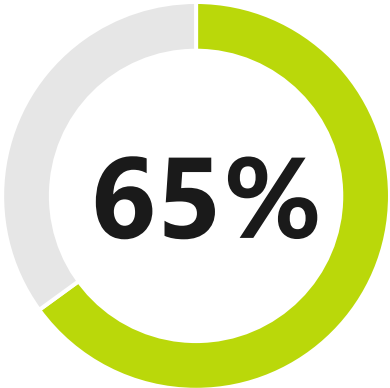


Migrating the Un-migratable

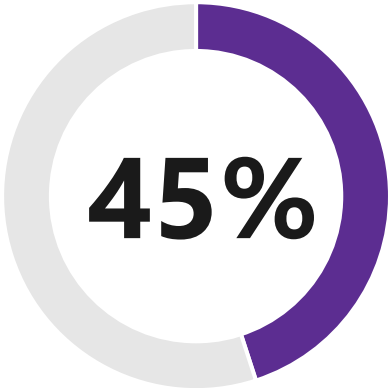
Easily Move Your Complex File Workloads to Azure

Jeff Whitaker, Sr. Manager Cloud Data Services, NetApp
Geert VanTeylingen, Azure NetApp Files Product Manager, NetApp

Challenge – Files in the Cloud...



Enterprise workloads continue to be On-Premises¹



Enterprise workloads on external storage systems are File based²

¹ [Survey Uptime Institute](#)
² IDC Worldwide Storage Workloads

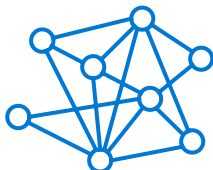
Enterprises are searching for a way to deploy file workloads in the cloud without sacrificing:



Performance
 (Low-latency)
 (High Throughput)



Reliability
 (High Availability)



Enterprise Data Management

And, no one wants to rearchitect *everything!*



Storage is the bottle neck: Limiting performance of business-critical workloads

Azure NetApp Files



Delivering NetApp Technology as a fully managed Azure service

- Widest choice of file protocols (NFSv3, NFSv4.1, SMB3) in the public cloud
- On-premises class performance with multiple tiers (Ultra, Premium, Standard)
- Most advanced enterprise data management (Snapshots, Clones, *Replication*)
- Azure consistent experience, support, and billing – Azure portal, not marketplace!

Workloads

Enterprise File Workloads	HPC
Database	VDI
Containerized Applications	

Verticals and Industries

Semiconductor EDA
Oil and Gas
Retail and E-Commerce, and many more...

What problem does Azure NetApp Files solve?

Organizations can now transition **enterprise file workloads** to the cloud without having to refactor and re-architect (because this introduces risk, is costly and time consuming)



Azure NetApp Files

Solving challenges for your core enterprise applications

Reduce Risk

- Achieving 99.99% availability targets - Guaranteed
 - Built-in data protection to ensure your data is not lost
-

Lower Costs

- Performance of Azure NetApp Files removes the storage bottleneck so you can more efficiently use your compute resources
 - Get better application performance from lower cost virtual machines
-

Save Time

- Deploy file environments faster with a simple to use interface
- NetApp SnapShot copies reduce the time and complexity to protect your business-critical data

Performance Tiers

Standard	Premium	Ultra
IOPs 1000 (16K) per 1TiB	IOPs 4000 (16K) per 1TiB	IOPs 8000 (16K) per 1TiB
Throughput 16MiB / s per 1TiB	Throughput 64MiB / s per 1TiB	Throughput 128MiB / s per 1TiB
Suitable for <ul style="list-style-type: none">• Static web content• File shares• Database backups	Suitable for <ul style="list-style-type: none">• Databases• Ent apps incl SAP• Analytics• Engineering apps• Messaging queues	Suitable for <ul style="list-style-type: none">• Extreme performance / throughput intensive apps• High Performance Computing
<i>Throughput comparable to mainstream HDD</i>	<i>Throughput comparable to mainstream SSD</i>	<i>Throughput comparable to Flash Arrays</i>

A minimum 4 TiB of capacity can be purchased, and then increased in increments of 1 TiB

Azure NetApp Files Updates

<https://azure.microsoft.com/en-us/updates/?product=netapp>

<https://azure.microsoft.com/en-us/global-infrastructure/services/?products=netapp>

New Regions

Global coverage with 20+ regions

- America
- Canada
- EMEA
- Mid East
- India
- Asia (South East and Japan)
- Pacific

Rapidly region expansion

Certifications

- SAP HANA Production Certified
 - Only file service environment that is certified for production KPIs by SAP (brings HANA Scale-out to Azure)
- FedRAMP certified – Commercial
- HIPAA

Recent Features

Available

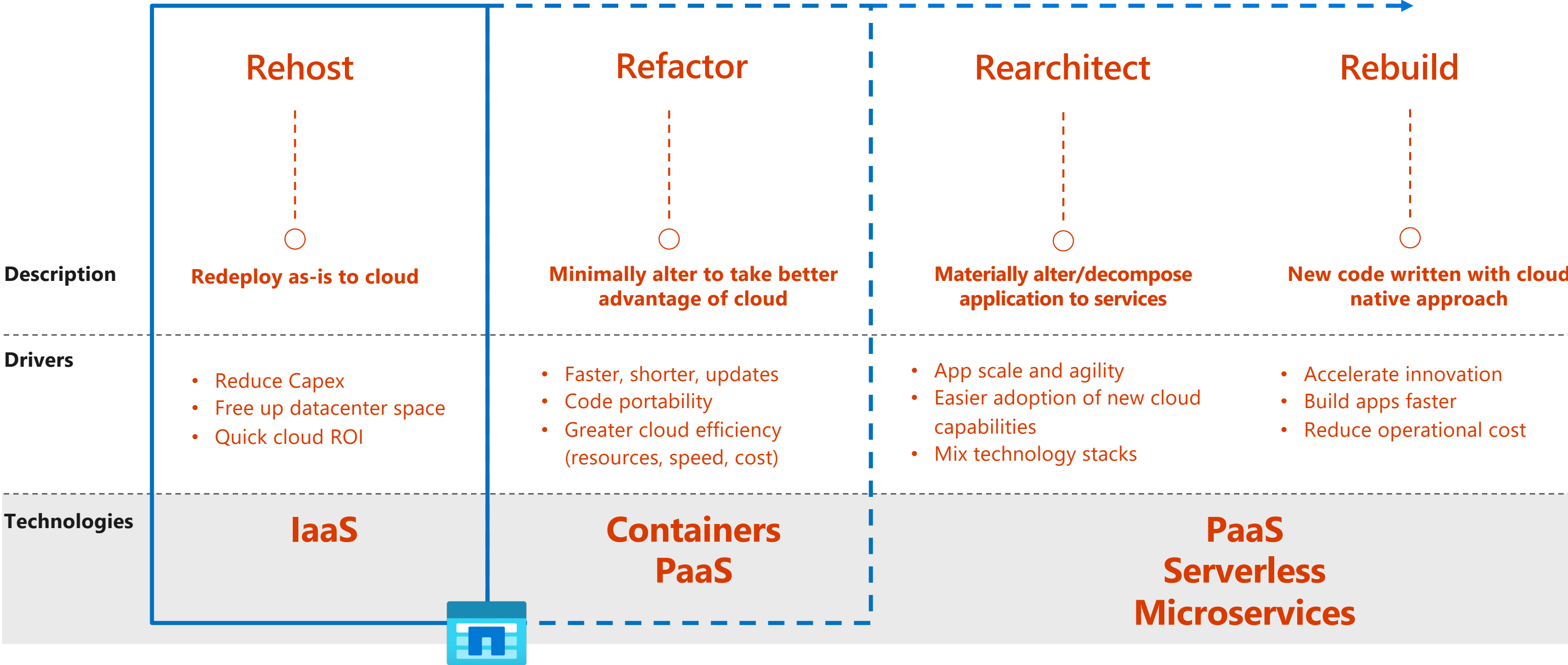
- 99.99% Availability SLA
- Azure CLI
- Faster snapshot restore to new volume
- Enhanced network topologies (VNET peering, ExpressRoute)
- NFSv4.1
- SMB multichannel
- ...

Preview

- *Volume-level snapshot restore*
- *Cross-region replication*
- *Backup Integration coming soon*

Migrate the un-migratable
Move Today To Achieve More Tomorrow

Applying to cloud migration strategies



Azure NetApp Files Key Customer Use Cases

Migration (Windows Apps & SQL Server | Linux OSS Apps & Database | SAP on Azure)

Context – Files in the Cloud...



Enterprises are searching for a way to deploy file workloads in the cloud without sacrificing:



Performance
(Low-latency)



Reliability
(High Availability)



Enterprise Data
Management

And, no one wants to rearchitect *everything!*



¹ Survey Lifecycle Institute
² IDC Worldwide Storage Workloads

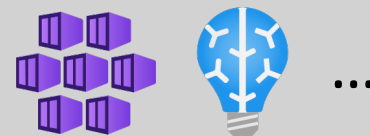
Specialized Workloads (HPC | VDI)

HPC

Generic
O&G
EDA

VDI

Windows Virtual Desktop
Citrix
FsLogix



Azure Platform Services

(AKS, Azure Batch, ...)



