Cloud Computing

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Introduction

In this presentation we will go over technologies that make up cloud computing. We will discuss virtualization and topics relevant to the CompTIA Cloud+ Certification.

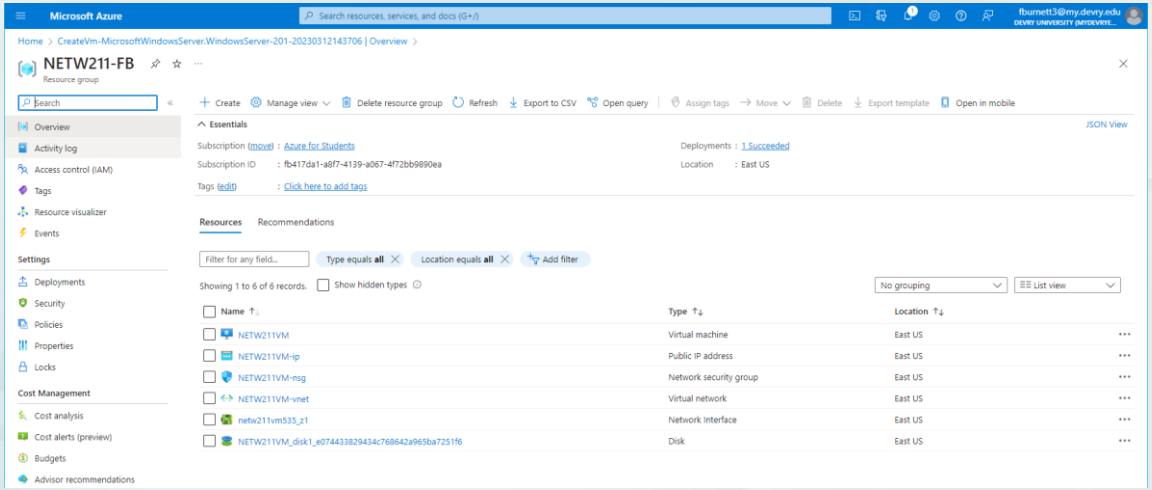
Overview

- Virtualization and Cloud Infrastructure
- Cloud Connectivity and IAM
- Securing Cloud Resources
- Cloud Storage
- Cloud Monitoring and Automation

