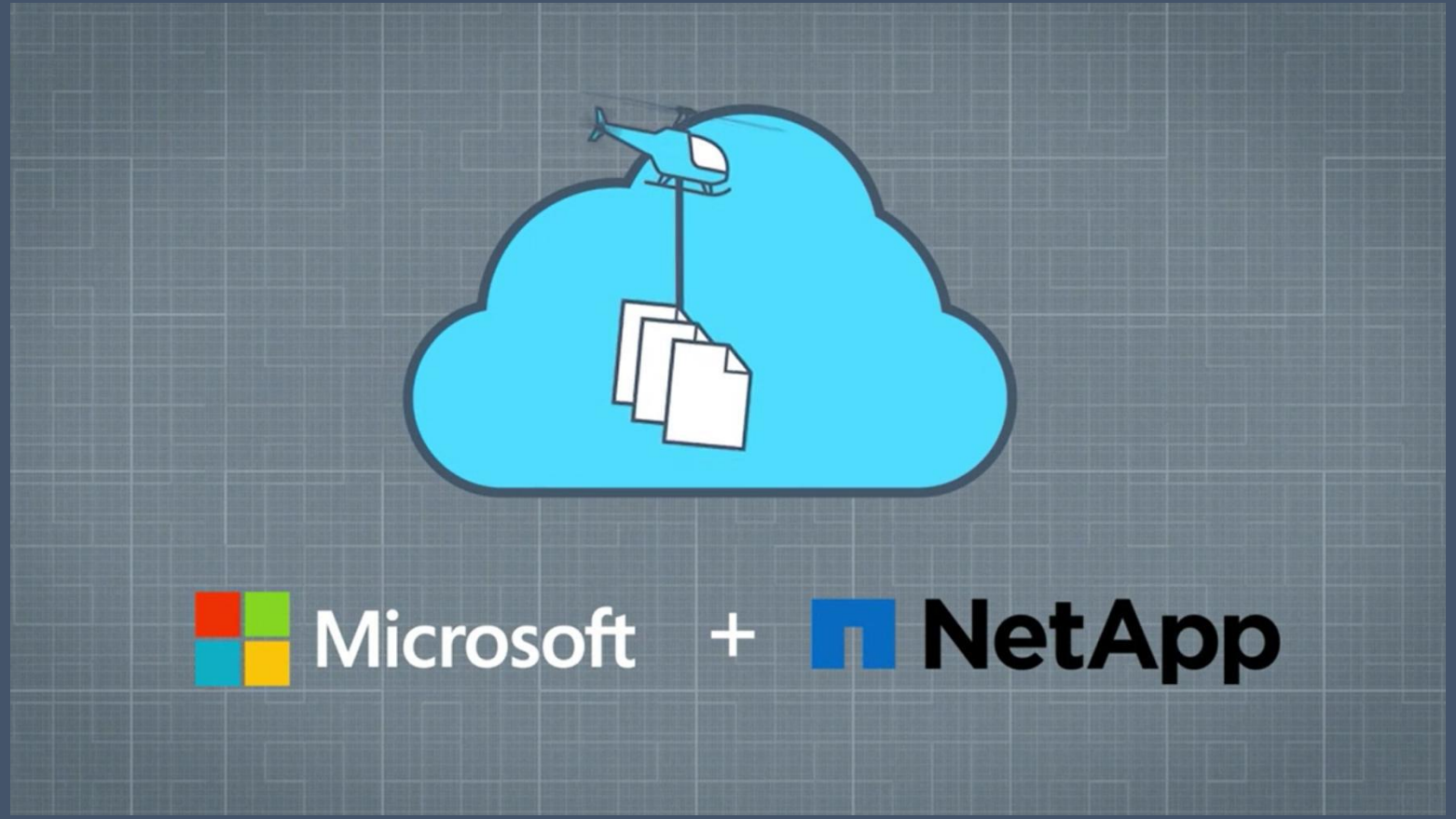
Azure NetApp Files



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Please note: the views and opinions in this presentation are entirely my own

Azure NetApp Files

- Overview – Why is this relevant?
- Use cases
- Setup – what's needed? How long?
- Demonstration – Setup
- Use case – CVAD, FSLogix etc.
- Roadmap – a brief point…

Overview

- Azure NetApp Files – Cloud Storage provided by NetApp ONTAP Storage, but sold, supported, and managed by Microsoft. 100% Azure native
- Managed in the same way as any Azure service – Portal / PowerShell / Azure CLI. 1st Party Service
- Provisioned and consumed against existing agreements. No extra Paperwork!
- Currently requires a request and subscription whitelisting – due to capacity

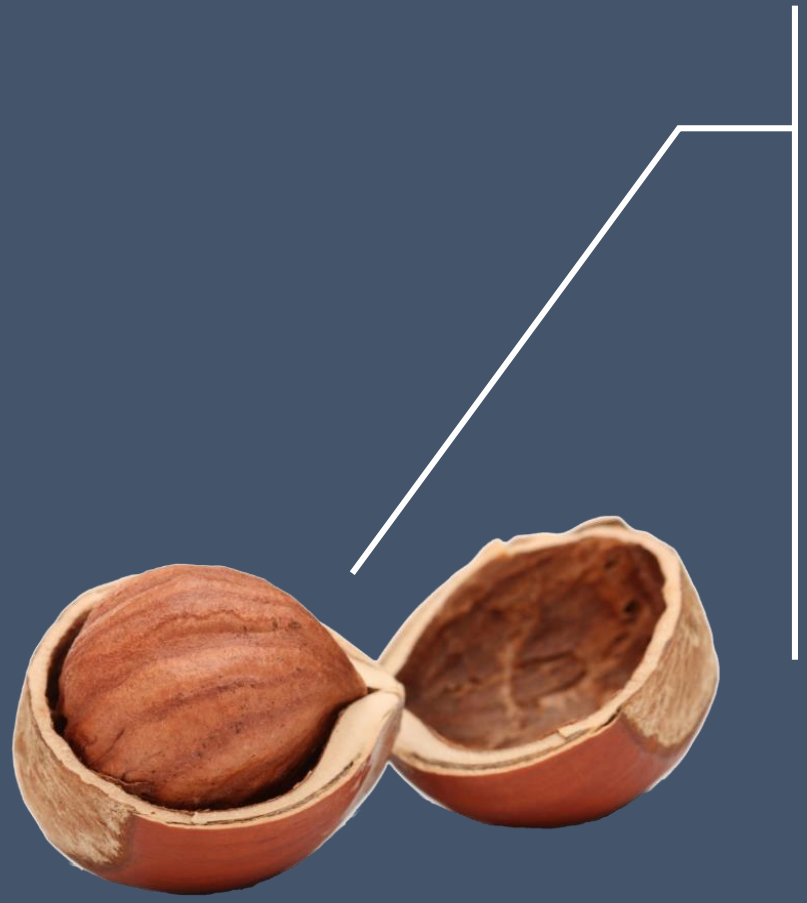
Who cares….?

