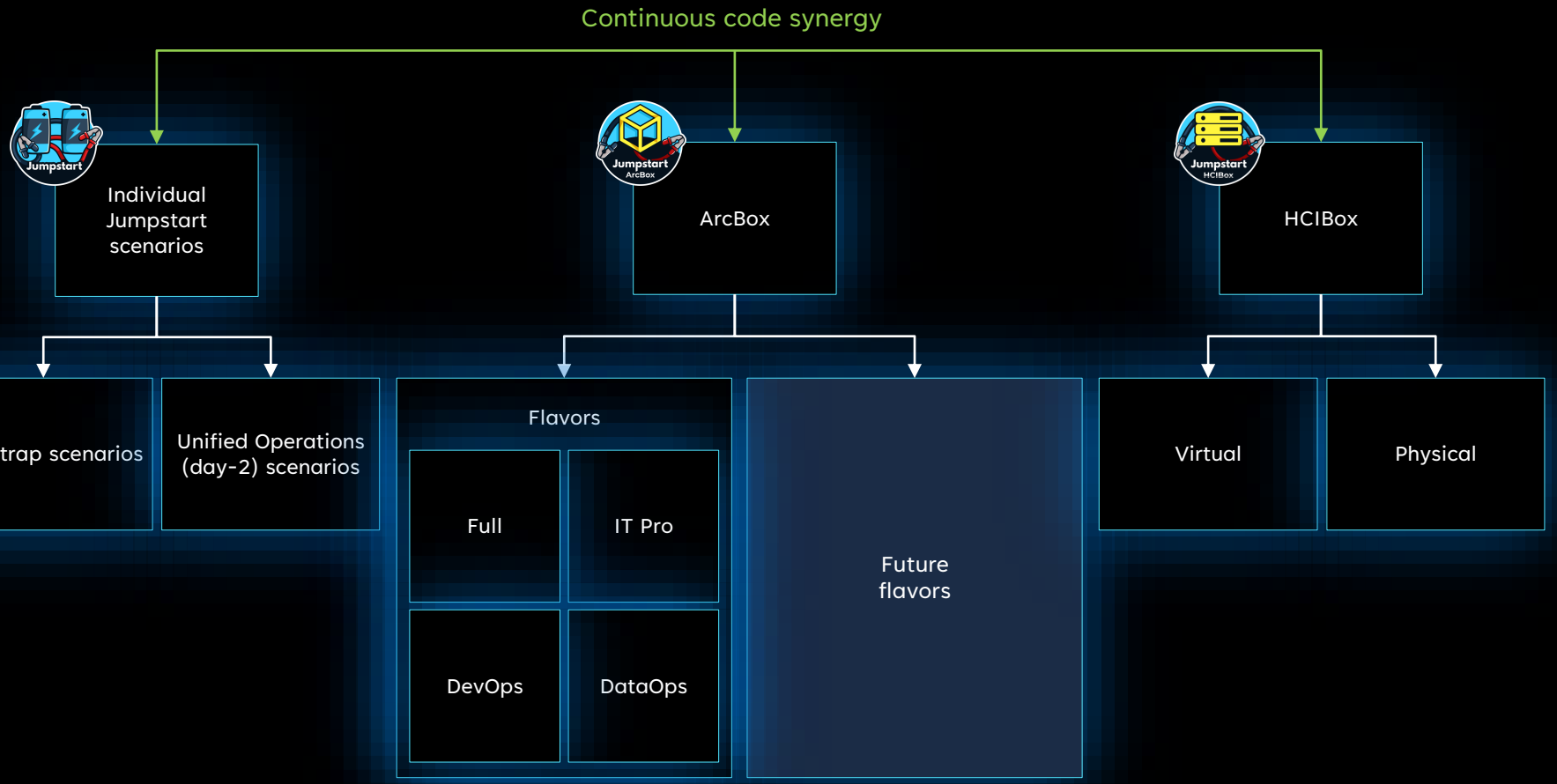


Cloud Accelerator

Cloud Adoption Framework
Landing Zone Accelerator

Azure Arc Jumpstart – Core Design Principals

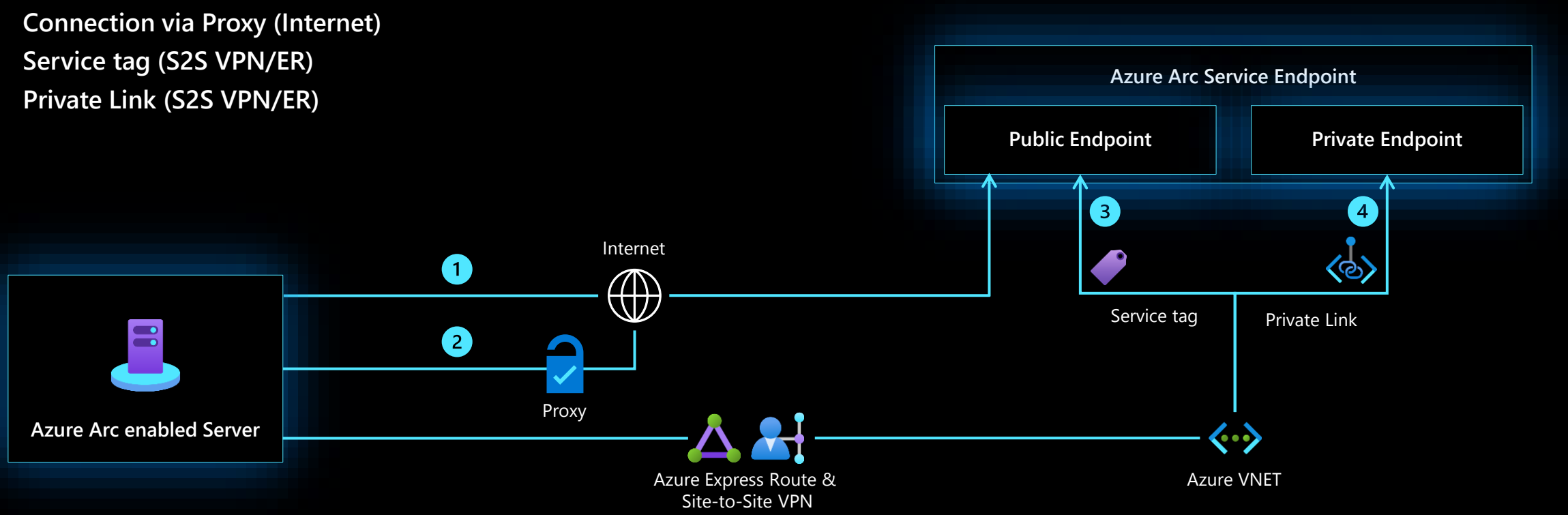
- "User never fail" mentality
- Minimum dependency between bootstrap and unified operations scenarios
- If it can be automated, it will be automated
- 1-click automation
- Modular automation, lego coding, reusable, comprehensive, repeatable, reliable
- Support as many deployment options as possible
- No detail is too small, no screenshot, note, disclaimer or explanation left behind
- Only public preview and GA services/features