Virtualization and Cloud Infrastructure

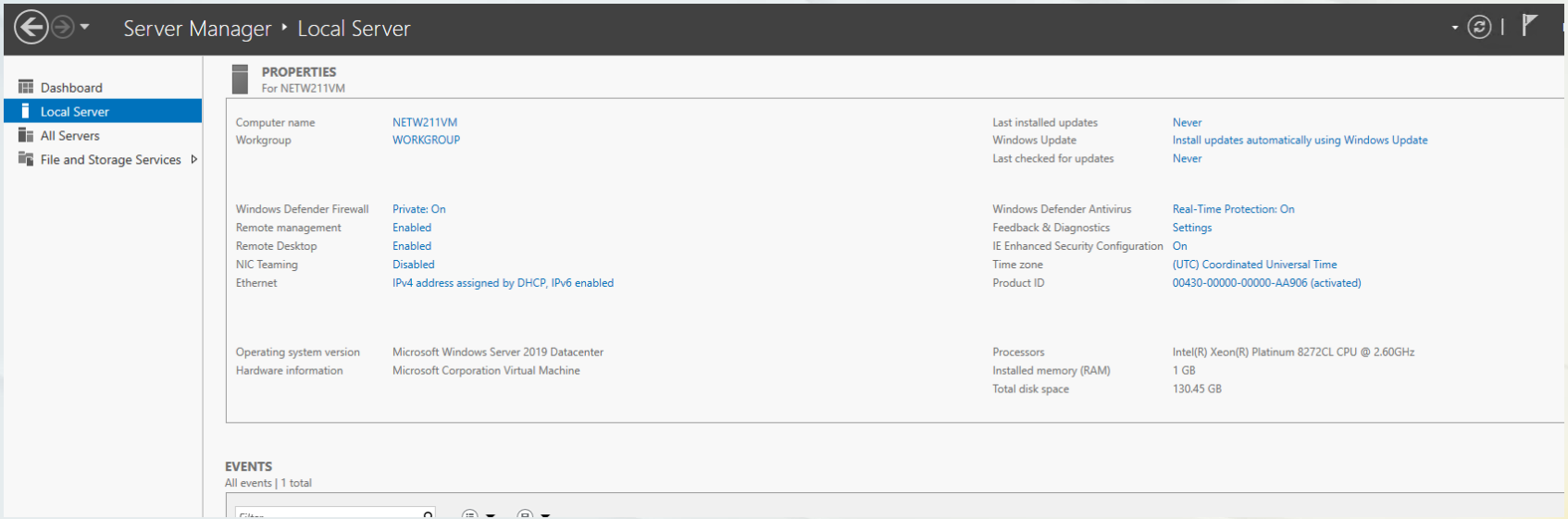
Deploying Azure VM

NETW211VM page with information such as the resource group name, subscription, public IP address, etc.

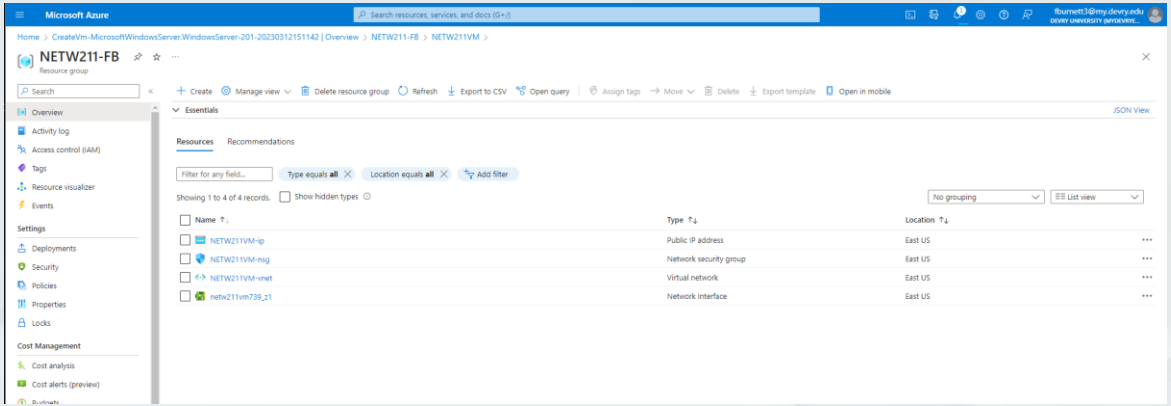


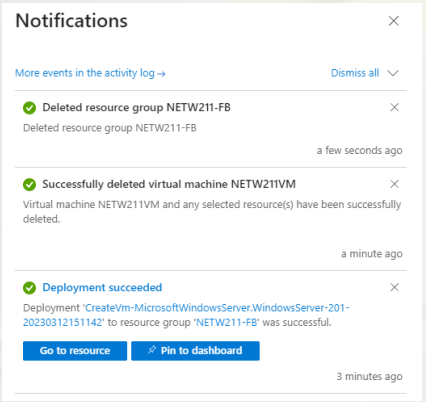
Connecting to VM

PROPERTIES for NETW211VM page, with the computer name, operating system version, hardware information, etc.



Deleting VM





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

Cloud Connectivity and IAM

Knowledge Check

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

Answer here:251

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?]

