MASTERING AVD PROFILES WITH AZURE (NETAPP) FILES

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AVD TechFest 2022
LIVE IN AMSTERDAM
Opening season three of AVD Tech Fest

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Cloud and Datacenter, Governance

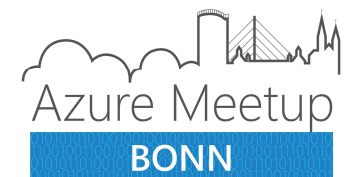Azure Infrastructure (Security, Governance and IaaS)

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CLOUD IDENTITY SUMMIT '22

Thu, September 22nd, 2022

Deep-Dive and Q&A sessions on #AzureAD
Hybrid Event in Bonn, Germany
www.identitysummit.cloud

Community Event by

Azure Meetup
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AGENDA

- Introduction

- Azure Files

- Private Link Integration for Azure Files

- Azure NetApp Files

- Defender for Storage
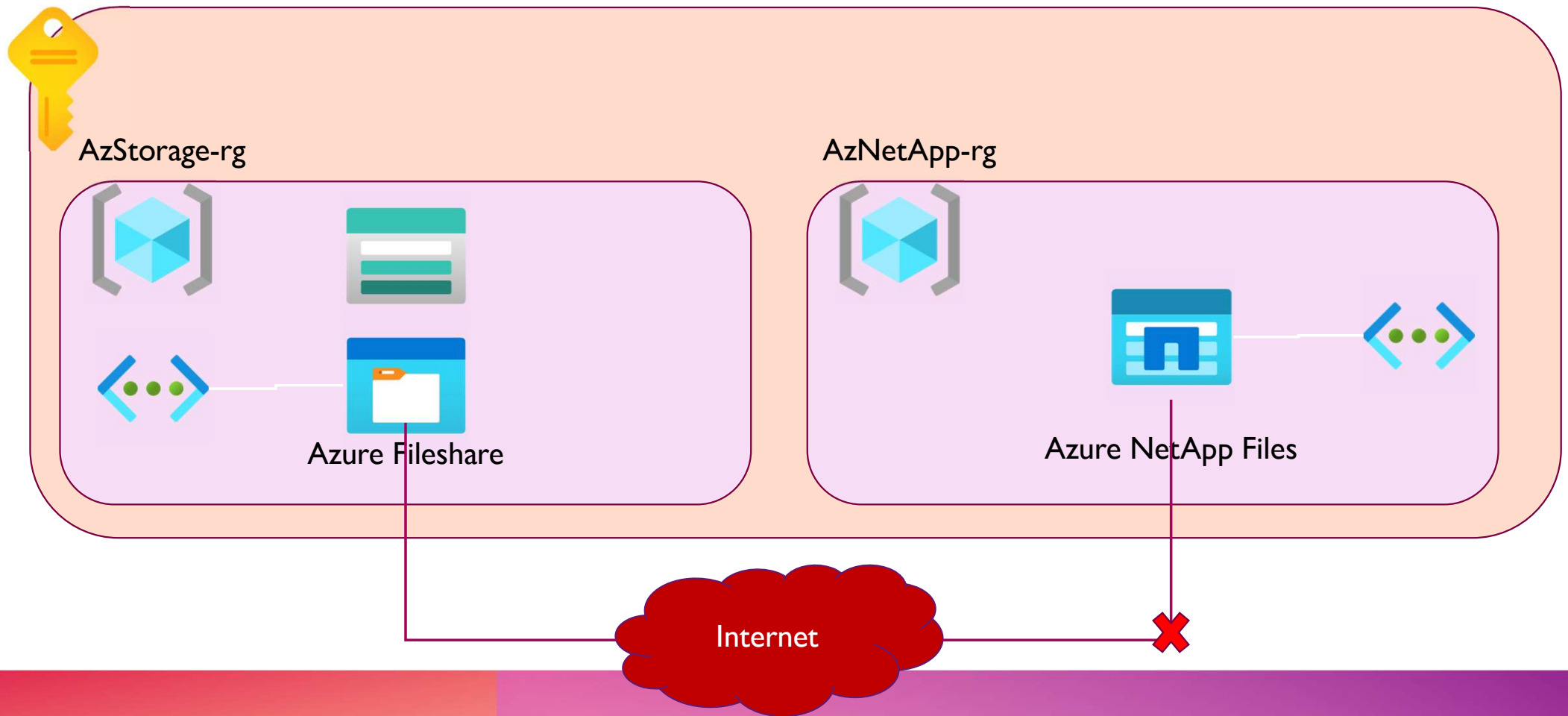
- Performance and Pricing