Azure Arc-enabled servers

Connectivity Options

1. Direct connection (Internet)
2. Connection via Proxy (Internet)
3. Service tag (S2S VPN/ER)
4. Private Link (S2S VPN/ER)



Demo

Jumpstart ArcBox Flavors

ArcBox comes in multiple “flavors”, or configurations, which can be selected to best suit your needs. Currently, the available flavors are:

- ArcBox “Full” As the name implies, this flavor includes all ArcBox features including Azure Arc-enabled servers, Azure Arc-enabled Kubernetes, and Azure Arc-enabled data services. Use this flavor if you want to experience everything ArcBox has to offer.

- ArcBox for IT Pros ArcBox for IT Pros focuses specifically on Azure Arc-enabled servers and Azure Arc-enabled SQL Server functionality.

- ArcBox for DevOps ArcBox for DevOps focuses specifically on Azure Arc-enabled Kubernetes and the experience for DevOps engineers.

- ArcBox for DataOps ArcBox for DataOps focuses specifically on Azure Arc-enabled SQL Managed Instance.

IT Pros edition

Azure Resource Manager (ARM)

Azure Bicep

Hashicorp Terraform

ArcBox IT Pros Azure Resource Group

ArcBox Workbook

Azure Monitor

Azure Policy

Azure Log Analytics

Microsoft Defender for Cloud

Azure Sentinel

ArcBox-SQL
Azure Arc-enabled SQL server

ArcBox-SQL
Azure Arc-enabled server

ArcBox-Win2K19
Azure Arc-enabled server

ArcBox-Win2K22
Azure Arc-enabled server

ArcBox-Ubuntu-01
Azure Arc-enabled server

ArcBox-Ubuntu-02
Azure Arc-enabled server

ArcBox-SQL
Nested Hyper-V VM (with SQL installed)

