Microsoft

# Azure VMware Solution

## Run VMware Natively on Azure


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Senior Cloud Advocate

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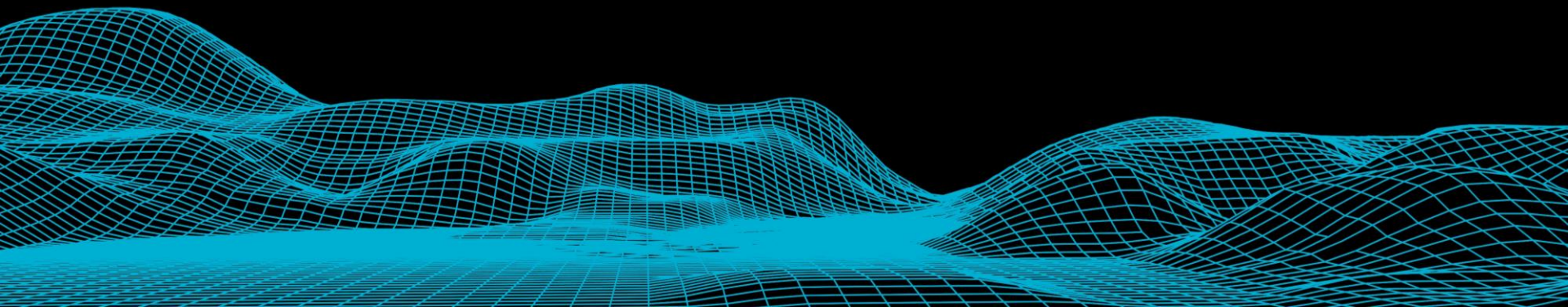
# Introduction & Background



# Cloud migration considerations

## Need for speed

- Software end of support
- Software & Hardware refresh
- Urgent capacity needs
- Datacenter contract expiry

## Cost and complexity

- Compliance and standards
- Application refactoring
- Business continuity/downtime
- Project resourcing

## People and processes

- Impact of change management
- Need for operational consistency
- Update DR and Backup process
- Need to grow cloud competency

# Cloud migration strategies:

## Rehost

**Redeploy as-is to cloud**

- Reduce Capex
- Free up datacenter space
- Quick cloud ROI

## Refactor

**Minimally alter to take better advantage of cloud**

- Faster, shorter, updates
- Code portability
- Greater cloud efficiency (resources, speed, cost)

## Rearchitect

**Materially alter/decompose application to services**

- App scale and agility
- Easier adoption of new cloud capabilities
- Mix technology stacks

## Rebuild

**New code written with cloud native approach**

- Accelerate innovation
- Build apps faster
- Reduce operational cost

**IaaS**
and
**Azure VMware Solutions**
(Azure Dedicated)

**Containers**
**PaaS**

**PaaS**
**Serverless**
**Microservices**

# Challenges with migration of existing app estate

29%

Risk of business disruption

28%

Cloud skilling gap

31%

Refactoring complexity

# What is Azure VMware Solution?

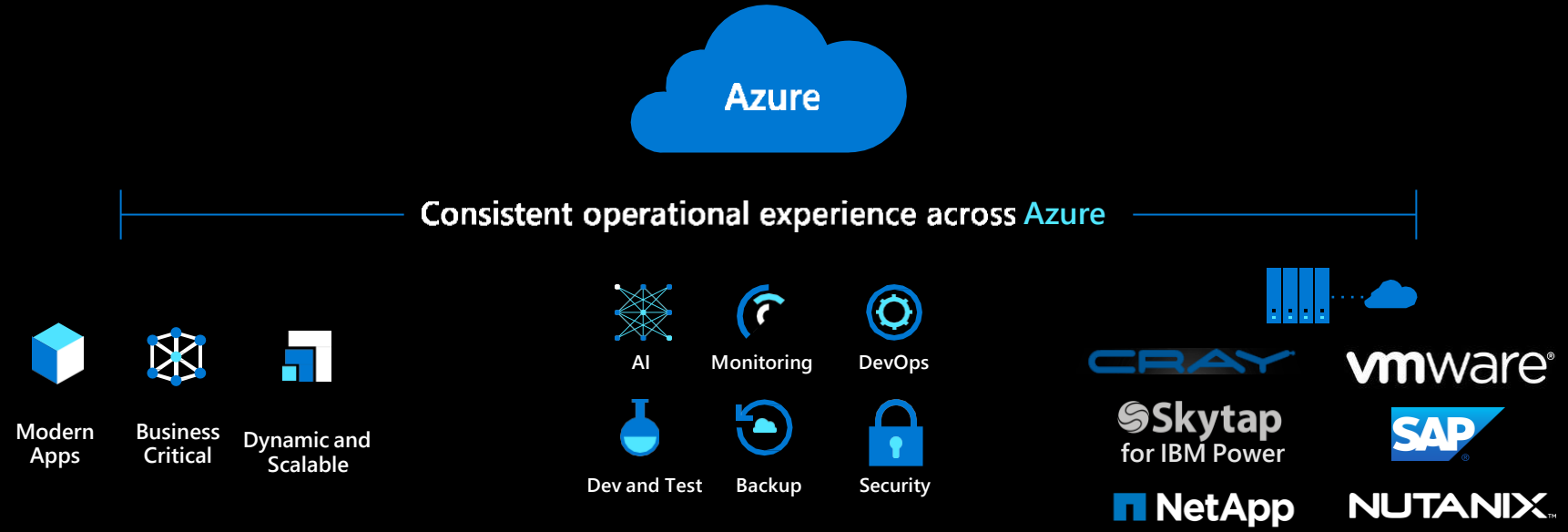
It is a **comprehensive VMware environment on dedicated Azure infrastructure**. Built by Microsoft and VMware.

It runs **your VMware workloads natively on Azure**, supported and operated by Microsoft.

It allows **you to manage, and secure applications across VMware environments and Microsoft Azure** with a consistent operating framework.

# Microsoft Azure

## Infrastructure designed for every workload

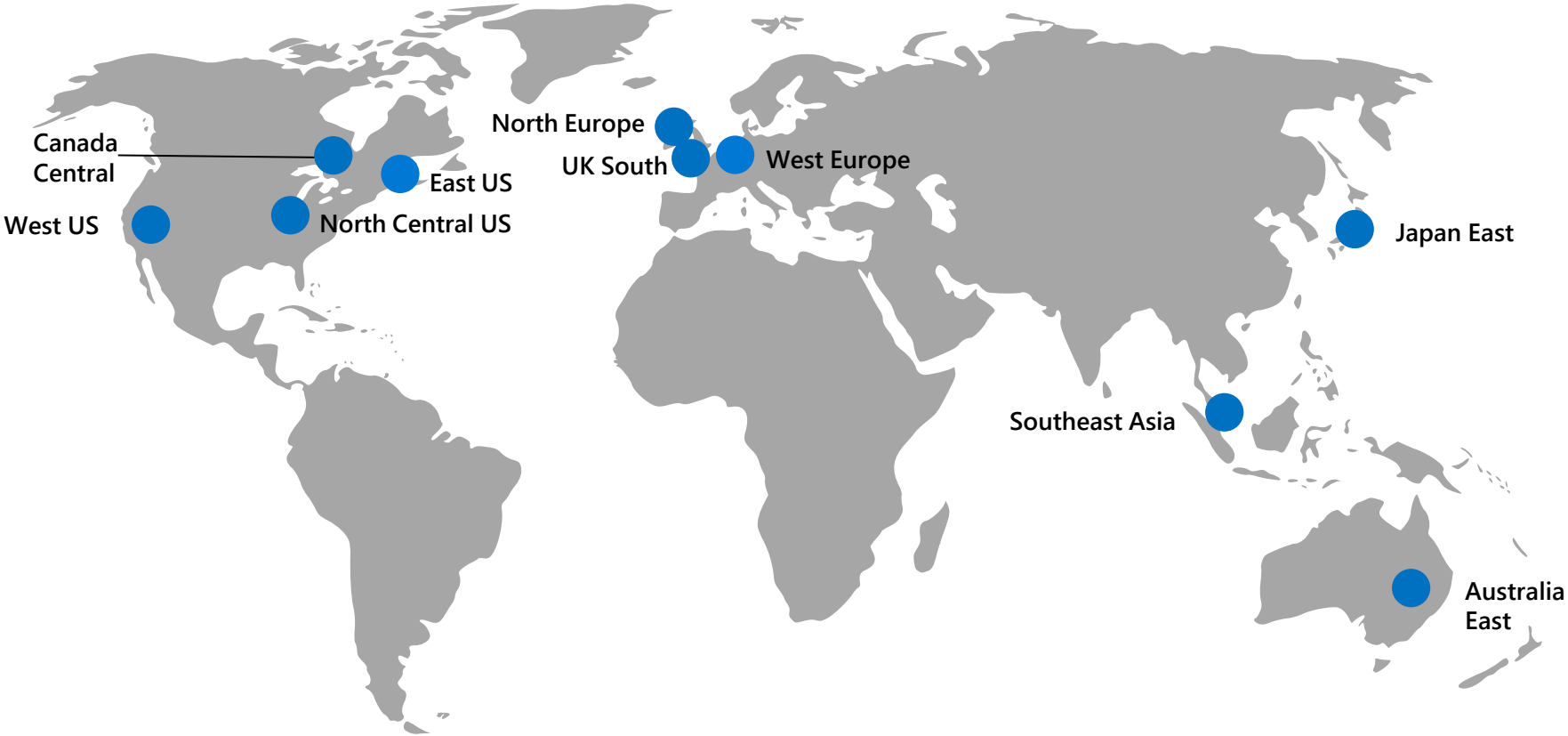



Azure native IaaS and PaaS offerings

Seamless integration with other Azure Services

Purpose-built Azure for platform continuity

# Azure VMware Solution Availability



# Migrate and Extend VMware workloads to the cloud

## Azure VMware Solution

Built-in continuity, speed and scale with modern infra

Use existing VMware skills and tools

Seamlessly modernize apps over time with Azure

Unmatched pricing for Windows and SQL Server

Accelerate your journey to the cloud

# Getting started with Azure VMware Solution

Use cases → Plan & Deploy → Migrate → Manage & Operate → Modernize

Datacenter expansion, reduction, or retirement

Speed and simplification of migration/hybrid cloud

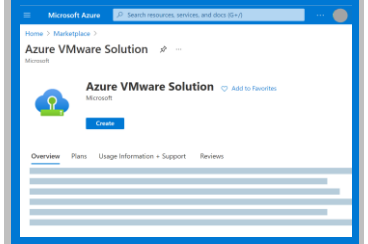
Disaster recovery and business continuity

App and business modernization, dev and test

Microsoft + VMware

Specialists, Programs, Partners

Create and deploy AVS SDDC environment from Azure portal in just a few hours




Connect AVS and VMware on-Prem

Use VMware HCX to quickly Migrate VMs

Visualize VM resources in Azure, continue to manage with vSphere

Microsoft Azure

Self-service elasticity & scale

Industry certifications

High availability, DR and backup

Low-latency ExpressRoute

vmware

VMware Cloud Foundation

- Native vSphere experience
- vSAN for storage
- NSX-T networking
- HCX for migration

