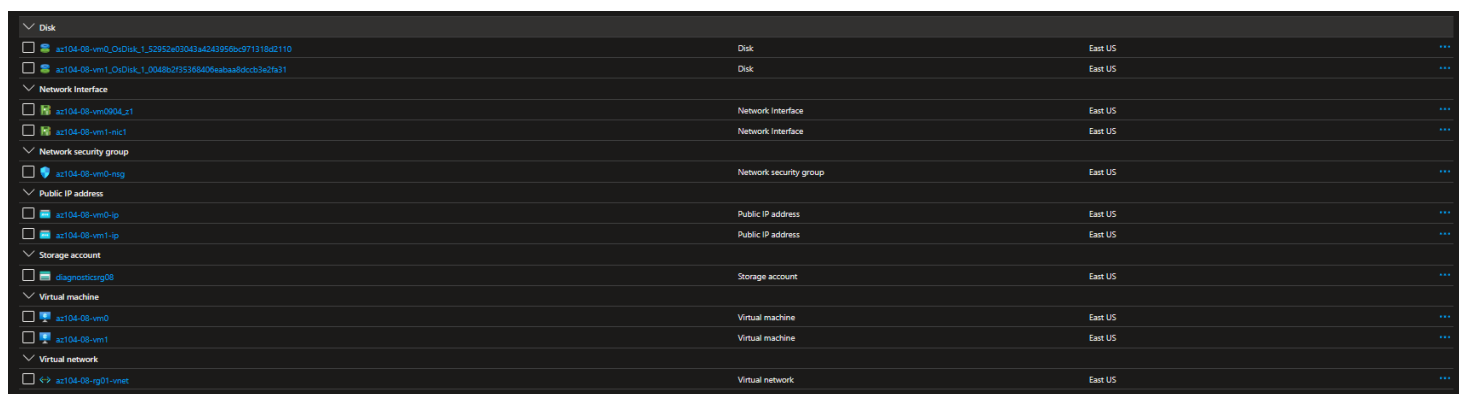


Lab 08 - Manage Virtual Machine

You were tasked with identifying different options for deploying and configuring Azure virtual machines. First, you need to determine different compute and storage resiliency and scalability options you can implement when using Azure virtual machines. Next, you need to investigate compute and storage resiliency and scalability options that are available when using Azure virtual machine scale sets. You also want to explore the ability to automatically configure virtual machines and virtual machine scale sets by using the Azure Virtual Machine Custom Script extension.

1. Deployed zone-resilient Azure virtual machines by using the Azure portal and an Azure Resource Manager template

Using the portal and templating we get our VMs in different zones



az104-08-vm0_OsDisk_1_52952a03043a4243956bc971318a2110	Disk	East US
az104-08-vm1_OsDisk_1_0048b2f53368406aaba8dc0b3a27a31	Disk	East US
az104-08-vm0NIC1	Network Interface	East US
az104-08-vm1-nic1	Network Interface	East US
az104-08-vm0-nsg	Network security group	East US
az104-08-vm0-ip	Public IP address	East US
az104-08-vm1-ip	Public IP address	East US
diagnostic08	Storage account	East US
az104-08-vm0	Virtual machine	East US
az104-08-vm1	Virtual machine	East US
az104-08-vg01-vnet	Virtual network	East US