ArcBox-Win2K19
Nested Hyper-V VM

ArcBox-Win2K22
Nested Hyper-V VM

ArcBox-Ubuntu-01
Nested Hyper-V VM

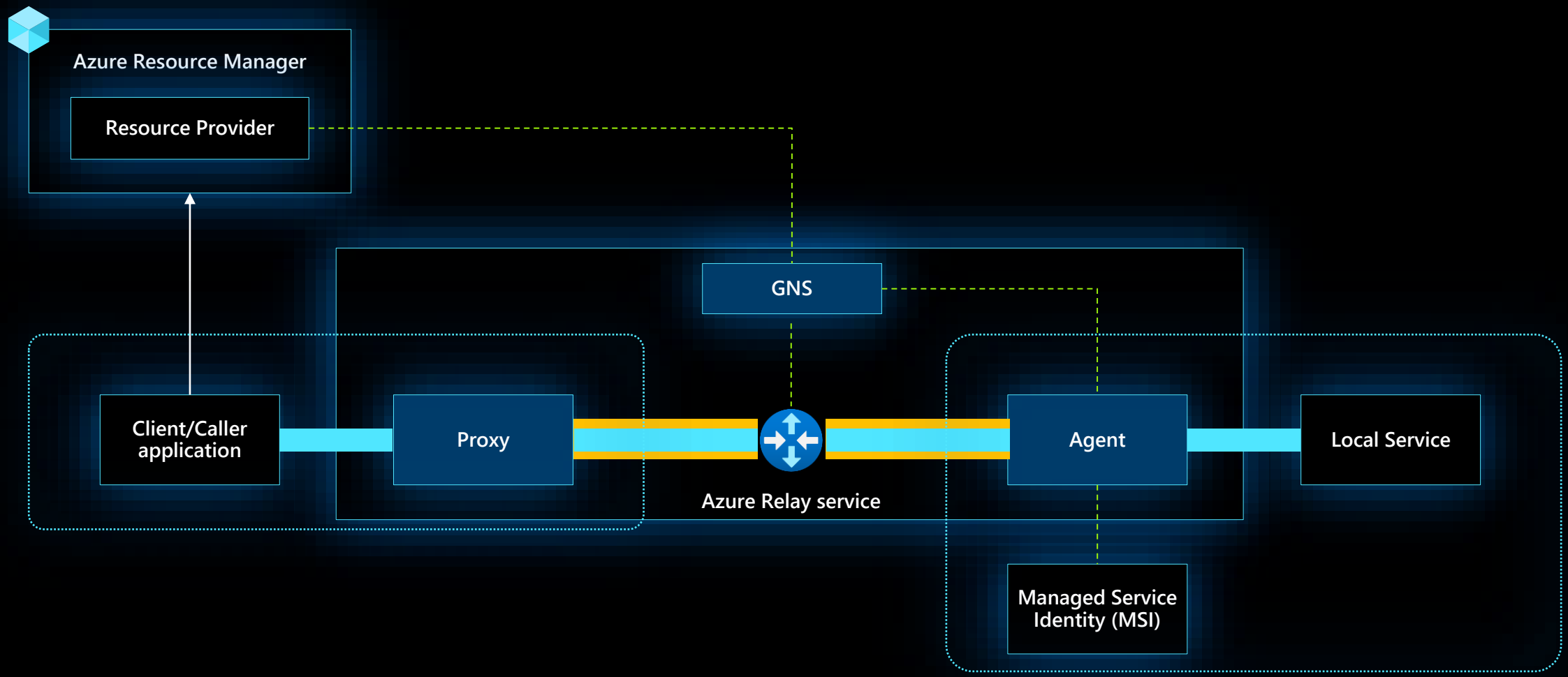
ArcBox-Ubuntu-02
Nested Hyper-V VM

Azure VM Hyper-V Host
Windows Server 2022 Datacenter with Hyper-V enabled (Nested Virtualization)

