NETW211: Fundamentals of Cloud Computing

Course Project Presentation

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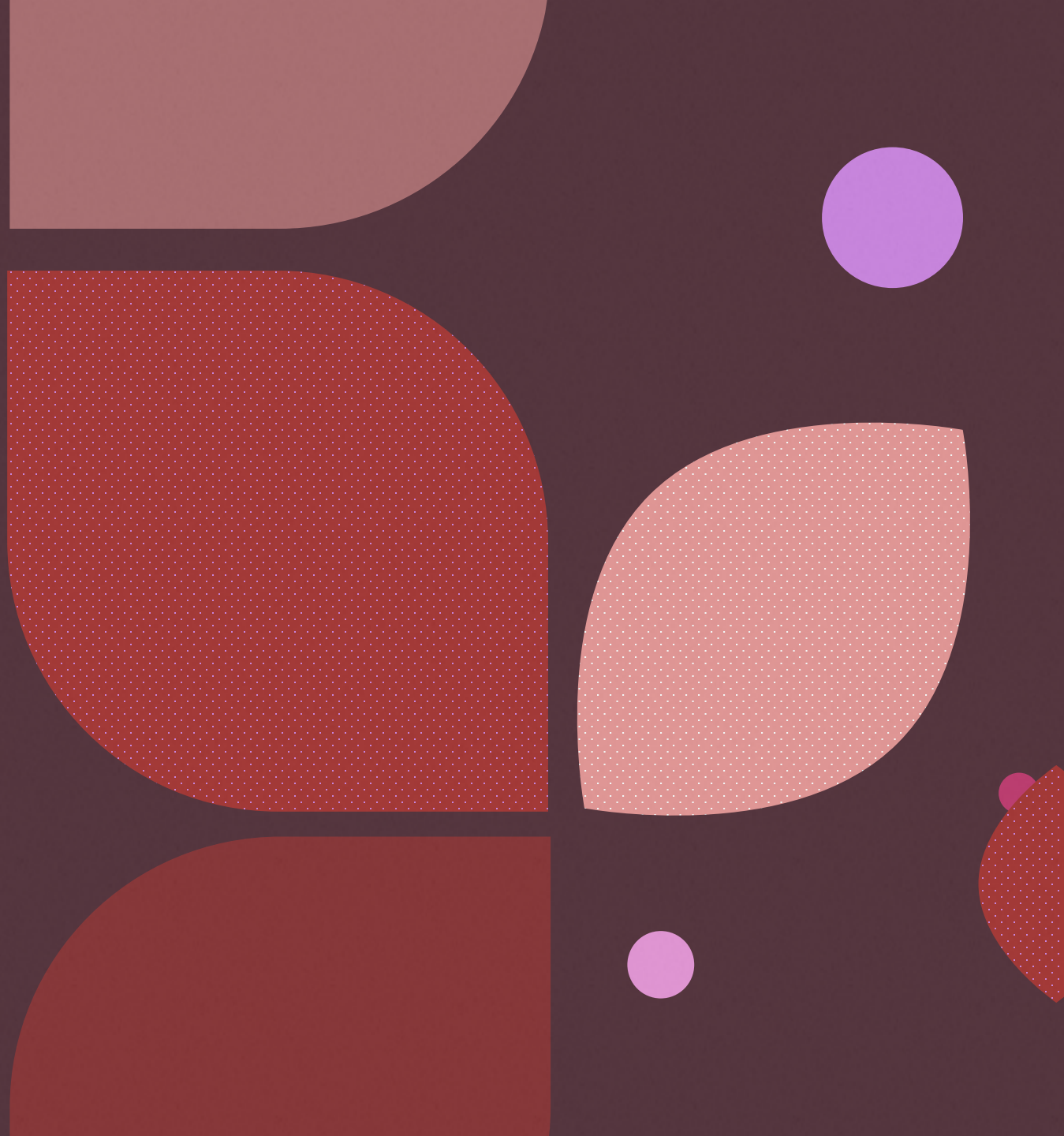
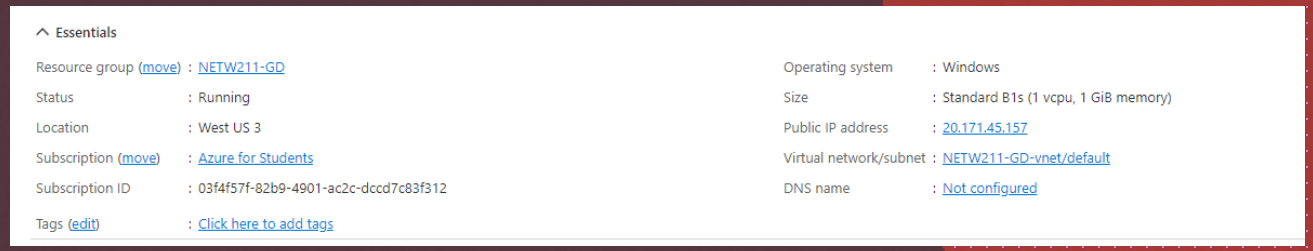
Virtual Machine (VM) Instances