- Traditional challenges – moving shares to the Cloud… *everyone has a nightmare file server migration story*
- The need for NTFS Permissions
- Performance – we need IOPS
- Protocol Support – SMB and NFS
- Compliance/Security – encryption at rest / RBAC / NTFS
- Roadmap - Integrated data replication and backup will be available soon

Use Cases

- File Shares – can be migrated, as is to Azure NetApp Files, maintaining NTFS permissions
- Cloud Sync can stage data and synchronize between regions
- Profile Storage – UPM / FSLogix / Roaming
- Applications with high IOPS requirements – SAP, Transactional Data etc. More on performance soon

In a nutshell…



You can now provision NetApp ONTAP backed Volumes, directly via the Azure Portal or CLI

NFS and SMB are supported protocols

No additional infrastructure is required in Azure or on-premises

NTFS permissions are supported

It can all be consumed through existing agreements

Regional Availability

CANADA		UNITED STATES						
Canada Central	Canada East	Central US	East US	East US 2	North Central US	South Central US	West Central US	West US	West US 2
✓	✓	■	■	■		■		✓	■

EUROPE		UNITED KINGDOM	
North Europe	West Europe	UK South	UK West
■	■	■	■

AFRICA		ASIA PACIFIC		AUSTRALIA			
South Africa North	South Africa West	East Asia	Southeast Asia	Australia Central	Australia Central 2	Australia East	Australia Southeast
			■			■	✓

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

Note: Correct as of 23/11/2019

Performance

- A tale of three tiers…
- **Ultra storage**

  The Ultra storage tier provides up to 128 MiB/s of throughput per 1 TiB of volume quota assigned.
- **Premium storage**

  The Premium storage tier provides up to 64 MiB/s of throughput per 1 TiB of volume quota assigned.
- **Standard storage**

  The Standard storage tier provides up to 16 MiB/s of throughput per 1 TiB of volume quota assigned

Performance

Throughput is based on Service Level x Volume Quota:

Service Level	Throughput
Ultra	128MiB/s per 1TiB quota
Premium	64MiB/s per 1TiB quota
Standard	16MiB/s per 1TiB quota

X

=

E.g. 1	Premium Tier (64MiB/s per 1TiB quota)	2TiB Volume Quota	Up to 128MiB/s gross throughput
E.g. 2	Premium Tier (64MiB/s per 1TiB quota)	100 GiB Volume Quota	Up to 6.25MiB/s gross throughput

Pricing

"Azure NetApp Files (ANF) is charged per hour based on the provisioned ANF capacity. Customers can provision a minimum of 4 TiB of ANF capacity and then add additional provision capacity in the increments of 1 TiB."

UK South:

	Price	4TB Example – Monthly cost	Cost per 1GB per month
Standard Storage	£0.000166/GiB/hour	~ £456	~11p
Premium Storage	£0.000331/GiB/hour	~ £911	~22p
Ultra Storage	£0.000441/GiB/hour	~ £1213	~29p

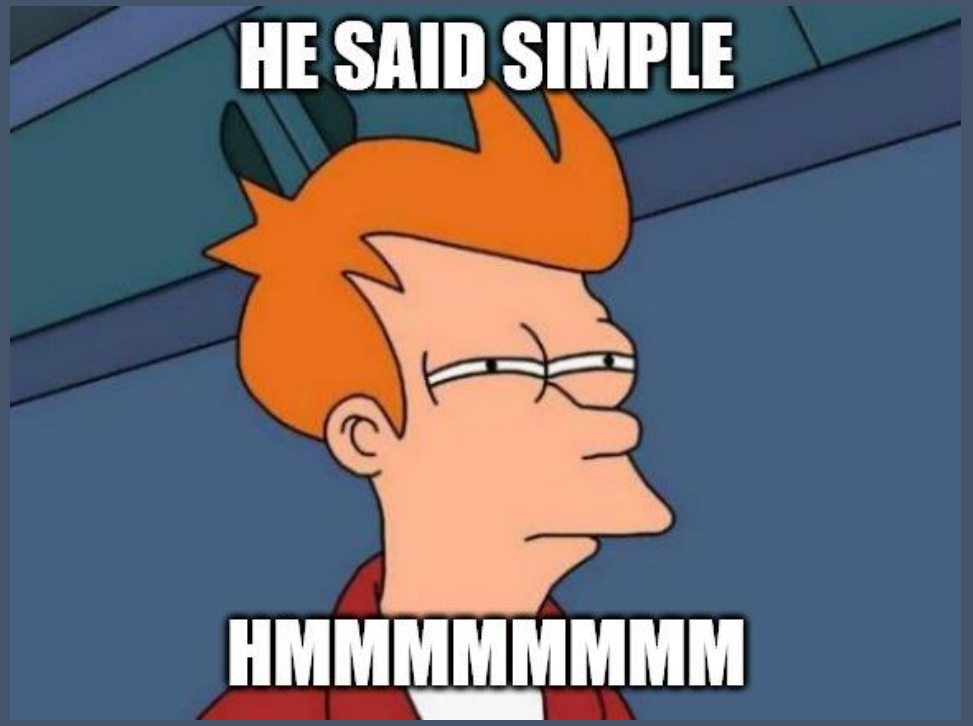
4096 x (24 x 28) x [Price per GB per hour] = monthly cost for 4TB

Challenge – can we setup ANF, and create a Volume in under 5 minutes?