ArcBox Azure Virtual Network

Azure Arc-enabled servers

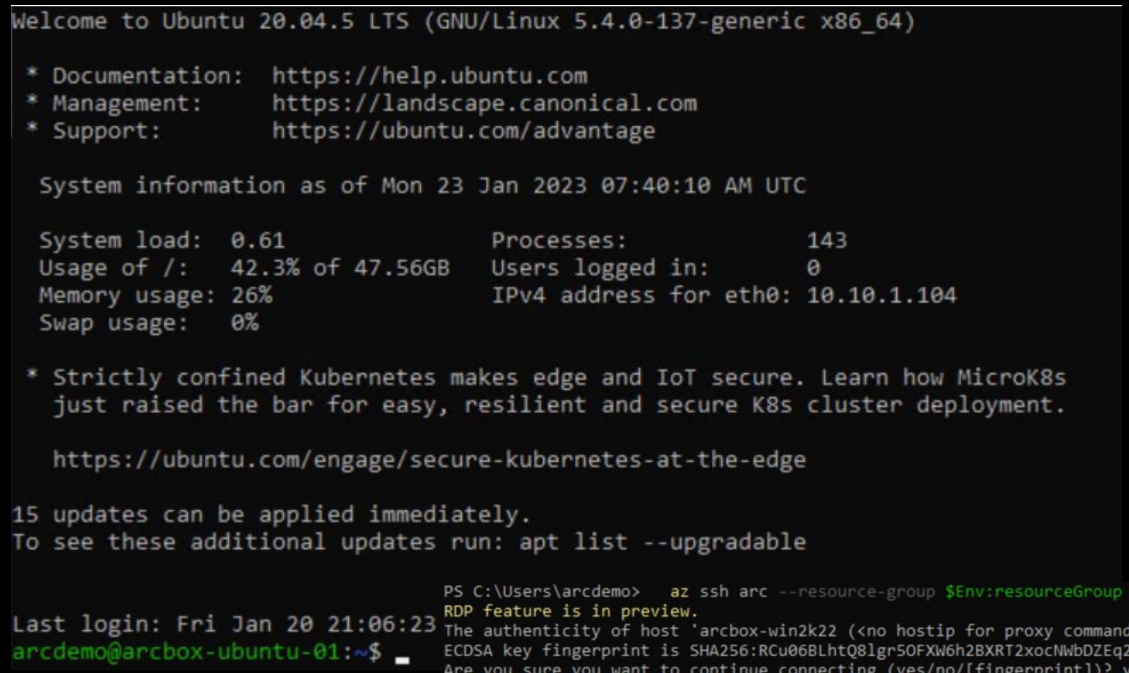
SSH access - Architecture

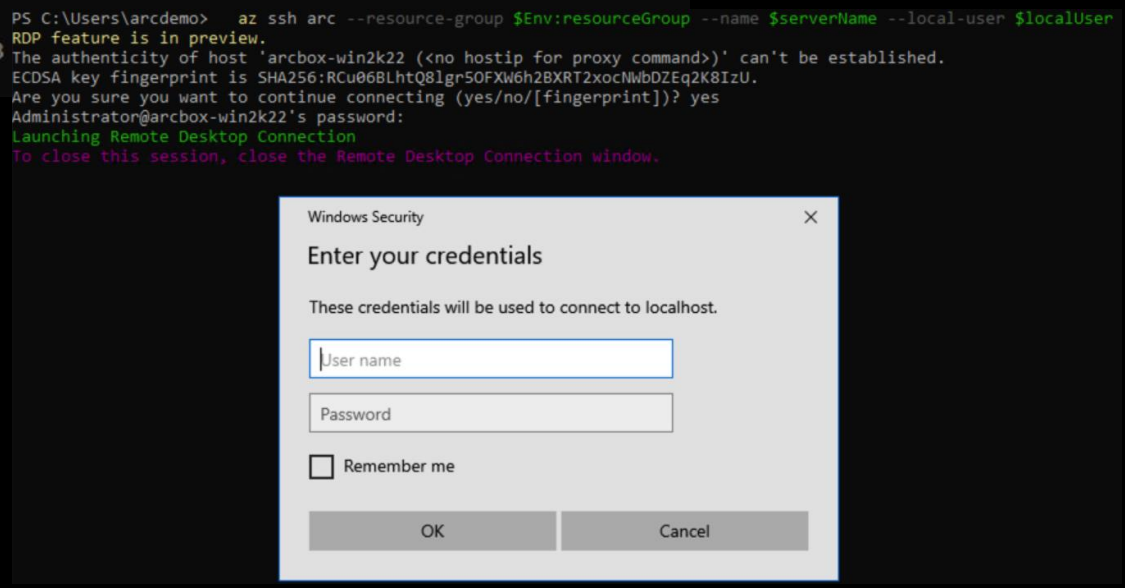


SSH into your Azure Arc-enabled servers

How to SSH into your Arc-enabled servers:

- Install Azure CLI SSH extension or/and Azure PowerShell SSH module on the client machine
- Enable SSH service on Arc-enabled servers
- Connect to Arc-enabled servers using SSH or using Remote Desktop tunneled via SSH
- Connect using Azure AD/Entra ID based SSH login



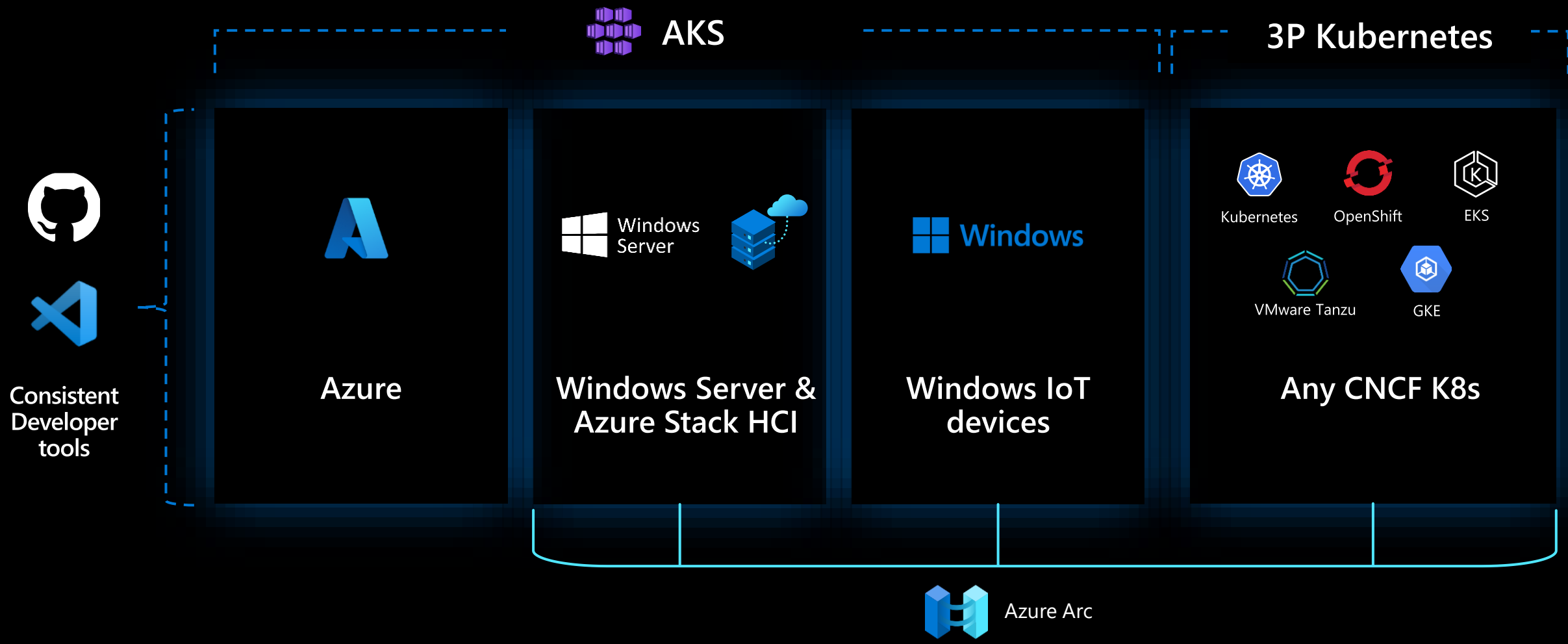


Demo

Managed Kubernetes from cloud to edge

GENERALLY AVAILABLE

Flexible deployment options on the infrastructure of your choice



GitOps – Definition & Principles

Git as the source of truth for a system

Git as the single place where we operate

(create, change, and delete)