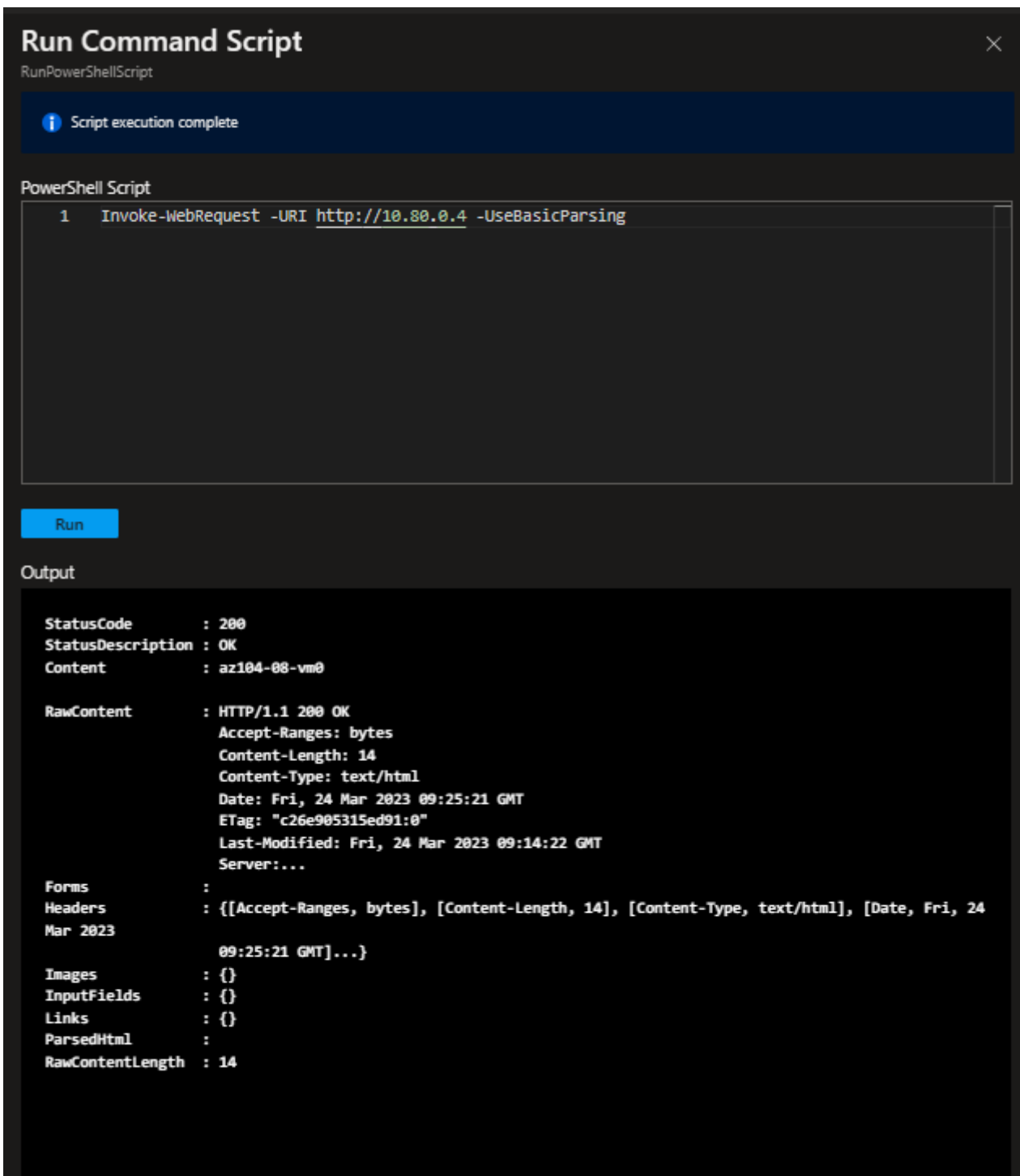
Complete provisioning

ToDo:

- What is zone resilient VM ?
- Zoning

2. Configured Azure virtual machines by using virtual machine extensions

Using cloud storage to save and run scripts and also using templates to update VMs



Successfull delpoyment of the script

ToDo:

- Use cases for storage/containers
- What is the difference between using pwsh run script and using extensions
- Using templates to update a VM

3. Scaled compute and storage for Azure virtual machines

Using Azure portal to add disks and merging theme via pwsh command

OS disk

↔ Swap OS disk

Disk name	Storage type	Size (GiB)
az104-08-vm0_OsDisk_1_52952e03043a4243956bc971318d2110	Premium SSD LRS	127

Data disks

🔍 Filter by name

Showing 2 of 2 attached data disks

+ Create and attach a new disk 🔗 Attach existing disks

LUN ⓘ	Disk name	Storage type	Size (GiB)
0	az104-08-vm0-datadisk-0	Premium SSD LRS	1024
1	az104-08-vm0-datadisk-1	Premium SSD LRS	1024