Yes, we can! 4 simple steps

All done via the Portal or CLI:

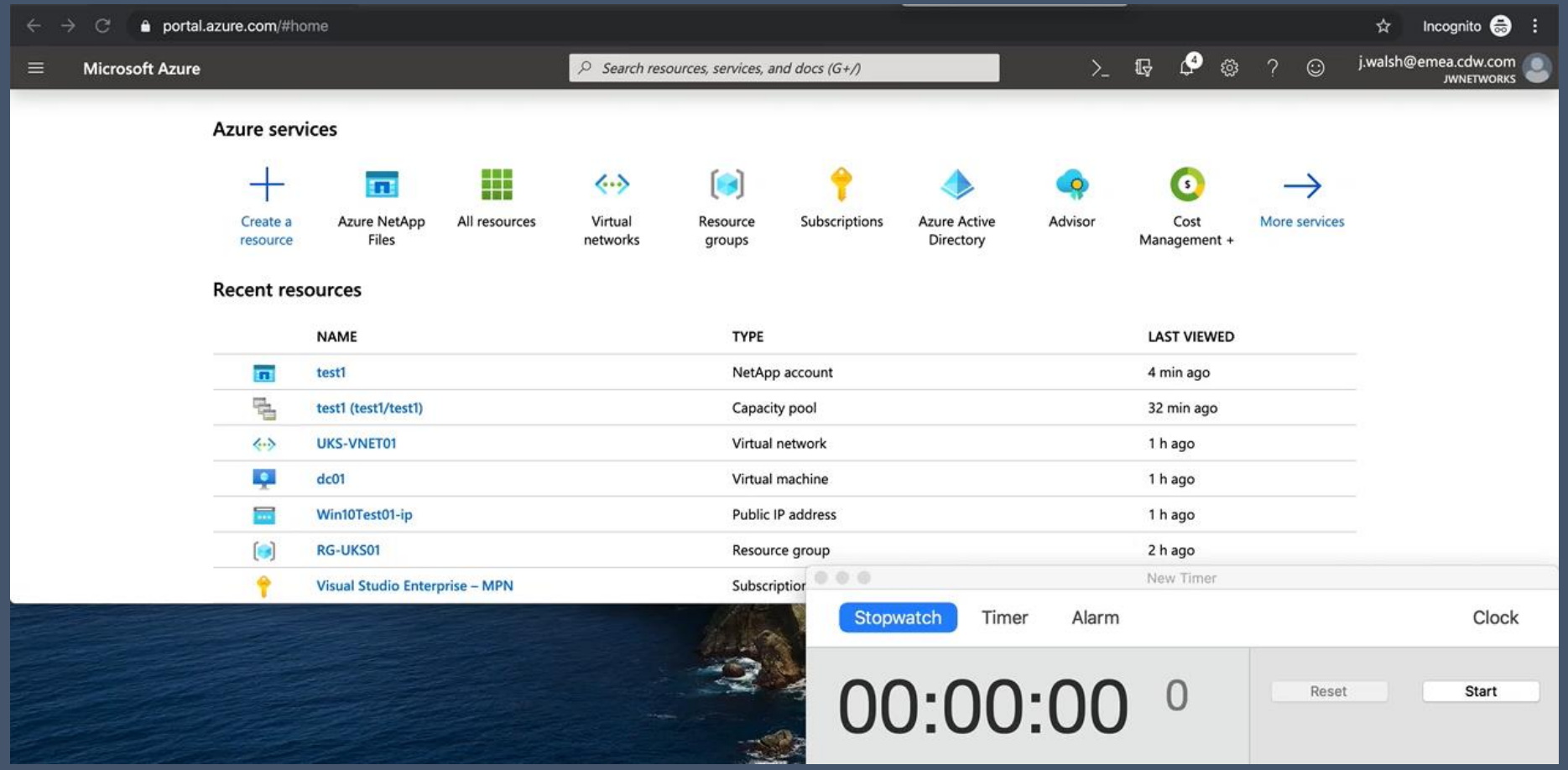
1. Create an ANF Account
2. Create a Capacity Pool
3. Create a Volume
4. Test



What do we need for this?

1. An Azure Subscription
2. A VNET, and a Subnet that we can delegate to ANF, or a new Subnet we create
3. A Domain Controller for NTFS permissions to be used
4. A Test machine that can access the above Subnet

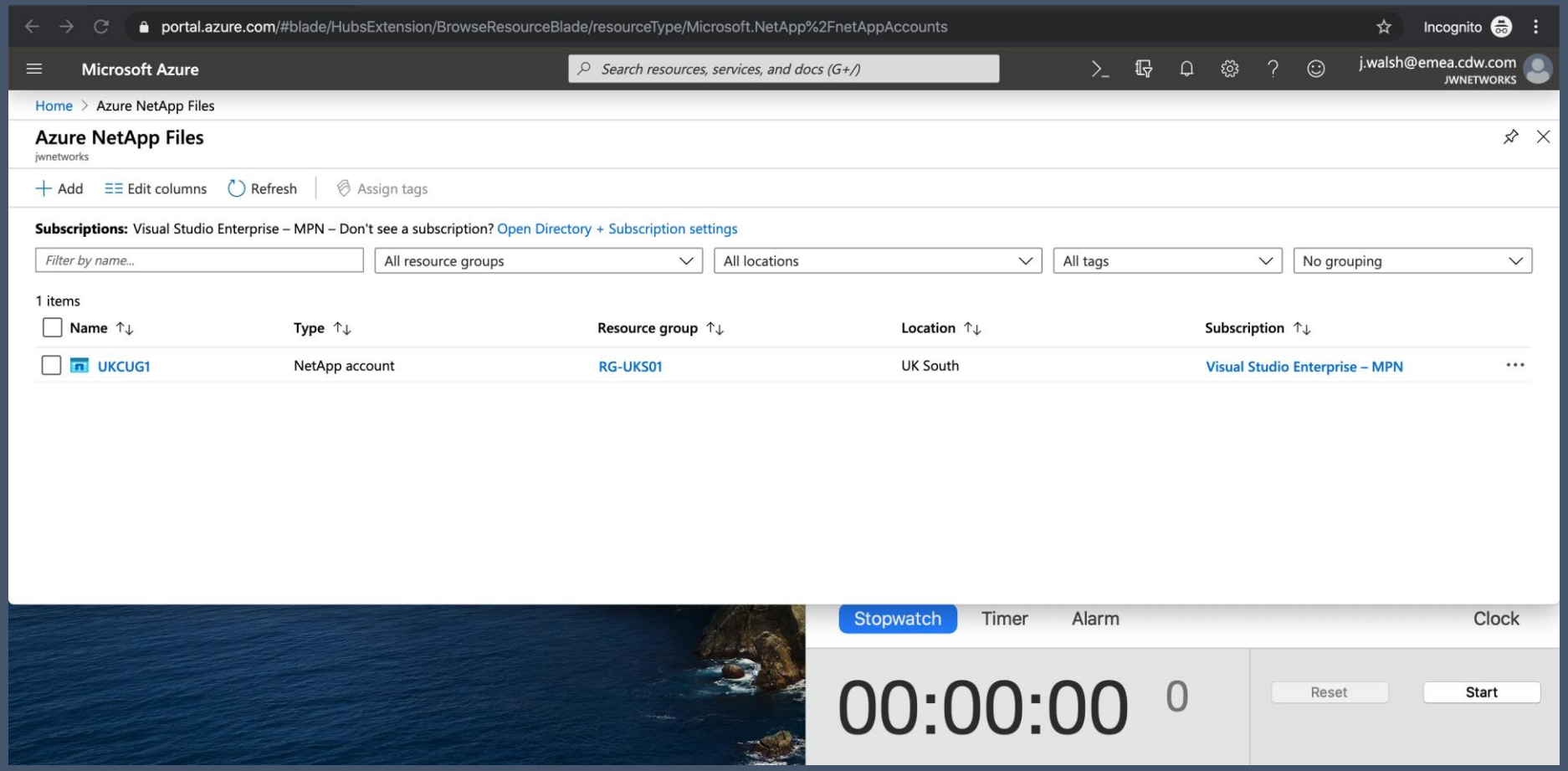
1. Create an ANF Account




```
$resourceGroup = "RG-UKS01"
$location = "uksouth"
$anfAccountName = "UKCUGTest"

New-AzNetAppFilesAccount -ResourceGroupName $resourceGroup -Location $location -Name $anfAccountName
```