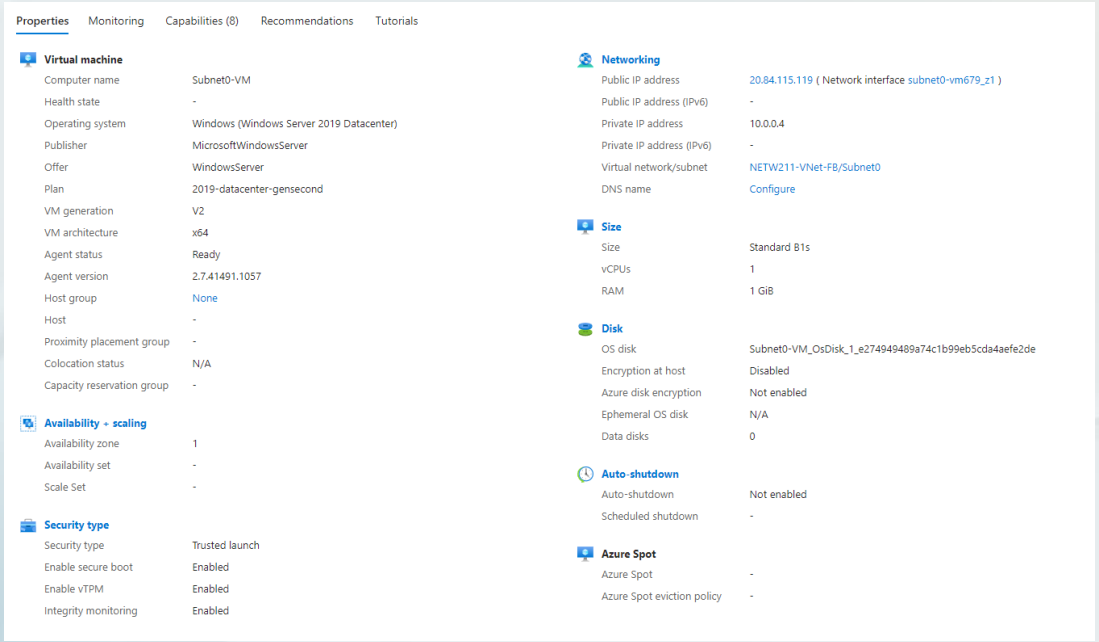
Answer here: The first four and last addresses are reserved for Azure.

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

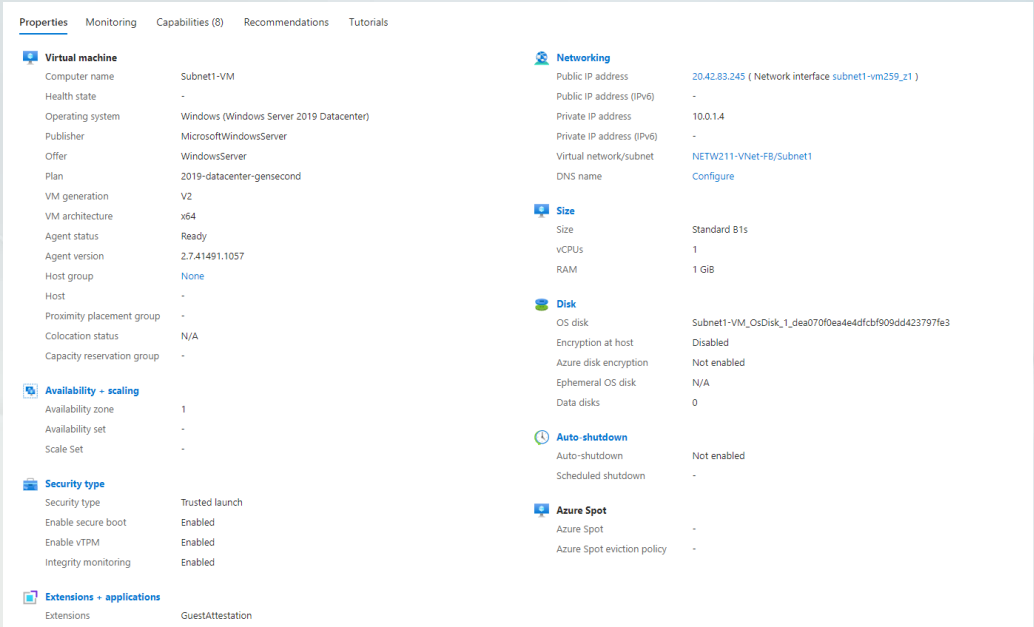
Deploying VM into Subnets



Subnet0-VM page, showing the networking and size information of the VM.