- Summary

1ST AVD PROFILE IOPS RECOMMENDATIONS
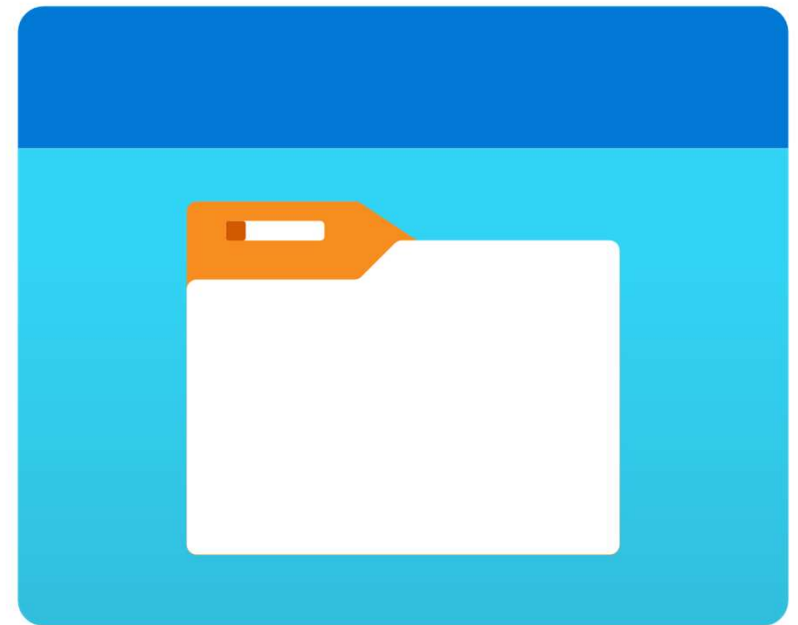
Needed IOPS for Profileshare around 10 per User

Login and Logout need around 100 per User

Latency between Client and Store <=5ms

AZURE STORAGE SOLUTIONS

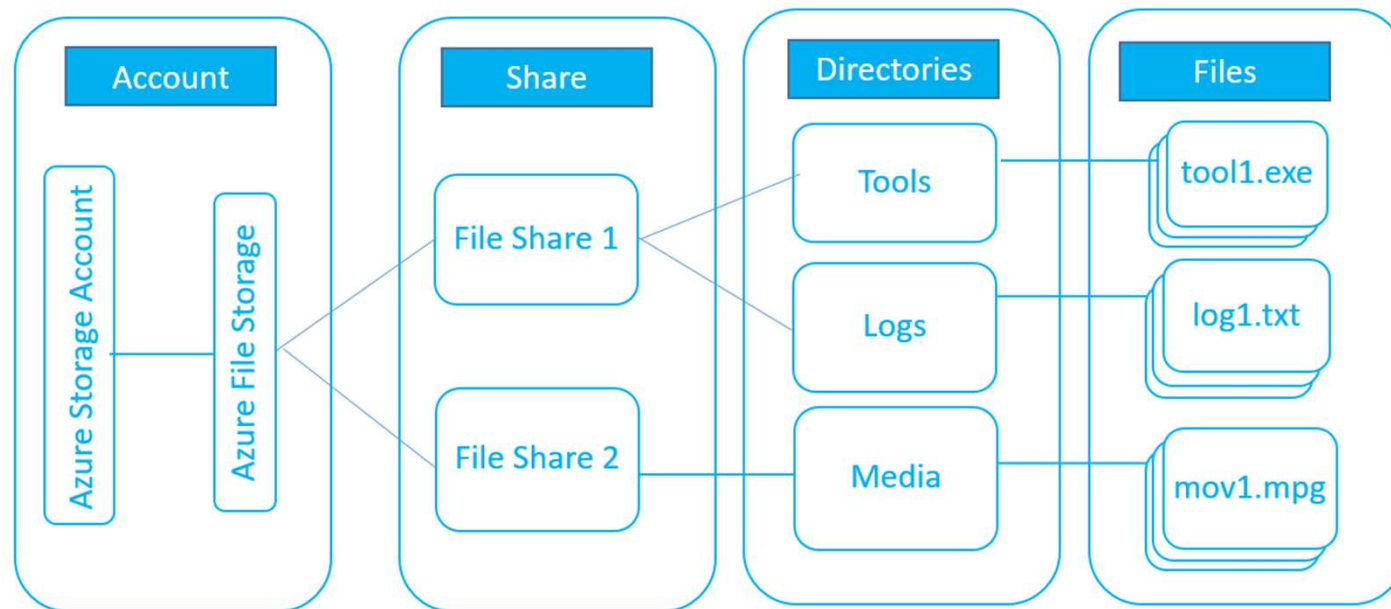AzStorage-rg

AzNetApp-rg

Azure Fileshare

Azure NetApp Files

Internet

AZURE FILES

AZURE FILES

- Hosted SMB 3.1 Share for you on Azure

- PaaS solu

- You don´

- No Volur

- Unique n

- avdtechfe

- avd.file.cc

AZURE FILES PERFORMANCE TIERS

Replication ⓘ

Locally-redundant storage (LRS)