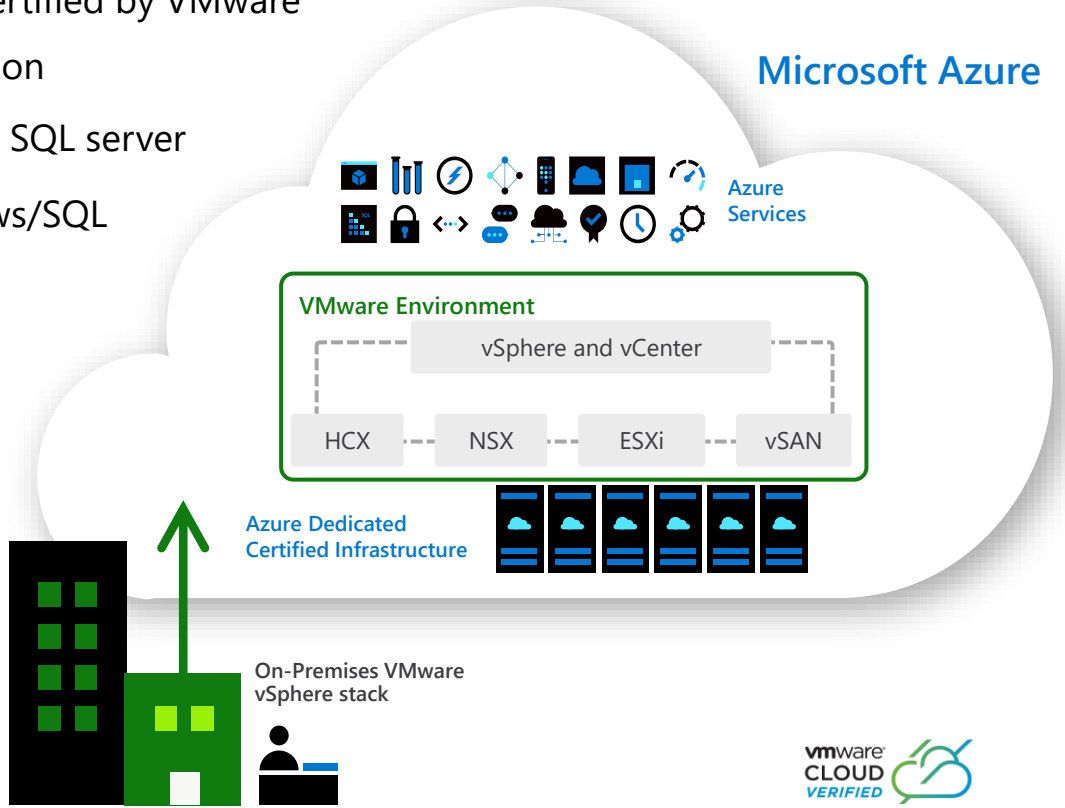
Azure Services

Modernize apps with seamless connection to Azure Services

- Central API Management
- Hybrid Hub and spoke
- Azure Security Center
- Azure Monitor
- Storage Optimization

# New and differentiated features

- Microsoft **first party Azure service**, cloud certified by VMware
- Seamless **Azure experience**, native integration
- **Azure Hybrid Use Benefit** for Windows and SQL server
- Free **extended security updates** for Windows/SQL Server 2008/2008R2
- **Single Point of Support**
- Latest **VMware technology updates**
- **HCX Enterprise Edition** available
- High performance **dedicated hosts**
- Unified **licensing and consumption**
- **Simplified NSX Interface**

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# Azure VMware Solution Software and Hardware Package

## Software Specifications

ESXi - 6.7U3 Enterprise Plus
vCenter - 6.7U3 Standard
vSAN - 6.7 Enterprise
NSX-T - 2.5 Advanced
HCX – 4.0

*HCX Enterprise available – monthly pricing (public preview)

## Hardware Specifications

Model – AV36 (36 cores)
CPU- Intel Xeon Gold 6140 2.3 GHz
Memory - 576 GB
Storage vSAN Caching - 2 × 1.6 TB NVMe
Storage vSAN Capacity - 8 × 1.92 TB SSD
Network - 2 - Dual Port 25 GbE

*Minimum 3 nodes per vSphere cluster
*Maximum 16 nodes per vSphere cluster
Maximum 96 nodes to an Azure Private Cloud instance

# Azure VMware Solution Features

## Familiar VMware technology

- Native vSphere support
- Fully featured networking stack
- vSphere management, vSAN, and NSX-T
- HCX Enterprise now available to support migration

## Integration with Azure

- Management and governance
- Security
- Low-latency connectivity to Azure
- Leverage Azure ecosystem
- Single point of support
- DevOps toolchain

## High performance cloud infra

- Optimized elastic infrastructure
- Automated self-service provisioning
- Dedicated, isolated, bare metal infrastructure
- Redundancy and placement control
- Security and encryption

# Azure pricing benefits for Azure VMware Solution

**Hourly Pay as You Go (PAYG) billing**

## Reserved Instances

1 year or 3 years Reserved Instance discounts for Azure VMware Solution.

Save 30-50% on the cost of dedicated nodes with RIs

+

## Azure Hybrid Benefit

Bring Windows Server and SQL Server on-premises licenses with Software Assurance to Azure

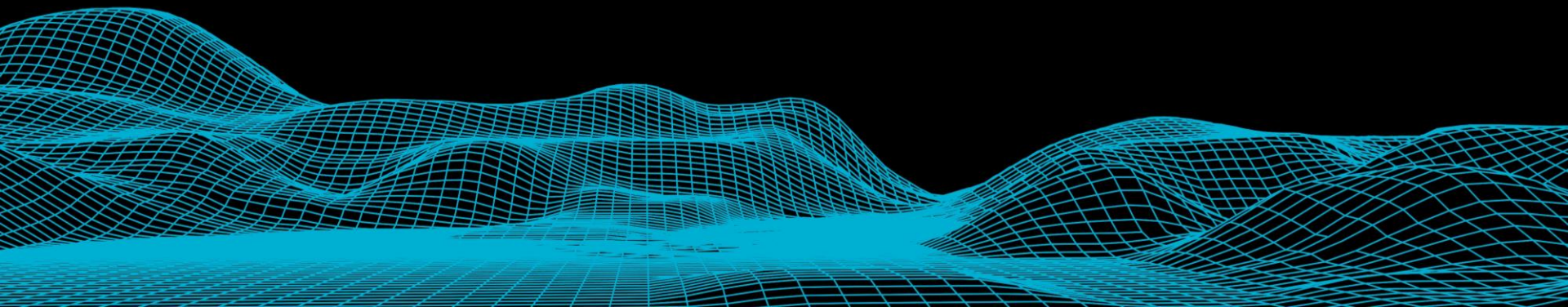
+

## Free Extended Security Updates

3 years free security updates for Windows Server 2008/2008R2

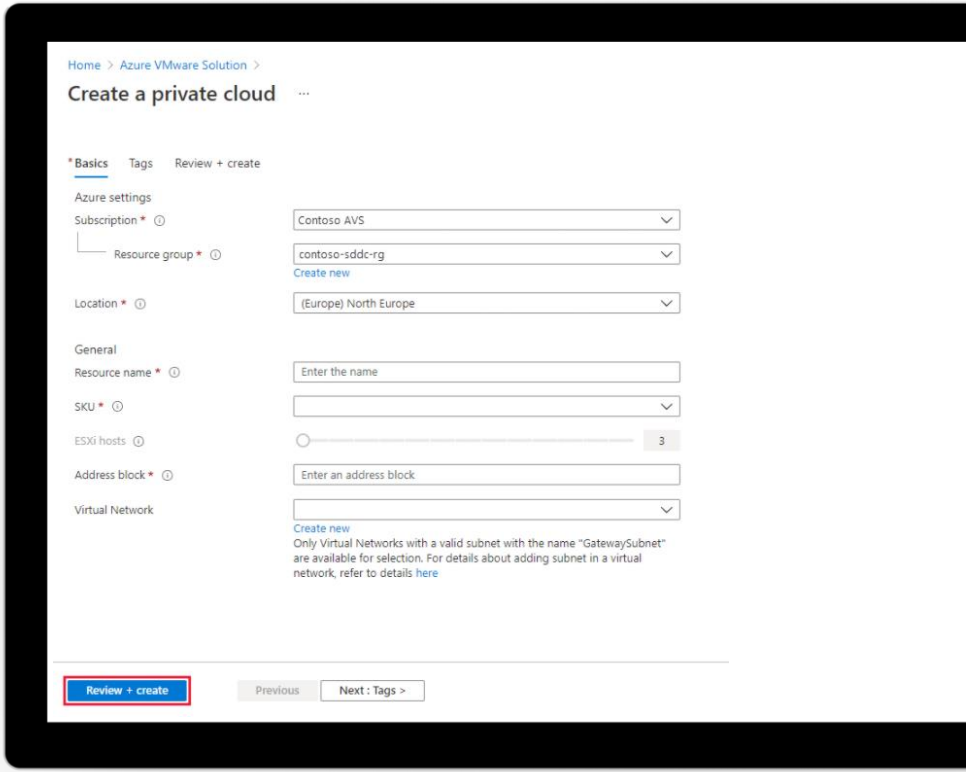
SQL Server 2008/2008R2

# Deploy



# Steps to deploying the SDDC through Azure

1. Deploy Private Cloud in Azure
2. Create a virtualized network (VNet)
3. Create an Azure Bastion & jump host
4. Create a gateway subnet & VNet gateway
5. Create auth key in VNet gateway
6. Connect AVS ExpressRoute to VNet gateway

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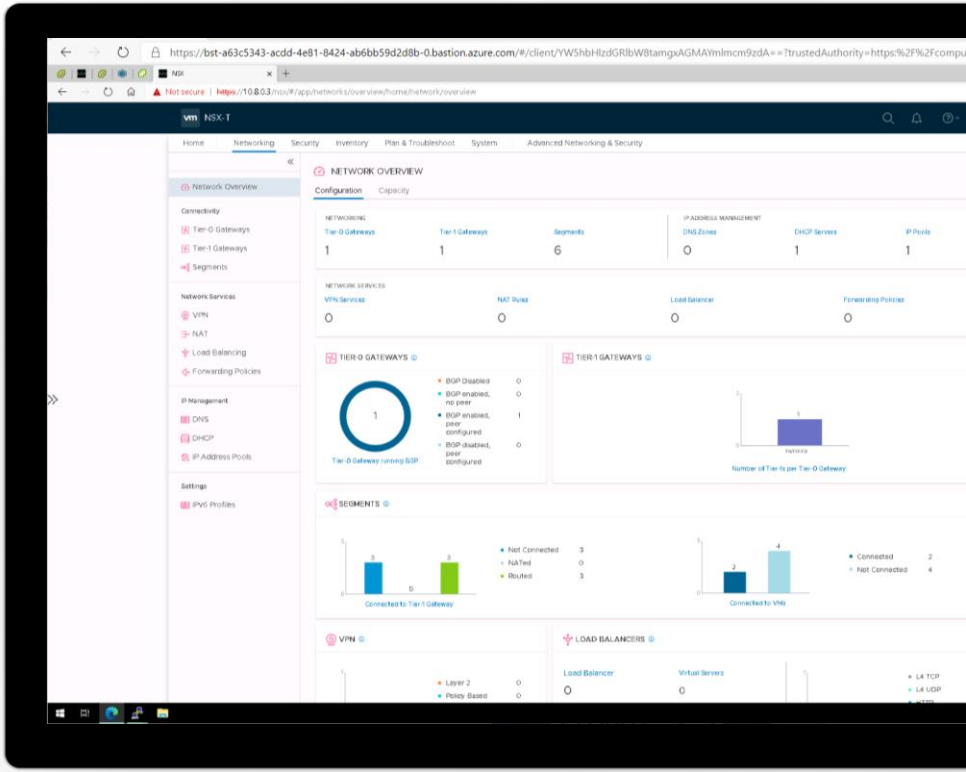
# Connect VMware on-Premises and AVS

1. Connect to jump host behind Azure Bastion
2. Connect to vCenter
3. Connect to NSX-T
4. Enable Global Reach for on-premises access
5. Join domain & configure identity source