All changes are observable

System state described declaratively

State declaration versioned in source control

Approved changes are applied automatically

Agents enforce desired state

https://www.weave.works/technologies/gitops/

Now available

Azure Arc-enabled SQL Managed Instance

Azure Arc-enabled SQL Server

Connected and disconnected scenarios

Azure Machine Learning

Arc ESUs for SQL Server 2008/2012

Azure Arc-enabled PostgreSQL Preview

Azure Arc-enabled data services

Existing apps

Azure Arc-enabled SQL Server

Organize, inventory

Enhanced security with Microsoft Defender for Cloud

Free SQL Assessment service

GENERALLY AVAILABLE

App modernization

Azure Arc-enabled SQL Managed Instance

Azure SQL Managed Instance on any infrastructure

Fully automated, evergreen SQL

Cloud billing model for on-premises

GENERALLY AVAILABLE

Azure Arc-enabled PostgreSQL

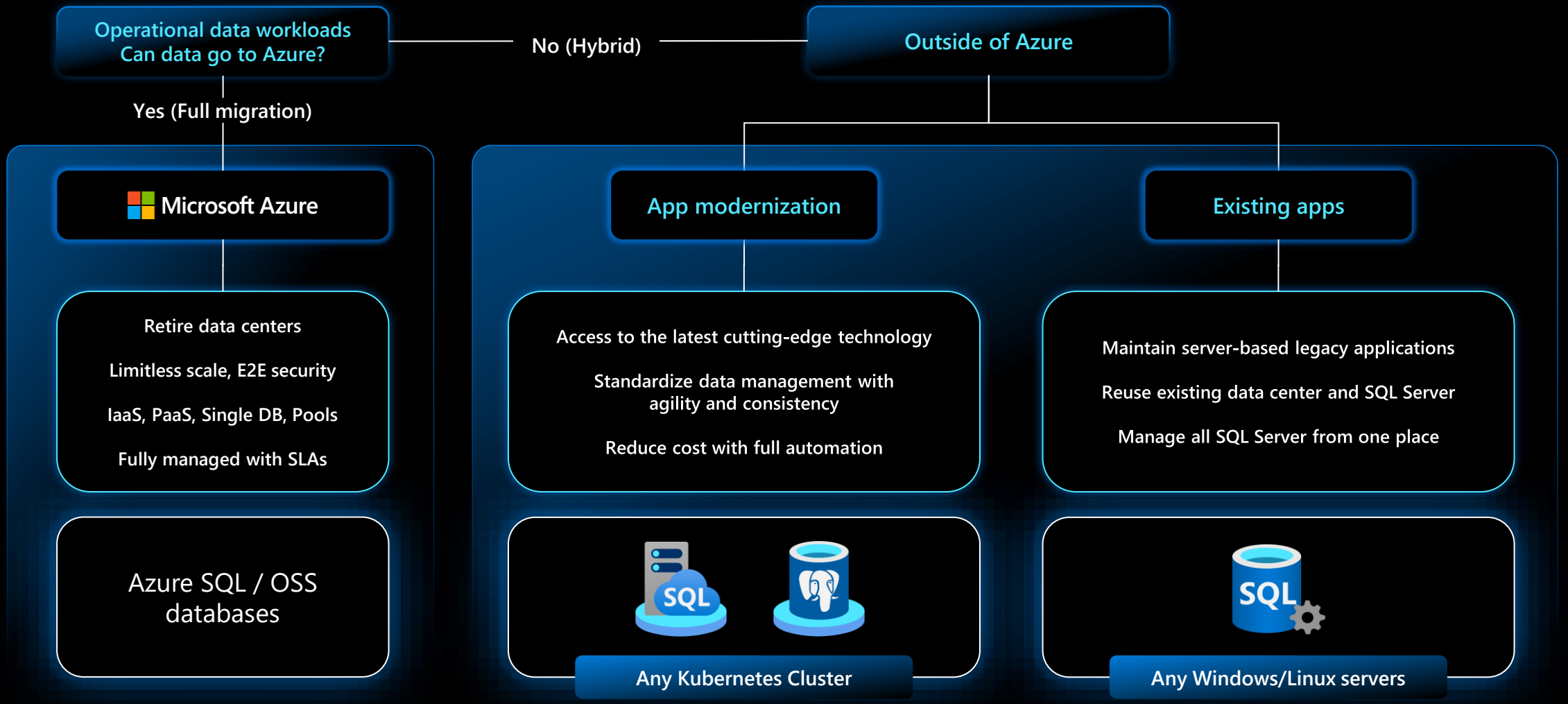
Azure Database for PostgreSQL on any infrastructure