Large file shares ⓘ
◉ Disabled   ◯ Enabled

Need GPv2 SA	Cold	Hot	Transaction-optimized (formerly Standard)	Premium
Storage Type	HDD	HDD	HDD	SSD
Pricing	Used capacity	Used capacity	Used capacity	Reserved capacity
Max. IOPS	1.000/10.000	1.000/10.000	1.000/10.000	100.000
Min. capacity	1GB	1GB	1GB	100GB
Max. capacity	100TB*	100TB*	100TB*	100TB
Tier moving	Possible	Possible	Possible	Not possible
Max. bandwith				Ingress 4136MB/sec Egress 6204MB/saec

AZURE FILES PRICING

Need GPv2 SA	Cold	Hot	Transaction-optimized (formerly Standard)	Premium
Storage Type	HDD	HDD	HDD	SSD
Write transactions	0.11€	0.06€	0.01€	Included
List transactions	0.06€	0.06€	0.01€	Included
Read transactions	0.0110€	0.0048€	0.0013€	Included
Additional operations	0.0048€	0.0048€	0.0013€	Included
Tier moving	Possible	Possible	Possible	Not possible

Replication ⓘ

Locally-redundant storage (LRS)

Large file shares ⓘ
◉ Disabled ◯ Enabled

AZURE FILES – PRIVATE LINK

Internet

Azure PaaS

Virtual Network (10.0.0.0/16)

Rule	Destination	Access
stg	STORAGE	Allow
vnet	VNET	Allow
internet	INTERNET	Deny
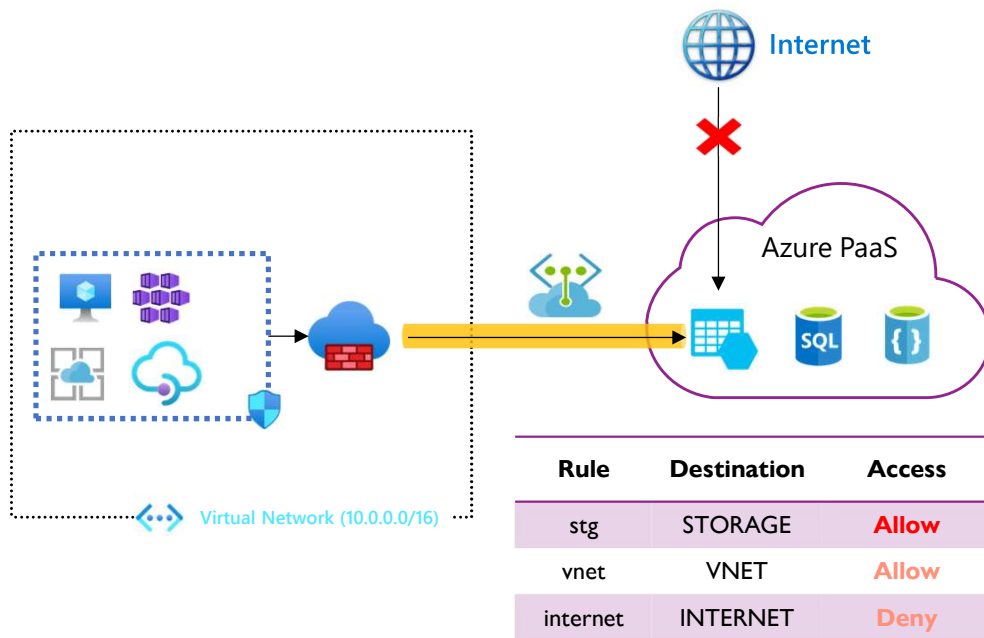
PRIVATE LINK – PRIVATE ENDPOINT

Internet

PRIVATE

Virtual Network (10.0.0.0/16)

