NETW211 Course Project
Fundamentals of Cloud Computing

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Introduction

This presentation covers VM (Virtual Machine) Instances, Azure Vnet and Subnets, VM Security, Cloud Storage, and Cloud Monitoring

It begins with VM Instances where we deploy a VM in Azure, connect to it and then delete it. This is followed by creating a VNet with two Subnets. Then we move on to launching and configuring VMs, uploading and accessing a file, and cloud monitoring.

The presentation concludes with Challenges, Career Skills obtained, a Conclusion, and References.

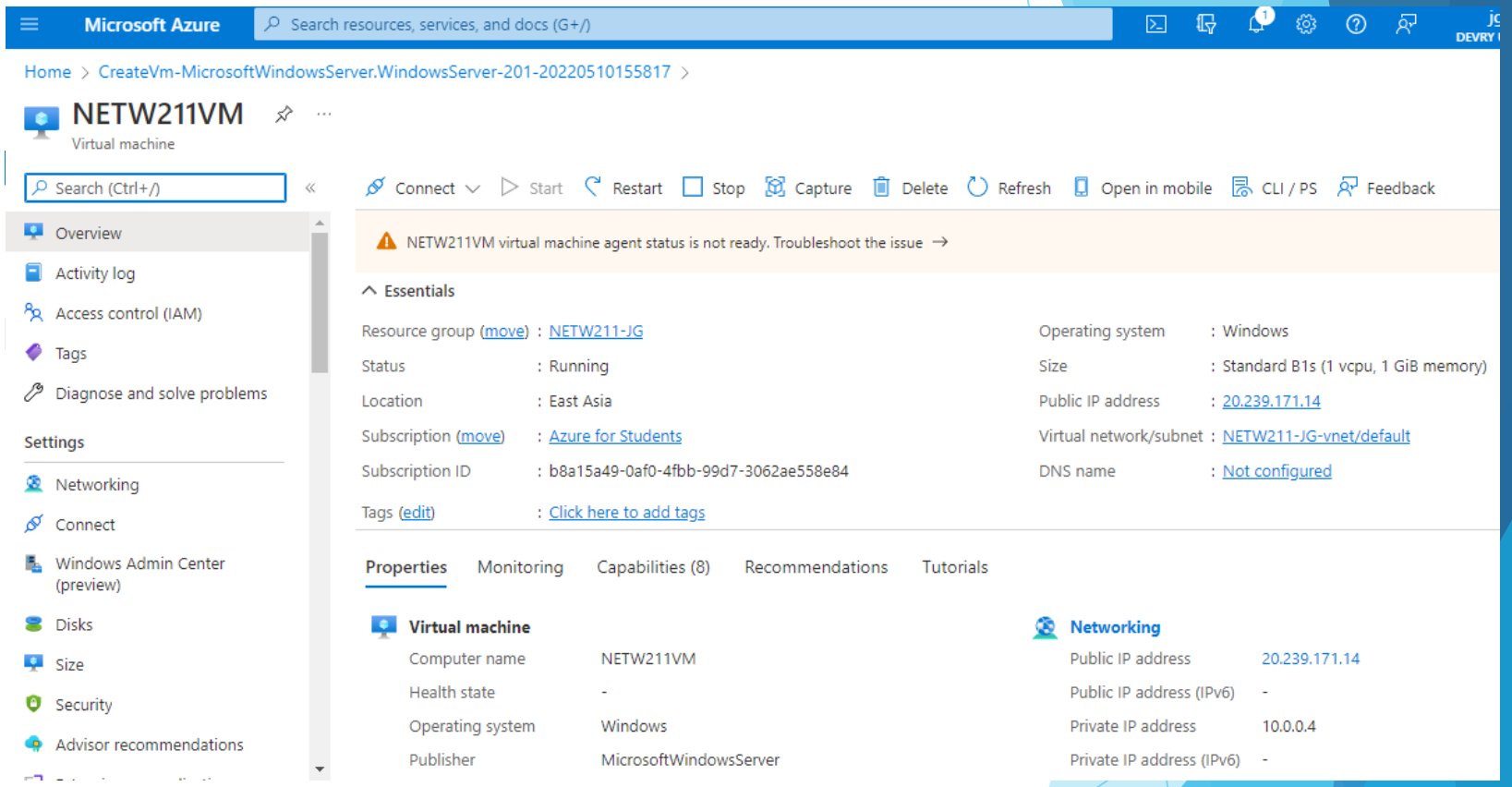
Virtual Machine (VM) Instances

The next three slides show:

1) Deploying a VM in Azure;
2) Connecting to it; and,
3) Deleting it.