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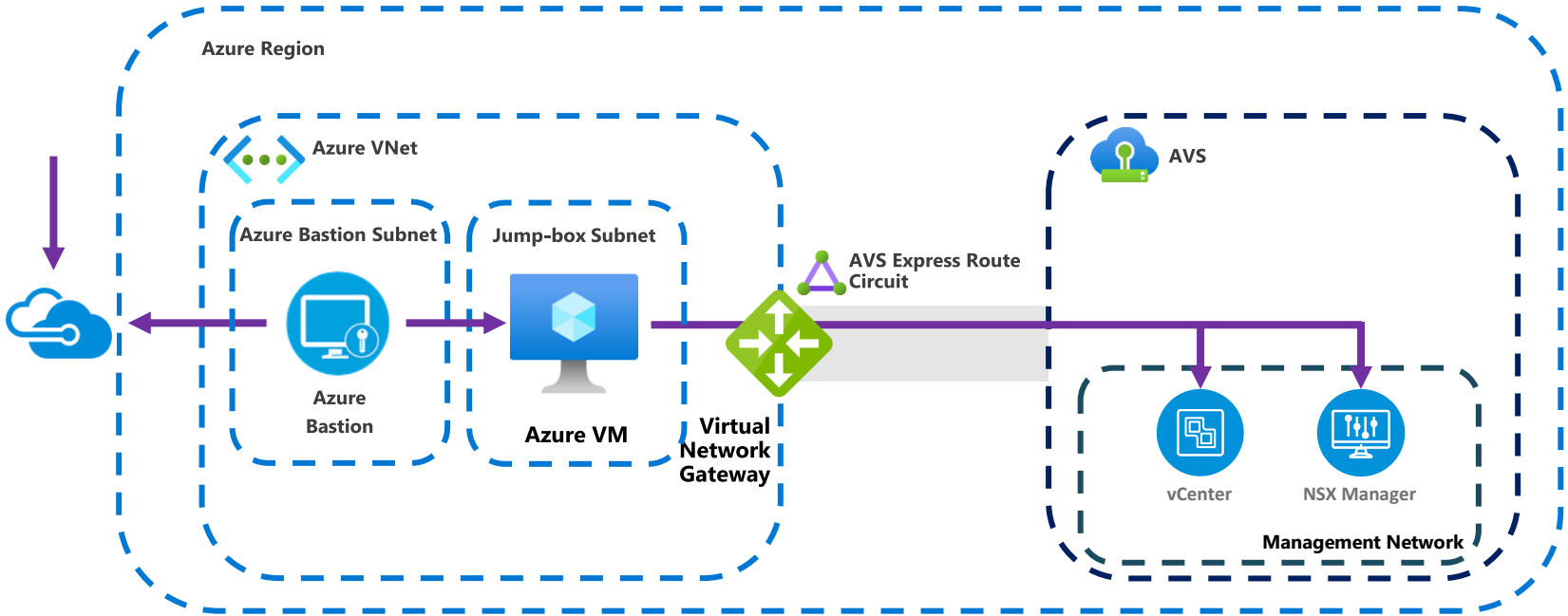
Azure

# Jump-Box VM with Azure Bastion




Microsoft Azure

Azure Subscription

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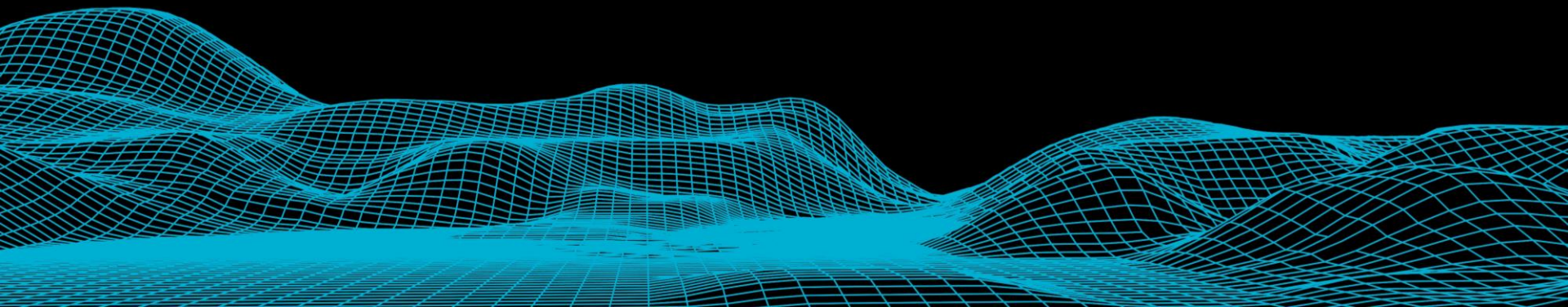
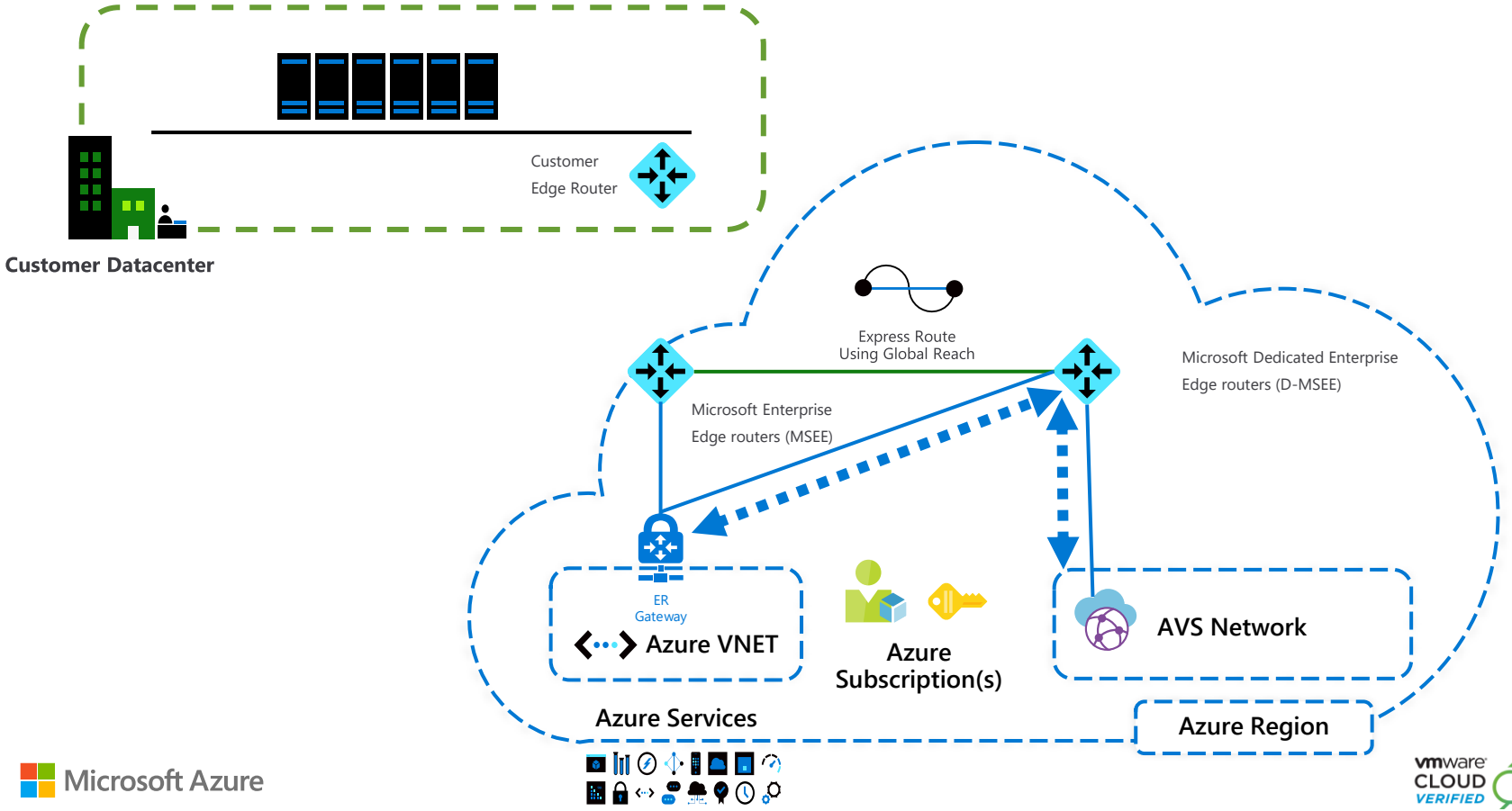
# Network Architecture



# Azure VMware Solution
# AVS to VNET using VNET ER Gateway – Basic Interconnectivity

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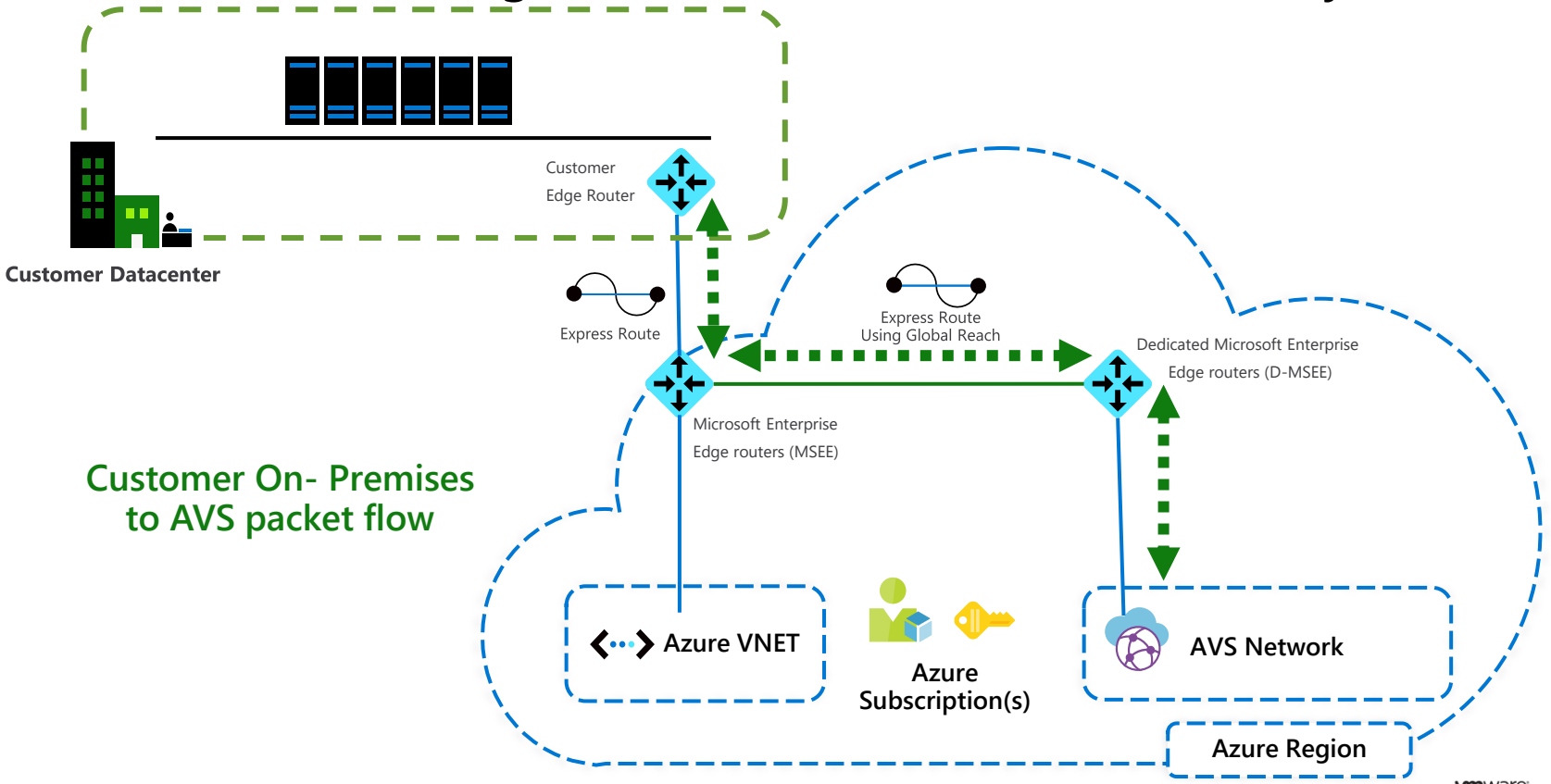
# Azure VMware Solution
# On Prem to SDDC using Global Reach – Full Interconnectivity