Fully automated, single server

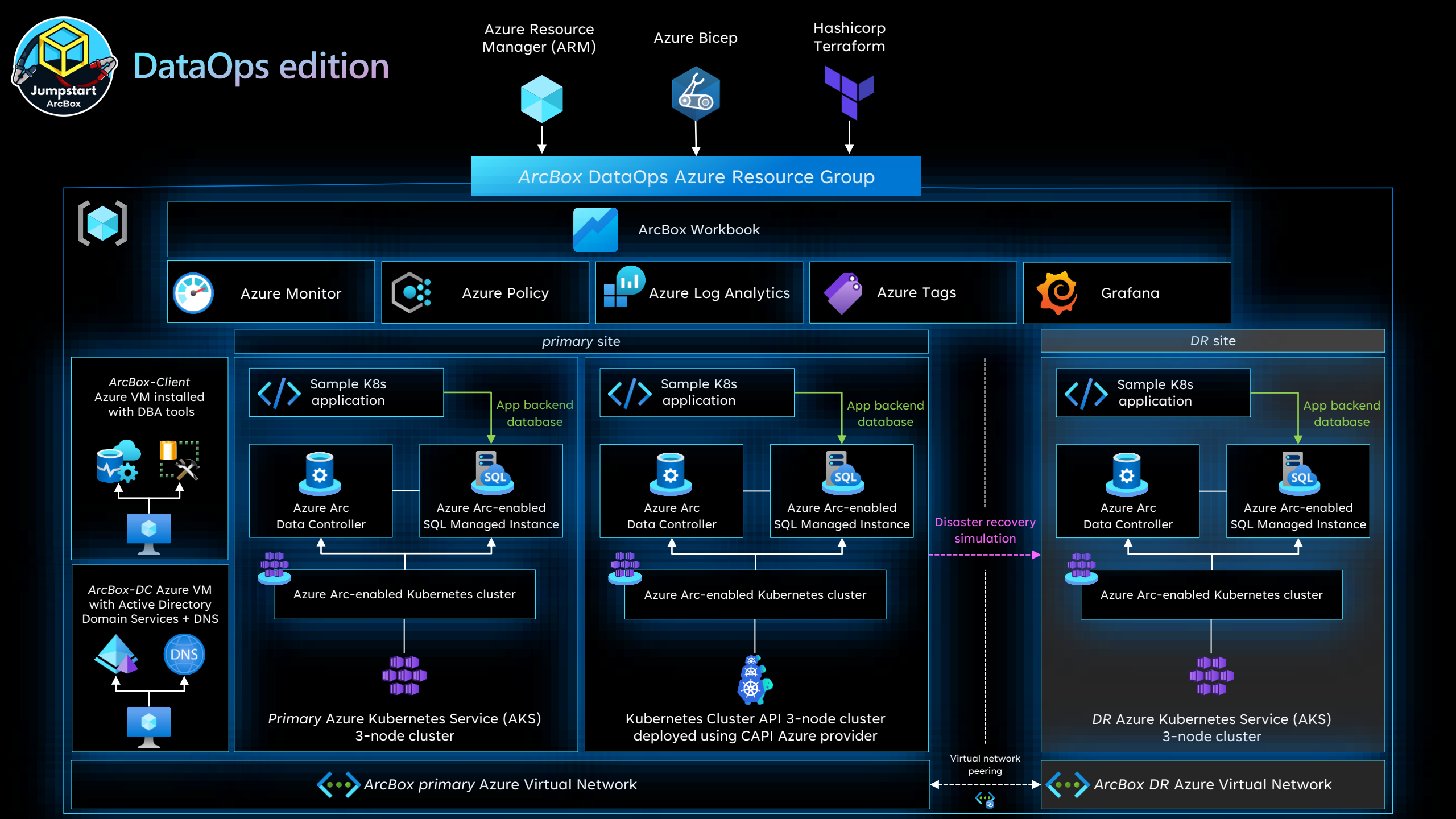
Scale up/down/out/in

PUBLIC PREVIEW

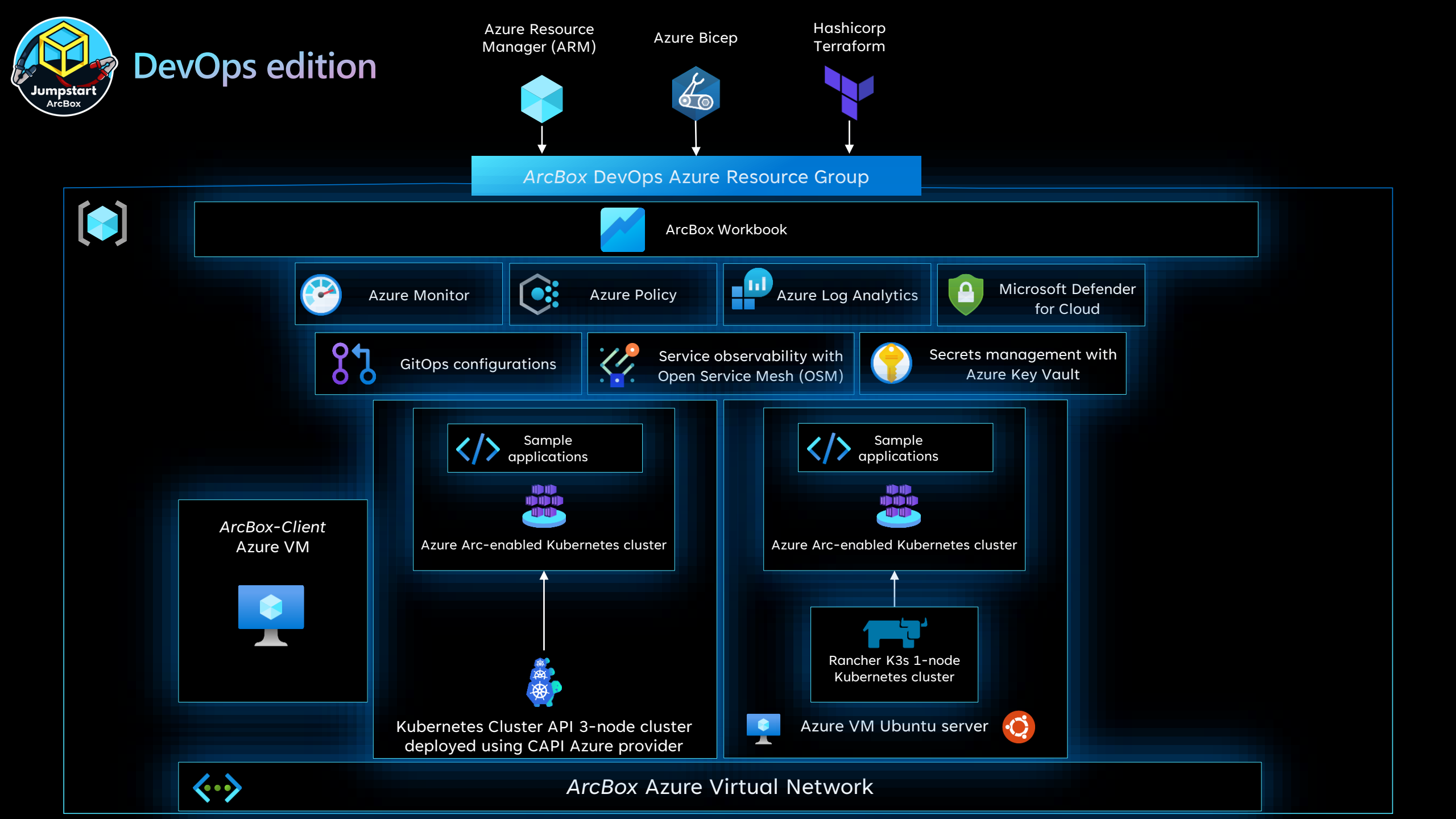
Making the decision based on customer needs