- Deploying a VM in Azure
- Connecting to the VM
- Deleting the VM



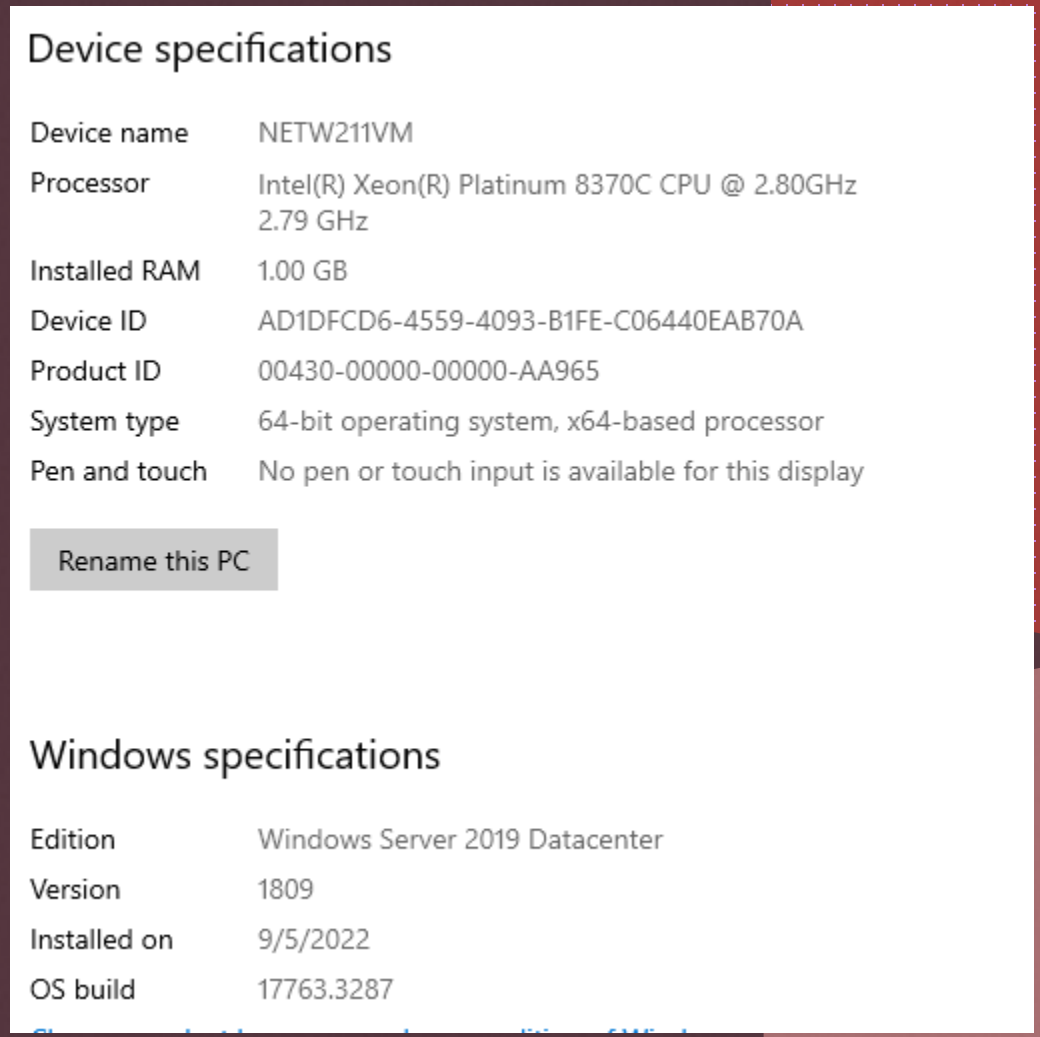
Deploying a VM in Azure

This screenshot should show the *NETW211VM* page with information such as the resource group name, subscription, public IP address, etc.



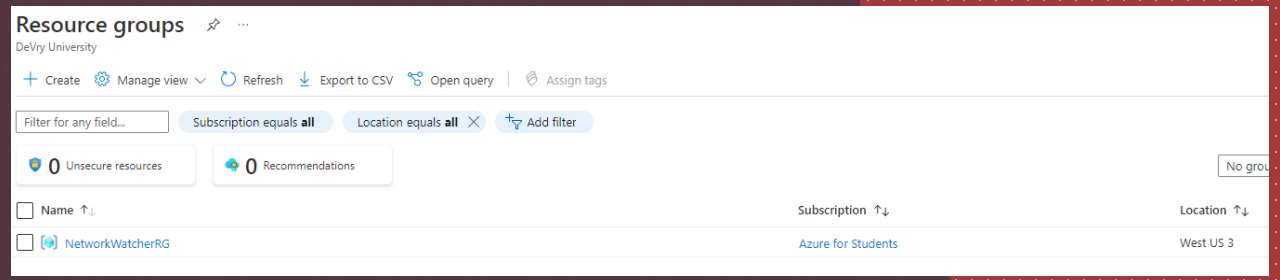
Connecting to the VM

This screenshot should show the *PROPERTIES for NETW211VM* page, with the computer name, operating system version, hardware information, etc.



Deleting the VM

This screenshot should show the *Resource groups* page, with the *Azure for Students* subscription selection and the "*No resource groups to display*" message.



Virtual Private Cloud (VPC)

- Creating a VNet with Two Subnets
- Deploying VMs into Subnets
- Verifying Connectivity between VMs

Creating a VNet with Two Subnets

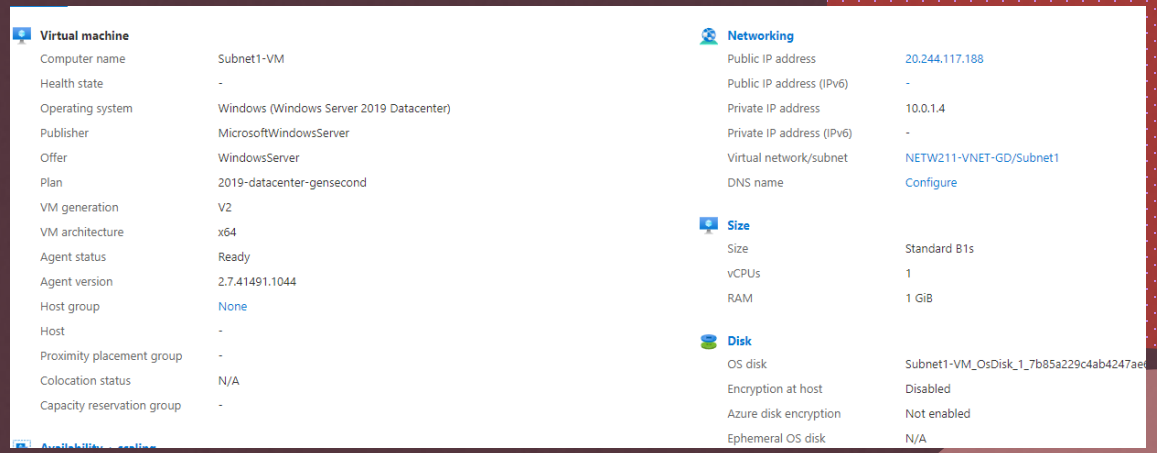
- 1. With a /24 network prefix, how many **usable** IPv4 host addresses are there? [hint: you learned this in NETW191]
- Answer here: 254
-

- 2. Given the answer above, why is the number of available IP addresses for Subnet0 (10.0.0.0/24) or Subnet1 (10.0.1.0/24) shown as 251? [hint: where did the missing addresses go?]
- Answer here: 1) Goes to the Network Address 2) Reserved for the VPC router 3) Reserved for the DNS 4) Reserved for Azure 5) Reserved for network broadcast

- References (here are two examples to get your research started):
- 1. IP Subnet Calculator, https://www.calculator.net/ip-subnet-calculator.html
- 2. Azure Virtual Network frequently asked questions, https://docs.microsoft.com/en-us/azure/virtual-network/virtual-networks-faq
- 3.
- 4.

Deploying VMs into Subnets cont'd

This screenshot should show the *Properties* section of the ***Subnet1-VM*** page, showing the networking and size information of the VM.