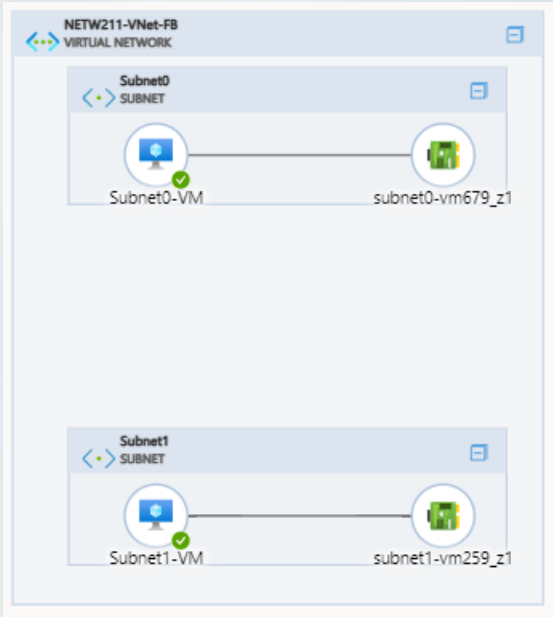
Deploying VM into Subnets cont'd

Subnet1-VM page, showing the networking and size information of the VM.



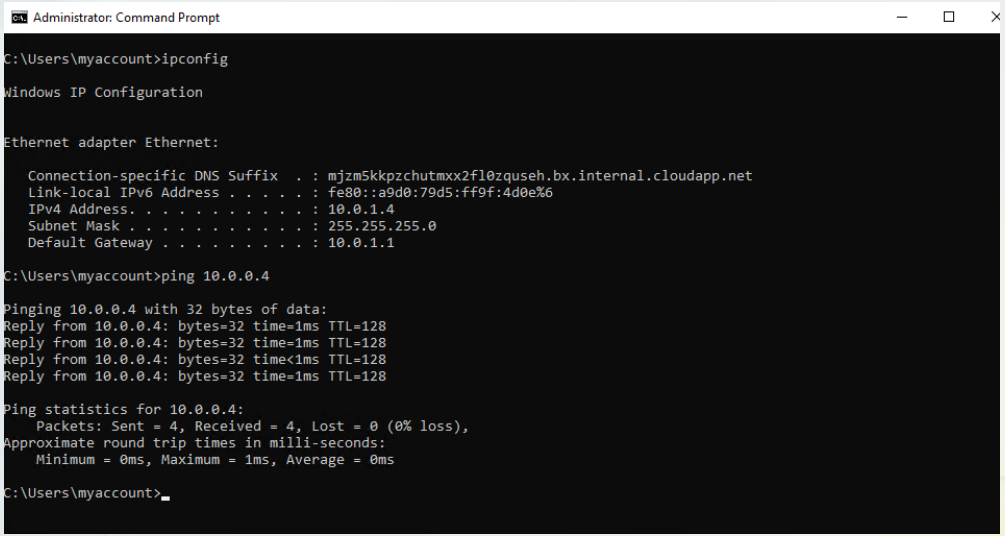
Deploying VM into Subnets cont'd

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*).