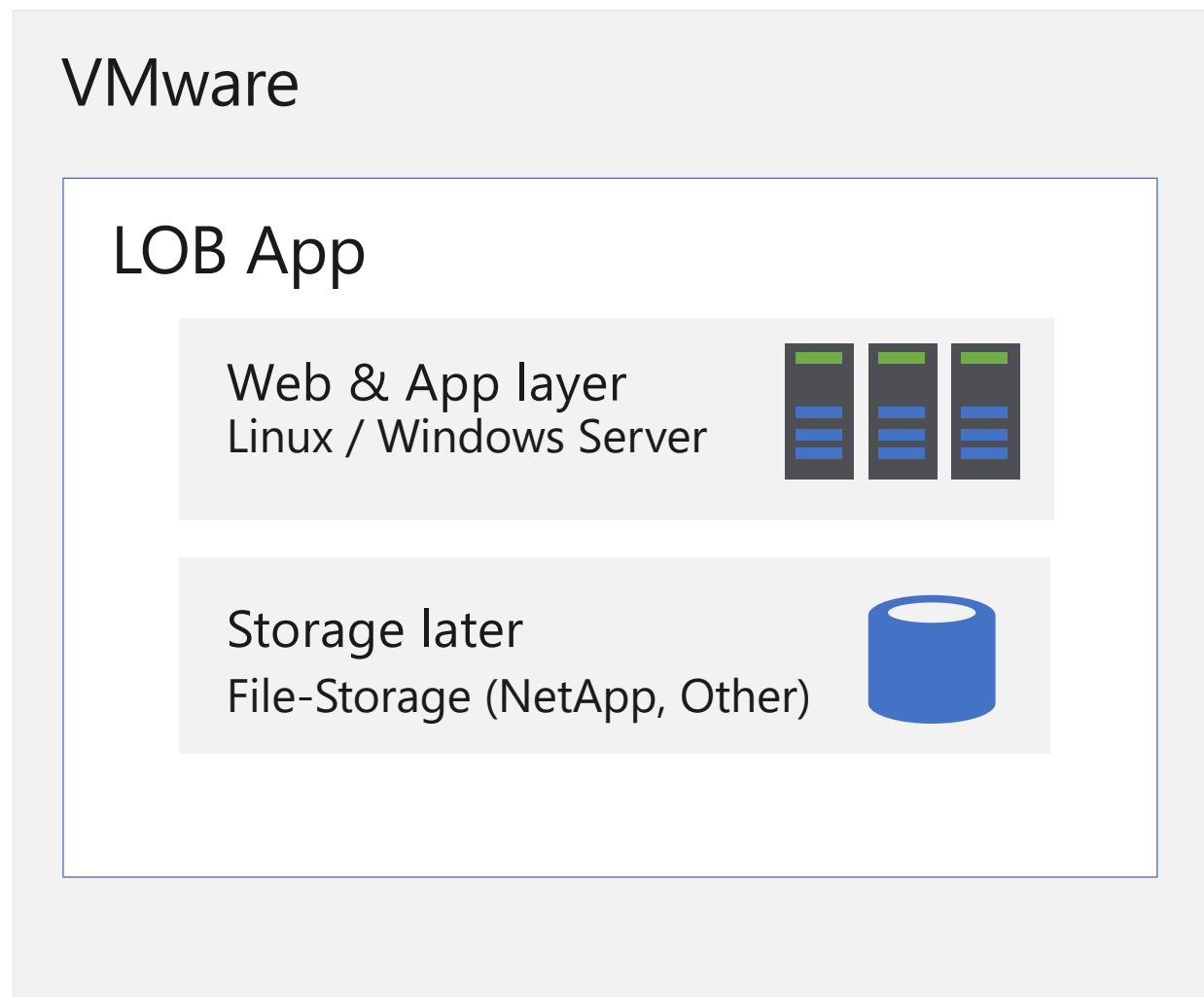
Azure NetApp Files

(Enterprise NAS)

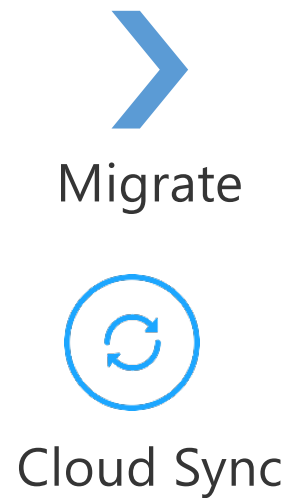
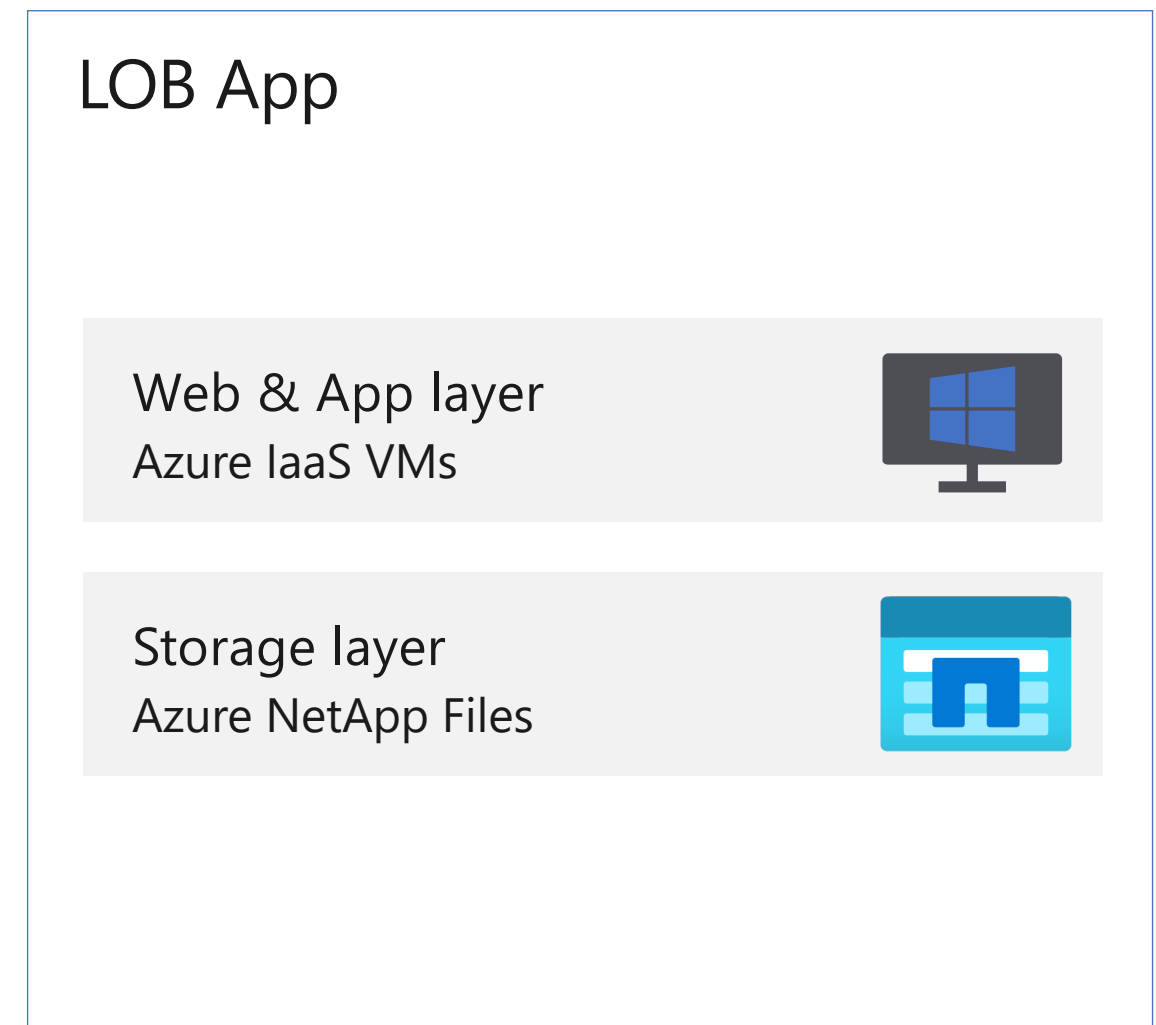
Windows and Linux Apps *with Azure NetApp Files*