Run Command Script



RunPowerShellScript

Script execution complete

PowerShell Script

```
1 New-StoragePool -FriendlyName storagepool1 -StorageSubsystemFriendlyName "Windows Storage*" -Phys
2
3 New-VirtualDisk -StoragePoolFriendlyName storagepool1 -FriendlyName virtualdisk1 -Size 2046GB -Re
4
5 Initialize-Disk -VirtualDisk (Get-VirtualDisk -FriendlyName virtualdisk1)
6
7 New-Partition -DiskNumber 4 -UseMaximumSize -DriveLetter Z
```

Run

Output

FriendlyName	OperationalStatus	HealthStatus	IsPrimordial	IsReadOnly	Size	AllocatedSize
storagepool1	OK	Healthy	False	False	2 TB	512 MB

ObjectId

VirtualDisk.0b

-89a6-e1ca8aeb

jectId="{a76b254b-ca1e-11ed-8e88-806e6f6e6963}:VD:{c08fb19c-8ba0-45a5

3246}{3f75db40-1a76-44c2-bd5c-d8f5250bd7dc}"

PassThroughClass

PassThroughIds

PassThroughNamespace

PassThroughServer

UniqueId

Access

AllocatedSize

AllocationUnitSize

ColumnIsolation

DetachedReason

FaultDomainAwareness

FootprintOnPool

FriendlyName

: {1}\\az104-08-vm0\root\Microsoft\Windows\Storage\Providers_v2\SPACES

:

:

:

:

: 40D8753F761AC2448D5CD8F5250BD7DC

: Read/Write

: 2196875771904

: 1073741824

: PhysicalDisk

: None

: PhysicalDisk

: 2196875771904

: virtualdisk1

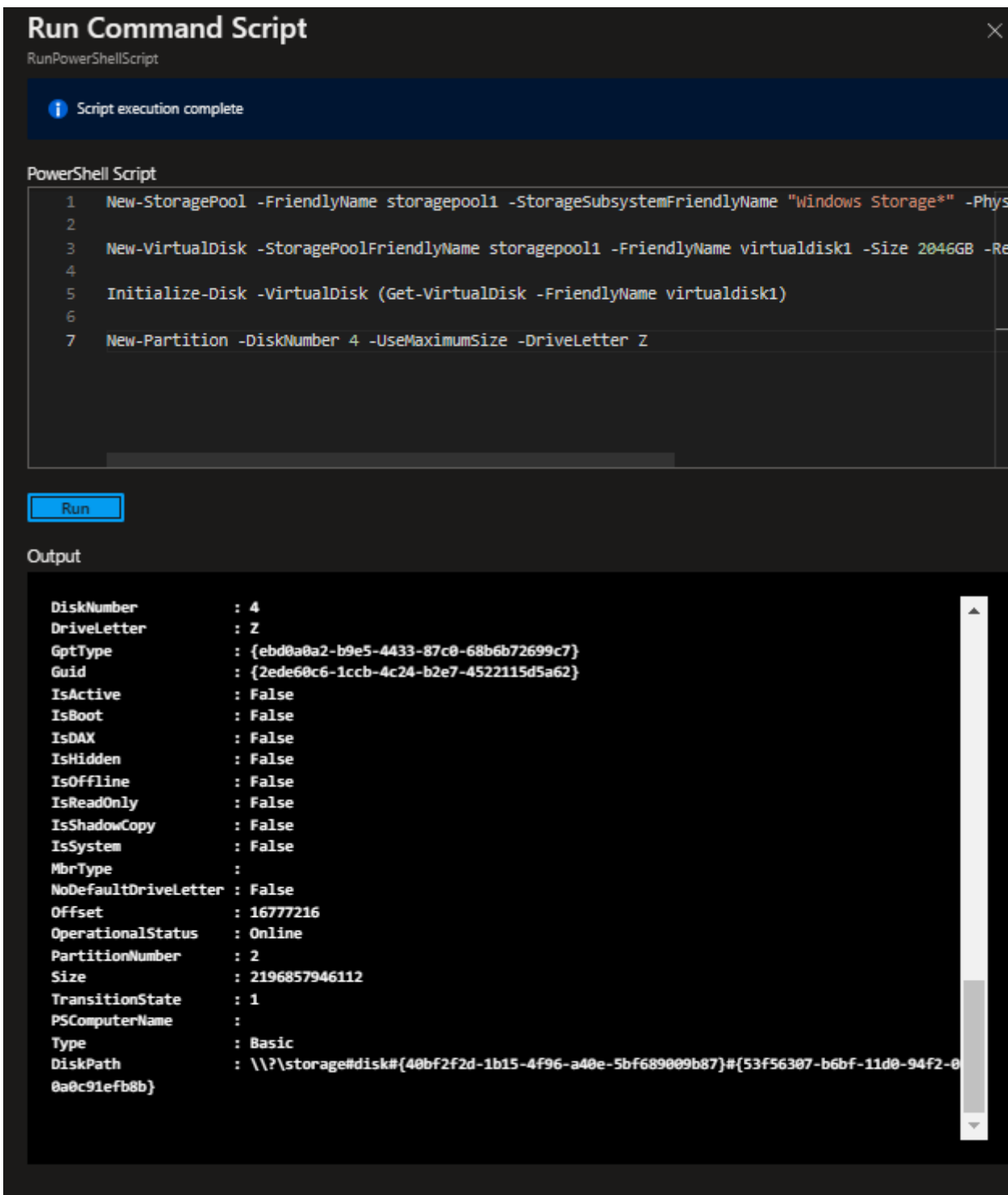
Setting up vm0

Doing the same to vm1, but using the export template method.

```
"dataDisks": [  
  {  
    "lun": 0,  
    "name": "az104-08-vm1-datadisk0",  
    "diskSizeGB": "1024",  
    "caching": "ReadOnly",  
    "createOption": "Empty"  
  },  
  {  
    "lun": 1,  
    "name": "az104-08-vm1-datadisk1",  
    "diskSizeGB": "1024",  
    "caching": "ReadOnly",  
    "createOption": "Empty"  
  }  
]
```

snippet from the template

And we do the same with powershell for vm1



4. Deployed zone-resilient Azure virtual machine scale sets by using the Azure portal

Register-AzResourceProvider -ProviderNamespace Microsoft.Insights

ProviderNamespace : microsoft.insights

RegistrationState : Registered

ResourceTypes : {components, components/query, components/metadata, components/metrics...}

Locations : {East US, South Central US, North Europe, West Europe...}

Register-AzResourceProvider -ProviderNamespace Microsoft.AlertsManagement

ProviderNamespace : Microsoft.AlertsManagement

RegistrationState : Registered

ResourceTypes : {alerts, alertsSummary, smartGroups, smartDetectorAlertRules...}

Locations : {global, North Central US, East US, East US 2...}

ToDo:

- what is ms.insights
- what is ms.alertsManagement

5. Configured Azure virtual machine scale sets by using virtual machine extensions

→ Move ▾ ▶ Start ↺ Restart □ Stop 🔄 Reimage 🗑 Delete ↻ Refresh 🗨 Feedback

^ Essentials

Resource group (move) : [az104-08-rg02](#)

Status : 2 out of 2 succeeded

Location : East US (Zone 1, 2, 3)

Subscription (move) : [Azure Pass - Sponsorship](#)

Subscription ID : 0da916b7-0592-453c-a0a2-277eb2a9ab89

Tags (edit) : [Click here to add tags](#)

Operating system : Windows

Size : Standard_D2s_v3 (2 instances)

Public IP address : [20.241.180.143](#)

Public IP address (IPv6) : -

Virtual network/subnet : [az104-08-rg02-vnet/default](#)

Orchestration mode : Uniform

Properties Monitoring Capabilities (6) Recommendations Tutorials

Virtual machine profile

Operating system : Windows

Publisher : MicrosoftWindowsServer

Offer : WindowsServer

Plan : 2019-datacenter-gensecond

Capacity reservation group : -

Availability + scaling

Availability zone : 1, 2, 3

Proximity placement group : -

Colocation status : -

Host group : -

Instance count : 2

Scaling : Manual

Scale-In policy : Default

Overprovisioning : Not enabled

Fault domain count : 5

Single placement group : Not enabled

Disk controller type : SCSI

Management

Upgrade policy : Manual

Boot diagnostics : Enabled

System assigned identity : Not enabled

Automatic OS upgrades : Not enabled

Termination notifications : Not enabled

Termination delay : -

Networking

Public IP address : 20.241.180.143

Public IP address (IPv6) : -

Virtual network/subnet : [az104-08-rg02-vnet/default](#)