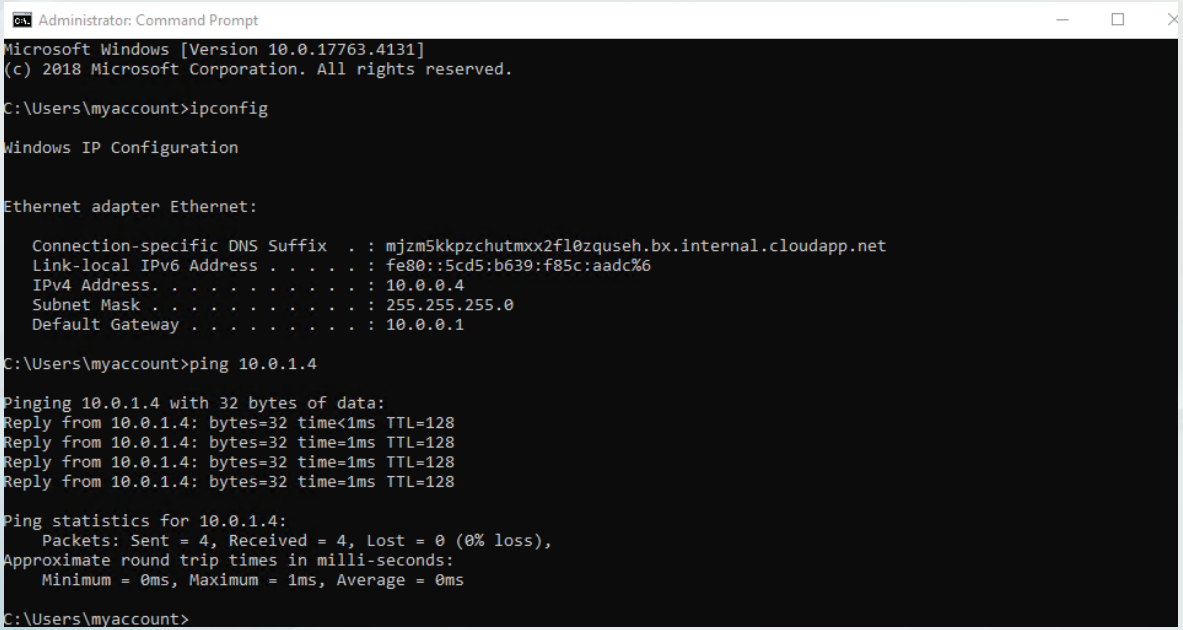


Verifying Connectivity between VMs

***Subnet0**-VM – x.x.x.x – Romote Desktop Connection* window title.



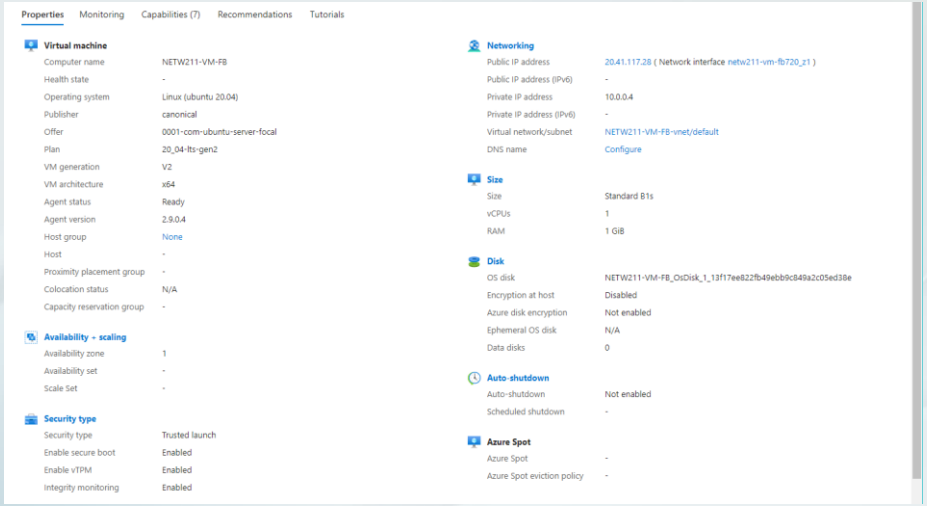
Verifying Connectivity between VMs cont'd