Lift & Shift File-Based Apps with ANF

- On-premises



- Azure



Linux/Windows File Services on Azure

Improve enterprise File workloads with Azure NetApp Files

Simple to Manage

- Native Azure experience for easy deployment & scale

High Performance

- On-prem like performance
- On-demand scalability



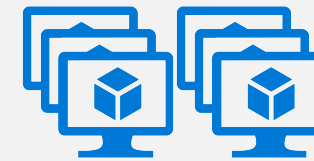
Enterprise Data Management

- Fully API/CLI programmable
- Instantaneous snapshot/restore and cloning
- Efficient Cross Region Replication (preview)

Linux

Application layer
Enterprise NFS workloads

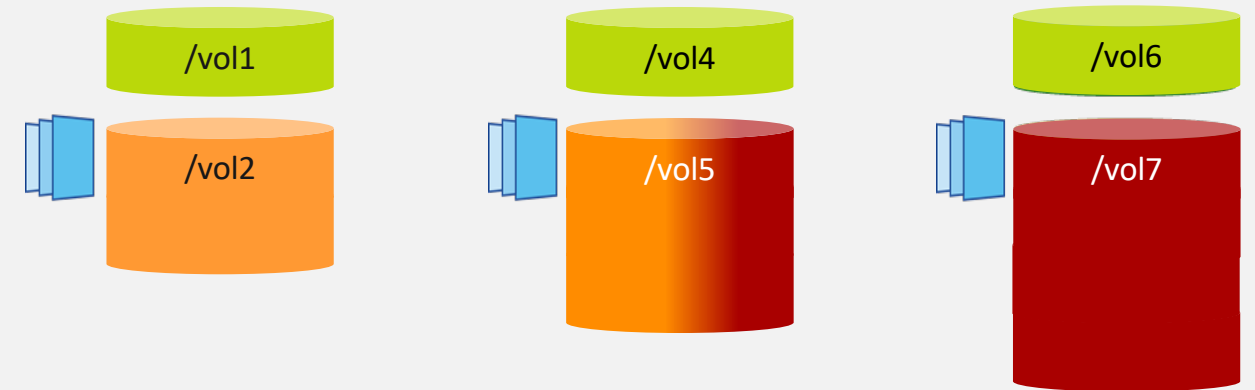
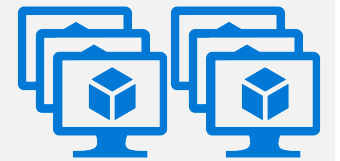
Compute layer
Azure IaaS VMs (NFS)



Windows

Application layer
Enterprise SMB workloads

Compute layer
Azure IaaS VMs (SMB)



Shared (NAS) storage layer
Azure NetApp Files



Performance/capacity

Low

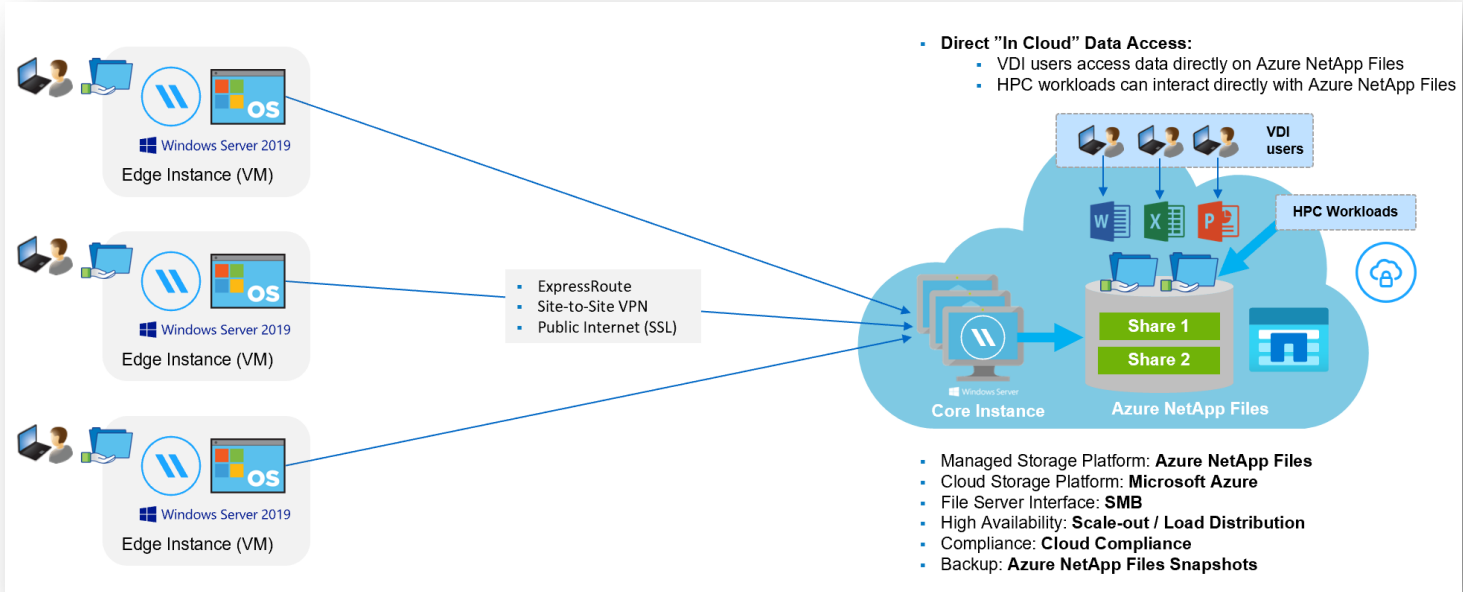
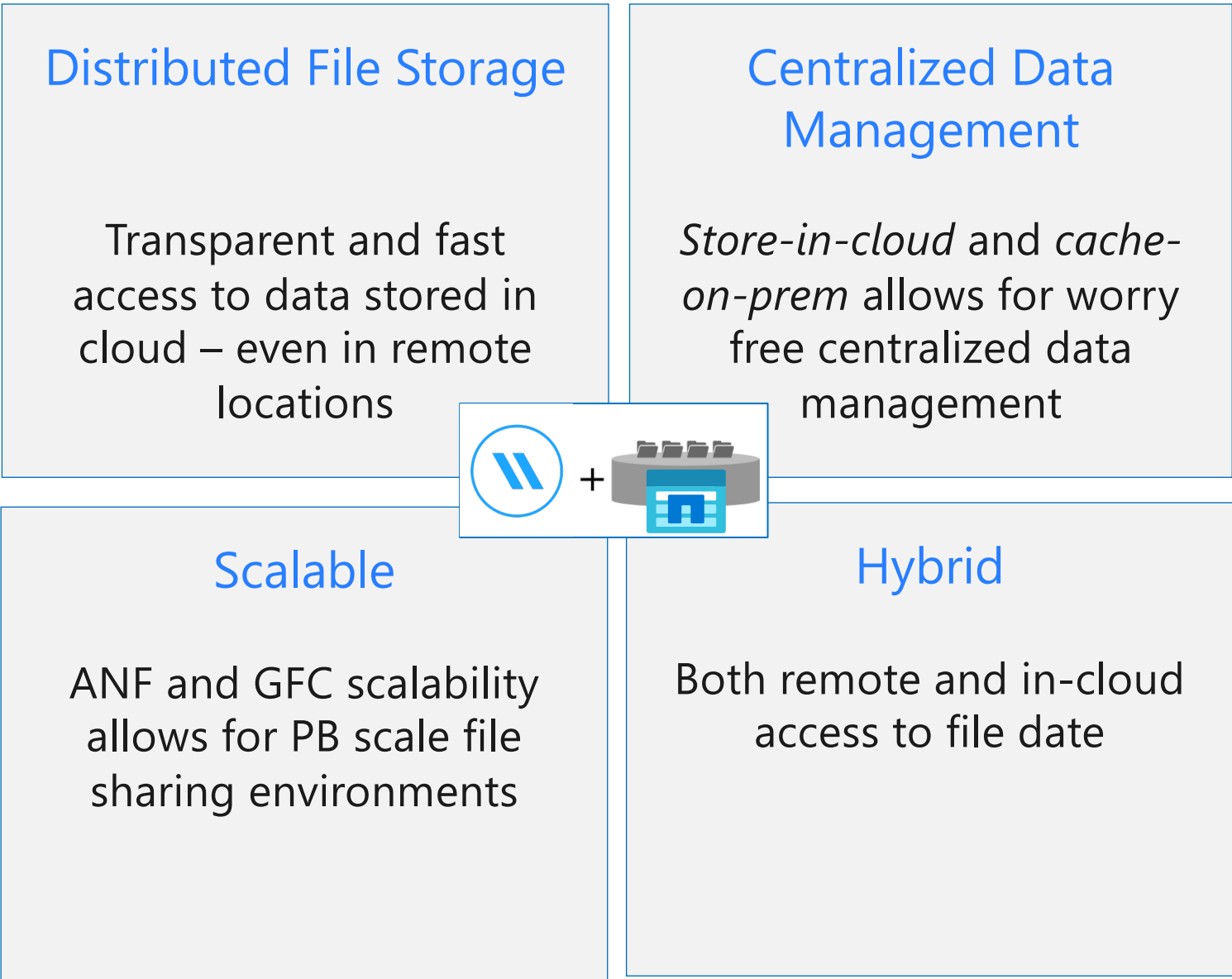
Medium