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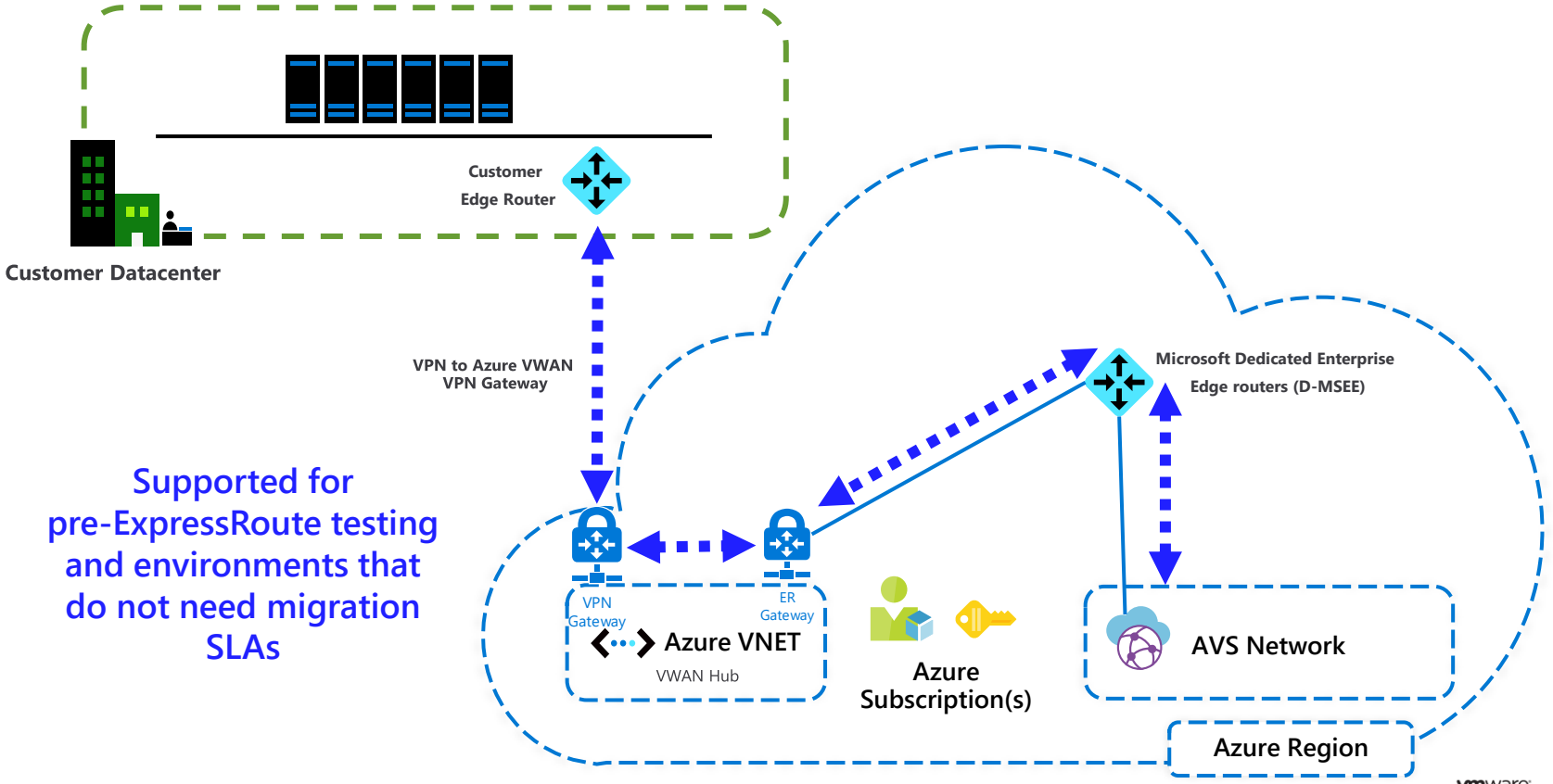
# Azure VMware Solution
# On Prem to SDDC using VPN*




Supported for pre-ExpressRoute testing and environments that do not need migration SLAs

Microsoft Azure

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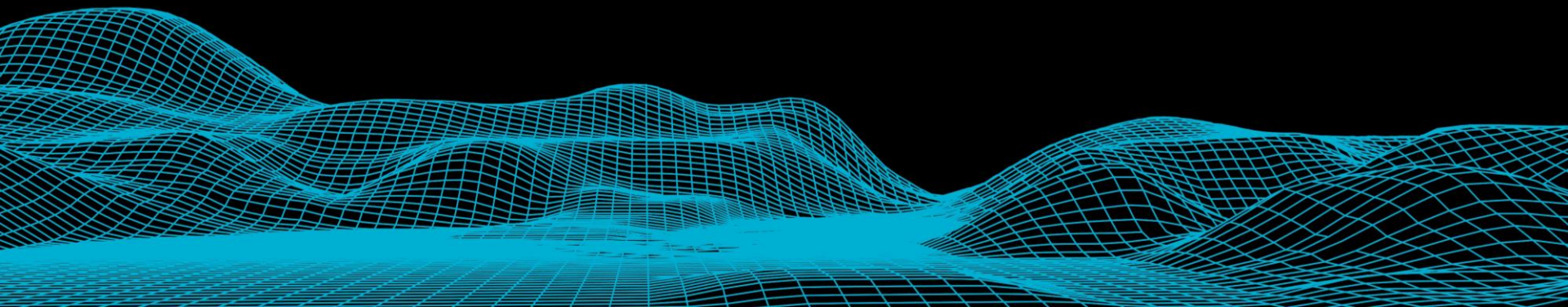
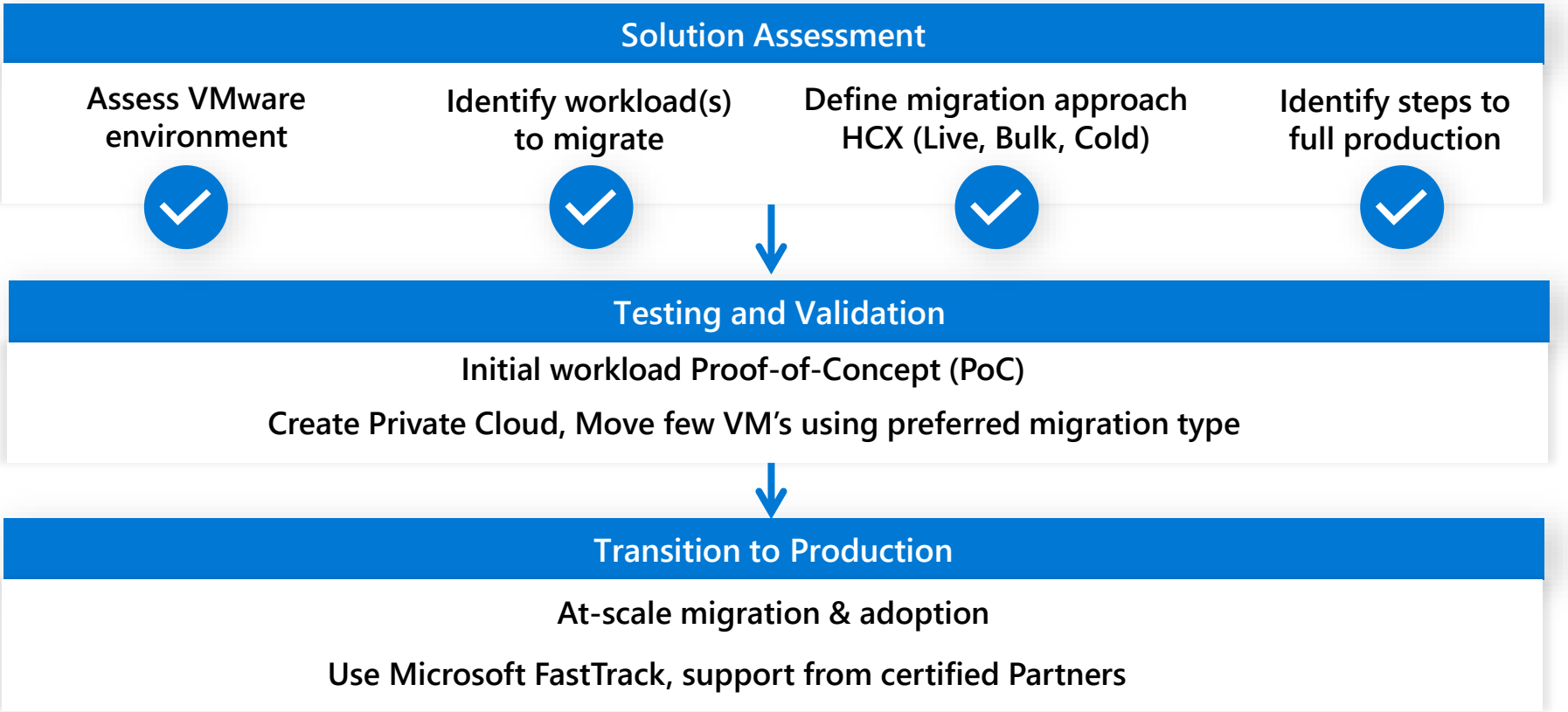
# Migrate



# Pre-Migration steps and process



# Azure VMware Solution + Azure Migrate

## Cost and readiness

**Total monthly cost estimate**

198530.8

USD

**Average cost estimate per VM**

207.23

USD

**AVS readiness for on-premises servers**

Ready for AVS
312

Ready with conditions
646

Not ready for AVS
0

Readiness unknown
0

**Assessed virtual machines**

958

## Utilization across AVS nodes

**Total AVS nodes required**

65

AVS nodes

**CPU utilization (projected)**

49.85%

**Memory utilization (projected)**

26.58%

9108.43 out of 34268 (GBs)

**Storage utilization (projected)**

9.65%

103893.64 out of 1076618 (TBs)