***Subnet1**-VM – x.x.x.x – Romote Desktop Connection* window title.

Security Cloud Resources

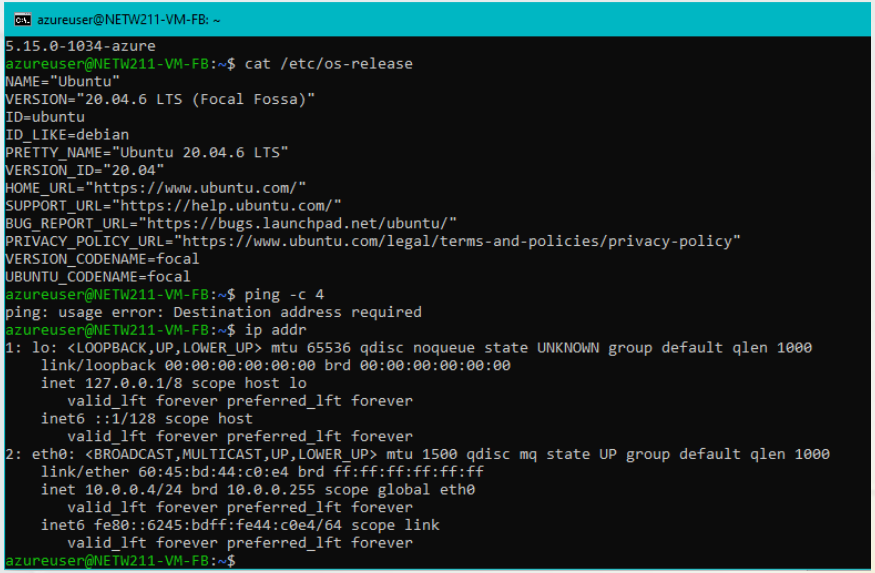
Launching VM



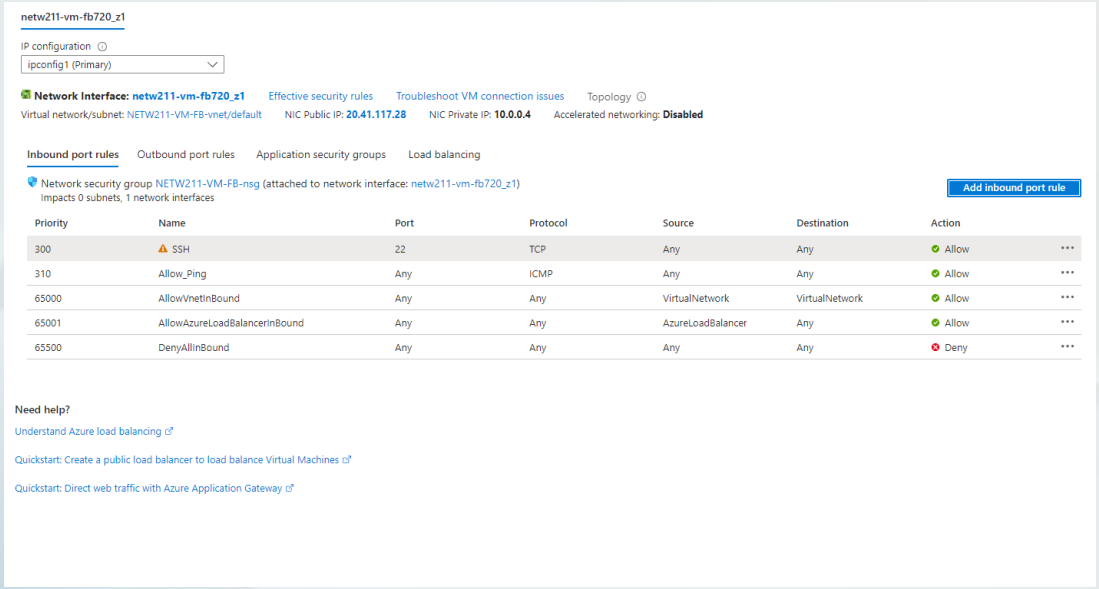
NETW211-VM-Your Initials page, with information such as the resource group name, subscription, public IP address, etc.

Connecting to VM via SSH

azureuser@NETW211-VM-Your Initials window showing the IPv4 address of the VM in the Azure cloud.



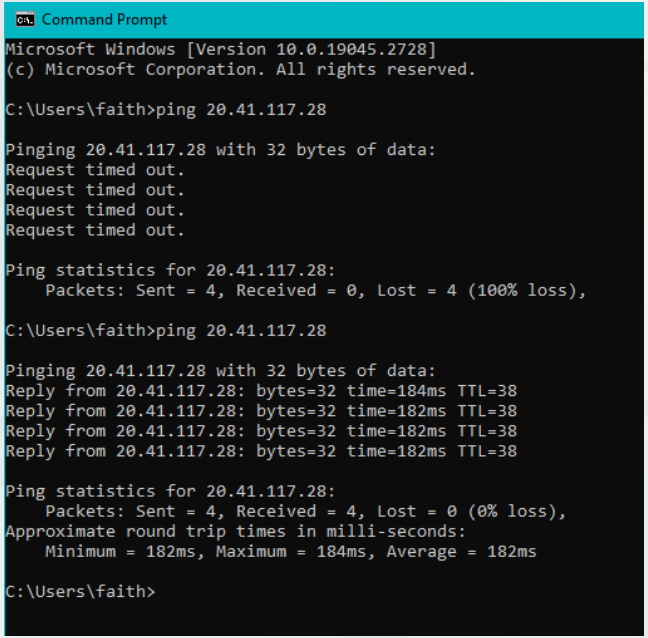
Configuring an NSG



Inbound port rules section with the newly added *Allow_Ping* rule.