Med-High

High

Globally Distributed Enterprise File Sharing

with Azure NetApp Files and NetApp Global File Cache

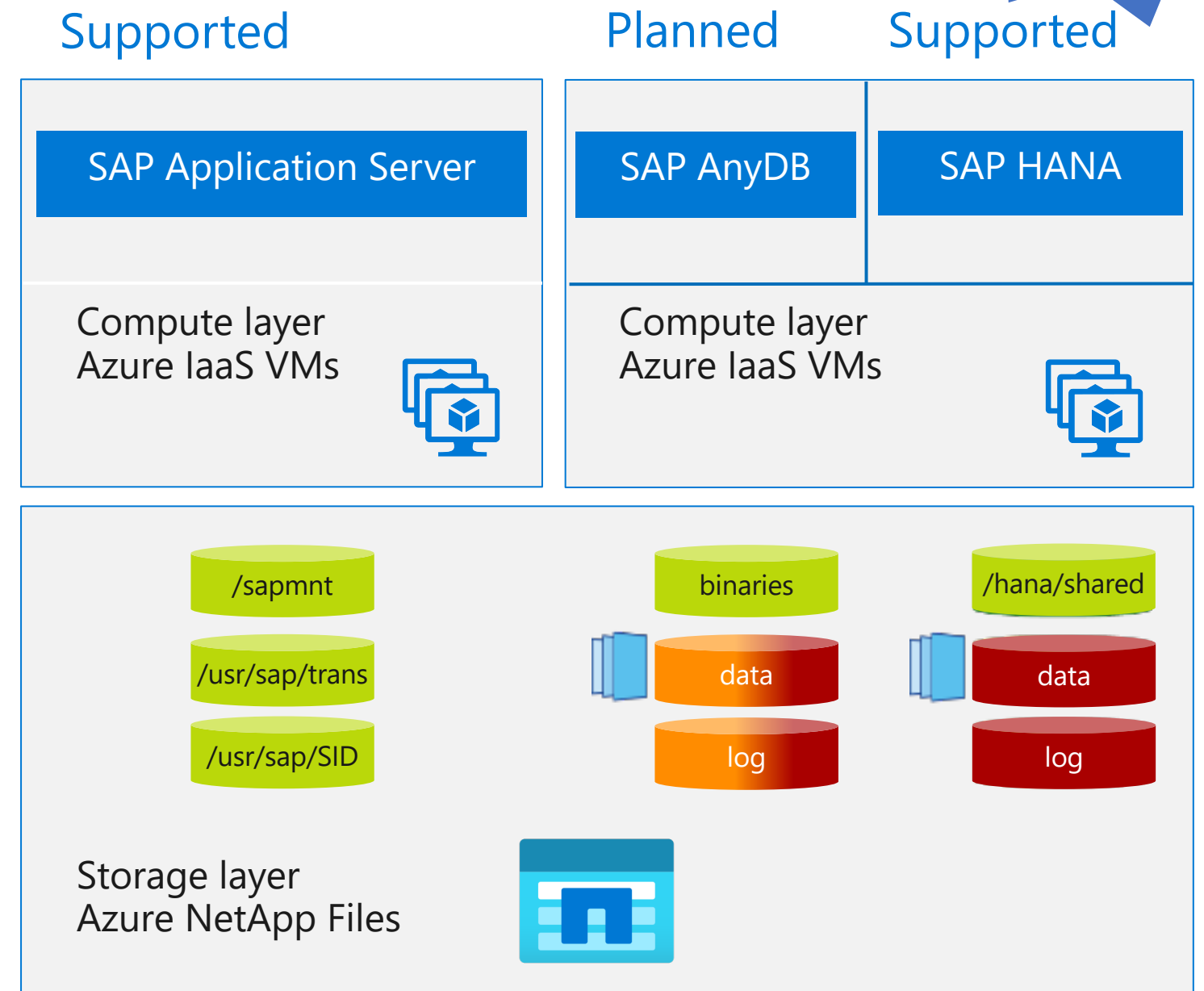
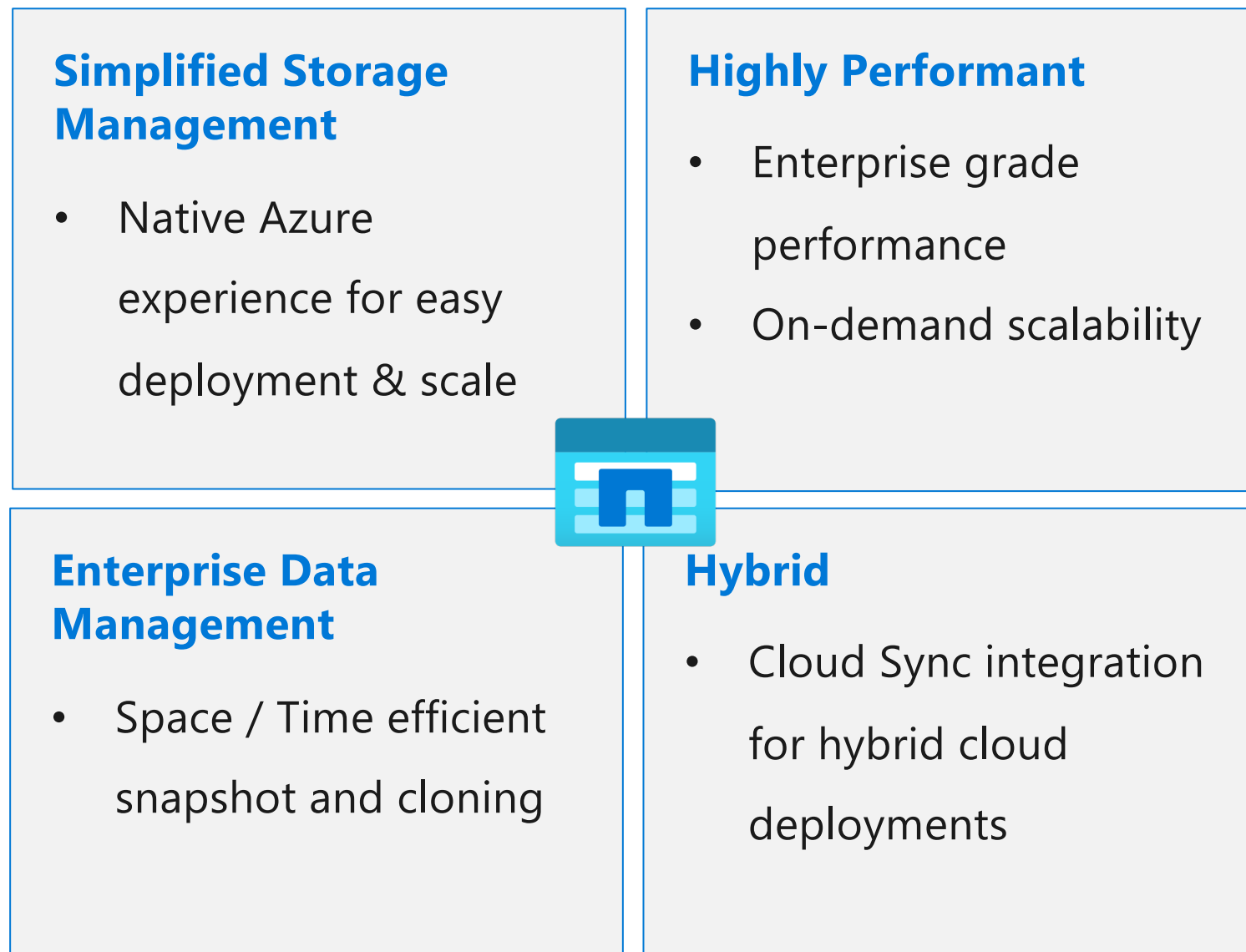


• Globally Distributed Enterprise File Sharing with Azure NetApp Files and NetApp Global File Cache Landing Page: aka.ms/GDEFS-ANF