Rule	Destination	Access
vnet	VNET	Allow
internet	INTERNET	Deny

12
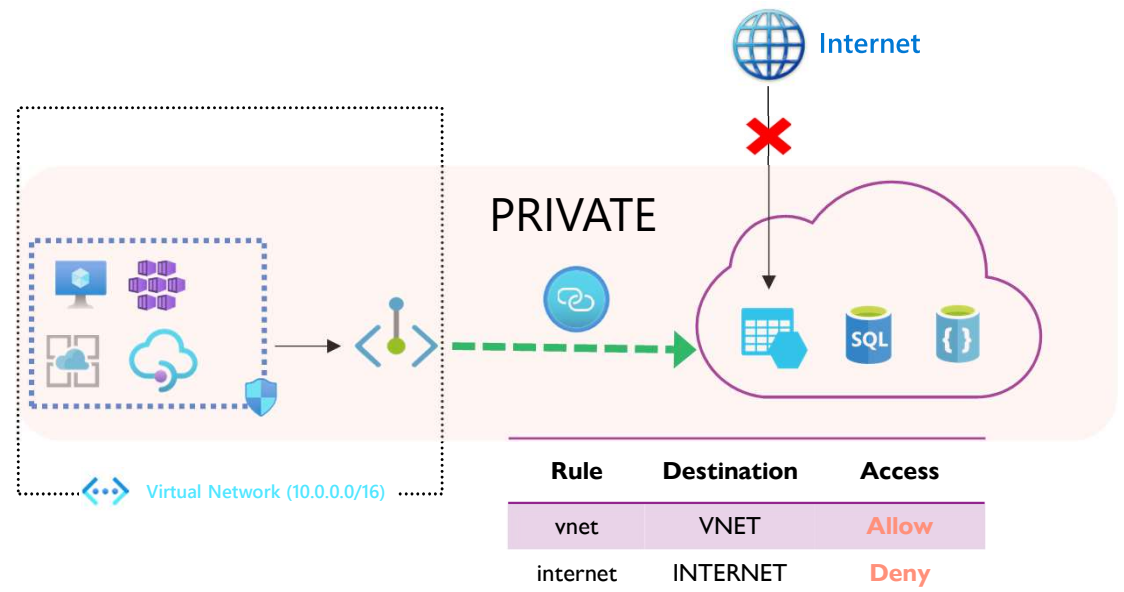
AZURE FILES – ENABLE AD DS SMB AUTH

- Use separated OU (without effective GPO)

- Use a Domain-joined Client

- Use a Domain-joined and synced user account
  - Allowed to create Computer- or Service accounts
  - Account need SA account owner or contributor permission

- Enabled Users
  - Must Synced to Azure AD
  - Need Fileshare access (Azure RBAC)
  - Need NTFS access

Storage File Data SMB Share Contributor ⓘ

Storage File Data SMB Share Elevated Contributor ⓘ
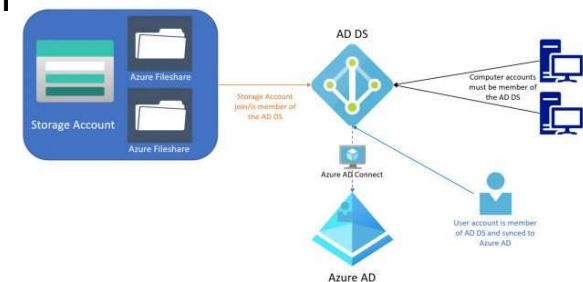
Storage File Data SMB Share Reader ⓘ

Active Directory Domain Services (AD DS) ⓘ
◯ Disabled ⬤ Enabled

Joined domain ⓘ
ad.cloudmechanic.de

Azure Files enabled AD DS SMB authentication

AZURE FILES - RECOMMENDATIONS

- Activate Soft delete (keeps deleted fileshares recoverable for defined days)

- When using ADDS SMB authentication:

  - Sync AD DS groups to Azure AD and give the group acces to the Fileshare

  - Do not forget to set Azure RBAC permissions (Fileshare permissions)