Virtual machine

Computer name	Subnet1-VM
Health state	-
Operating system	Windows (Windows Server 2019 Datacenter)
Publisher	MicrosoftWindowsServer
Offer	WindowsServer
Plan	2019-datacenter-gensecond
VM generation	V2
VM architecture	x64
Agent status	Ready
Agent version	2.7.41491.1044
Host group	None
Host	-
Proximity placement group	-
Colocation status	N/A
Capacity reservation group	-

Networking

Public IP address	20.244.117.188
Public IP address (IPv6)	-
Private IP address	10.0.1.4
Private IP address (IPv6)	-
Virtual network/subnet	NETW211-VNET-GD/Subnet1
DNS name	Configure

Size

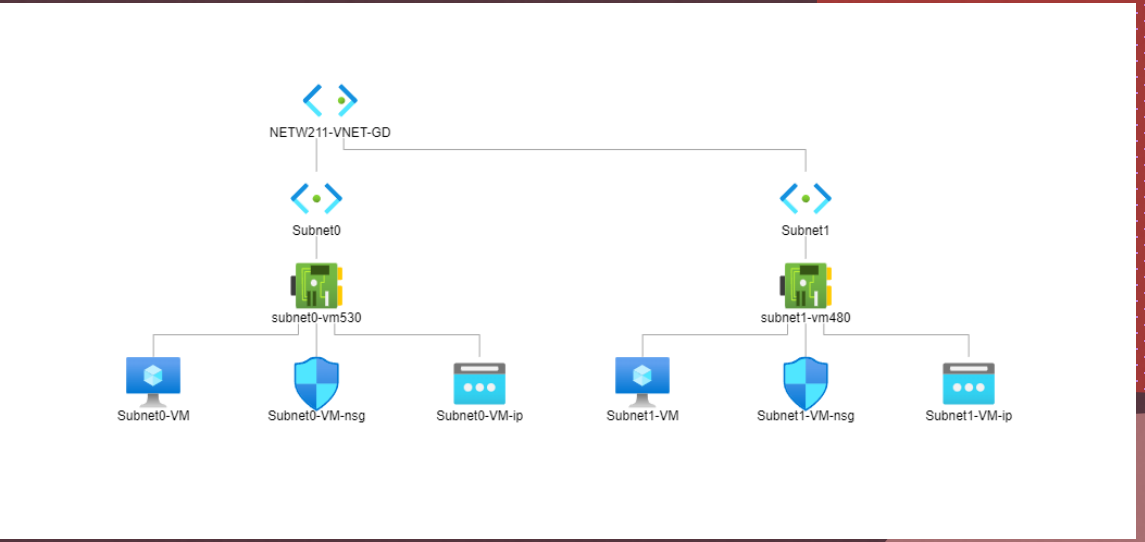
Size	Standard B1s
vCPUs	1
RAM	1 GiB

Disk

OS disk	Subnet1-VM_OsDisk_1_7b85a229c4ab4247ae
Encryption at host	Disabled
Azure disk encryption	Not enabled
Ephemeral OS disk	N/A

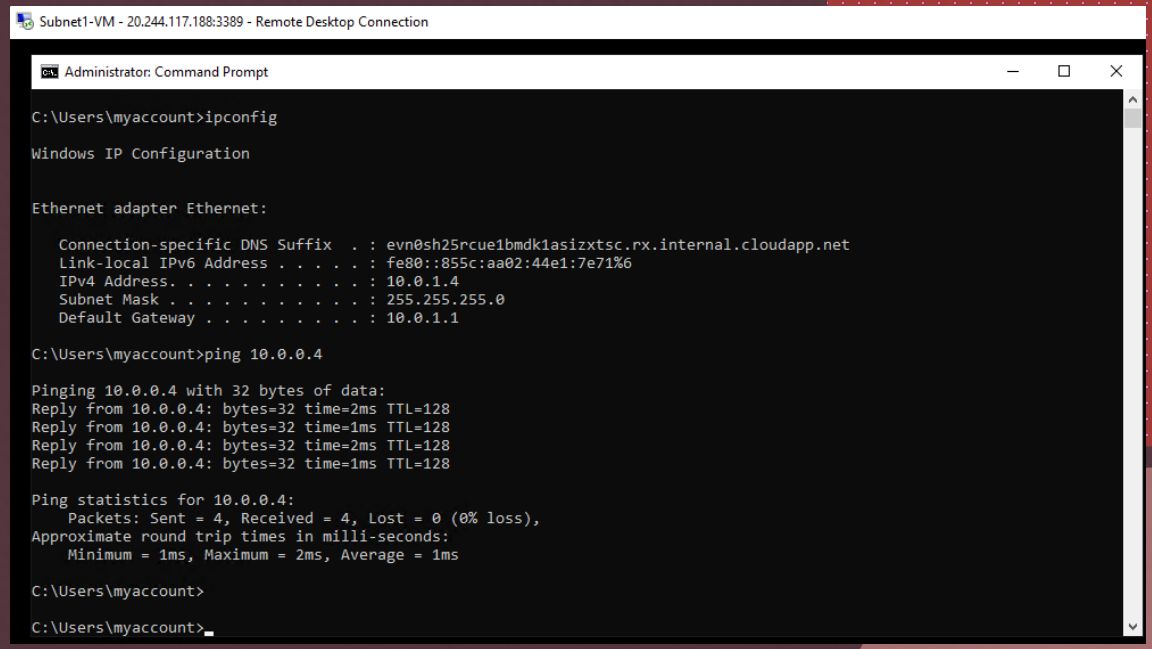
Deploying VMs into Subnets cont'd

This screenshot should show the topology diagram of your VNet (*NETW211-VNet-Your Initials*) with two subnets (*Subnet0* and *Subnet1*) and one VM in each subnet (*Subnet0-VM* and *Subnet1-VM*).