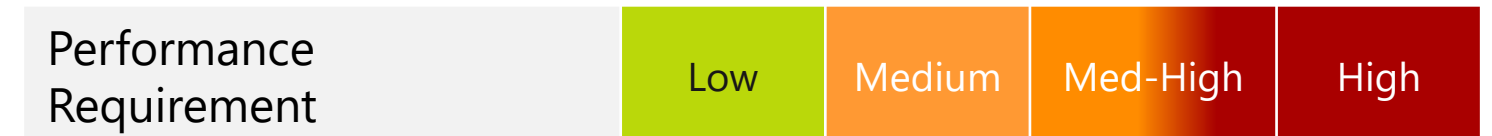
SAP on Azure *with Azure NetApp Files*

SAP on Azure

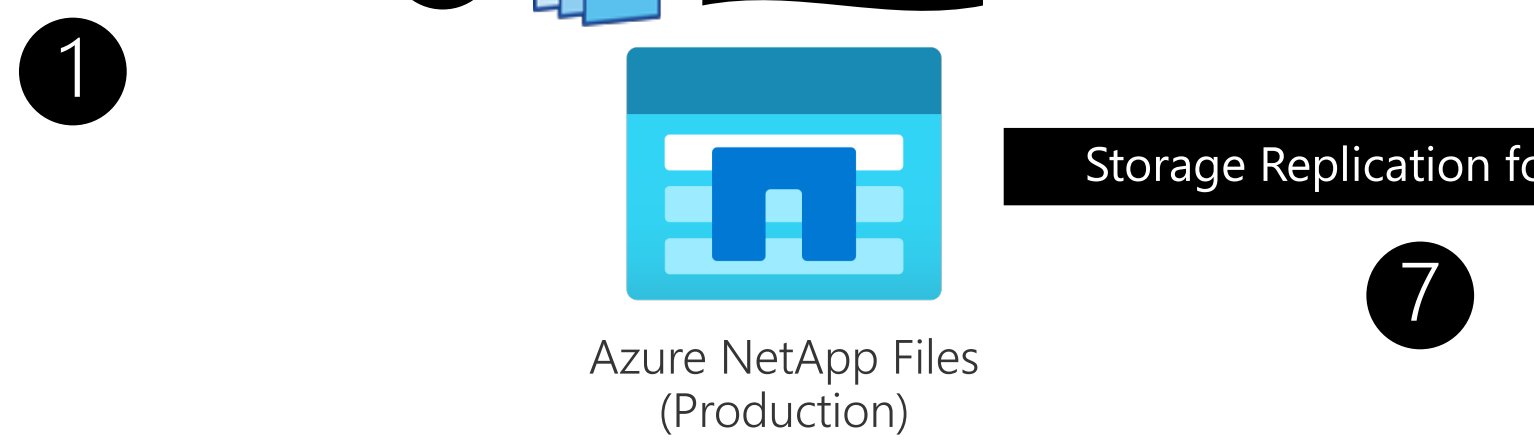
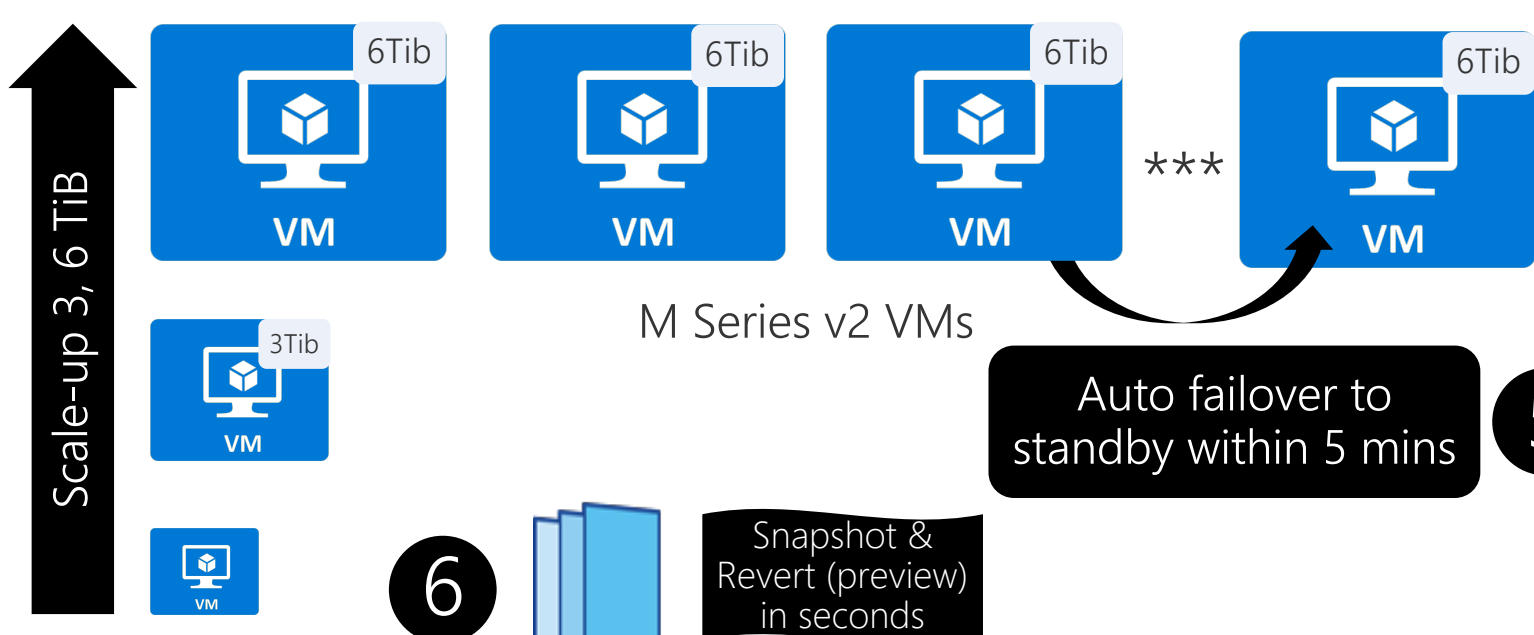
Improve Agility with Azure NetApp Files (ANF)



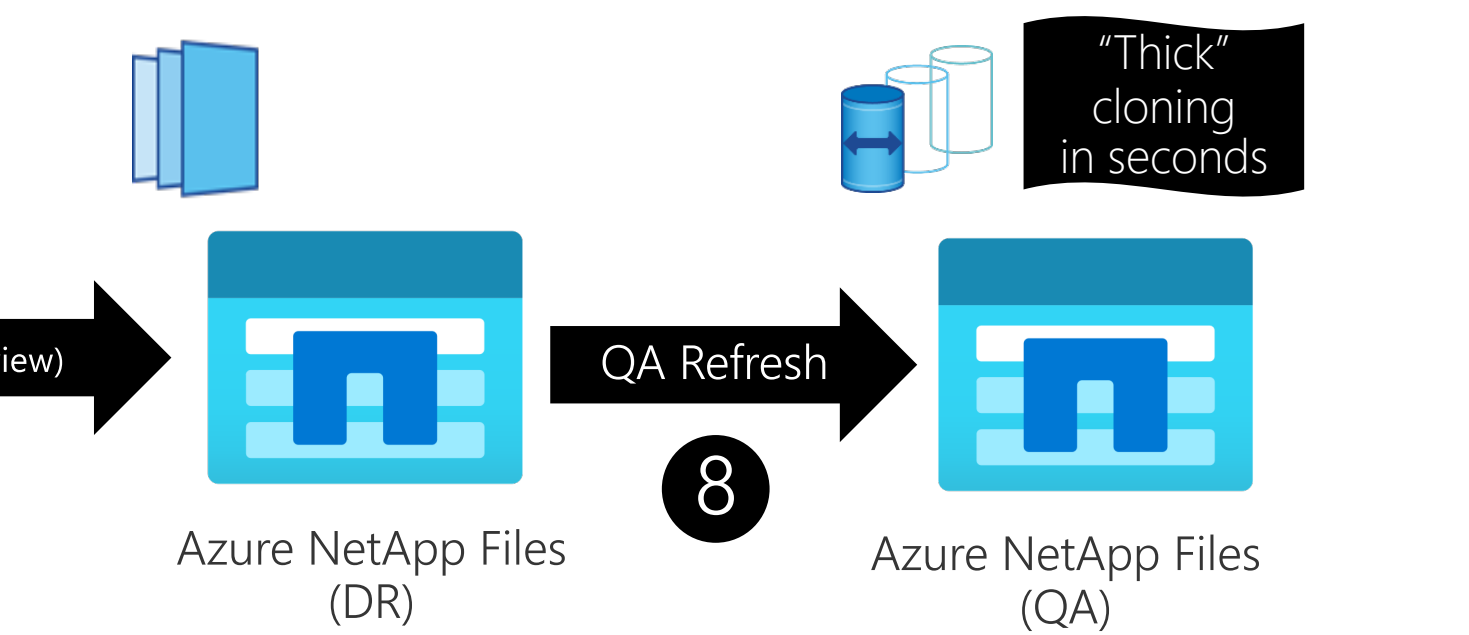
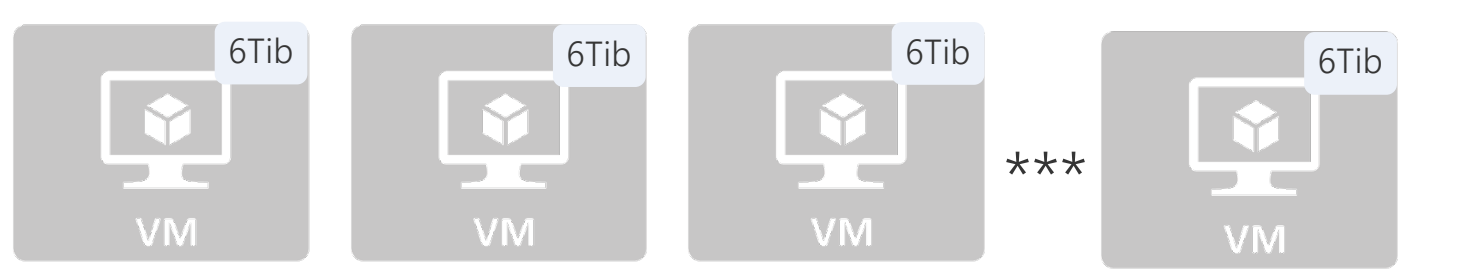
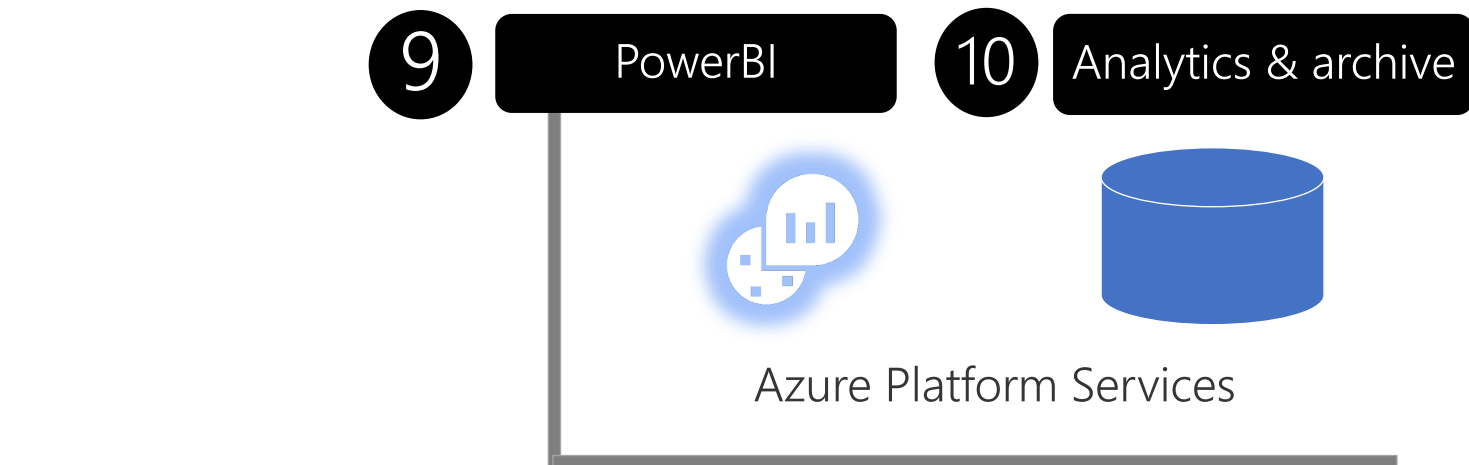
Solution Guides: <https://aka.ms/ANF-solutions#sap-on-azure-solutions>