2. Create a Capacity Pool



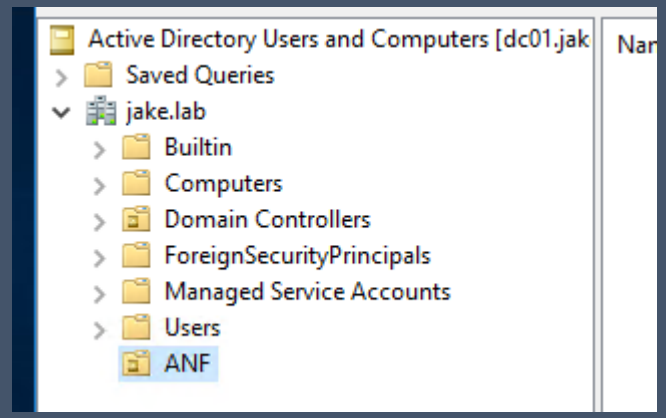

```
$poolName = "ukcugtest1"
$poolSizeBytes = 4398046511104 # 4TiB
$serviceLevel = "Standard" # Valid values are Standard, Premium and Ultra

New-AzNetAppFilesPool -ResourceGroupName $resourceGroup -Location $location -AccountName $anfAccountName -Name
$poolName -PoolSize $poolSizeBytes -ServiceLevel $serviceLevel
```

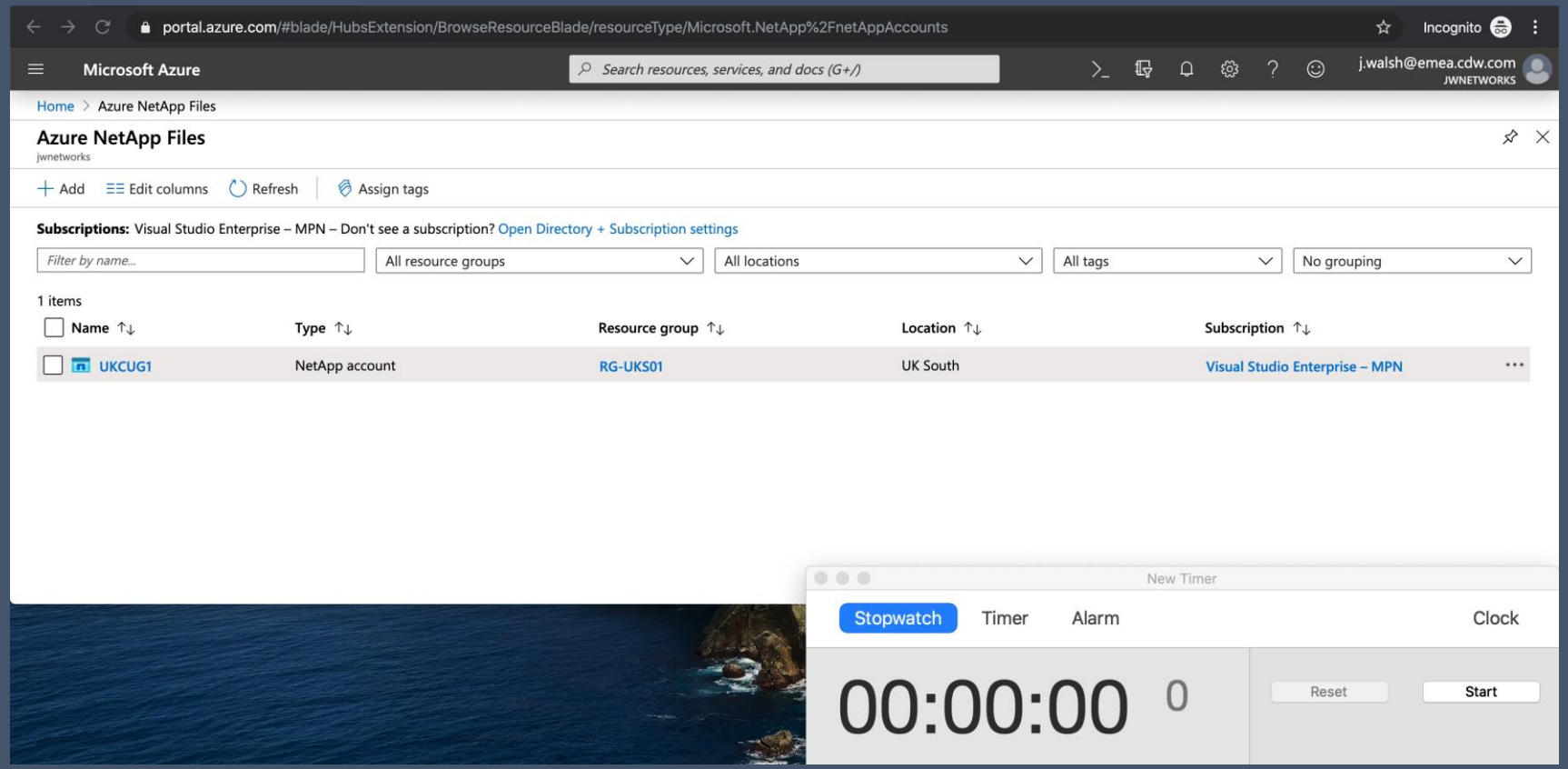
3. Create a Volume

Step 1 – Setup AD Connection

- This is required to allow ANF to support NTFS authentication for Shares
- Requires a service account with create/delete permissions to an OU for NetApp Computer objects to be stored