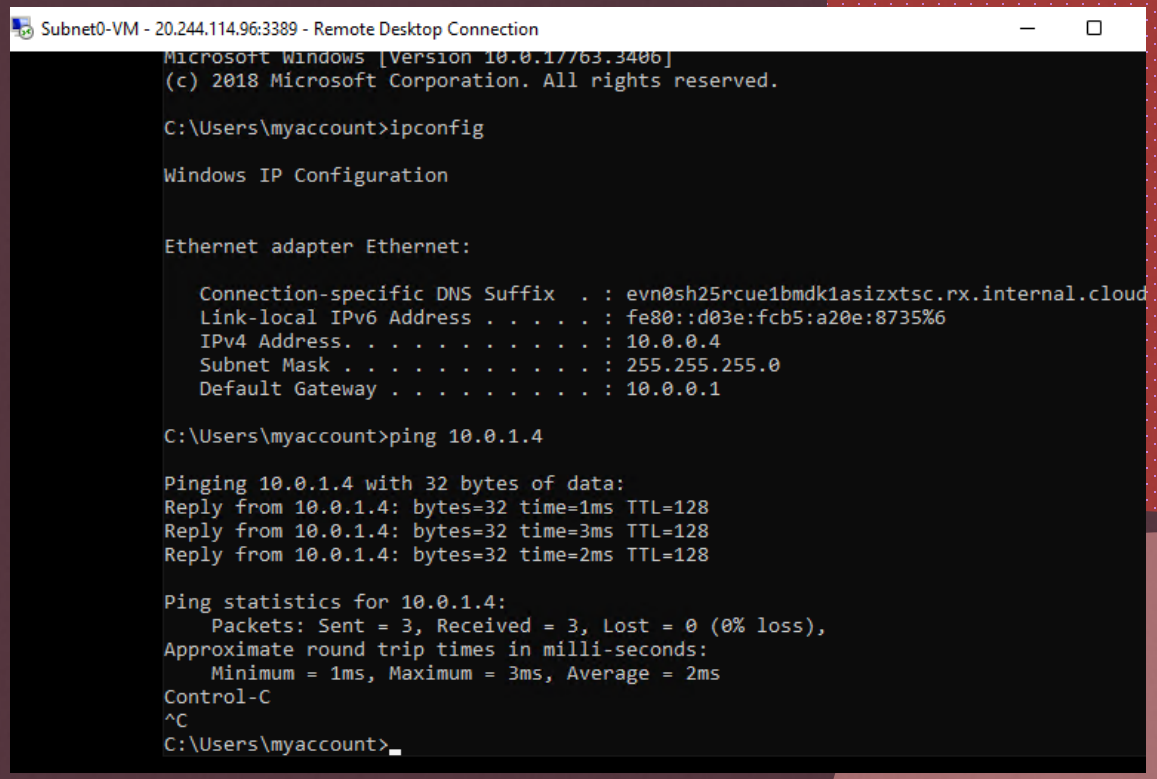
Verifying Connectivity between VMs

This screenshot should show the *ipconfig* and *ping x.x.x.x* results in the command prompt window, including the ***Subnet0****-VM – x.x.x.x – Romote Desktop Connection* window title.



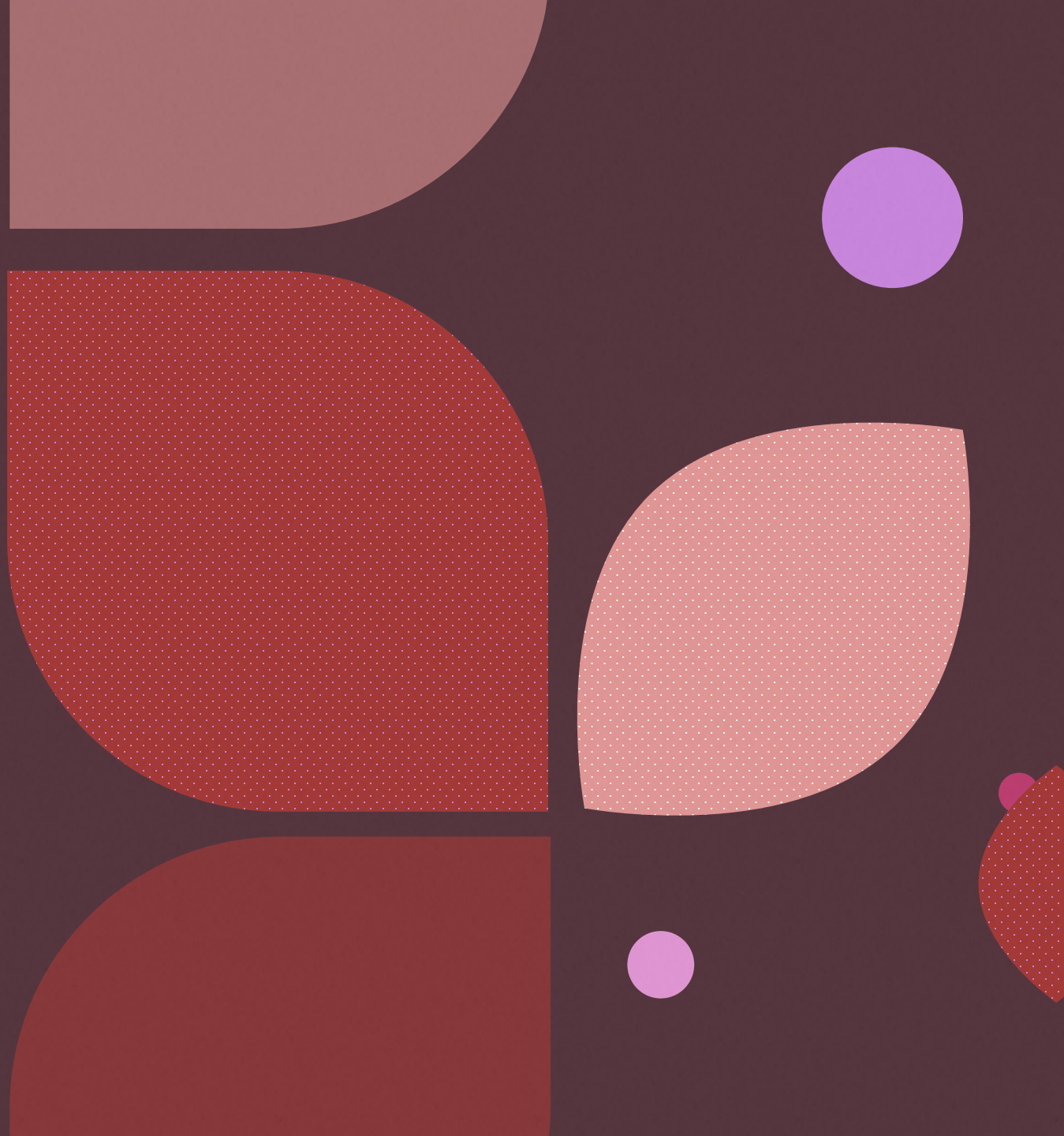
Verifying Connectivity between VMs cont'd

This screenshot should show the *ipconfig* and *ping x.x.x.x* results in the command prompt window, including the ***Subnet1****-VM – x.x.x.x – Romote Desktop Connection* window title.