- 4 Scale-out with $(15+1) \times 6\text{Tib} = 96\text{Tib}$ with HA Standby
- 3 Scale-out with $(2+1) \times 6\text{Tib}$ with HA Standby
- 2 Scale-out with $2 \times 6\text{Tib}$



BW HANA Production



BWHANA DR/QA

Databases and WVD *with Azure NetApp Files*

Oracle on Azure

Improve Agility with ANF

Simple to Manage

- Native Azure experience for easy deployment & scale

Highly Performant

- On-prem like performance
- On-demand scalability



Enterprise Data Management

- Space / Time efficient snapshot and cloning

Hybrid

- Cloud Sync integration for hybrid cloud deployments

Solution Guides: <https://aka.ms/ANF-solutions#oracle>

Production

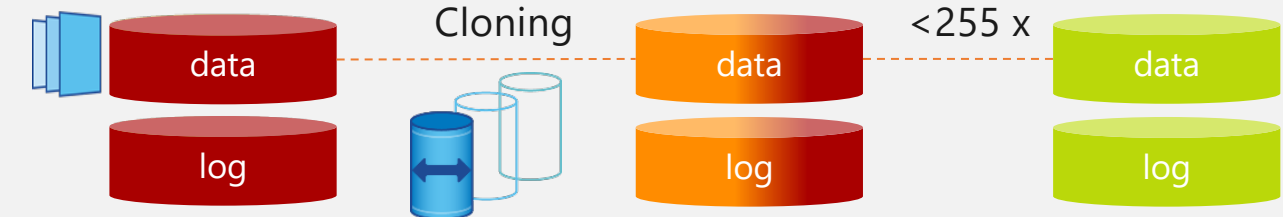
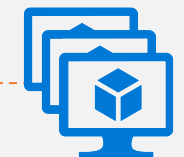
Database layer



Compute layer
Azure IaaS VMs



Test & Dev (at scale)