Storage File Data SMB Share Contributor ⓘ

Storage File Data SMB Share Elevated Contributor ⓘ

Storage File Data SMB Share Reader ⓘ

AZURE NETAPP FILES
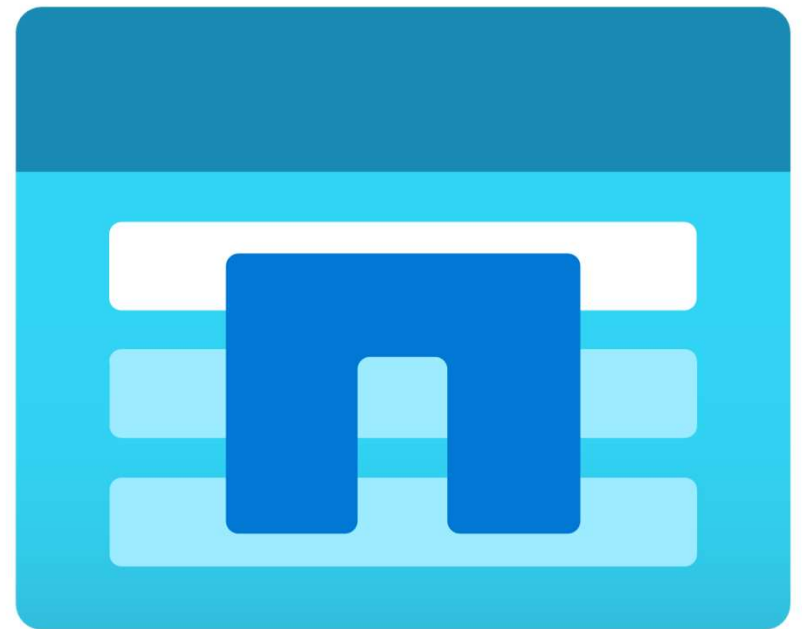
AZURE NETAPP FILES

Azure NetApp Files Key Customer Use Cases

Migration [Windows Apps & SQL Server | Linux OSS Apps & Database | SAP on Azure]

Specialized Workloads (HPC | VDI | AVS)

HPC	VDI	Azure VMware Solutions
Generic	Azure Virtual Desktop	Datastores
O&G	Citrix App Layering	Guest OS mounts
EDA	FSLogix (profile & MSIX App Attach)	

Azure Platform Services
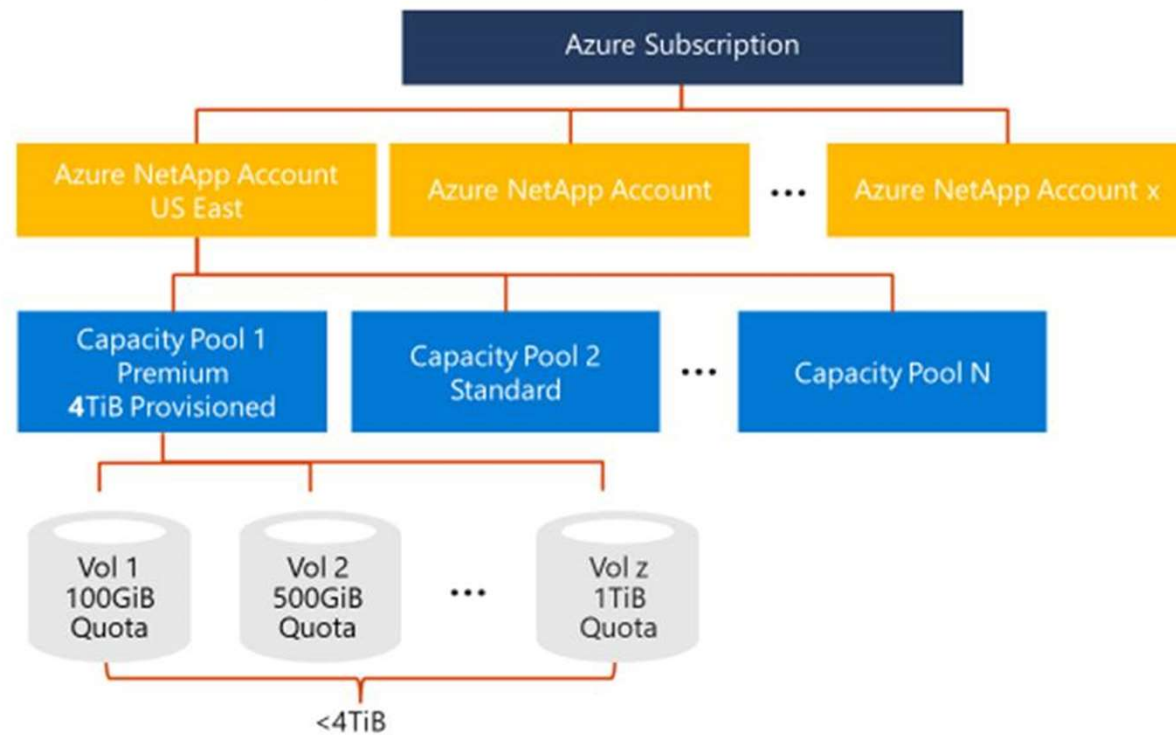(AKS, Azure Batch, ...)