# Use VMware HCX to Migrate to Azure

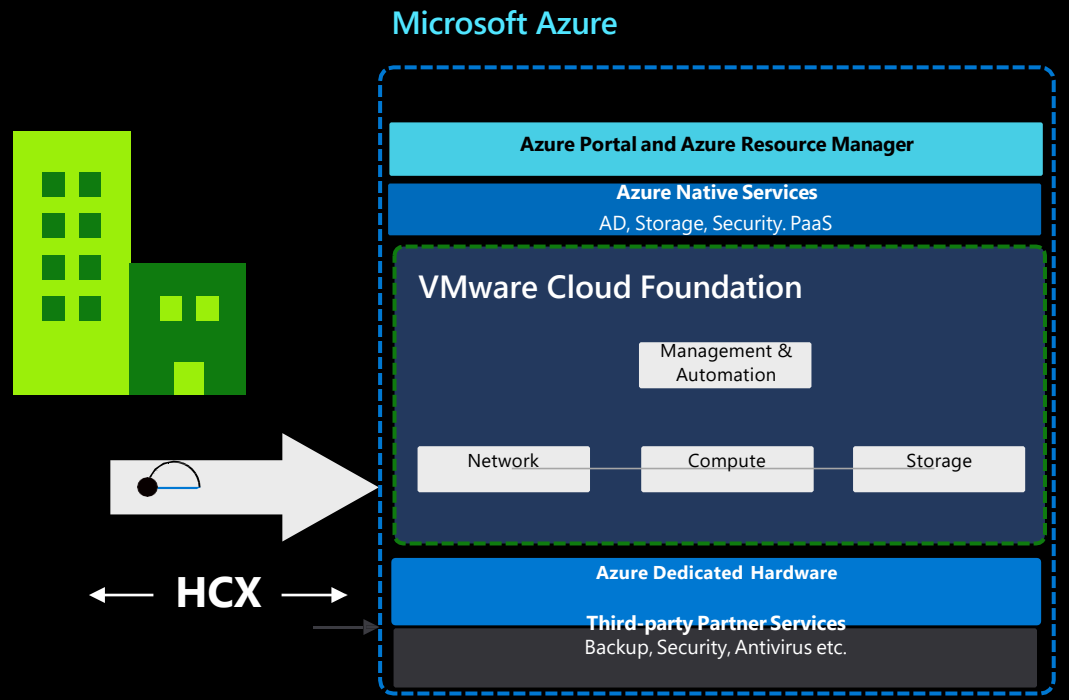
71%
Less Staff Time

Simple

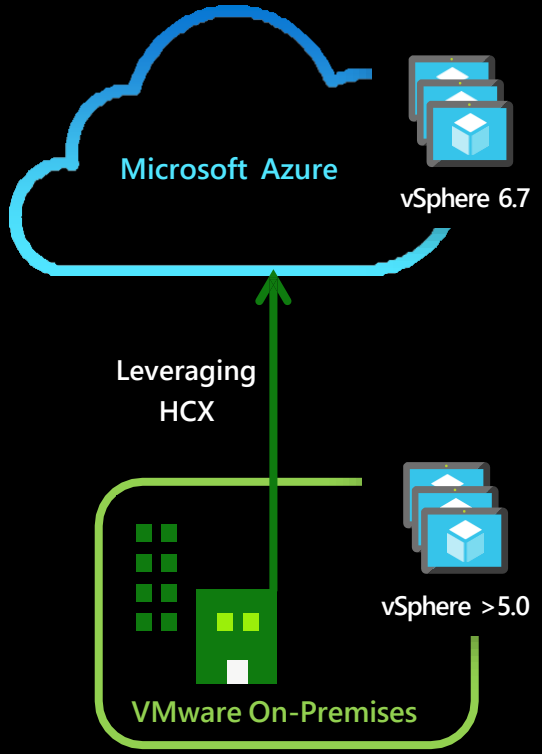
Fast

Economical

- Live migration without the cost, complexity or risk of refactoring
- Minimal downtime
- Extend proven tools, skills, policies
- Eliminate need and cost of reskilling

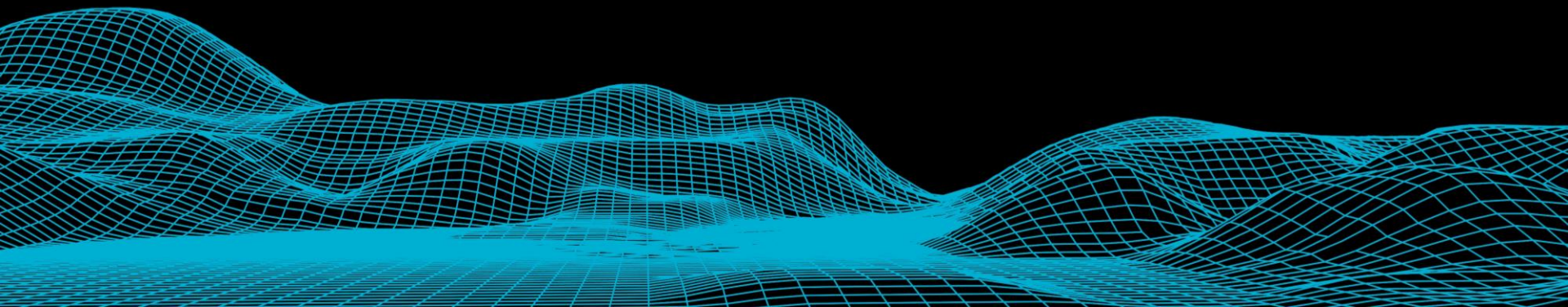


# Using VMware HCX for Migration to Azure VMware Solution

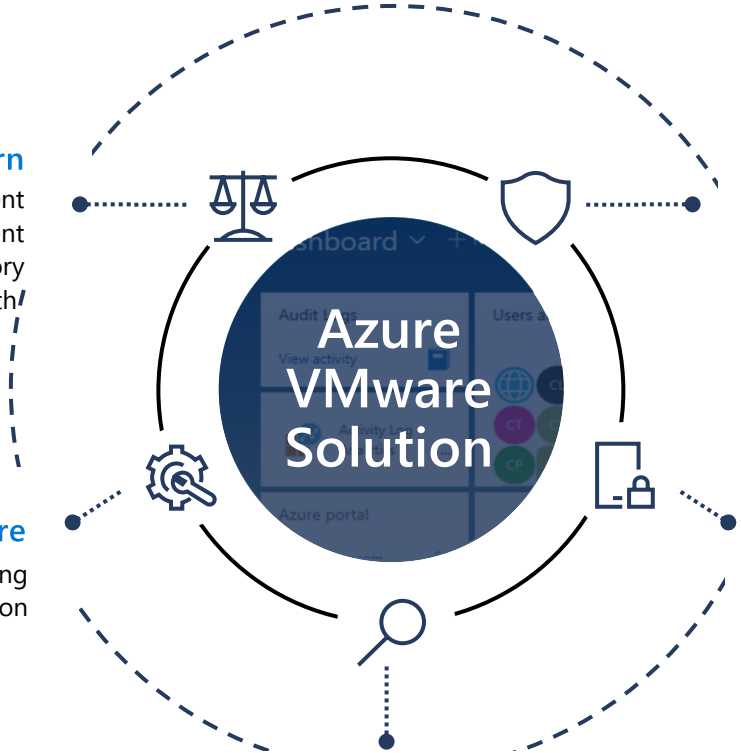



- Large scale **bulk migration** using HCX
- **Replication Assisted vMotion**
- Any **vSphere to vSphere** migration
- **HCX for site pairing** and DR
- **Parallel VM migration** threads
- **No change in IP,** no NAT
- **Secure proxy** for vMotion and replication traffic

# Management & Operations



# Azure VMware Solution - Managed IT




## Govern

Policy management
Cost management
Advisory
Service Health

## Secure

NSX-T secure workloads
Security Center
Sentinel and SIEM integration
Defender and Threat Protection
Identity setup

## Configure

Update management, scripting automation, configuration

## Protect

Backup - MABS
DR-Site Recovery
Azure Site Recovery

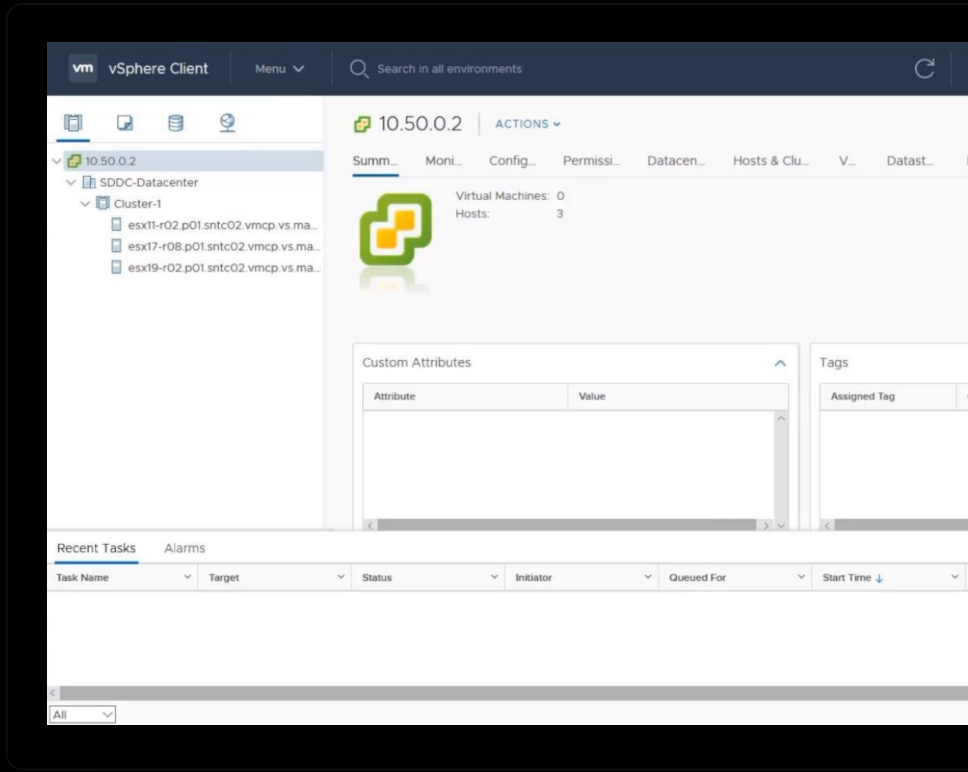
## Monitor

App, infrastructure and network monitoring log analytics and diagnostics

# Familiar and consistent VMware tools and technology

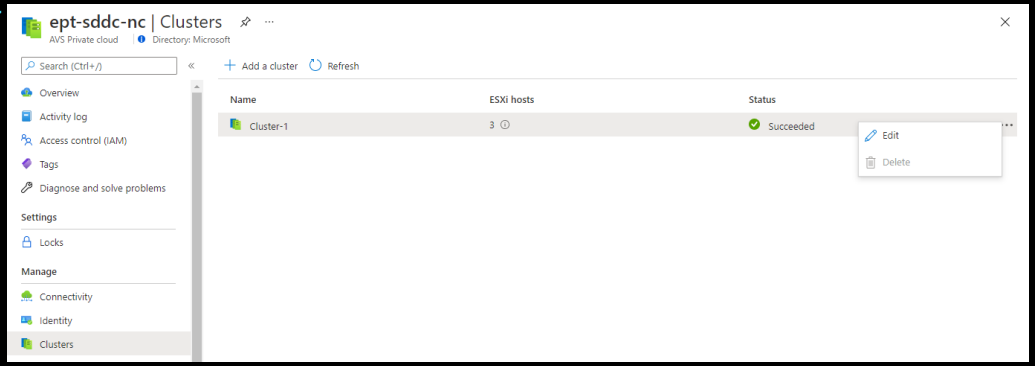
Create operational consistency for admins as you **continue to use VMware for resources running on Azure infrastructure**, including the vSphere client and NSX-T Manager.

Access to **vSphere, HCX, and NSX-T are enabled during the Private Cloud deployment** process. Credentials are registered in Azure to connect to the private cluster hosts.



# Seamless management for Azure infrastructure resources

Easily **scale infrastructure** as your business needs it through the Azure Portal.