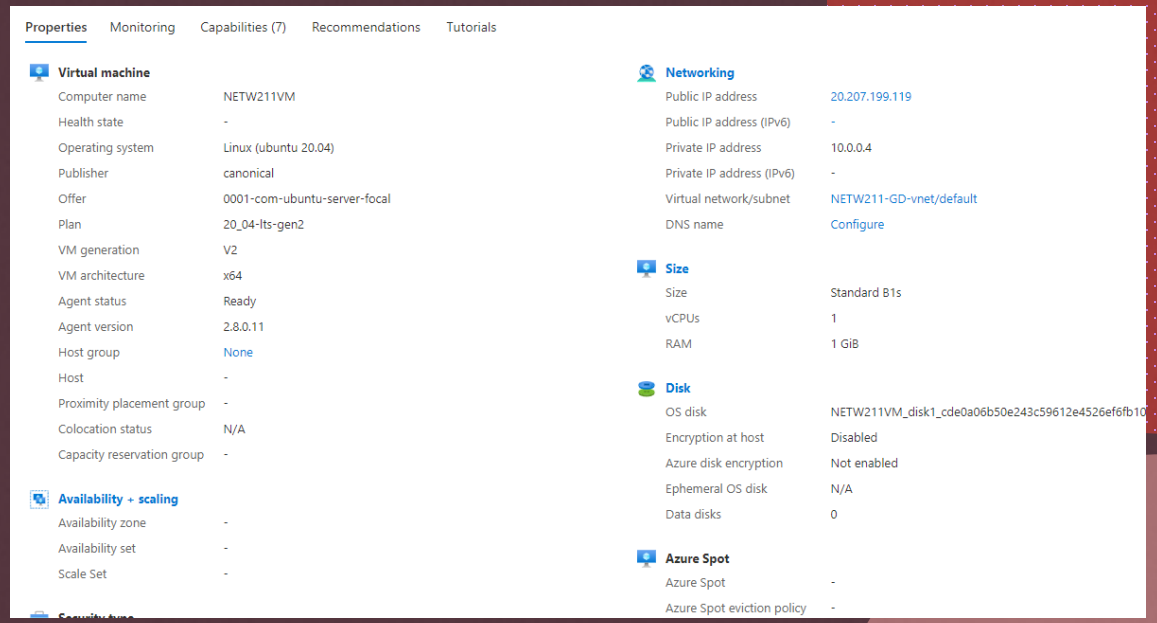
Azure VM Security

- Launching a VM
- Connecting to the VM via SSH
- Configuring an NSG



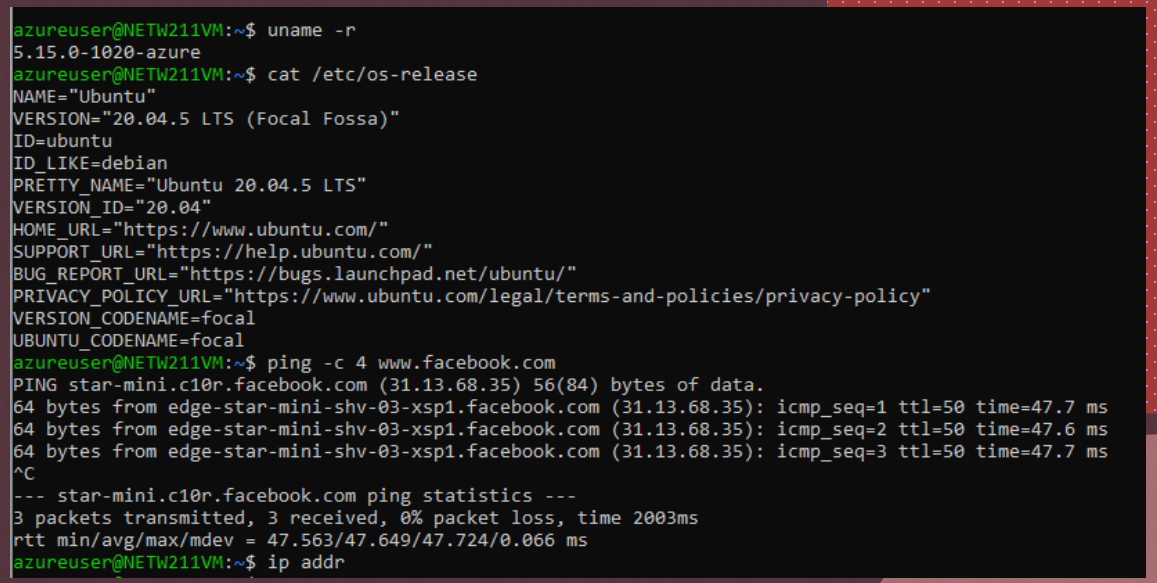
Launching a VM

This screenshot should show the *NETW211-VM-Your Initials* page, with information such as the resource group name, subscription, public IP address, etc.



Connecting to the VM via SSH

This screenshot should show the *azureuser@NETW 211-VM-Your Initials* window showing the IPv4 address of the VM in the Azure cloud.