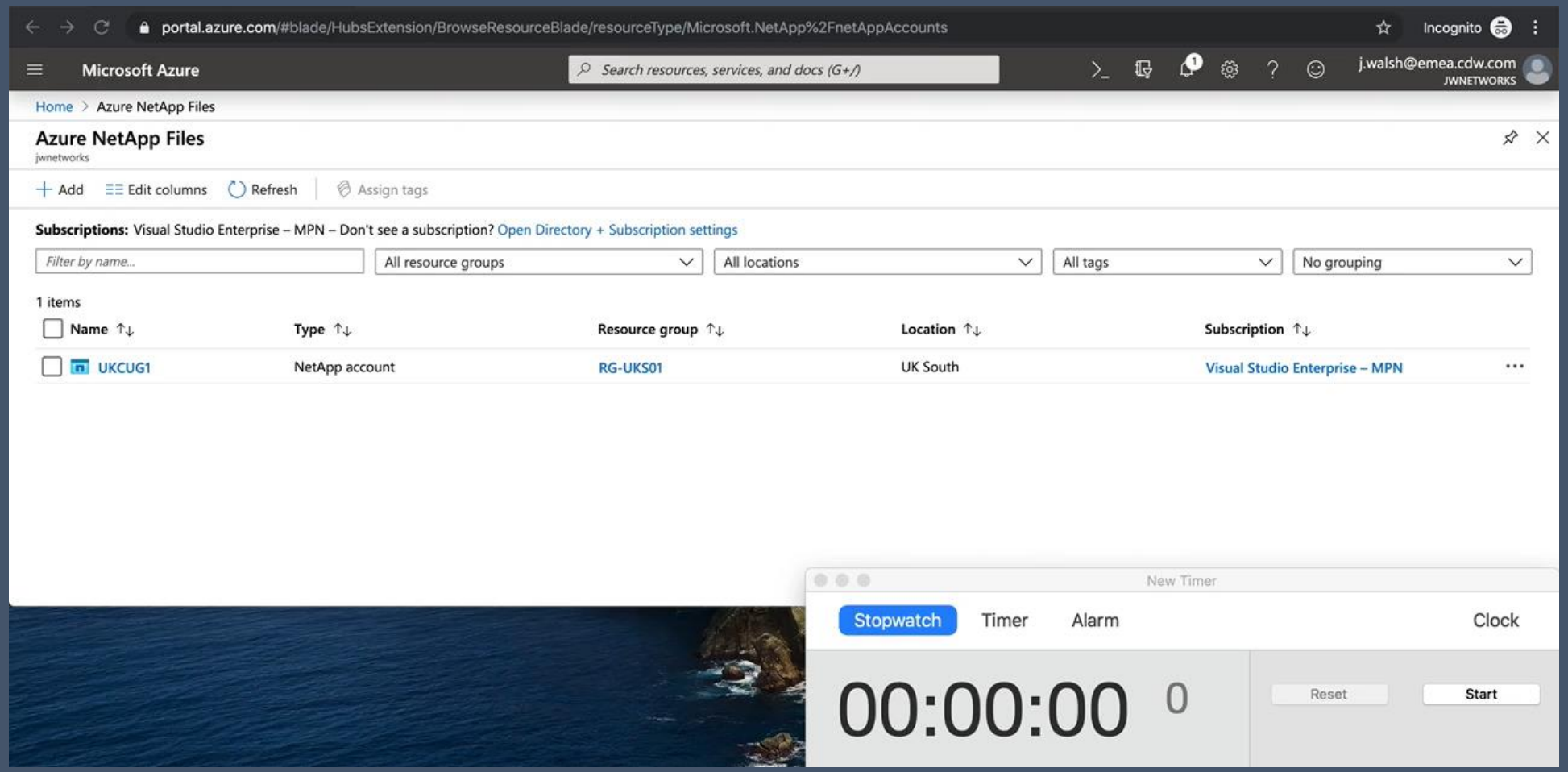


OU=ANF,DC=jake,DC=lab



3. Create a Volume

Step 2 – Create a Volume, and a delegated Subnet for ANF to utilise

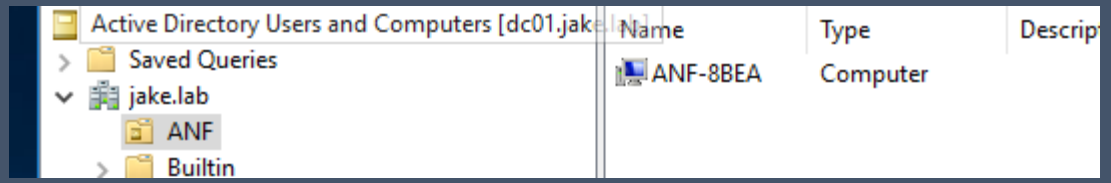


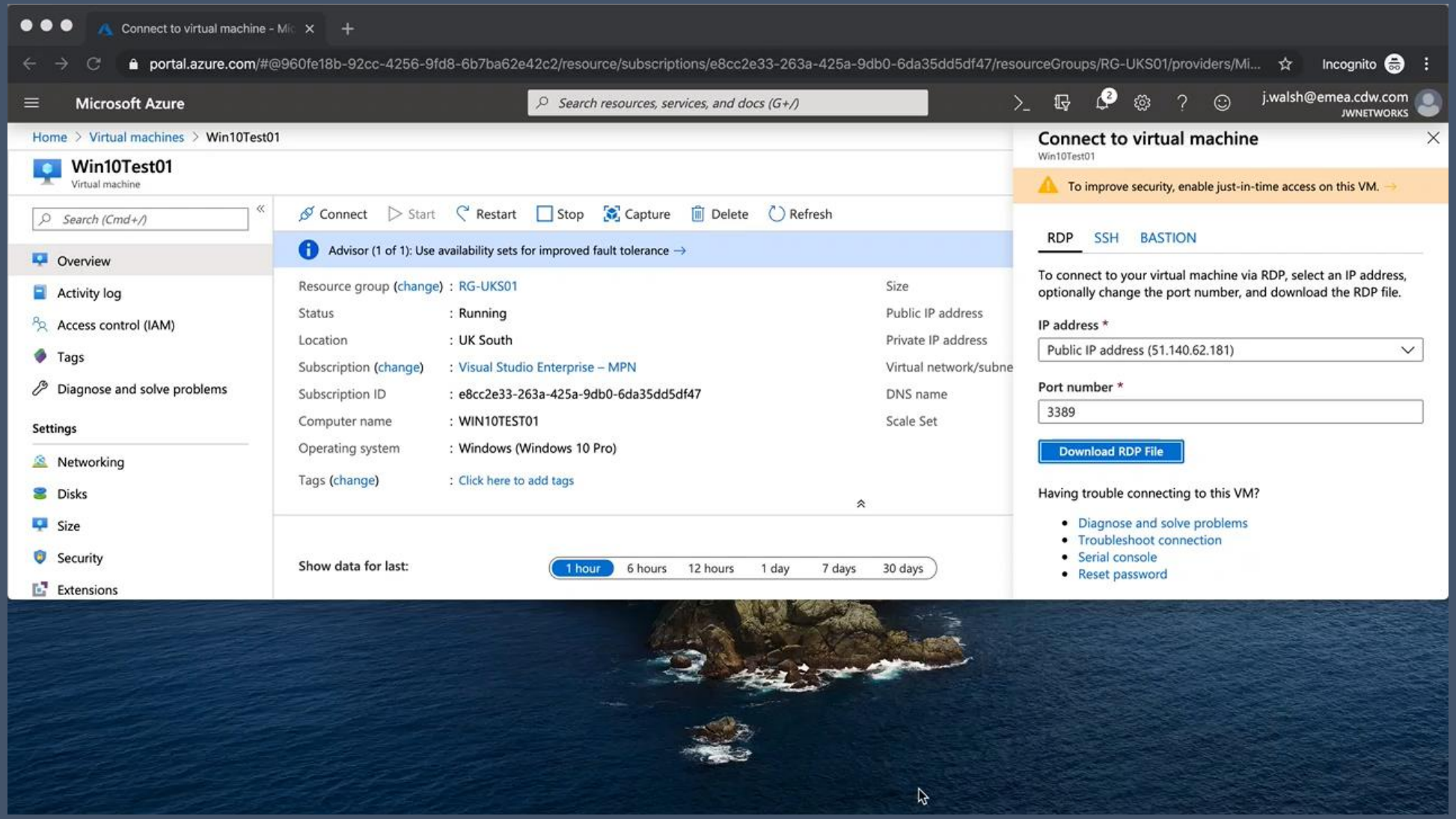
3. Create a Volume

```
$anfDelegation = New-AzDelegation -Name ([guid]::NewGuid().Guid) -ServiceName "Microsoft.NetApp/volumes"
$subnet = New-AzVirtualNetworkSubnetConfig -Name "myANFSubnet" -AddressPrefix "10.0.1.0/24" -Delegation
$anfDelegation
$vnet = New-AzVirtualNetwork -Name “UKS-VNET01" -ResourceGroupName $resourceGroup -Location $location -
AddressPrefix "10.0.1.0/24" -Subnet $subnet
$volumeSizeBytes = 1099511627776 # 100GiB
$subnetId = $vnet.Subnets[0].Id

New-AzNetAppFilesVolume -ResourceGroupName $resourceGroup `
    -Location $location `
    -AccountName $anfAccountName `
    -PoolName $poolName `
    -Name “ukcug01" `
    -UsageThreshold $volumeSizeBytes `
    -SubnetId $subnetId `
    -CreationToken "myfilepath1" `
    -ServiceLevel $serviceLevel `
    -ProtocolType NFSv3
```

4. Test


Active Directory Users and Computers [dc01.jake.lab]
Saved Queries
jake.lab
ANF
Builtin
Name
Type
ANF-8BEA
Computer

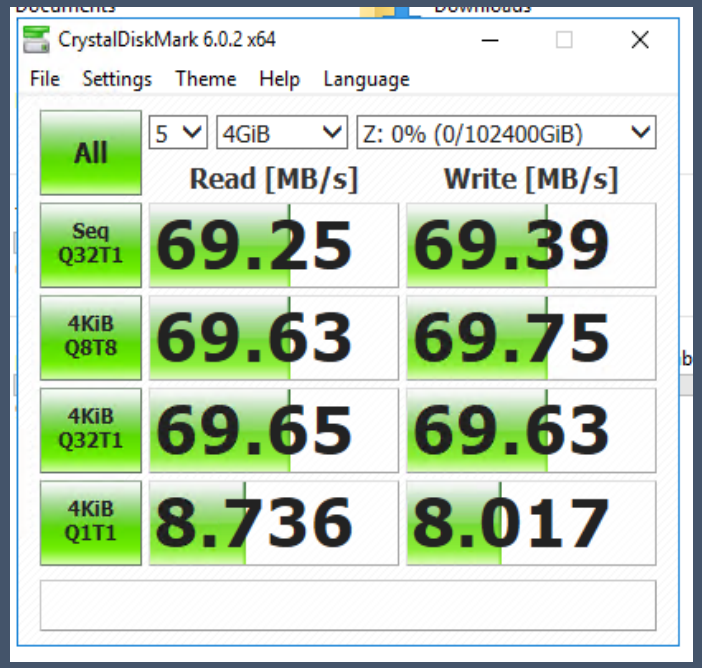

Connect to virtual machine - Mic
portal.azure.com/#@960fe18b-92cc-4256-9fd8-6b7ba62e42c2/resource/subscriptions/e8cc2e33-263a-425a-9db0-6da35dd5df47/resourceGroups/RG-UKS01/providers/Mi...