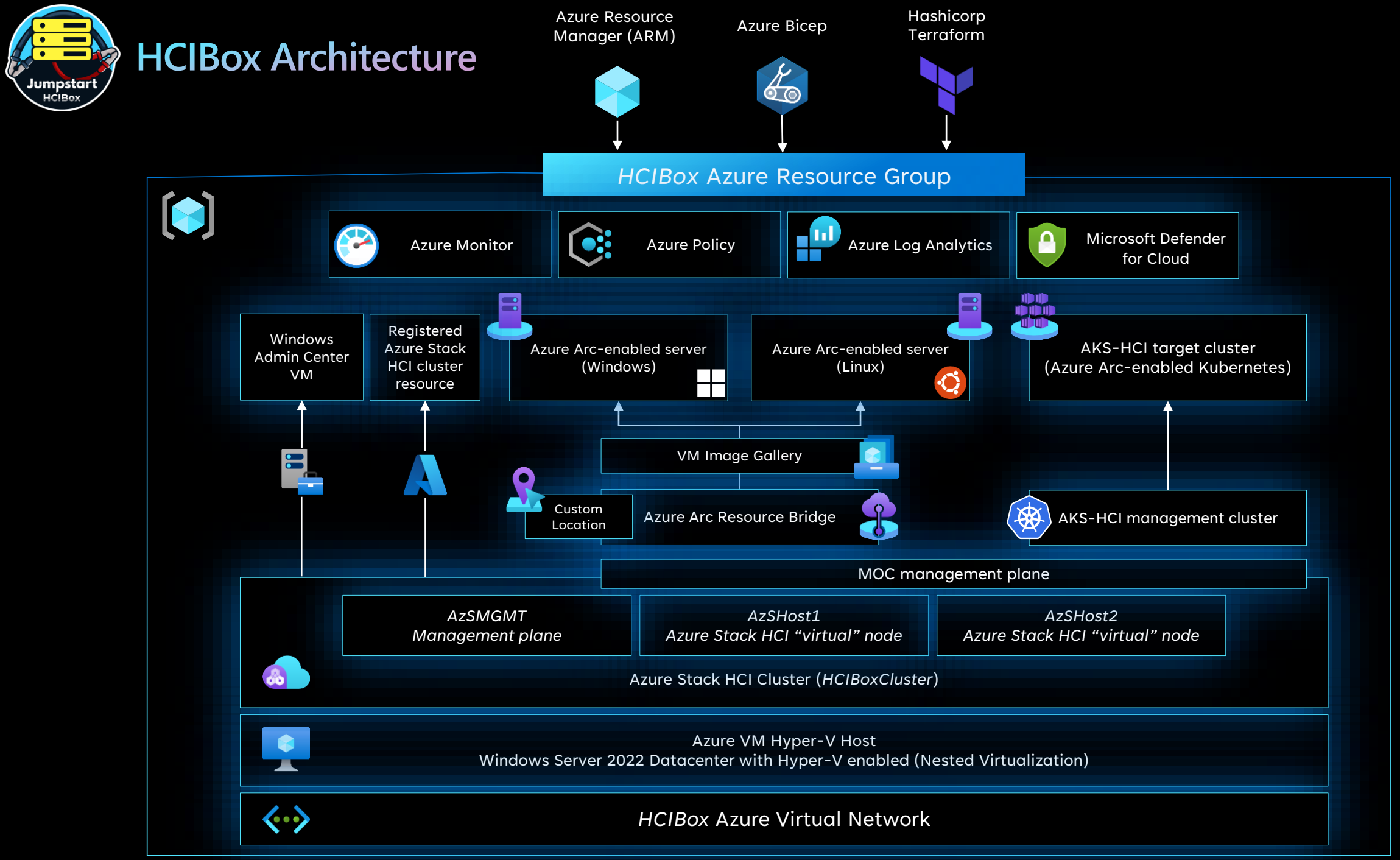
MICROSOFT CONFIDENTIAL – NON-DISCLOSURE AGREEMENT REQUIRED


Jumpstart ArcBox
DataOps edition
Azure Resource Manager (ARM)
Azure Bicep
Hashicorp Terraform
ArcBox DataOps Azure Resource Group
ArcBox Workbook
Azure Monitor
Azure Policy
Azure Log Analytics
Azure Tags
Grafana
primary site
DR site
ArcBox-Client
Azure VM installed with DBA tools
ArcBox-DC Azure VM with Active Directory Domain Services + DNS
DNS
Sample K8s application
App backend database
Azure Arc Data Controller
Azure Arc-enabled SQL Managed Instance
SQL
Azure Arc-enabled Kubernetes cluster
Primary Azure Kubernetes Service (AKS) 3-node cluster
Kubernetes Cluster API 3-node cluster deployed using CAPI Azure provider
Disaster recovery simulation
DR Azure Kubernetes Service (AKS) 3-node cluster
ArcBox primary Azure Virtual Network
Virtual network peering
ArcBox DR Azure Virtual Network