Size

Size : Standard_D2s_v3

vCPUs : 2

RAM : 8 GiB

Disk

OS disk : Premium SSD LRS

Encryption at host : Disabled

Ultra disk compatibility : Disabled

Data disks : 0

Managed disks : Enabled

Ephemeral OS disk : N/A

Azure Spot

Azure Spot : Disabled

Extensions

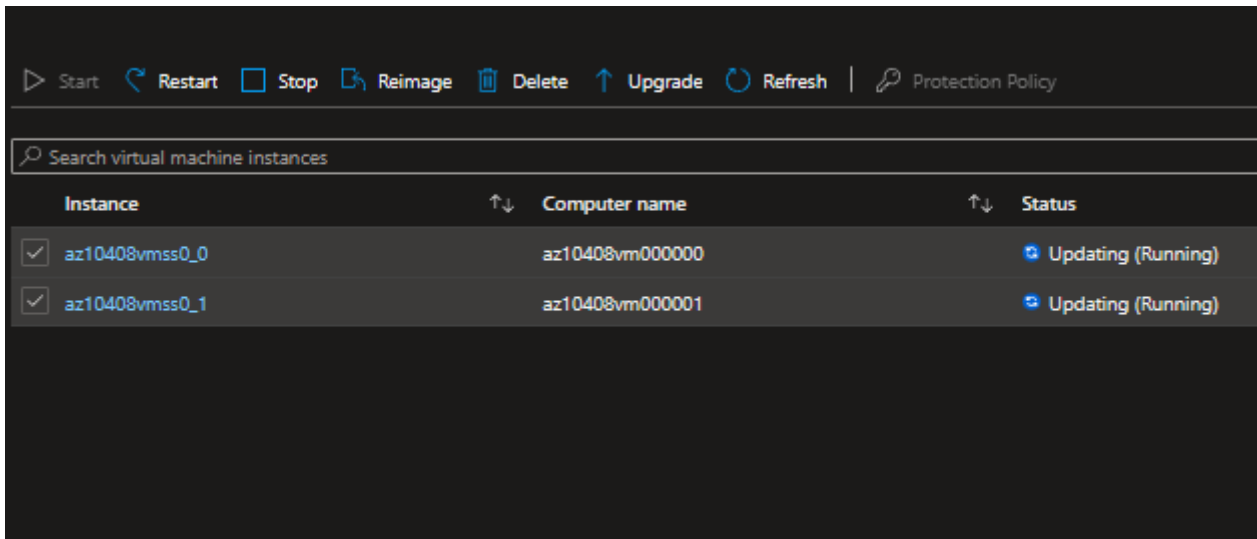
-

Getting the machine up and running

ToDo:

- research NIC security groups inbound/outbound rules

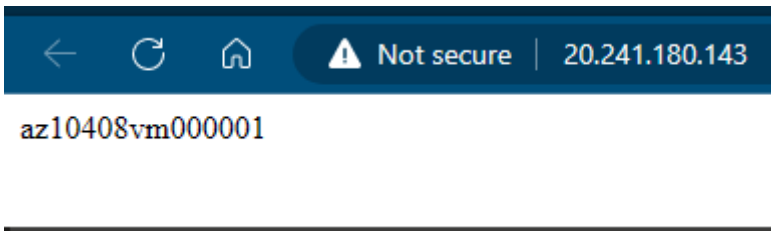
6. Configured Azure virtual machine scale sets by using virtual machine extensions



The screenshot shows the Azure portal interface for a virtual machine scale set. At the top, there is a toolbar with icons for Start, Restart, Stop, Reimage, Delete, Upgrade, Refresh, and Protection Policy. Below the toolbar is a search bar labeled "Search virtual machine instances". The main content area displays a table with the following columns: Instance, Computer name, and Status. Two instances are listed, both with a status of "Updating (Running)".