Incognito
Microsoft Azure
Search resources, services, and docs (G+/)
j.walsh@emea.cdw.com
JWNETWORKS
Home > Virtual machines > Win10Test01
Win10Test01
Virtual machine
Search (Cmd+/)
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Settings
Networking
Disks
Size
Security
Extensions
Connect
Start
Restart
Stop
Capture
Delete
Refresh
Advisor (1 of 1): Use availability sets for improved fault tolerance →
Resource group (change) : RG-UKS01
Status : Running
Location : UK South
Subscription (change) : Visual Studio Enterprise – MPN
Subscription ID : e8cc2e33-263a-425a-9db0-6da35dd5df47
Computer name : WIN10TEST01
Operating system : Windows (Windows 10 Pro)
Tags (change) : Click here to add tags
Size
Public IP address
Private IP address
Virtual network/subne
DNS name
Scale Set
Show data for last:
1 hour
6 hours
12 hours
1 day
7 days
30 days
Connect to virtual machine
Win10Test01
To improve security, enable just-in-time access on this VM. →
RDP
SSH
BASTION
To connect to your virtual machine via RDP, select an IP address, optionally change the port number, and download the RDP file.
IP address *
Public IP address (51.140.62.181)
Port number *
3389
Download RDP File
Having trouble connecting to this VM?
Diagnose and solve problems
Troubleshoot connection
Serial console
Reset password

Challenge – can we setup ANF, and create a Volume in under 5 minutes?