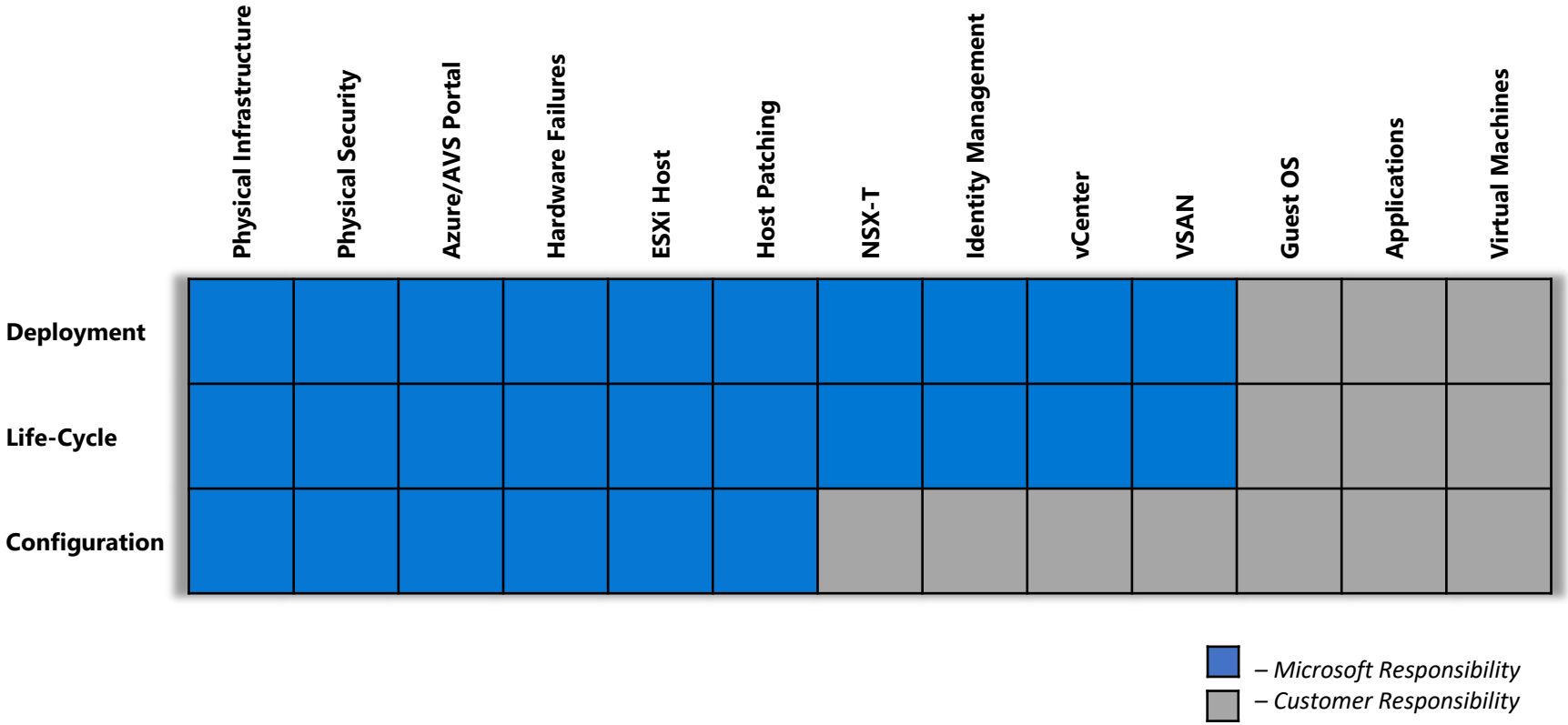

Add new nodes as required to **increase compute and storage during peak times.** And **delete nodes seasonally** when infrastructure demands are lower.

**Add and delete new clusters as required:**

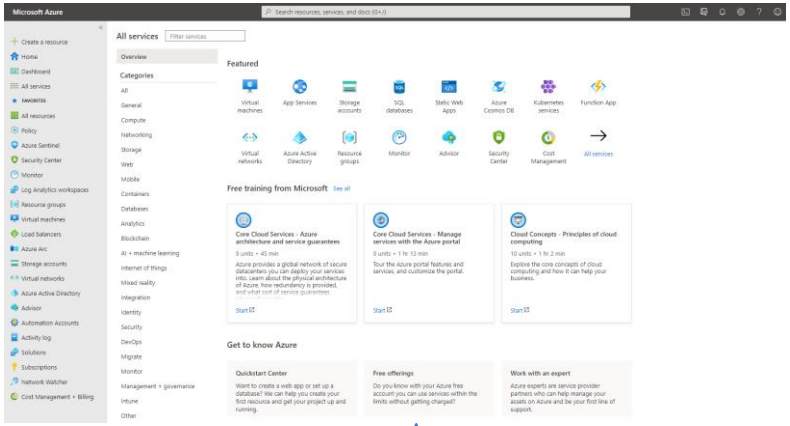
- Min 3 nodes per cluster
- Max 16 nodes in a vSphere cluster
- Max 96 nodes to an Azure Private Cloud instance

# Azure VMware Solution – Shared responsibility matrix

## Control boundaries



# Azure VMware Solution Deployment



Azure Portal

Customer Datacenter

Customer Edge Router

ExpressRoute

Azure Region

ExpressRoute Using Global Reach

Microsoft Enterprise Edge routers (MSEE)

Microsoft Dedicated Enterprise Edge routers (D-MSEE)

ER Gateway

Azure VNET

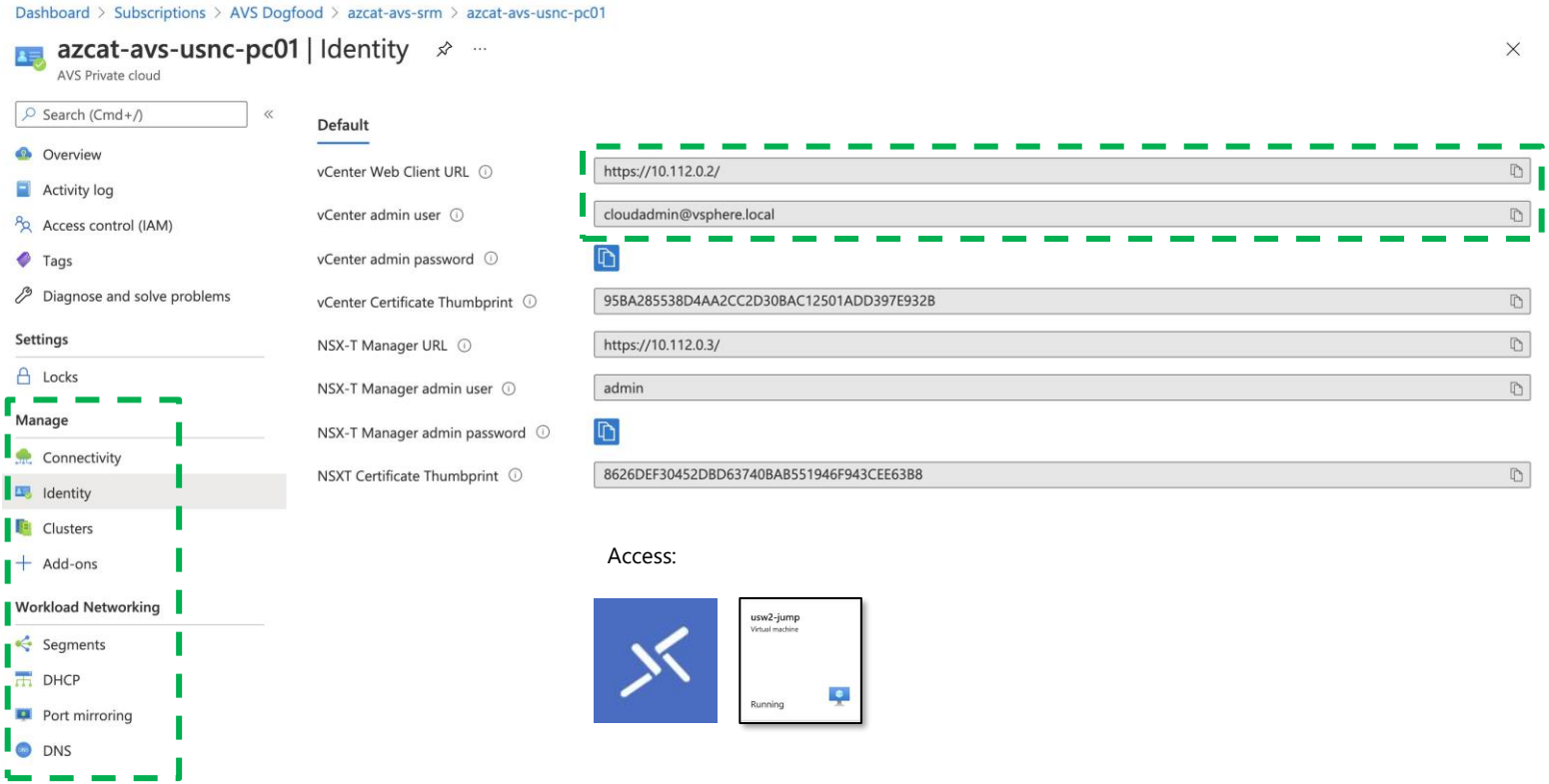
Azure Services

Azure Subscription(s)