Instance	Computer name	Status
az10408vmss0_0	az10408vm000000	Updating (Running)
az10408vmss0_1	az10408vm000001	Updating (Running)

upgrading the vm instances

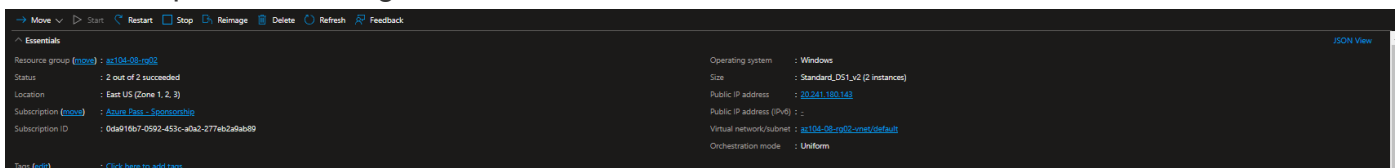


Name of one of the instances

ToDo:

- research scale instances

7. Scaled compute and storage for Azure virtual machine scale sets



The screenshot shows the Azure portal interface for a virtual machine scale set. The top toolbar includes icons for Move, Start, Restart, Stop, Reimage, Delete, Refresh, and Feedback. The main content area displays the details of the scale set, including the resource group, status, location, subscription, and various configuration options.

Essentials	Configuration
Resource group (move) : az104-08-rg02	Operating system : Windows
Status : 2 out of 2 succeeded	Size : Standard_DS1_v2 (2 instances)
Location : East US (Zone 1, 2, 3)	Public IP address : 20.241.180.143
Subscription (move) : Azure Pass - Sponsorship	Public IP address (IPv6) : -
Subscription ID : 0da916b7-5592-453c-ab2a-277eb2abab89	Virtual network/subnet : az104-08-rg02-vnet/default
Tags (edit) : Click here to add tags	Orchestration mode : Uniform

changing size

Instance	Zone
az10408vmss0_0	1
az10408vmss0_1	2

For some reason powershell doesn't find rg02, but we can get the ip manually

```
PS /home/dark> $rgName = 'az104-08-rg02'
PS /home/dark> $lbipName = 'az10408vmss0-ip'
PS /home/dark> $pip = (Get-AzPublicIpAddress -ResourceGroupName $rgName -Name $lbipName).IpAddress
Get-AzPublicIpAddress: The Resource 'Microsoft.Network/publicIPAddresses/az10408vmss0-ip' under resource group 'az104-08-rg02' was not found. For more details please go to https://aka.ms/ARMResourceNotFoundFix
StatusCode: 404
ReasonPhrase: Not Found
ErrorCode: ResourceNotFound
ErrorMessage: The Resource 'Microsoft.Network/publicIPAddresses/az10408vmss0-ip' under resource group 'az104-08-rg02' was not found. For more details please go to https://aka.ms/ARMResourceNotFoundFix
OperationID : a426f169-5d0b-4f08-a87a-95f621b8d0df
```

Powershell issues

Doing a http request test to see the scaling in action

The screenshot shows the Azure portal interface for a Virtual Machine Scale Set (VMSS) named 'az10408vmss0'. The 'Instances' tab is selected, displaying a table with three instances: 'az10408vmss0_0', 'az10408vmss0_1', and 'az10408vmss0_2'. All three instances are in a 'Running' state. Below the table, a PowerShell terminal window is open, showing the output of a 'curl' command. The output indicates a successful HTTP/1.1 200 OK response from the server, with headers including 'Accept-Ranges: bytes', 'ETag: "7723bfad435cd91:0"', 'Server: Microsoft-IIS/10.0', 'Date: Fri, 24 Mar 2023 11:33:16 GMT', 'Content-Type: text/html', and 'Last-Modified: Fri, 24 Mar 2023 11:27:55 GMT'. The status code is 200, and the content is 'az10408w000002'.

Successfully scaling to 3 VMs

Runing a script to partition the newly added disks

```
./az104-08-configure_VMSS_disks.ps1
```

ToDo:

- How to setup scaling