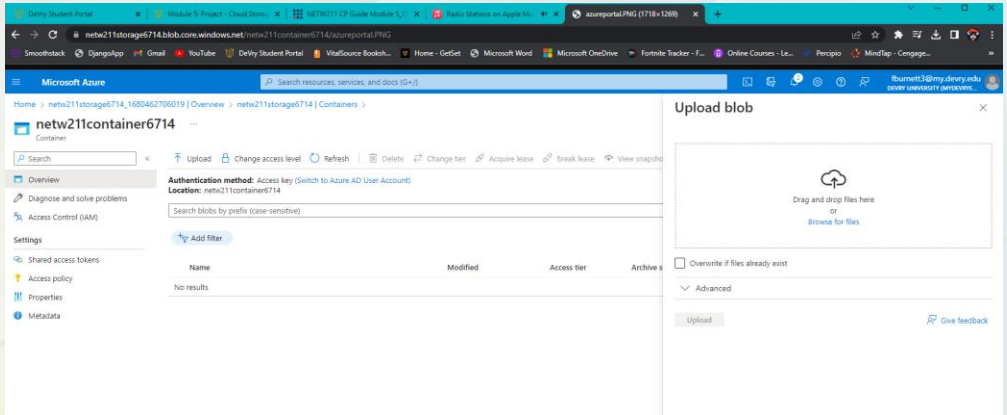
Configuring an NSG cont'd

successful ping result from your local computer to the VM in the Azure cloud.



Cloud Storage

Uploading and Accessing a File



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

Knowledge Check

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:

The access tier setting allows you to choose what kind of access tier you want to use. The three types of tiers are hot-storing data that is accessed or changed often, cold-storing data that is not accessed or changed often, and archive-offline option for rarely accessed data.

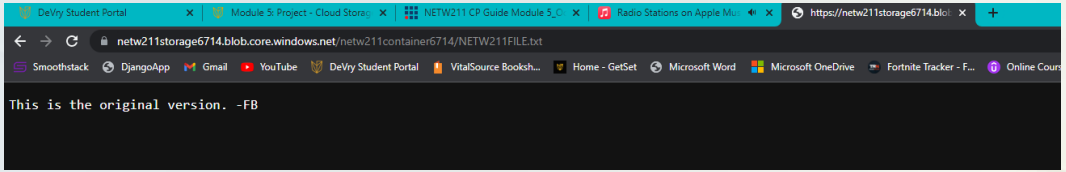
References (here are two examples to get your research started):

1. Hot, Cool, and Archive access tiers for blob data, https://docs.microsoft.com/en-us/azure/storage/blobs/access-tiers-overview

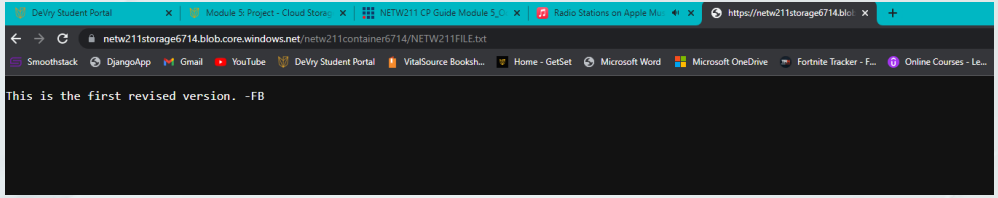
2. Azure Blob Storage Access Tiers, https://devry.percipio.com/courses/c7ef0333-8560-403f-a004-9c5c843866b0/videos/2658bbe6-ee97-438b-a376-fbb079c3b3a0

Creating Blob Snapshots

"*This is the original version. –Your Initials*"
message and the URL on top of the window