Storage layer
Azure NetApp Files



Performance Requirement

Low

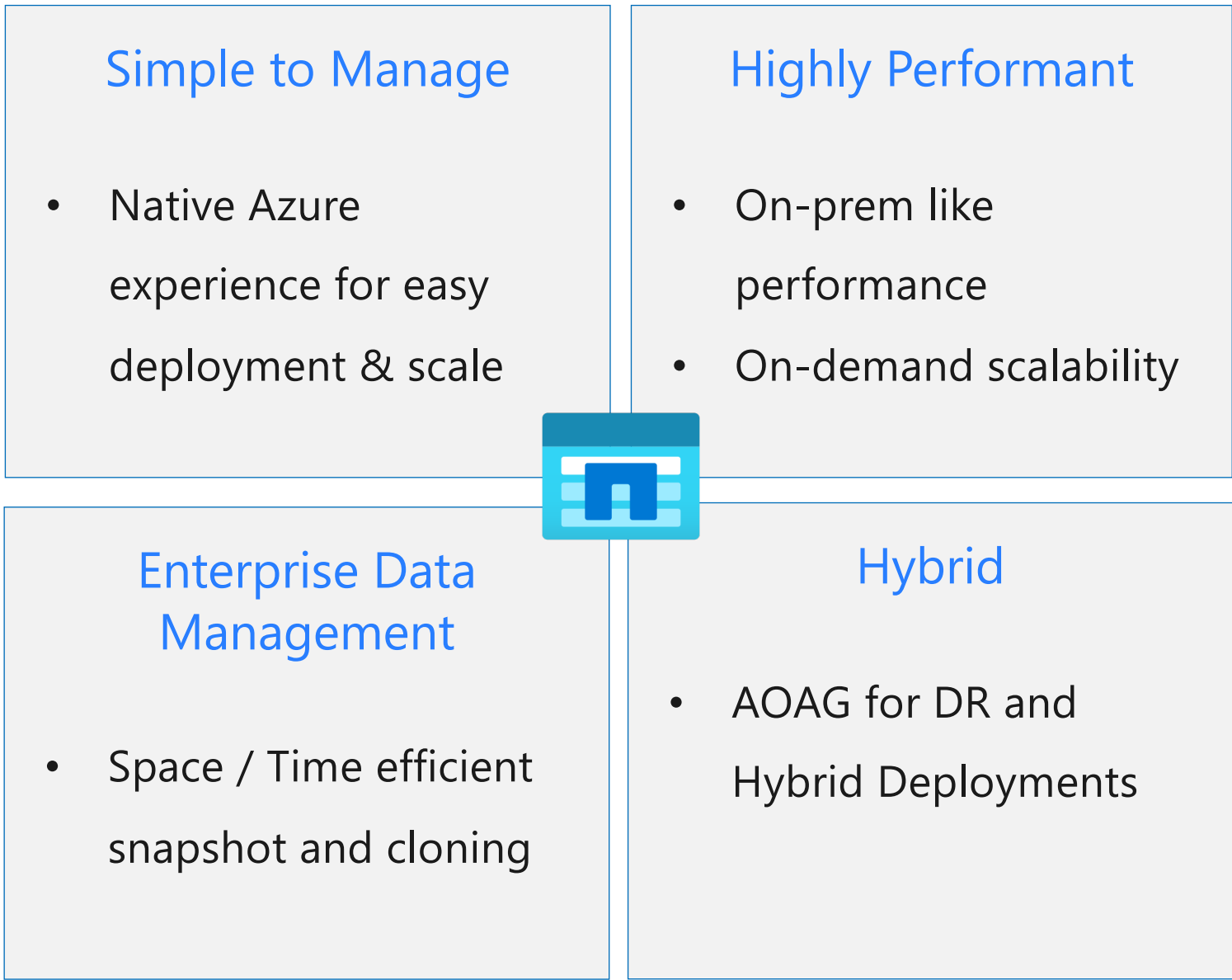
Medium

Med-High

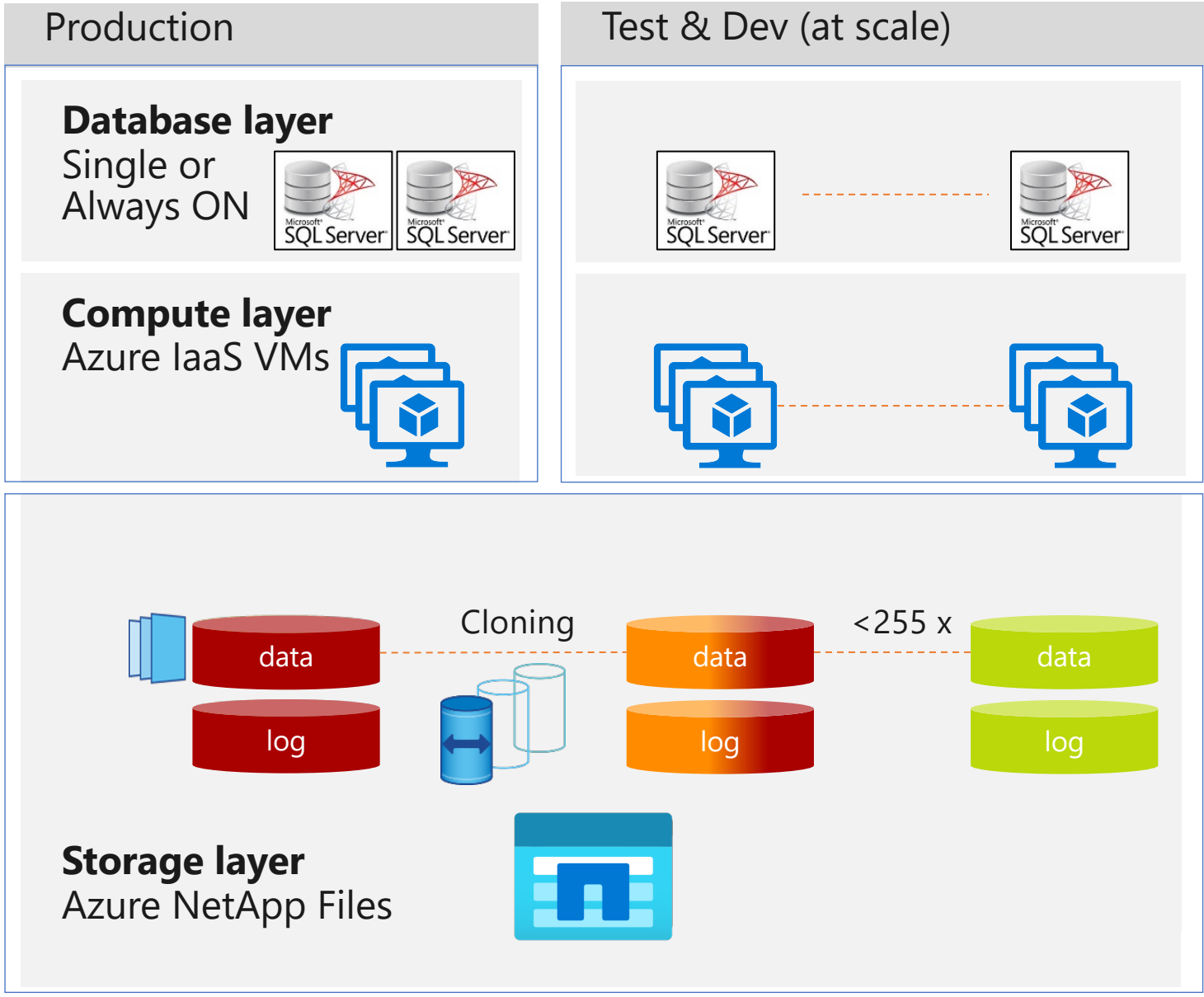
High

SQL Server on Azure

Improve Agility with ANF



Solution Guides: <https://aka.ms/ANF-solutions#sql-server>

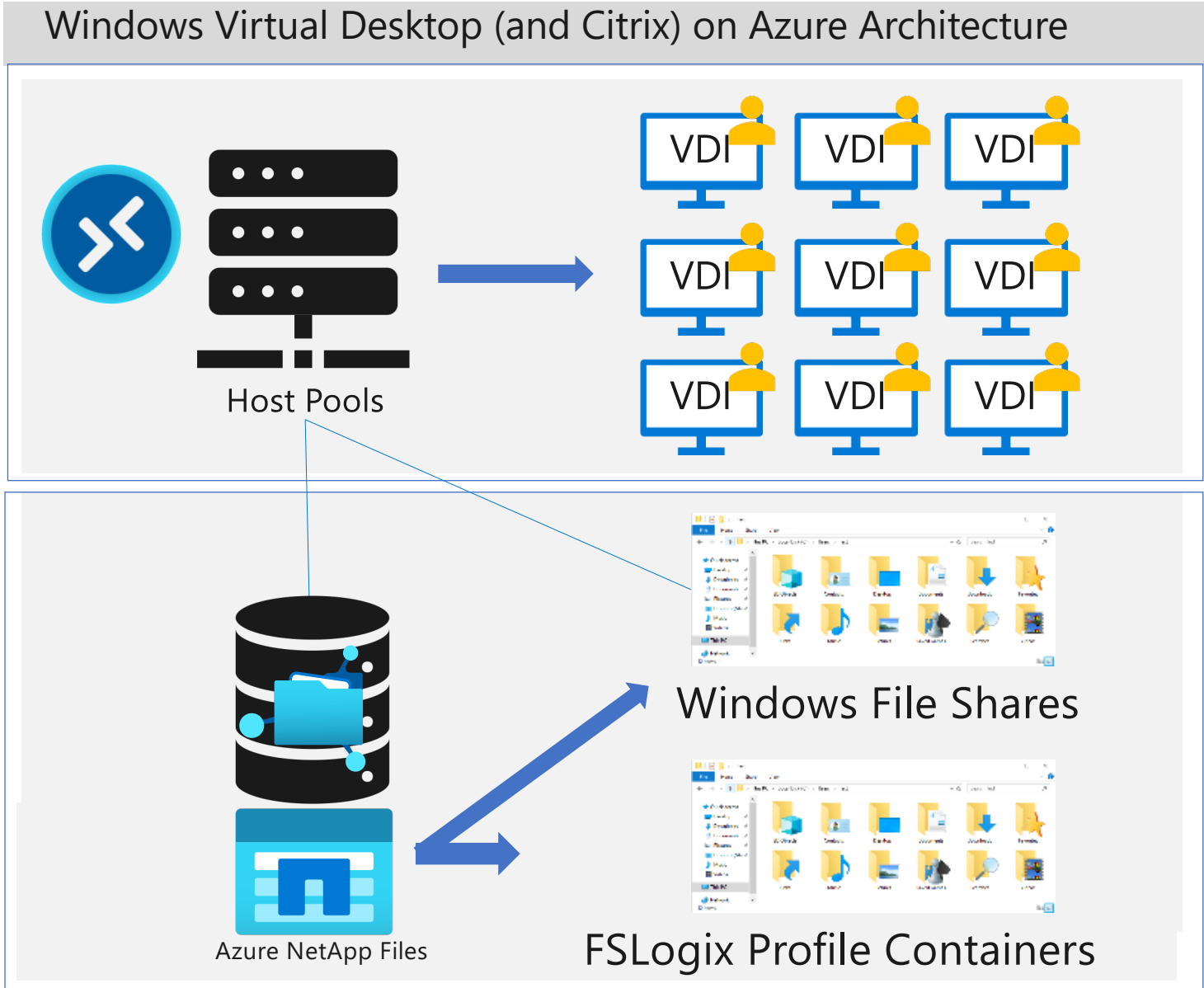


Performance Requirement: Low Medium Med-High High

Windows Virtual Desktop on Azure

Optimize End User Experience With Azure NetApp Files (ANF)

<h3>Simple to Manage</h3> <ul style="list-style-type: none">• Native Azure service for easy deployment & scalability• Single shared platform for FSLogix containers and generic file shares	<h3>Lower TCO</h3> <ul style="list-style-type: none">• PaaS service• No VMs resources required on Azure IaaS• Integrated Snapshot Backup & DR
<h3>Enterprise Performance</h3> <ul style="list-style-type: none">• High IOPs w/ low latency• Online scalability of capacity and performance (e.g. burst for login storms)	<h3>Maximum Compatibility</h3> <ul style="list-style-type: none">• SMB (all versions) support• Native Active Directory Domain Services (non-AAD) support• Full NTFS ACLs support