Azure NetApp Files
(Enterprise NAS)

PERFORMANCE TIERS & MANUAL QOS

Storage Hierarchy

PERFORMANCE TIERS & MANUAL QOS

Need GPv2 SA	Standard	Premium	Ultra
Throughput per 1TB Capacity	16MB/sec	64MB/sec	128MB/sec
Throughput per Capacity Pool (4TB)	64MB/sec	256MB/sec	512MB/sec

Manual QoS Capacity Pool (Premium Service Level): 1024 MB/sec, 8TB

AVD PaW
128MB/sec
2,0TB

AVD Standard
128MB/sec
2,0TB

AVD CAD
768MB/sec
4,0TB

Throughput

Capacity

New NetApp account ...

Name *

avdtechfest

⊗ The subscription was not found in Azure NetApp Files. Please ensure that this
subscription has been fully registered with Azure NetApp Files. Please note: There
maybe a short delay after registering before it's possible to create/manage
resources.

AZURE NETAPP FILES NETWORK

Features	Standard Network	Basic Network
Number of IPs in a Vnet	Standard limis	1000
Support for NSGs	Yes	No
Support for UDRs	Yes	No
Connectivity for Private Endpoints	No	No
Connectivity for Service Endpoints	No	No
Azure Policy	No	No
Connectivity to Volume in local VNET	Yes	Yes
Connectivity to Volume in peered VNET (same region)	Yes	Yes
Connectivity to Volume in peered VNET (different region)	Yes	No
Express Route Fast Path	Yes	No

AZURE (NETAPP) FILES DEMO
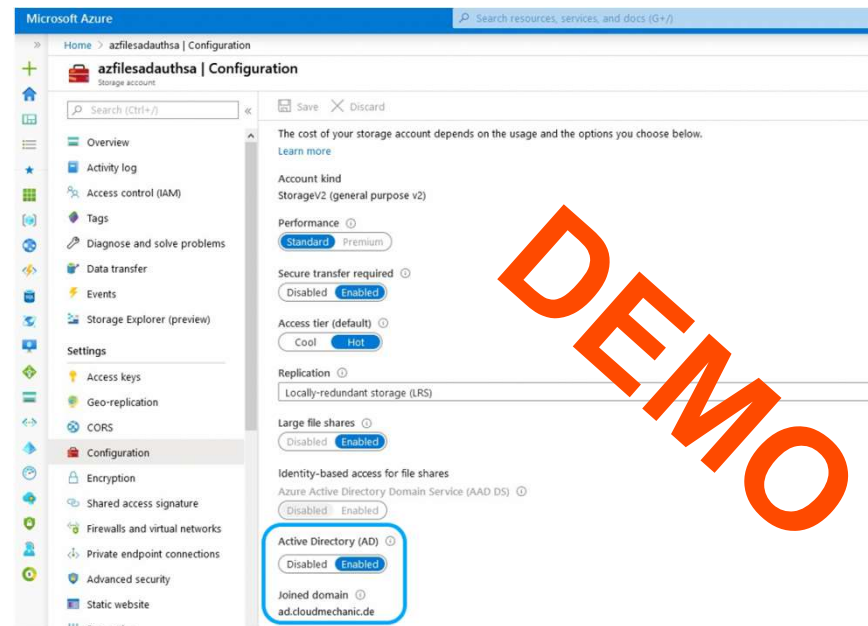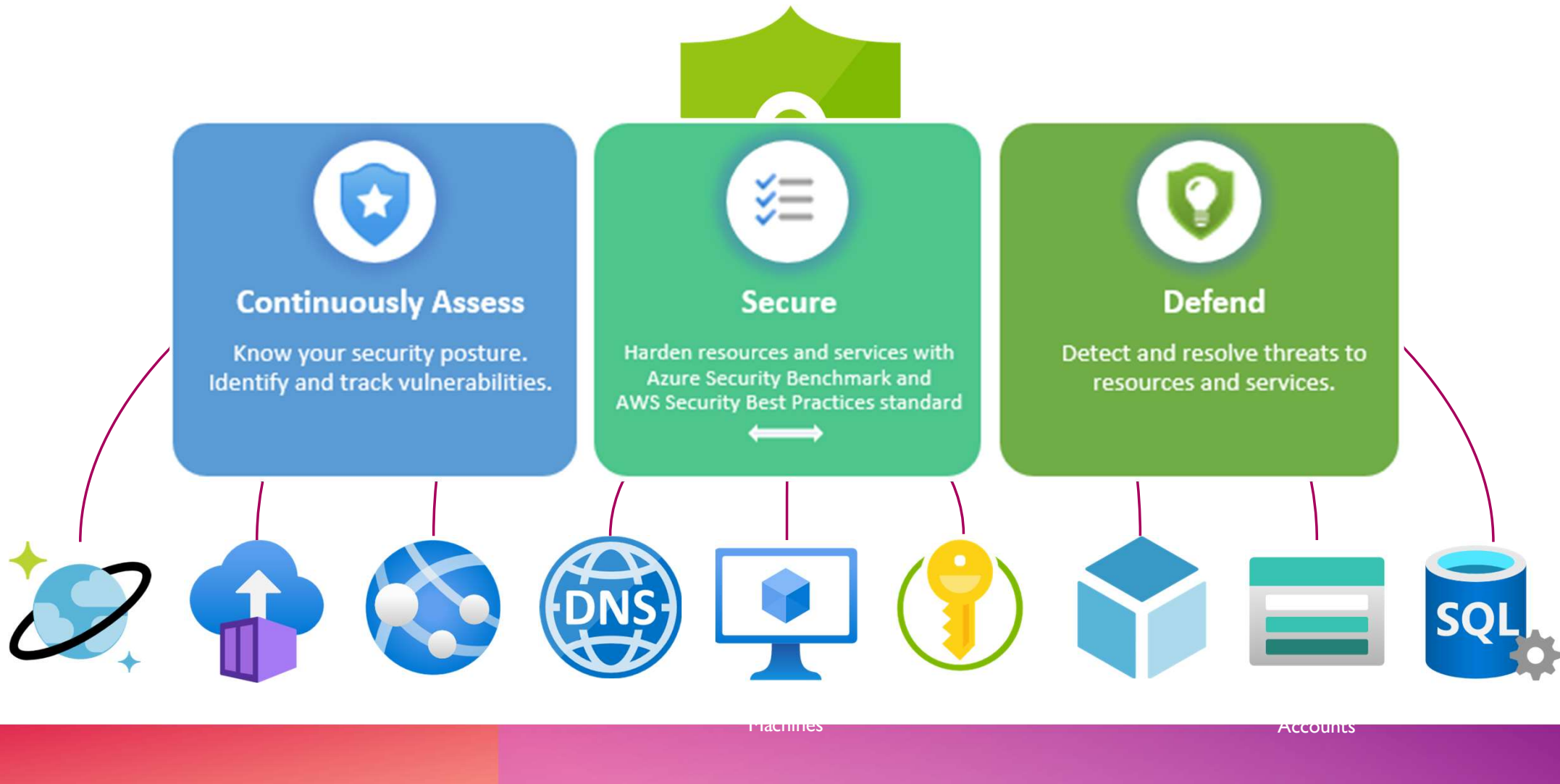
BACKUP COMPARISON