DevOps edition



HCIBox Architecture



Demo

Microsoft

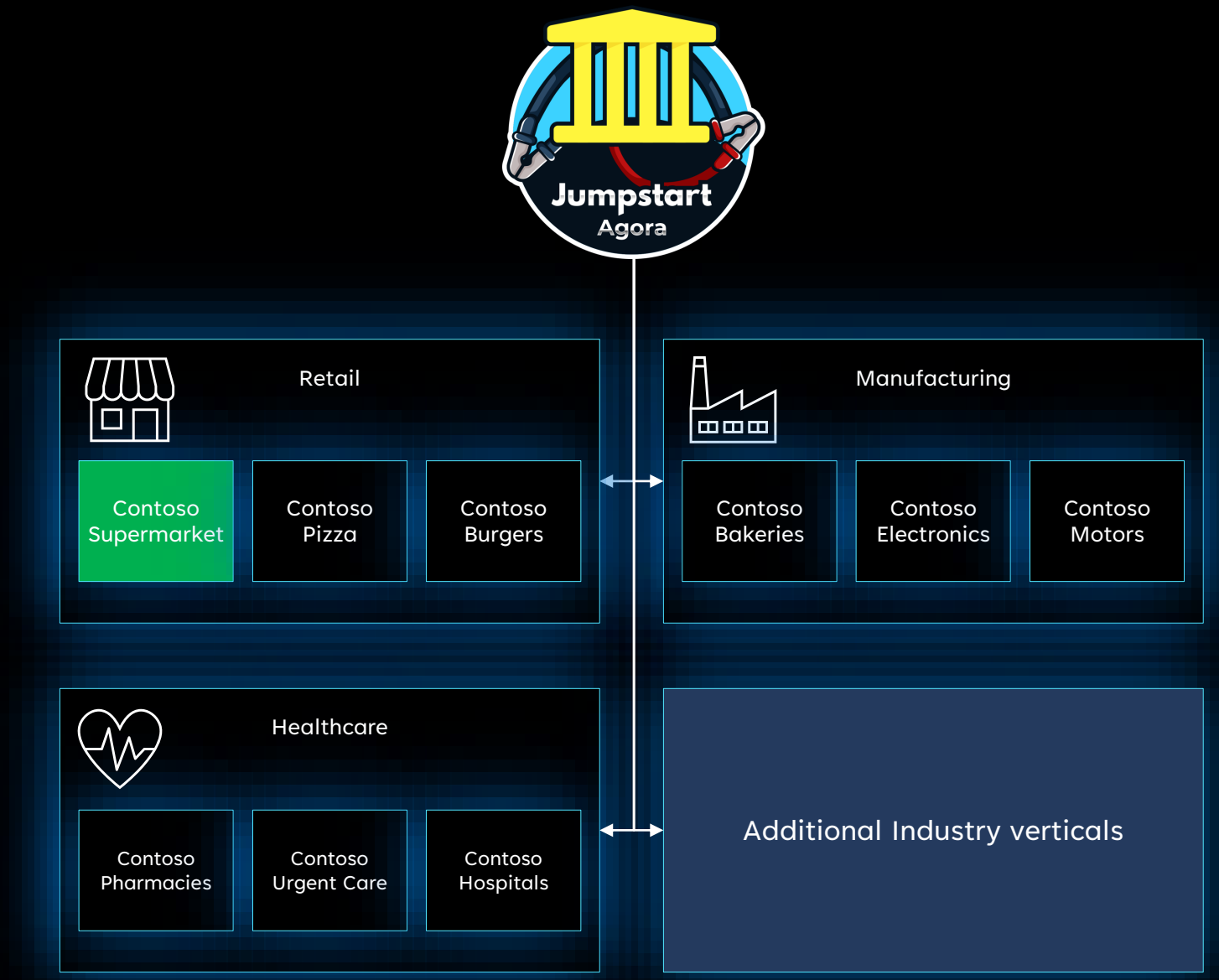
Introducing Jumpstart Agora

Jumpstart for Industries and application development velocity across cloud and edge

Microsoft

The word "agora" comes from the ancient Greek term for a public gathering place or assembly, and it has come to be used more broadly to refer to any place or forum where people come together for discussion or exchange.

Jumpstart Agora industries landscape (current and future)



Contoso Supermarket

Applications and technology stack

Tooling and operations

Inner loop process
Outer loop process
Dev Containers
IDE
GitHub Actions
GitOps
Dashboards
Cost management
Client interfaces

Contoso Supermarket applications stack

Point of Sale (PoS)

Checkout Queue Monitoring

Freezer Monitoring for Food Safety

Microsoft Defender for Cloud

Azure Log Analytics

Prometheus and Grafana Observability stack (OSS)

Azure Container Registry (ACR)

Azure Monitor

AKS Edge Essentials (as Arc-enabled Kubernetes)

Windows 11 IoT (as Arc-enabled servers)

Azure Kubernetes Service

Azure Automation

Azure Data Explorer (ADX)

Azure IoT Hub

Azure Cosmos DB

Azure Compute, storage and network stack

Azure

Demo

Agora
Contoso Supermarket

nic Cloud Connect

RECAP

- Arc-enabled Servers
  - SSH access
  - Private Link
- Azure Arc Jumpstart
  - ArcBox
  - HCIBox
    - Arc-enabled Kubernetes
    - SQL Managed Instance
  - Agora

Resources

- aka.ms/azurearc
- aka.ms/azurearcjumpstart

- Arc-sessions at Microsoft Ignite (Nov 15 – 16)
  - aka.ms/ignite
    - Design cloud to edge architecture patterns with Azure Arc
    - Bring enhanced manageability to SQL Server anywhere with Azure Arc
    - Best Practices for Successful Azure Hybrid Cloud Rollouts

Cloud Connect

Thank you!