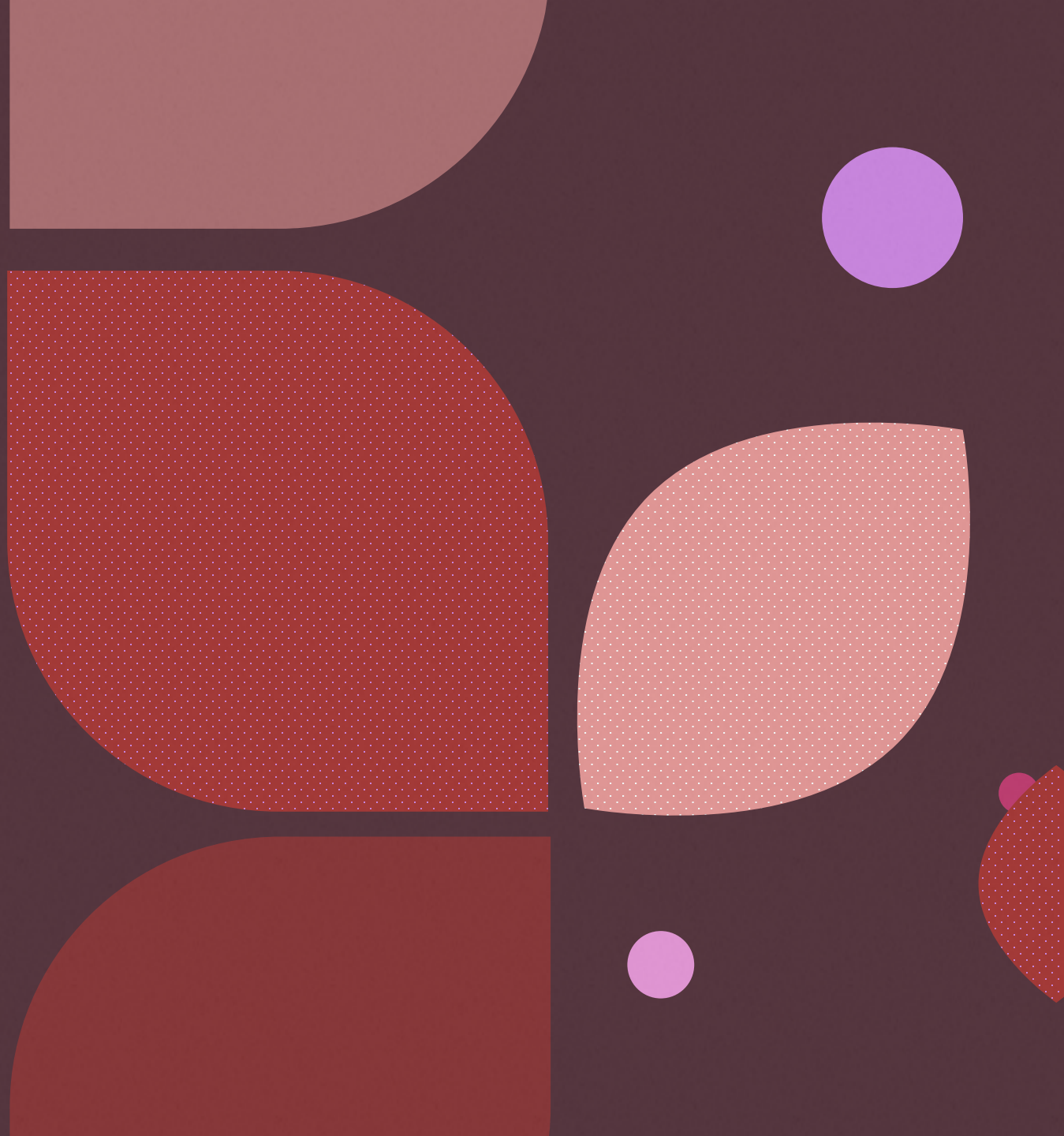
Configuring an NSG

This screenshot should show the *Inbound port rules* section with the newly added *Allow_Ping* rule.

Priority	Name	Port	Protocol	Source	Destination	Action
300	SSH	22	TCP	Any	Any	Allow
310	Allow_Ping	Any	ICMP	Any	Any	Allow
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalancerInBound	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInBound	Any	Any	Any	Any	Deny

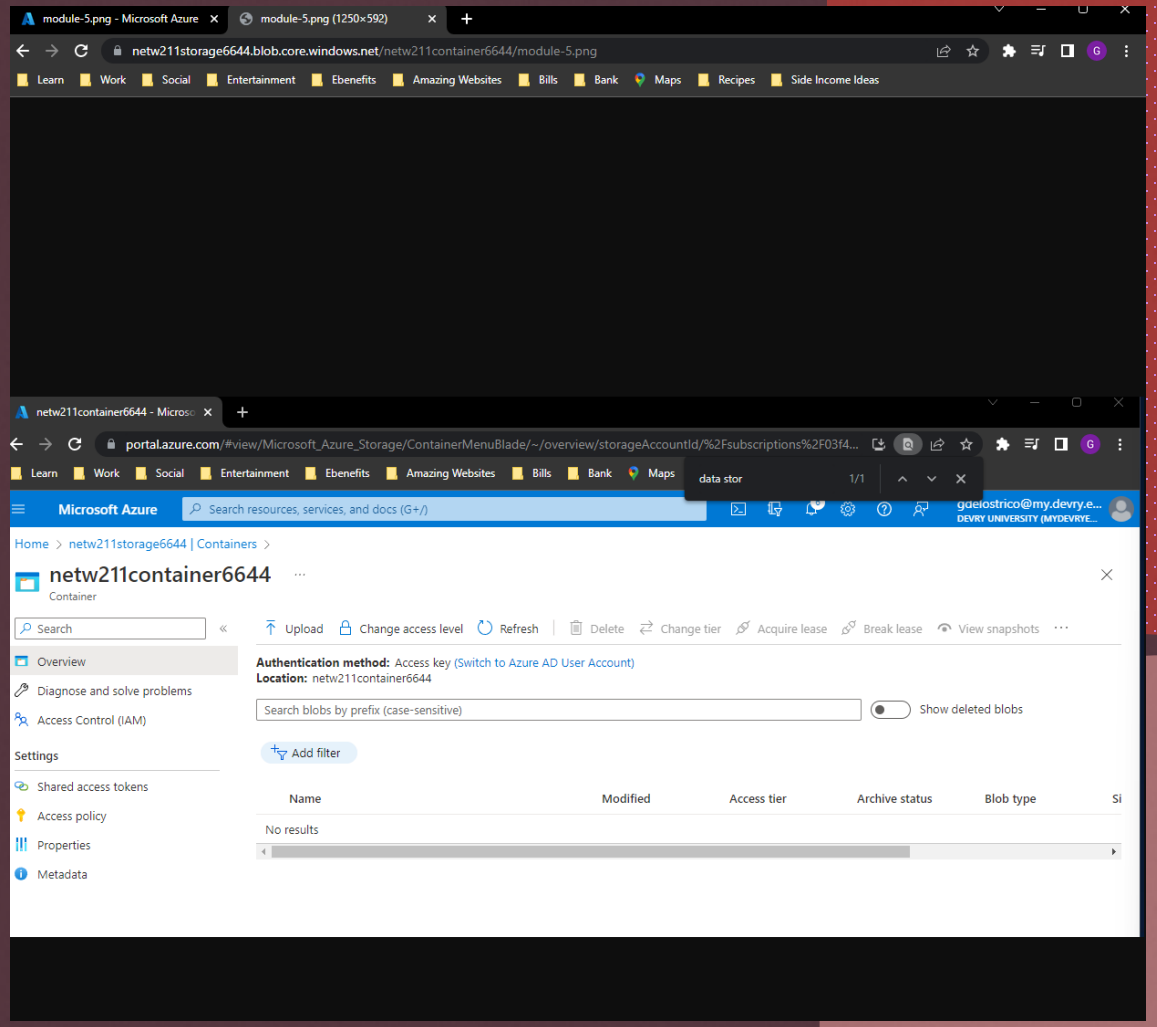
Cloud Storage

- Uploading and Accessing a File
- Creating a Blob Snapshots
- Enabling a Blob Versioning



Uploading and Accessing a File

This screenshot should show the browser window with the image uploaded from your local computer and the URL on top of the window.



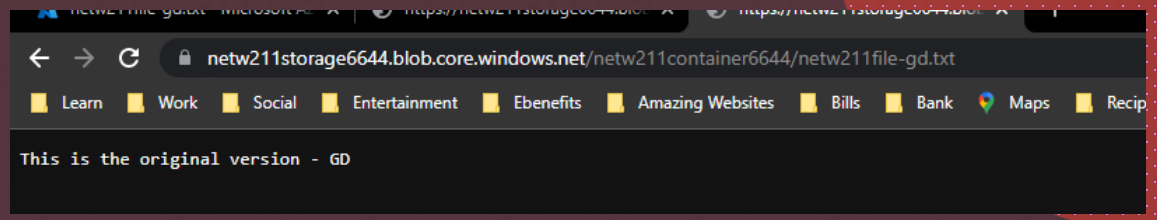
Question

- What does the *access tier* setting do? What are the Azure blob storage access tiers?
- [hint: in the Azure portal, on the *Upload blob* page, under *Advanced*, click the ? circle above the *Access tier* box.]
- Answer here:
- It optimizes data costs by placing your data in the appropriate access tier. Hot/Cool and Archive tier.