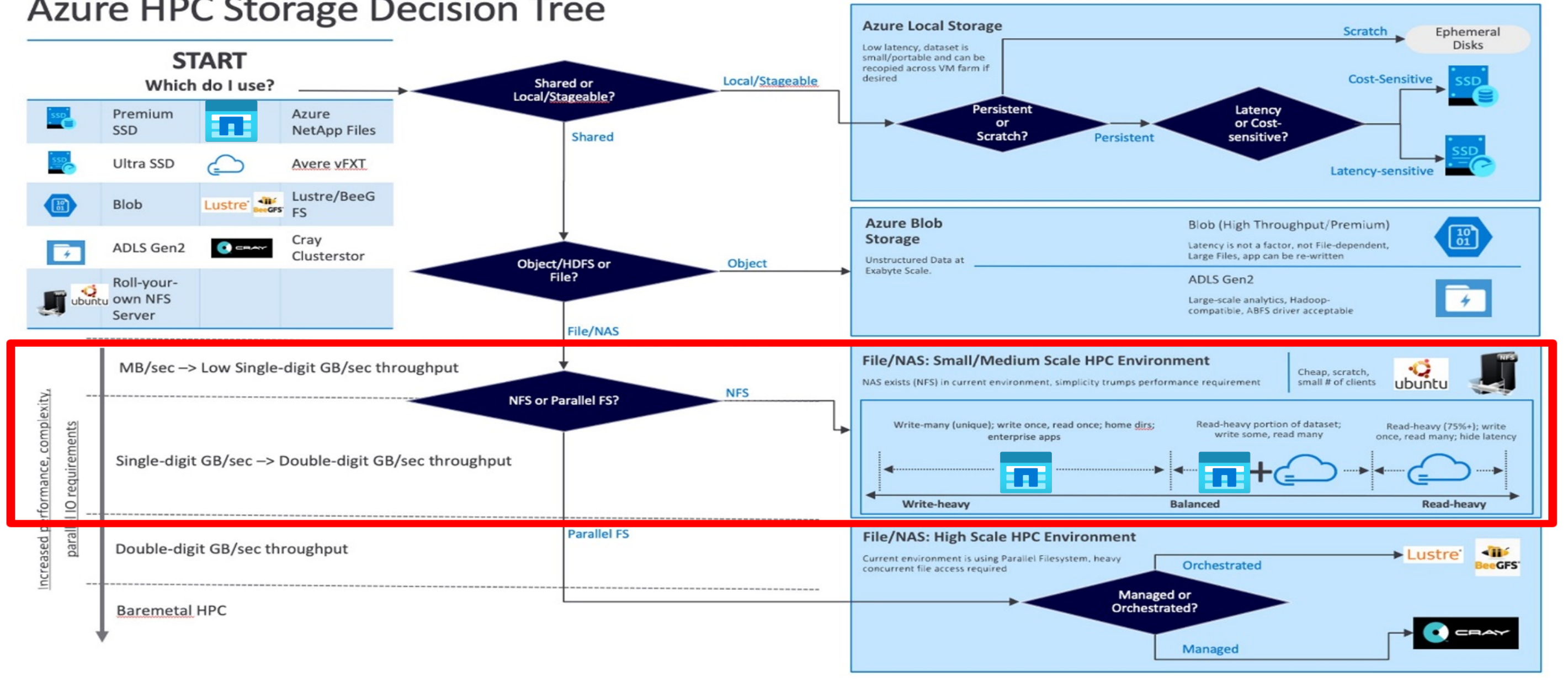
Solution Guides: <https://aka.ms/ANF-solutions#windows-virtual-desktop>

High Performance Computing (HPC) *with Azure NetApp Files*

HPC on Azure

Reliable & Scalable Performance

Azure HPC Storage Decision Tree



Solution Guides: <https://aka.ms/ANF-solutions#hpc-solutions>

Repsol E&P in Azure

High throughput reservoir simulation with Azure NetApp Files



Need

- Flexibility, scalability, global access & collaboration
- High performance with small & large file-sizes

Solution

- Simulation & collaboration environment running in **HPC on Azure**
- Enabled by **Azure NetApp Files**
- Use proximity placement groups

Benefits

- **Simple Management** : Native Azure experience
- **Reduced** : workstation provisioning time from **months to hours**, on-demand for remote locations
- **Performance** : Better than on-premises – simulation run-time **reduced from months to days**
- **Lift & shift** : Flexible data transfer using 3rd party applications, multi-OS access

Customer Story:

<https://customers.microsoft.com/en-us/story/768495-repsol-energy-azure>

6+ locations WW using HPC Pack, MPI and Schlumberger Eclipse and Intersect

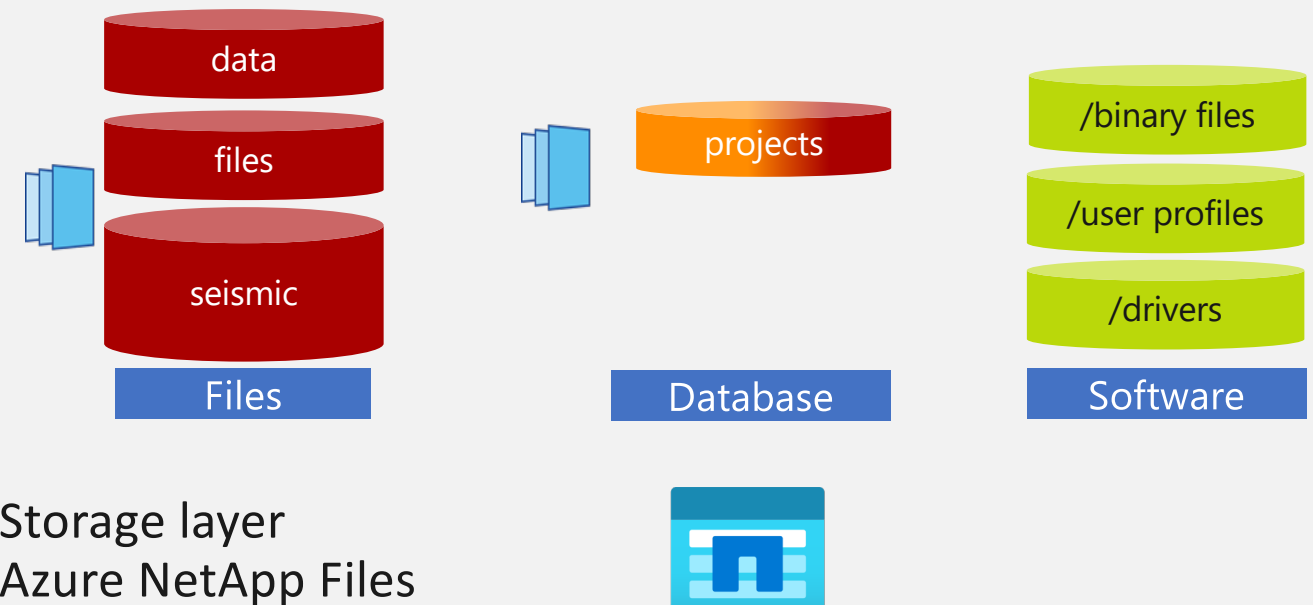
Engineering Workstations



HC Series (Windows & Linux)



NV Series (GPU enabled)



Performance Requirement

Low

Medium

Med-High

High

Repsol E&P in Azure

High throughput reservoir simulation with Azure NetApp Files



"We wanted an on-premise like performance for our reservoir simulation and analysis software. We were thrilled to see Azure NetApp Files exceeding our expectations with an over 5x performance increase. Most importantly, the massive scale-up/down capability of Azure NetApp Files now allows for pure cloud-based consumption of both capacity AND performance."

Juan Pedro Bretti, Digital Transformation Engineer, E&P at Repsol

Solution Architectures

Solution architectures using Azure NetApp Files

<https://aka.ms/ANF-solutions>

Microsoft | Docs | Documentation | Learn | Q&A | Code Samples

Azure | Product documentation | Architecture | Learn Azure | Develop | Resources

Azure / Azure NetApp Files

Solution architectures using Azure NetApp Files

07/06/2020 • 2 minutes to read • 👤 👥 🌐

This article provides references to best practices that can help you understand the solution architectures for using Azure NetApp Files.

The following diagram summarizes the categories of solution architectures that Azure NetApp Files offers:

Azure NetApp Files Key Use Cases

- Migration (Windows Apps & SQL Server | Linux OSS Apps & Database | SAP on Azure)
- Specialized Workloads (HPC | VDI)
 - HPC: Generic, O&G, EDA
 - VDI: Windows Virtual Desktop, Citrix, FsLogix
- Azure Platform Services (AKS, Azure Batch, ...)
- Azure NetApp Files (Enterprise NAS)

Linux OSS Apps and Database solutions

This section provides references for solutions for Linux OSS applications and databases.

Download PDF

Oracle



Questions?

Summary

- Learn how Azure NetApp Files can help you [migrate the unmigratable](#)
 - Performance
 - Resilience
 - Cost
- Register now for Azure NetApp Files directly off the Azure portal or [Azure.com](https://azure.com)

Register now
and get your
\$50 gift card

Thank you!