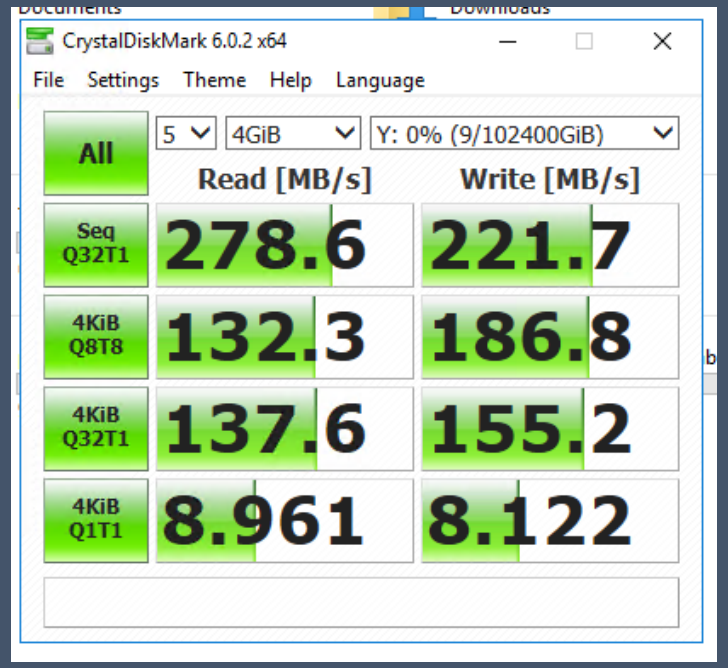
- Rapid Setup – 5 minutes approx. setup time
- Setup can be scripted – so perfect for integration with current toolsets and scripts
- IOPS for demanding use cases
- NTFS Supported – so ideal for file shares, profile storage etc.
- Protocol support for both Linux and Windows systems

Performance Testing

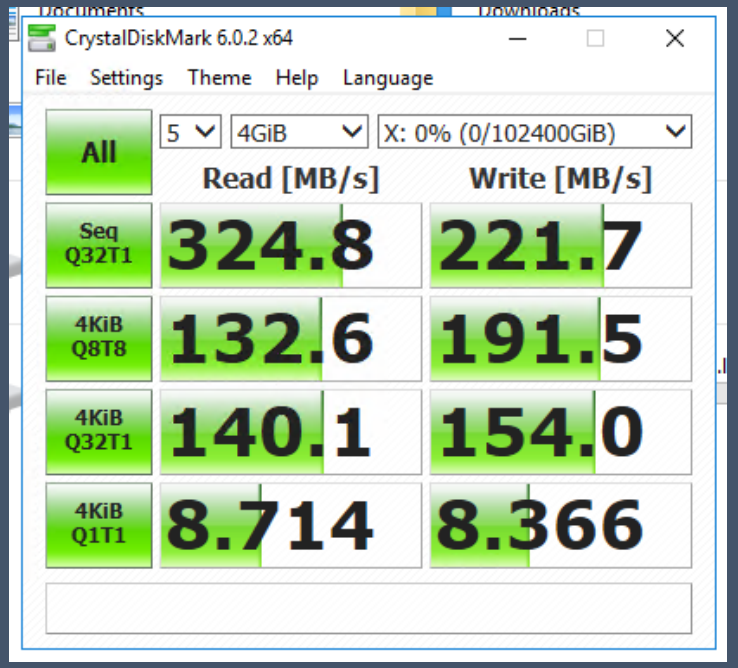
Performance Testing using CrystalDiskMark – accessing as a Windows 10 Client via SMBv3. Tests using a 4TB volume on a 4TB pool – 4GB file test using Standard, Premium, and Ultra:



Standard



Premium

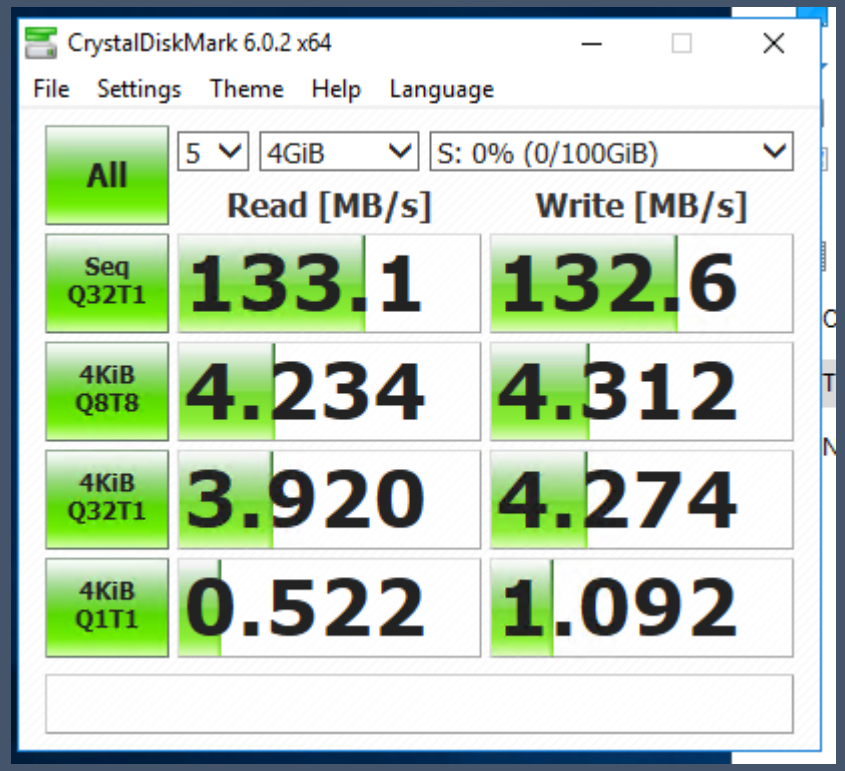


Ultra

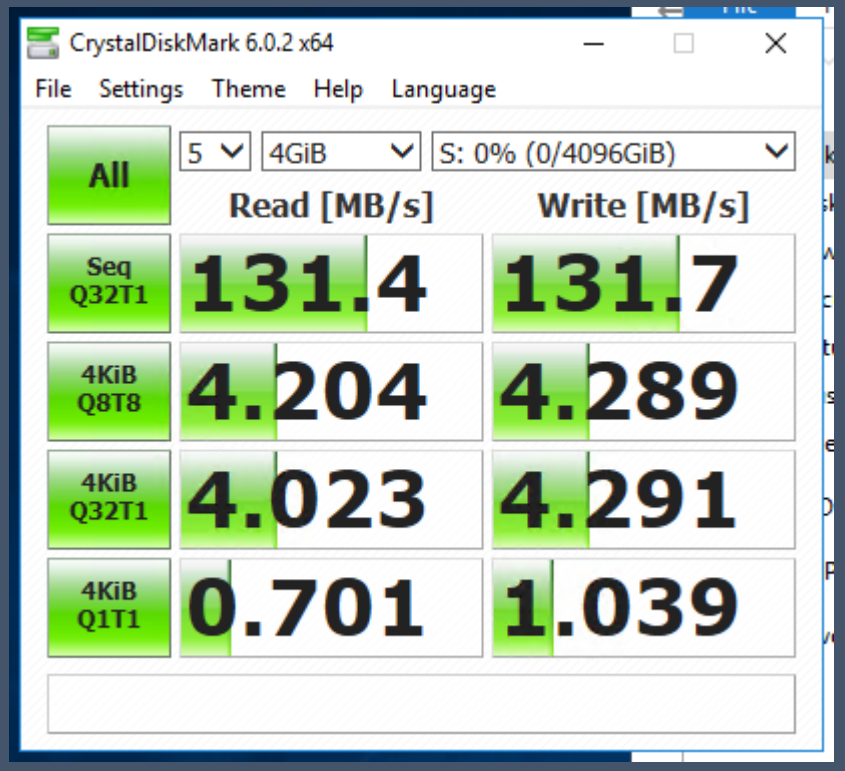
Performance Testing

Comparison to Azure Files with SBMB Share, 4GB test – there is no performance increase with an increased quota:

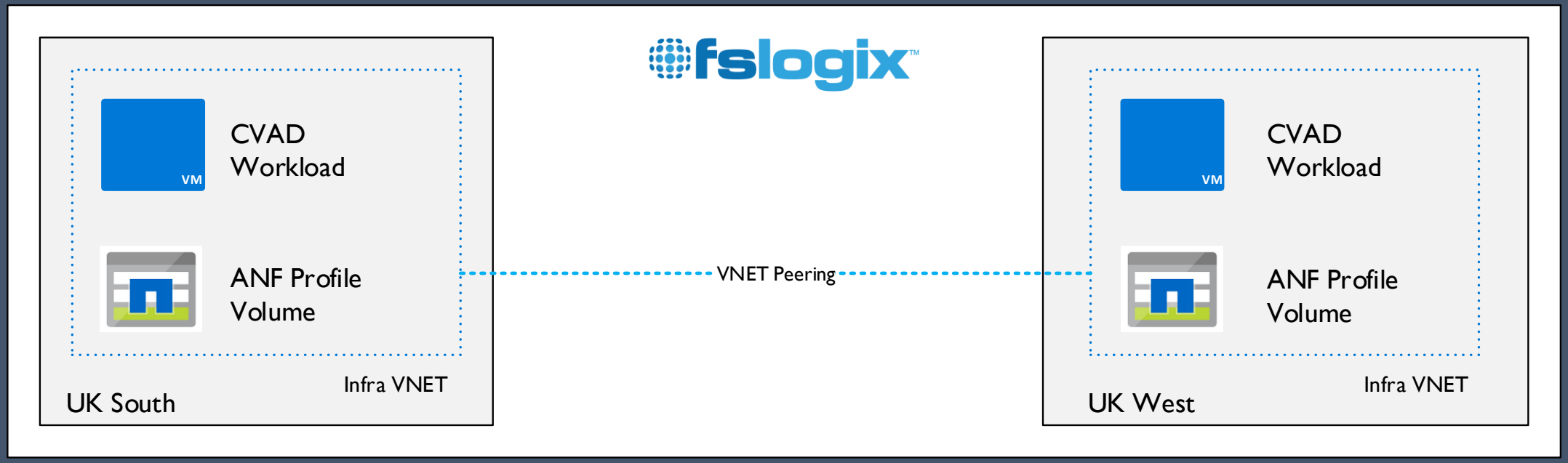
100GB Quota:



4TB Quota:



Sample use case – FSLogix Profile Containers HA cross-region



2 Regions of Virtual Apps and Desktops VDAs, plus 2 NetApp Volumes for Profiles
FSLogix Configured to use two VHD Storage Locations – (CCDLocations in the Registry)

Now we could lose a region and continue consuming Desktops + Profiles with no impact to use

Useful Resources

ANF Geek Out video - https://www.youtube.com/watch?v=nwCZ4-OL5qg

Microsoft ANF overview - https://www.youtube.com/watch?v=km8um8lxqR8

ANF Availability by Region - https://azure.microsoft.com/en-gb/global-infrastructure/services/?products=netapp

ANF Pricing - https://azure.microsoft.com/en-gb/pricing/details/netapp/

ANF Whitelisting Request - https://forms.office.com/Pages/ResponsePage.aspx?id=v4j5cvGGr0GRqy180BHbR8cq17Xv9yVBtRCSlcD_gdVUNUpUWEpLNERIM1NOVzA5MzczQ0dQR1ZTSS4u

ANF Performance Testing recommended settings - https://docs.microsoft.com/en-us/azure/azure-netapp-files/azure-netapp-files-performance-metrics-volumes

ANF Performance Benchmarks - https://docs.microsoft.com/en-us/azure/azure-netapp-files/azure-netapp-files-performance-benchmarks

Thank You!

Up next – Coffee Break