Azure Files

- Integration with Azure Backup

- Fast Backup

- Hourly Backup

- GRS support

Azure NetApp Files

- No Integration in Azure Backup

- Backup use same location

- Large volumes > 10TB needs multiple hours for backup

- Actual support for daily, weekly and monthly backups – no hourly backups

- Backup use internally ZRS

MICROSOFT DEFENDER FOR CLOUD

Continuously Assess
Know your security posture. Identify and track vulnerabilities.

Secure
Harden resources and services with Azure Security Benchmark and AWS Security Best Practices standard

Defend
Detect and resolve threats to resources and services.

DNS

SQL

Machines

Accounts

DEFENDER FOR STORAGE

- Only for Azure Files **not** for NetApp Files

- Protected storage types
  - Blob Storage
  - Azure Files
  - Azure Data Lake Storage Gen 2

- Support for Threat Intelligence
  - Compromised Credentials
  - Data exfiltration
  - Privilege abuse
  - Malicious content

- Price 0,020€ per 10k Transactions

Microsoft Azure

MEDIUM SEVERITY

Someone has accessed your Storage account 'mystorageaccount' from an unusual location.

Activity details

Subscription ID	
Storage account	mystorageacount
Storage type	Blob
Container	mycontainer
Application	myTestApplication
IP address	
Location	Washington, United States
Data center	scus
Date	May 17, 2018 7:50 UTC
Potential causes	Unauthorized access that exploits an opening in the firewall. Legitimate access from a new location
Investigation steps	For a full investigation, configure diagnostics logs for read, write, and delete
Remediation steps	Be sure to follow the principle of "least privilege" and limit access to your data

AZURE FILES RECAP

Standard and Premium Storage

Premium Storage prices based on reserved capacity

Standard Storage prices based on used capacity

Note: Change tiering incure transaction costs

New file share   ✕

Name *

wvd ✓

Sizing your file share:

- A premium file share is billed by provisioned share size, regardless of the used capacity.
- Share sizes can range from 100 GiB to 102,400 GiB.
- Provisioned share size is specified by share quota.
- IO and network bandwidth limits scale with the provisioned share size.