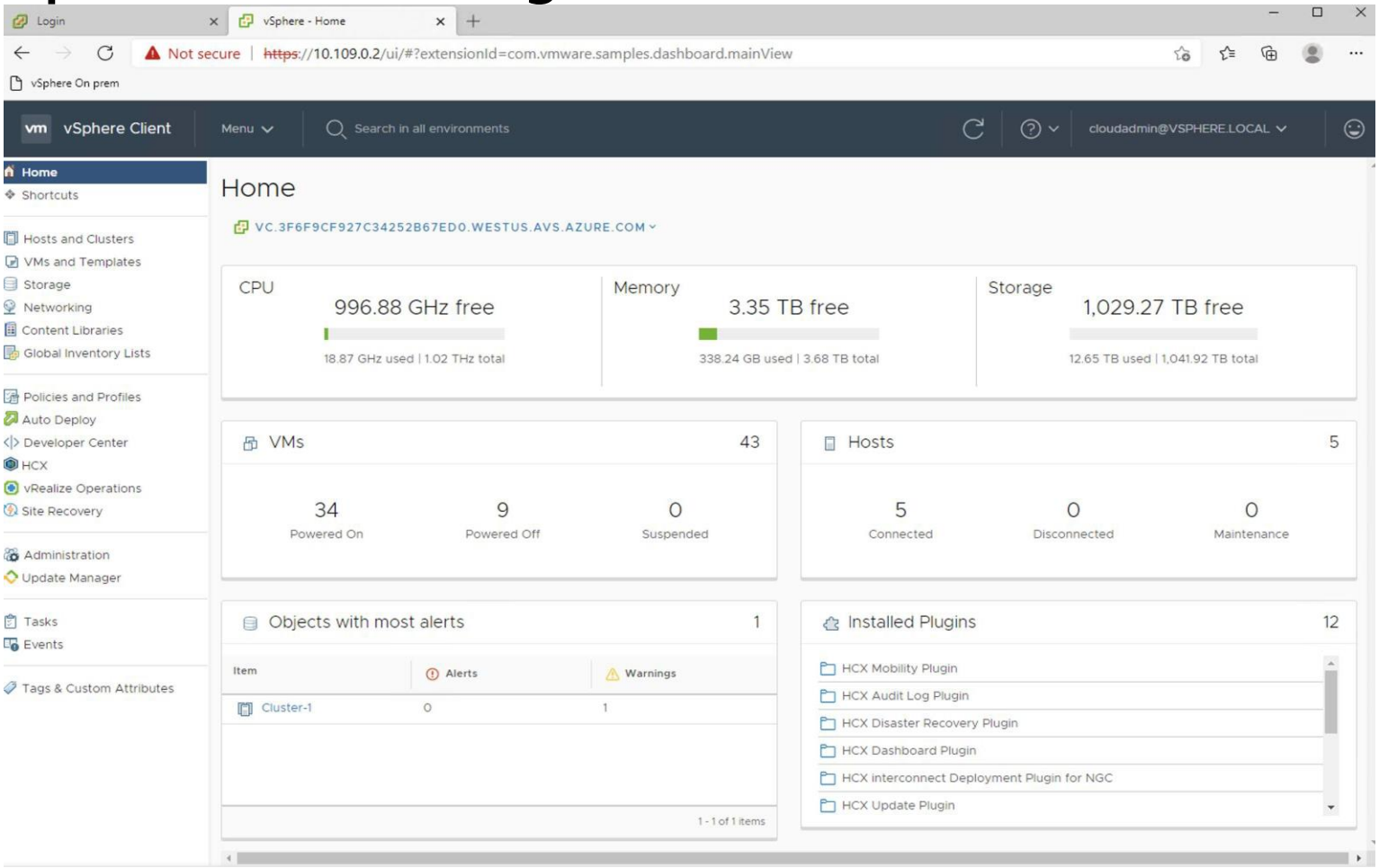
AVS Private Cloud

vCenter, NSX-T, HCX, 3rd party services

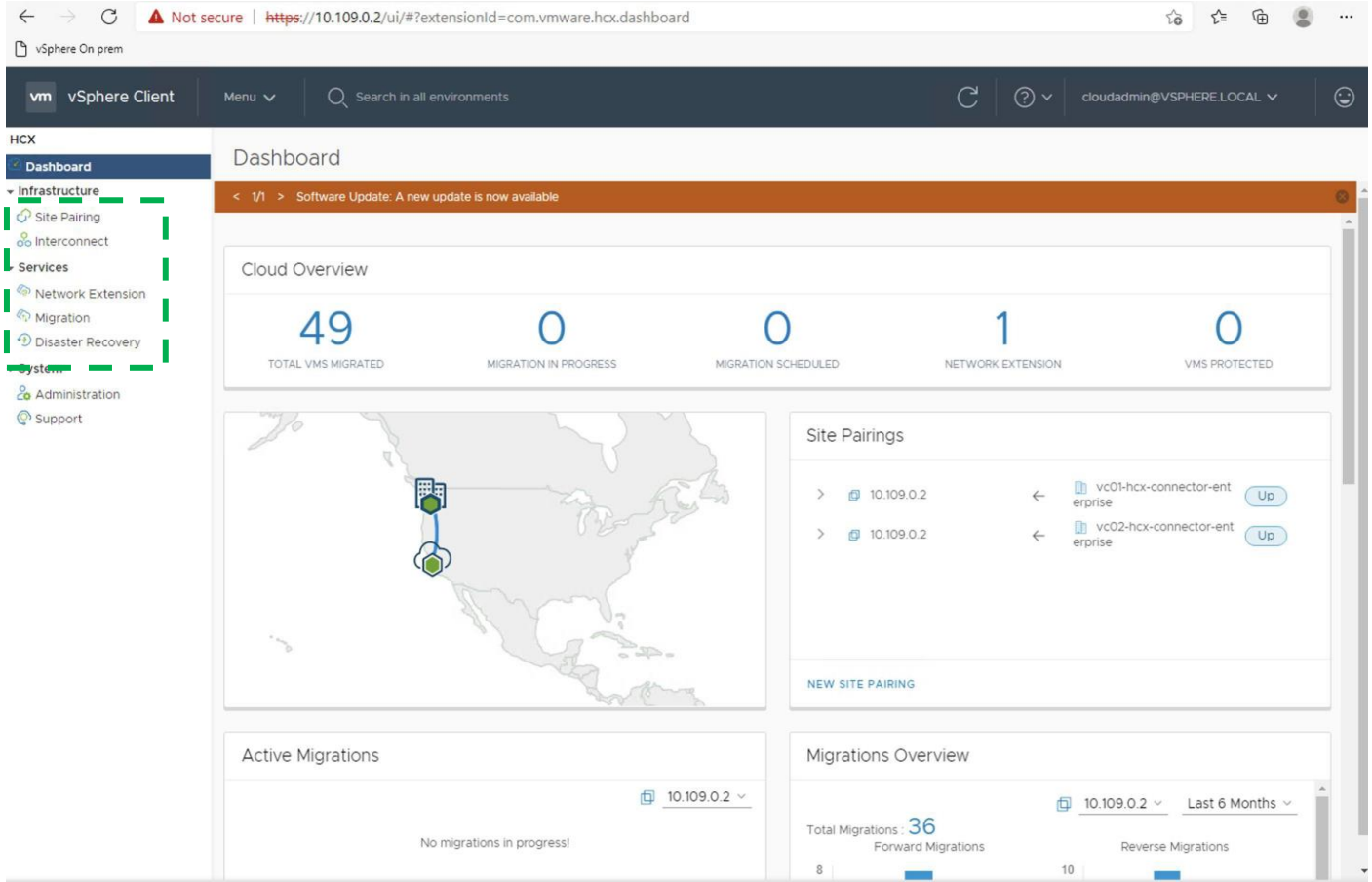
# Manage Private Cloud



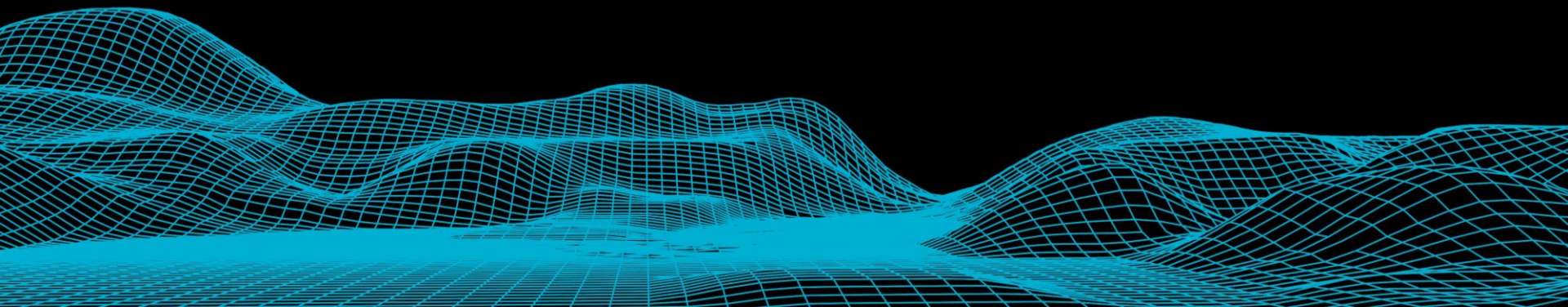
# vSphere admin using “CloudAdmin”



# AVS uses HCX for Hybrid and Lift and Shift



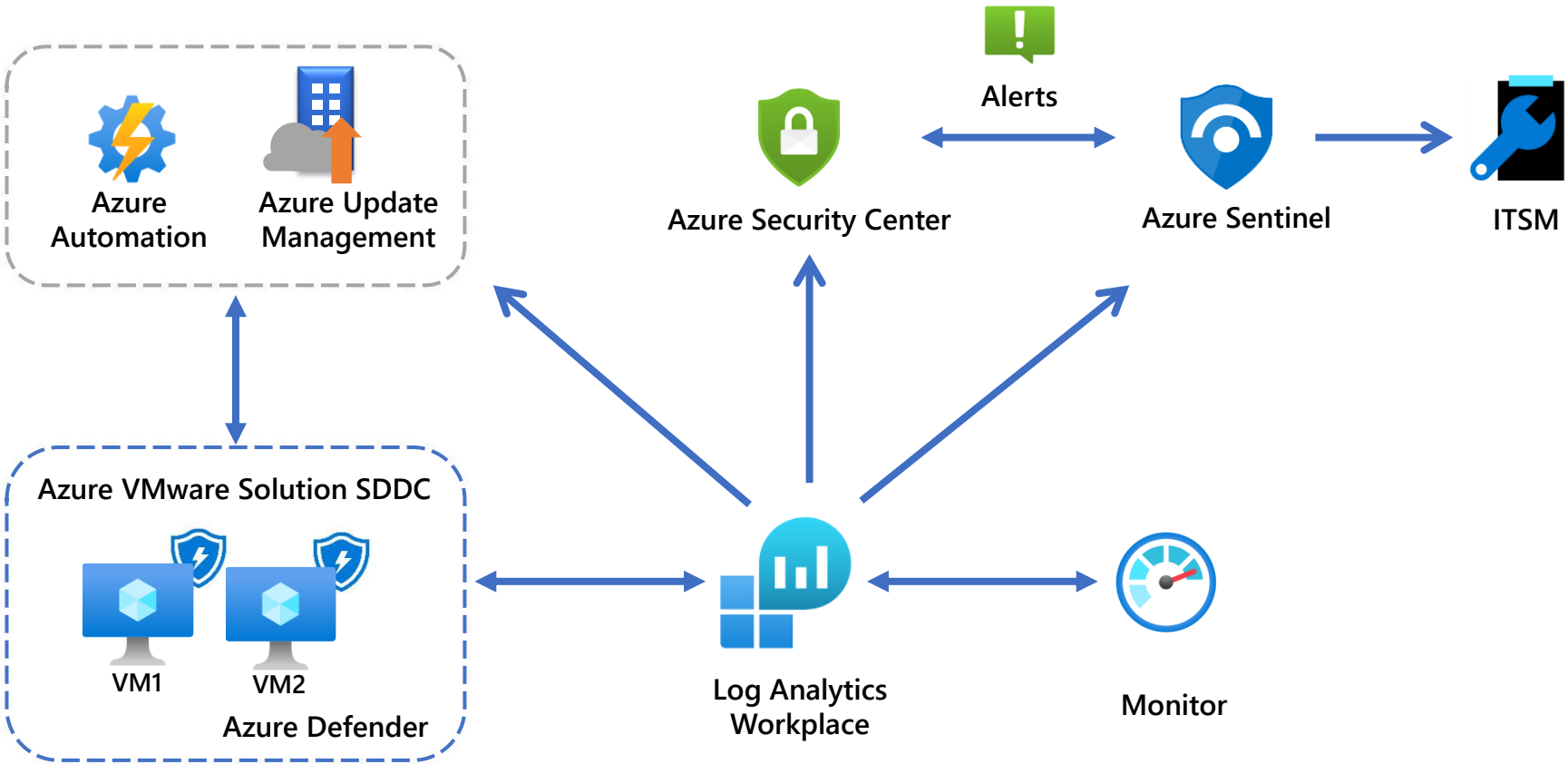
# Integrations



# Popular Azure VMware Solution Integrations

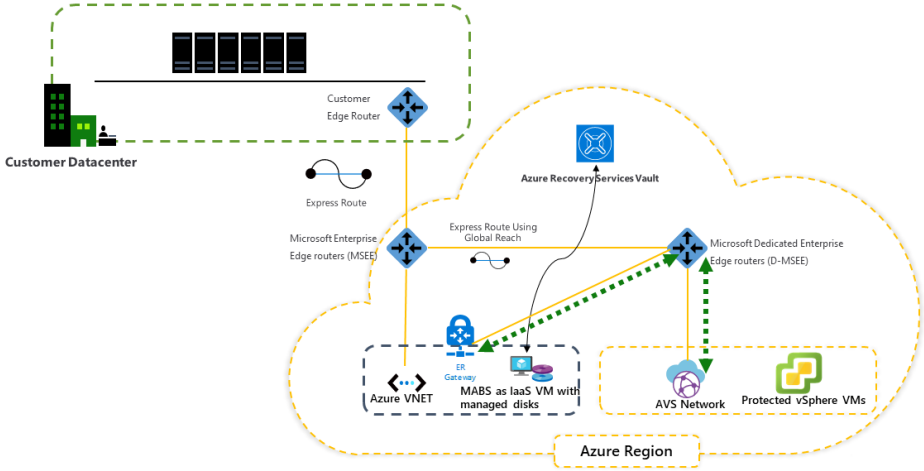
- Azure NetApp Files for file share
- Azure Blob Storage
- Azure Traffic Manager, Application Gateway
- Support for Hub and Spoke
- Azure Backup Server
- Azure Monitor
- Azure Security Center/Azure Sentinel