- References (here are two examples to get your research started):
- 1. Hot, Cool, and Archive access tiers for blob data, https://docs.microsoft.com/en-us/azure/storage/blobs/access-tiers-overview
- 2. Azure Blob Storage Access Tiers, https://devry.percipio.com/courses/c7ef0333-8560-403f-a004-9c5c843866b0/videos/2658bbe6-ee97-438b-a376-fbb079c3b3a0
- 3.
- 4.

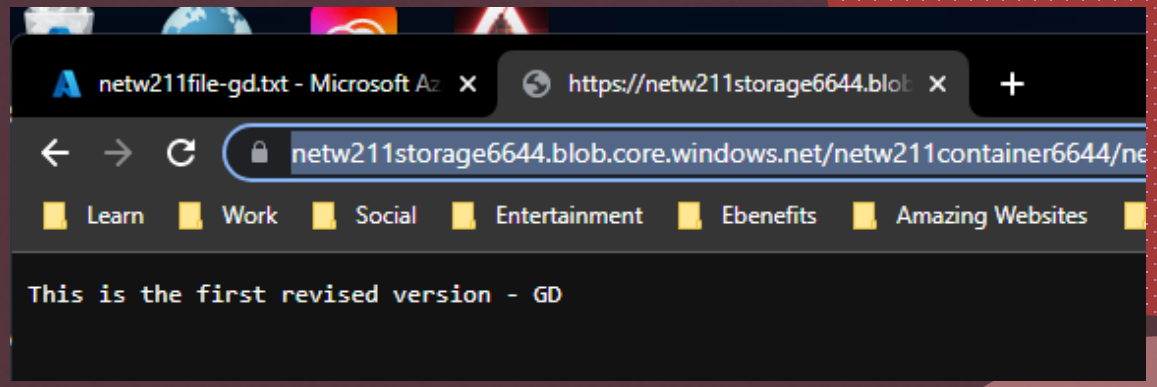
Creating Blob Snapshots

This screenshot should show the browser window with the "*This is the original version. –Your Initials*" message and the URL on top of the window



Enabling Blob Versioning

This screenshot should show the browser window with the "*This is the first revised version. – Your Initials*" message and the URL on top of the window.

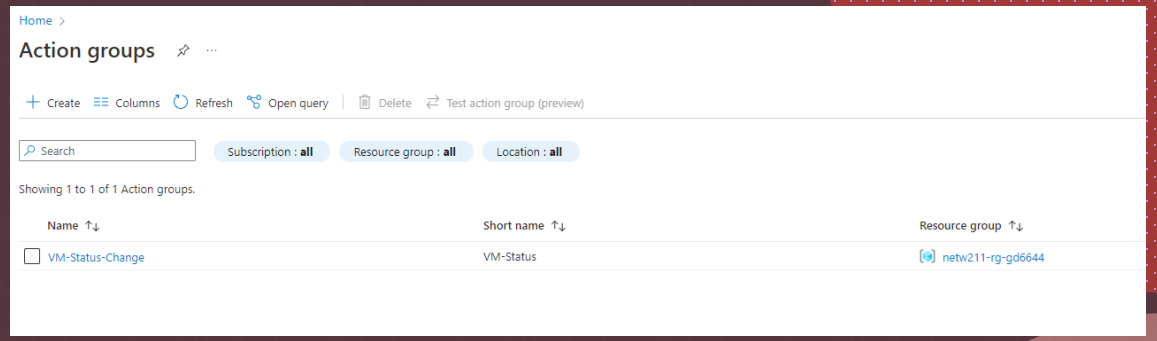


Cloud Monitoring

- Setting up an Action Group and Notifications
- Setting up Alert Rules
- Testing Alerts

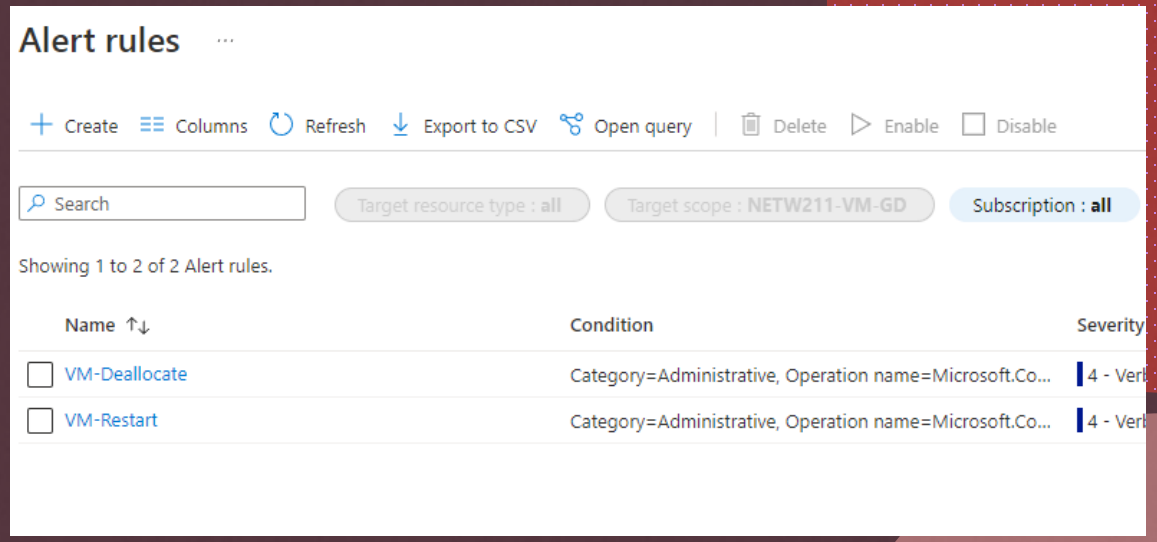
Setting up an Action Group and Notifications

This screenshot should show the "VM-Status-Change" action group on the *Manage actions* page.