Learn more

Provisioned capacity * ⓘ

99

Set to maximum   GiB

⊗ Quota must be between 100 and 102400 GiB.

Baseline IO/s ⓘ : **499**
Burst IO/s   : **4000**
Egress Rate ⓘ : **65.9 MiBytes / s**
Ingress Rate ⓘ : **44.0 MiBytes / s**

AZURE NETAPP FILES – RECAP

Azure NetApp Files (ANF) → Available **without** request → Easier Domainintegration

Pay per capacity (Min 4TB) → Higher Performance level → Good choice for medium/high AVD profile solutions

AZURE FILES VS. NETAPP FILES

	AFS Transaction-optimized	AFS Premium	NetApp Files
Regional availability	All regions	32 (more are coming)	25 (more are coming)
Tiering	Cool, Hot, T O	Only Premium – Performance based on selected capacity	Standard, Premium, Ultra
Identity based auth	Azure AD DS AD DS SMB Auth	Azure AD DS AD DS SMB Auth	Azure AD DS AD DS
Supported Protocols	SMB 3.1 (3.1.1) NFS 3 / 4.1	SMB 3.1 (3.1.1) NFS 3 / 4.1	SMB 3.1 (3.1.1) NFS 3 / 4.1 & Multiprotocol
Min Size	1GB	100GB	4TB
Max Filesize	1TB	4TB	16TB
Max. Size	5PB	100TB	500TB
Pricing	0.0487€/GB	0.1620€/GB	0.149593€/GB
Pricing for 4TB store	194.63€ *	647.65€ **	612.73€ **

AZURE (NETAPP) FILES – PERFECT AVD PROFILE SOLUTION?

- Many options – needs good planning

- Transaction-optimized unexpected costs for Transactions

- Premium Tier best fit but needs planning about perf./cost ratio

- Azure Fileshare need to be domain joined for AD DS auth

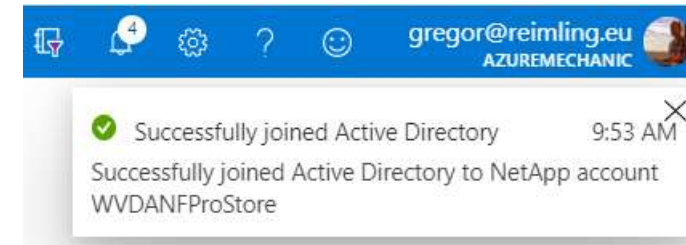- Integrate Private Link for traffic flows over VPN (VNET) not Internet

- Performance good for PoCs and Small-Medium AVD deployments

- For large deployments compare Azure Files to NetApp Files

RECOMMENDATIONS

Plan and and categorize AVD User and count estimated AVD user

Small Usage	Medium Usage	Heavy Usage
Standard or Premium Files	Premium Files	NetApp Files
Use AD DS SMB Authentication	Use AD DS SMB Authentication	Easier AD DS integration
Enable Private Link	Enable Private Link	Access directly over NetApp SNET
Enable SMB Multich. (Prem)	Enable SMB Multichannel	SMB Multichannel enabled by default

LINKS

What is Azure NetApp Files | Microsoft Docs

[Guidelines for Azure NetApp Files network planning | Microsoft Docs]

https://docs.microsoft.com/en-us/azure/storage/files/

https://www.reimling.eu/2020/12/azure-files-enabled-ad-ds-smb-authentication-all-you-need-to-know/

https://docs.microsoft.com/en-us/azure/storage/files/storage-files-identity-auth-active-directory-enable

https://azure.microsoft.com/en-us/updates/active-directory-for-authentication-on-smb-access-to-azure-file-in-preview/

https://github.com/Azure-Samples/azure-files-samples/releases

https://docs.microsoft.com/en-us/azure/azure-netapp-files/

https://azure.microsoft.com/en-us/updates/more-iops-at-no-additional-cost-for-azure-files-premium-tier/

https://docs.microsoft.com/en-us/azure/virtual-desktop/create-fslogix-profile-container

AVD FSLogix IOPs Calculator https://github.com/RMITBLOG/FSLogix

Microsoft Defender for Storage - the benefits and features - Microsoft Defender for Cloud | Microsoft Docs

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Questions? ->
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