Enabling Blob Versioning

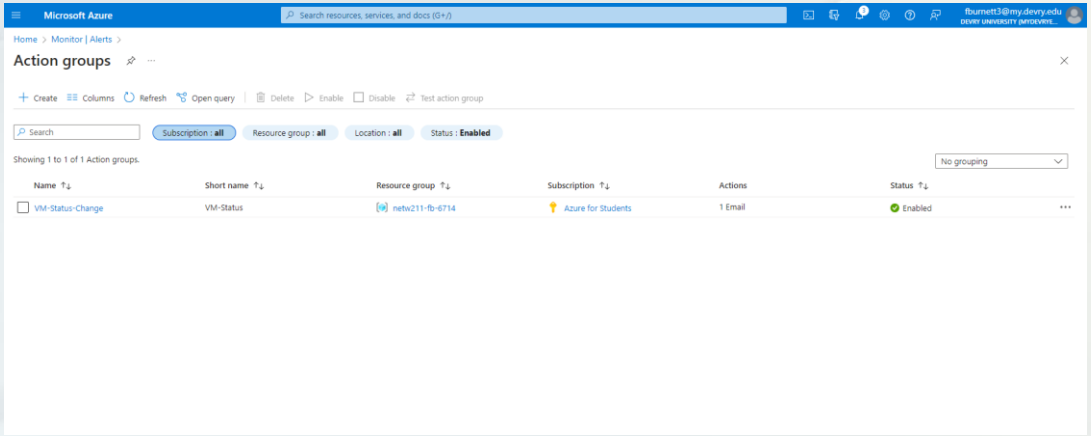


"*This is the first revised version. –Your Initials*" message and the URL on top of the window.

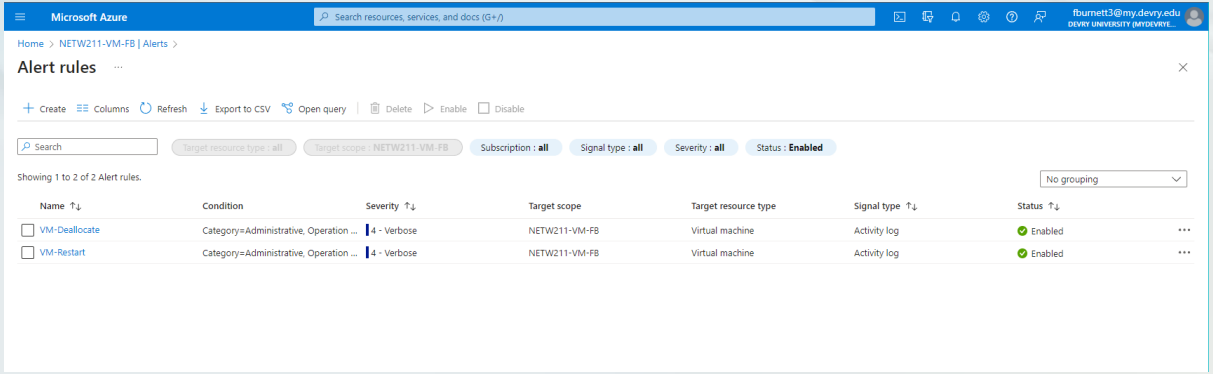
Cloud Monitoring and Automation

Setting up Action Group

“VM-Status-Change” action group on the *Manage actions* page.

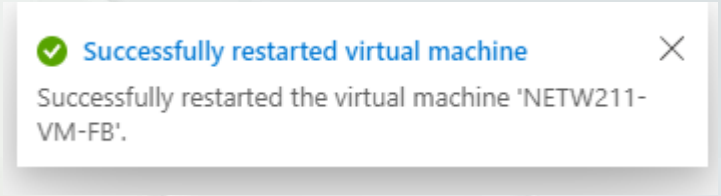


Setting up Alert Rules



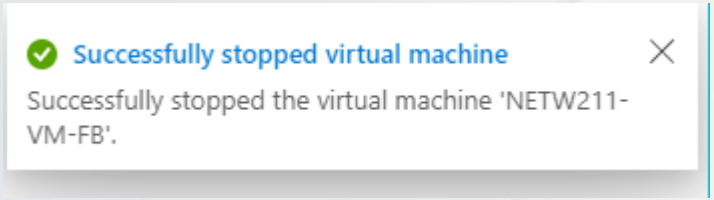
Alert rules window showing the *VM-Deallocate* and *VM-Restart* rules.

Testing Alerts



'VM-Restart' was activated email message with the date and time of the alert.

Testing Alerts cont'd



'VM-Deallocate' was activated email message with the date and time of the alert.

Challenges

- Subnetting specifically the class system
- Understanding each role in the OSI Model

Skills Learned

- Understanding concepts of networking
- Identify cloud-centric access control techniques
- Access cloud-central security techniques
- Evaluate cloud storage technologies
- Apply common cloud maintenance tools, techniques and services

Thanks!

Do you have any questions?

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