# AVS Workload Integrations

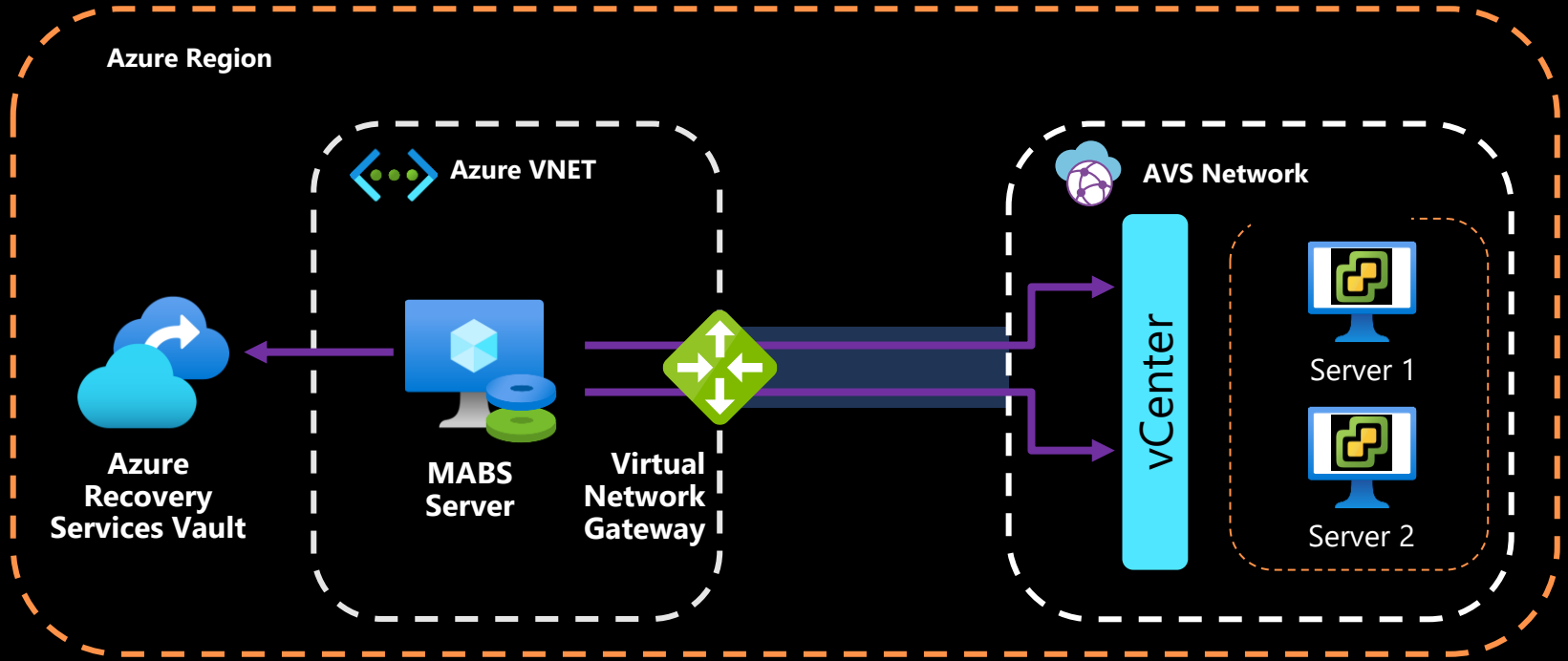


# Workload backup – Azure Backup

- **Microsoft Azure Backup Server (MABS)** can be used to backup AVS running workloads
- MABS servers is deployed on Azure IaaS and connects to AVS through the ExpressRoute circuit
- Check the procedure details in [AVS documentation]

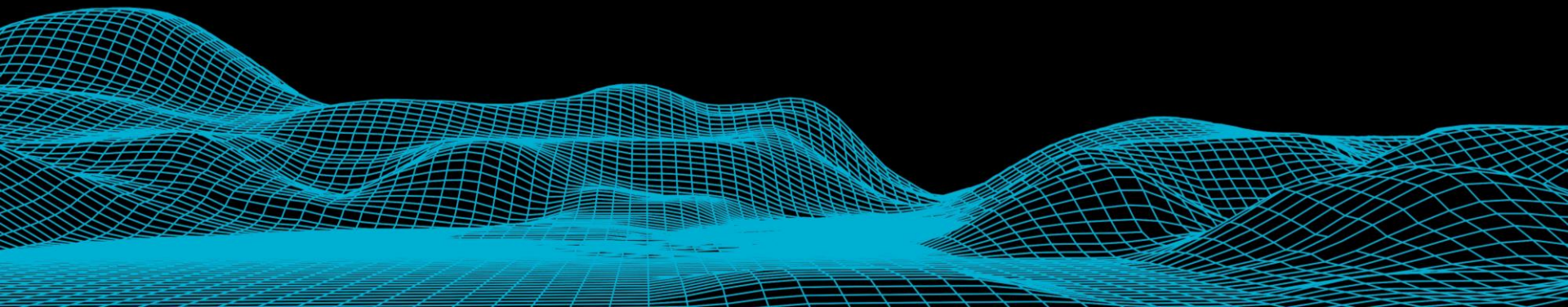


# Azure VMware Solution
## with MABS For Backup



# Available today

# Support



# Microsoft support – single point of contact

## Azure VMware Solution is validated, supported, and certified by VMware and Microsoft.

### Problem Management

Microsoft is first contact and will make decision based on problem type.

Azure-related issues are addressed by Microsoft.

### When VMware support is required

Microsoft coordinates with VMware for product-specific support.

Microsoft continues to be central point to resolution.

## Built with VMware, delivered by Microsoft

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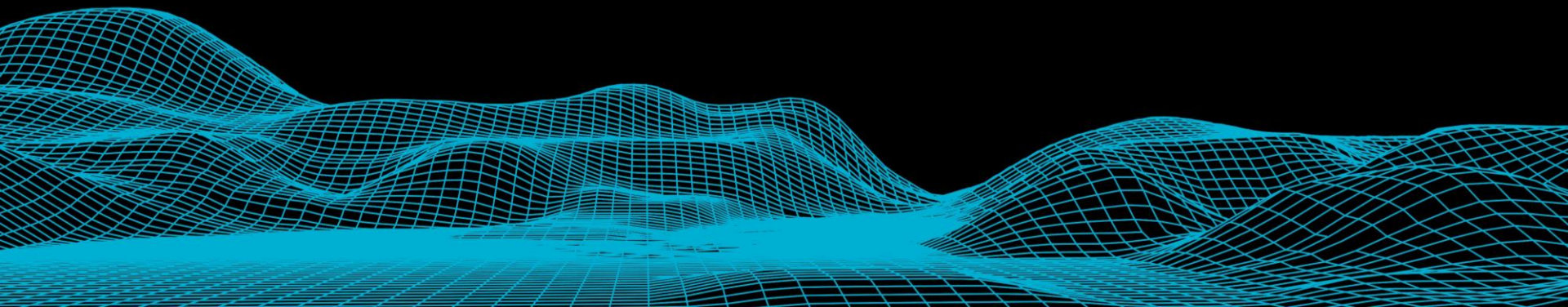
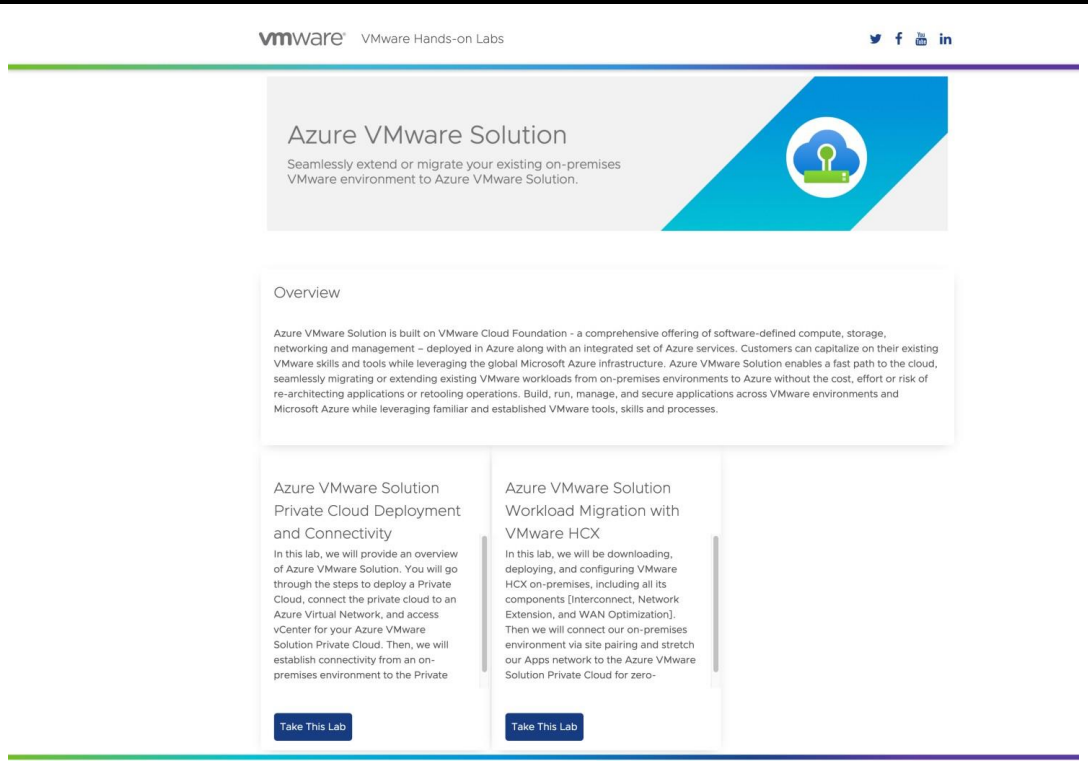
# Resources



# VMware Hands-On-Lab




http://hol.pub/avs

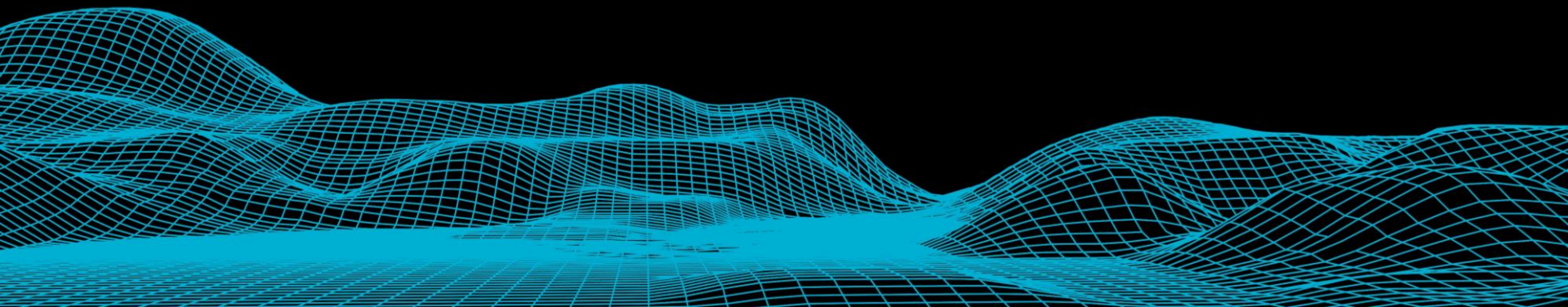
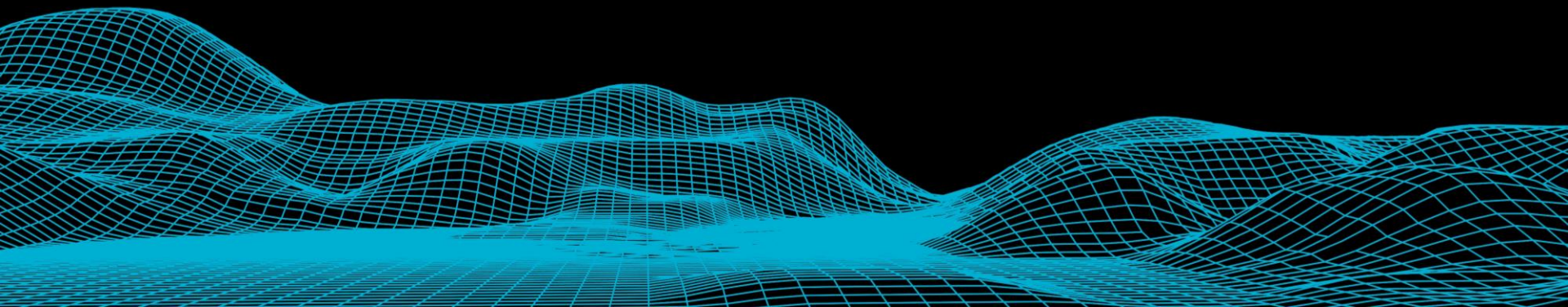
# Azure VMware Solution Learn Module

https://aka.ms/learn-avs1

# Resources

- AVS Overview - https://azure.microsoft.com/services/azure-vmware/
- AVS Documentation - https://docs.microsoft.com/azure/azure-vmware/
- Azure VMware Solution Videos - https://tinyurl.com/yal7r33d
- VMware Ports and Protocols - https://ports.vmware.com/
- VMware HCX Documentation - http://www.vmw.re/hcxdocs
- VMware HCX Release Notes - http://www.vmw.re/hcxrn
- Azure Migrate Documentation - https://docs.microsoft.com/azure/migrate/migrate-services-overview

# Demo



# Thank you!