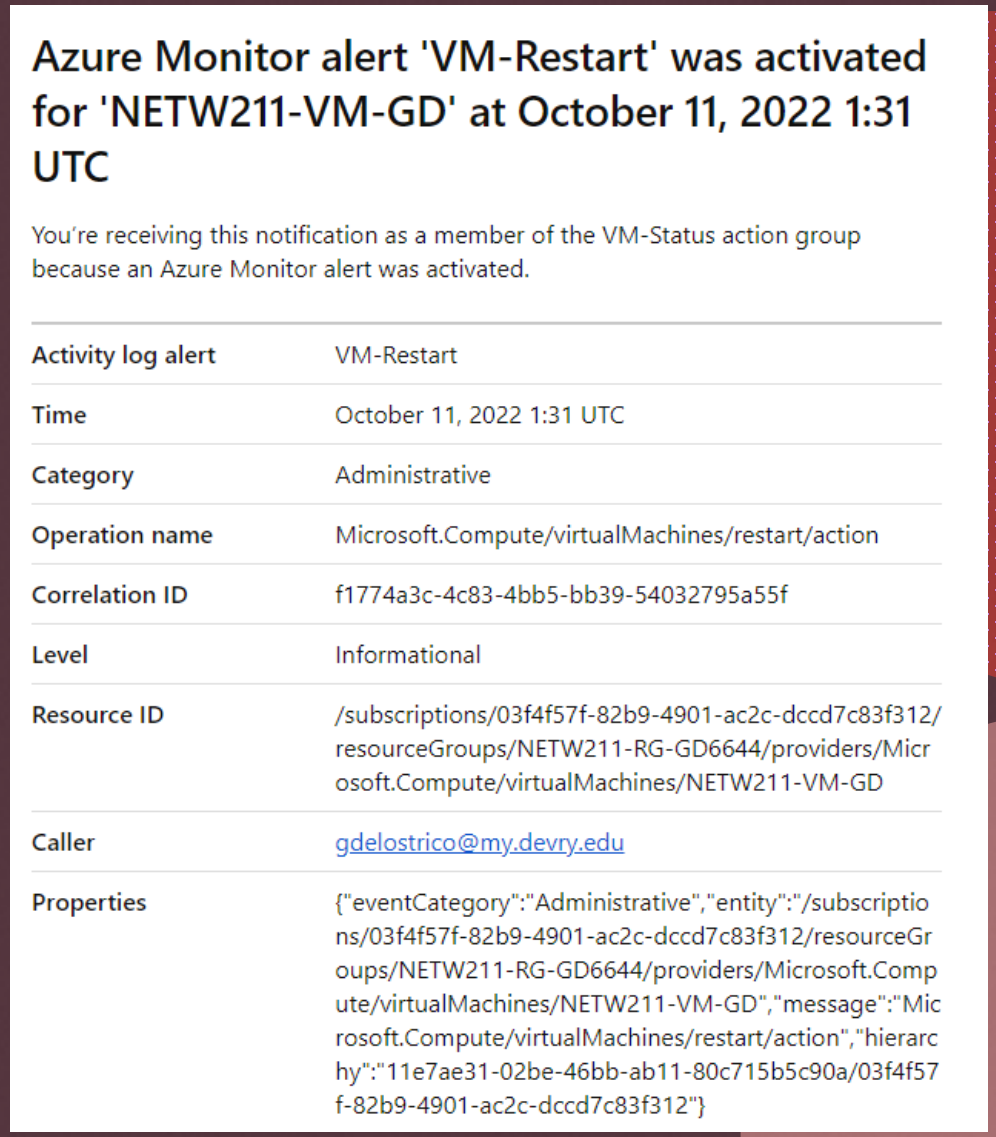
Setting up Alert Rules

This screenshot should show the *Alert rules* window showing the *VM-Deallocate* and *VM-Restart* rules.



Testing Alerts

This screenshot should show the *'VM-Restart' was activated* email message with the date and time of the alert.



Azure Monitor alert 'VM-Restart' was activated for 'NETW211-VM-GD' at October 11, 2022 1:31 UTC

You're receiving this notification as a member of the VM-Status action group because an Azure Monitor alert was activated.

Activity log alert	VM-Restart
Time	October 11, 2022 1:31 UTC
Category	Administrative
Operation name	Microsoft.Compute/virtualMachines/restart/action
Correlation ID	f1774a3c-4c83-4bb5-bb39-54032795a55f
Level	Informational
Resource ID	/subscriptions/03f4f57f-82b9-4901-ac2c-dccd7c83f312/resourceGroups/NETW211-RG-GD6644/providers/Microsoft.Compute/virtualMachines/NETW211-VM-GD
Caller	gdelostrico@my.devry.edu
Properties	{"eventCategory":"Administrative","entity":"/subscriptions/03f4f57f-82b9-4901-ac2c-dccd7c83f312/resourceGroups/NETW211-RG-GD6644/providers/Microsoft.Compute/virtualMachines/NETW211-VM-GD","message":"Microsoft.Compute/virtualMachines/restart/action","hierarchy":"11e7ae31-02be-46bb-ab11-80c715b5c90a/03f4f57f-82b9-4901-ac2c-dccd7c83f312"}

Testing Alerts cont'd

This screenshot should show the *'VM-Deallocate' was activated* email message with the date and time of the alert.

Azure Monitor alert 'VM-Deallocate' was activated for 'NETW211-VM-GD' at October 11, 2022 1:42 UTC

You're receiving this notification as a member of the VM-Status action group because an Azure Monitor alert was activated.

Activity log alert	VM-Deallocate
Time	October 11, 2022 1:42 UTC
Category	Administrative
Operation name	Microsoft.Compute/virtualMachines/deallocate/action
Correlation ID	69704130-16ad-460e-8797-bb4e1c35c9c0
Level	Informational
Resource ID	/subscriptions/03f4f57f-82b9-4901-ac2c-dccd7c83f312/resourceGroups/NETW211-RG-GD6644/providers/Microsoft.Compute/virtualMachines/NETW211-VM-GD
Caller	gdelostrico@my.devry.edu
Properties	{"eventCategory":"Administrative","entity":"/subscriptions/03f4f57f-82b9-4901-ac2c-dccd7c83f312/resourceGroups/NETW211-RG-GD6644/providers/Microsoft.Compute/virtualMachines/NETW211-VM-GD","message":"Microsoft.Compute/virtualMachines/deallocate/action","hierarchy":"11e7ae31-02be-46bb-ab11-80c715b5c90a/03f4f57f-82b9-4901-ac2c-dccd7c83f312"}

Challenges

- Azure is slow
- The instructions are deprecated.

Career Skills Obtained

- Virtual Machine (VM) Instances
- Virtual Private Cloud (VPC)
- Azure VM Security
- Cloud Storage
- Cloud Monitoring

Conclusion

I've completed AWS Practitioner Bootcamp and this class on Azure. I can see the difference between how the two leading cloud platforms perform. Overall, I learned how two companies are different and how services are very similar.