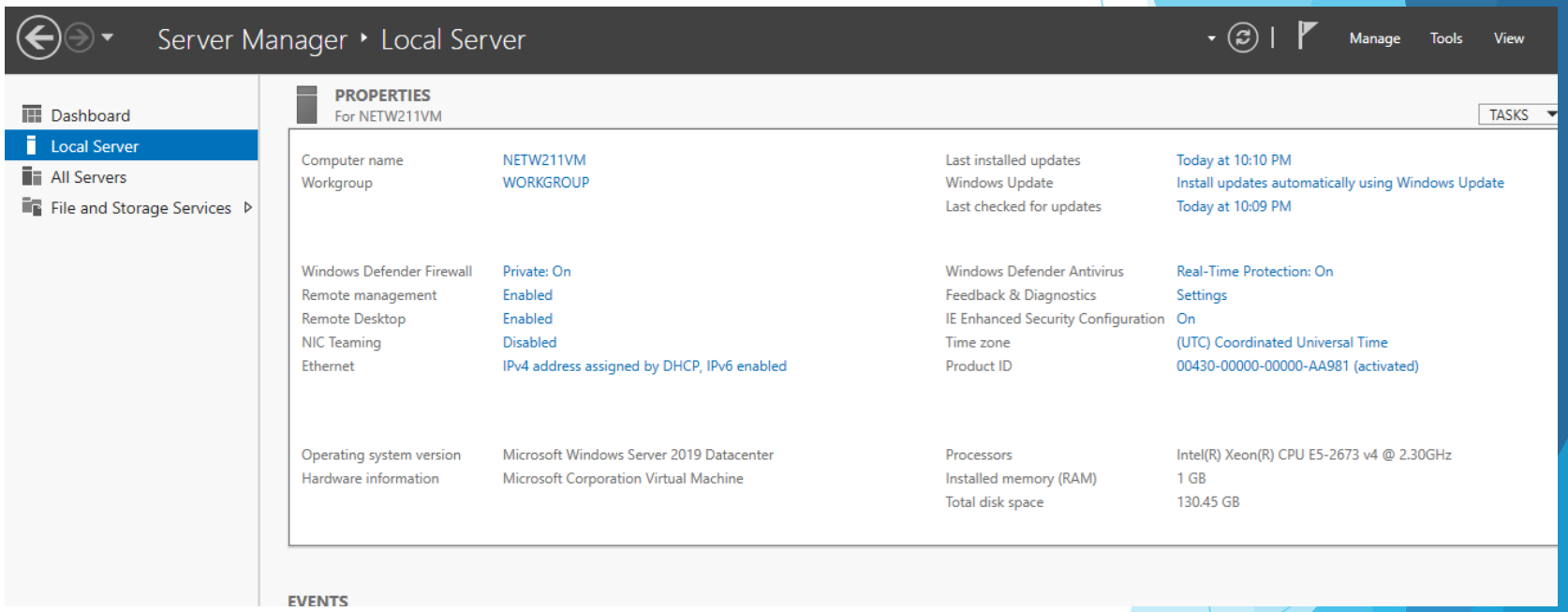
Deploying a VM in Azure

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



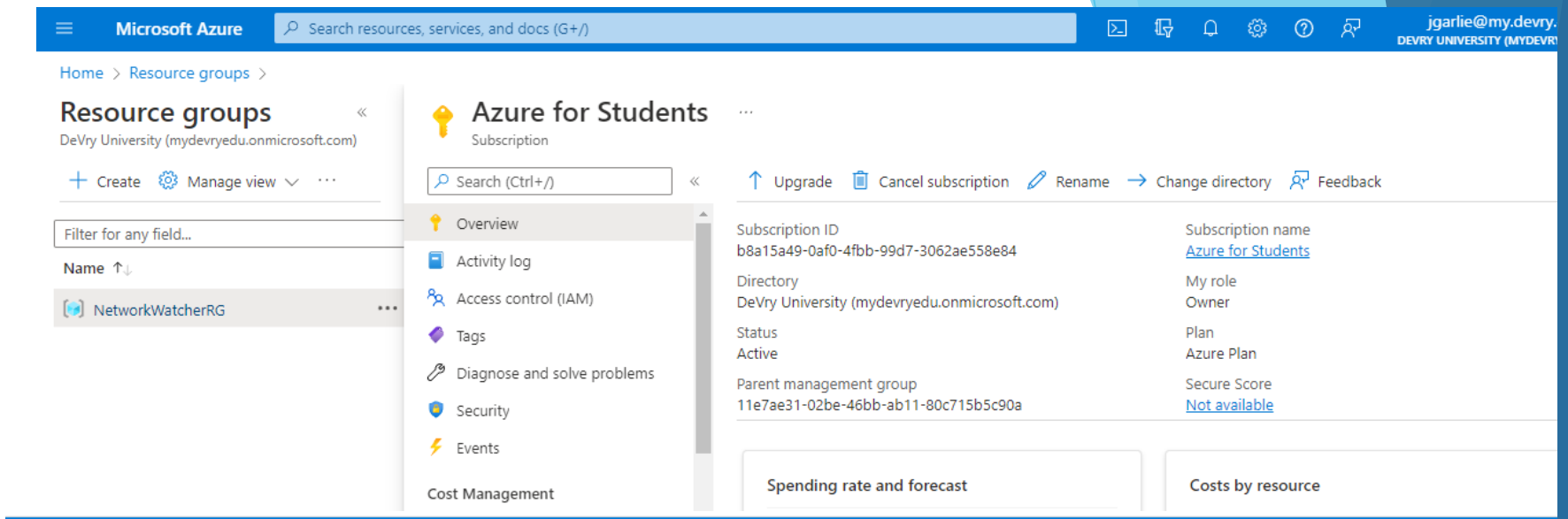
Connecting to the VM

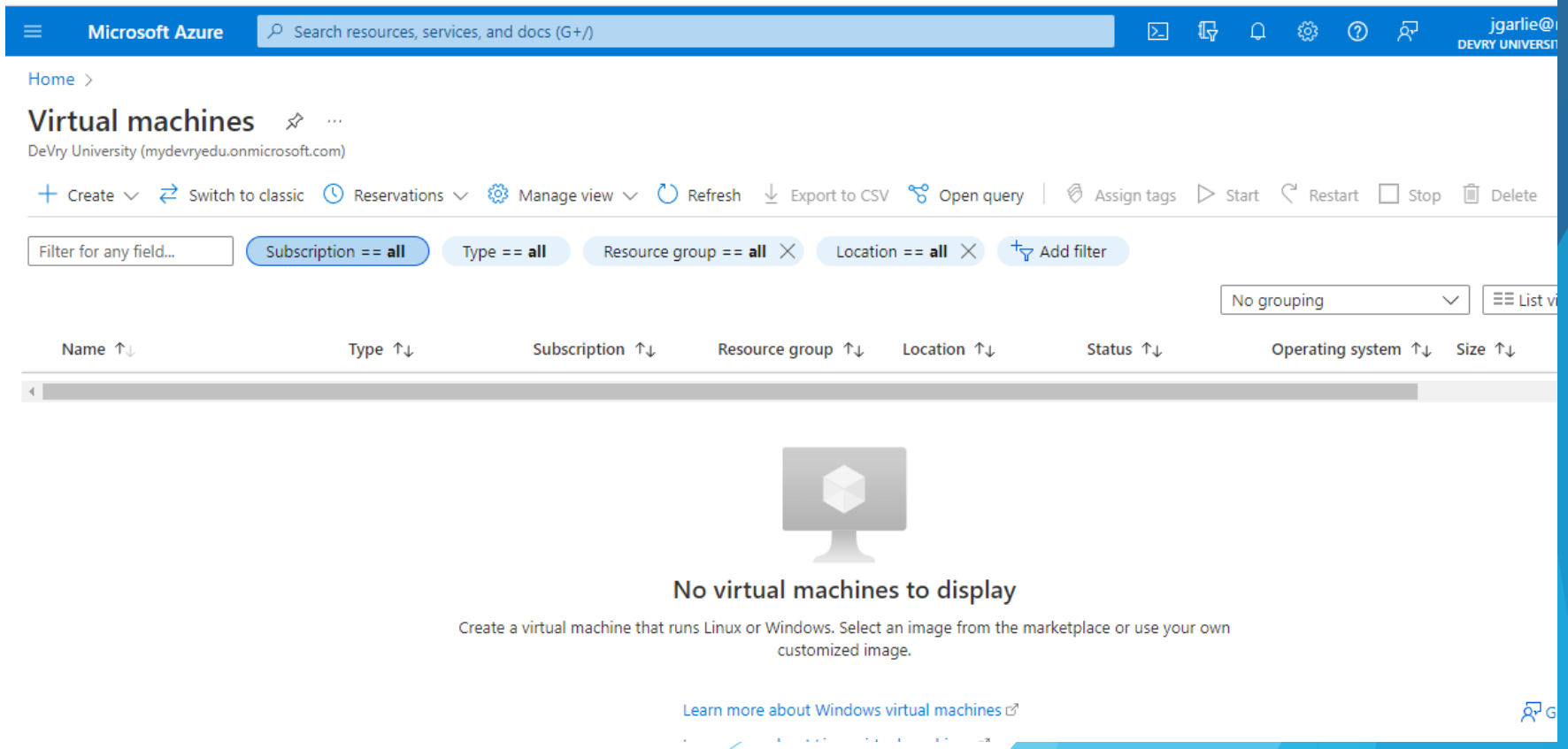
This screenshot shows the *PROPERTIES for the NETW211VM* page, with the computer name, operating system version, hardware information, etc.



Deleting the VM

The two screenshots show the *Resource groups* page, with the *Azure for Students* subscription and the and the "*No virtual machines display*" message.





Azure VNet and Subnets

The next six slides show:

1) Creating a Vnet with two Subnets;
2) Deploying VMs into Subnets
3) Deploying VMs into Subnets, cont'd;
4) Deploying VMs into Subnets, cont'd;
5) Connectivity between VMs; and,
6) Connectivity between VMs, cont'd

Creating a VNet with Two Subnets

1. With a /24 network prefix, how many **usable** IPv4 host addresses are there?

Answer here:

Equals = 2 to the power of 8 which is 256. Then 256 -2 =254. So, the answer is 254

2. 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?

Answer here:

Because Azure reserves the difference for their own use.

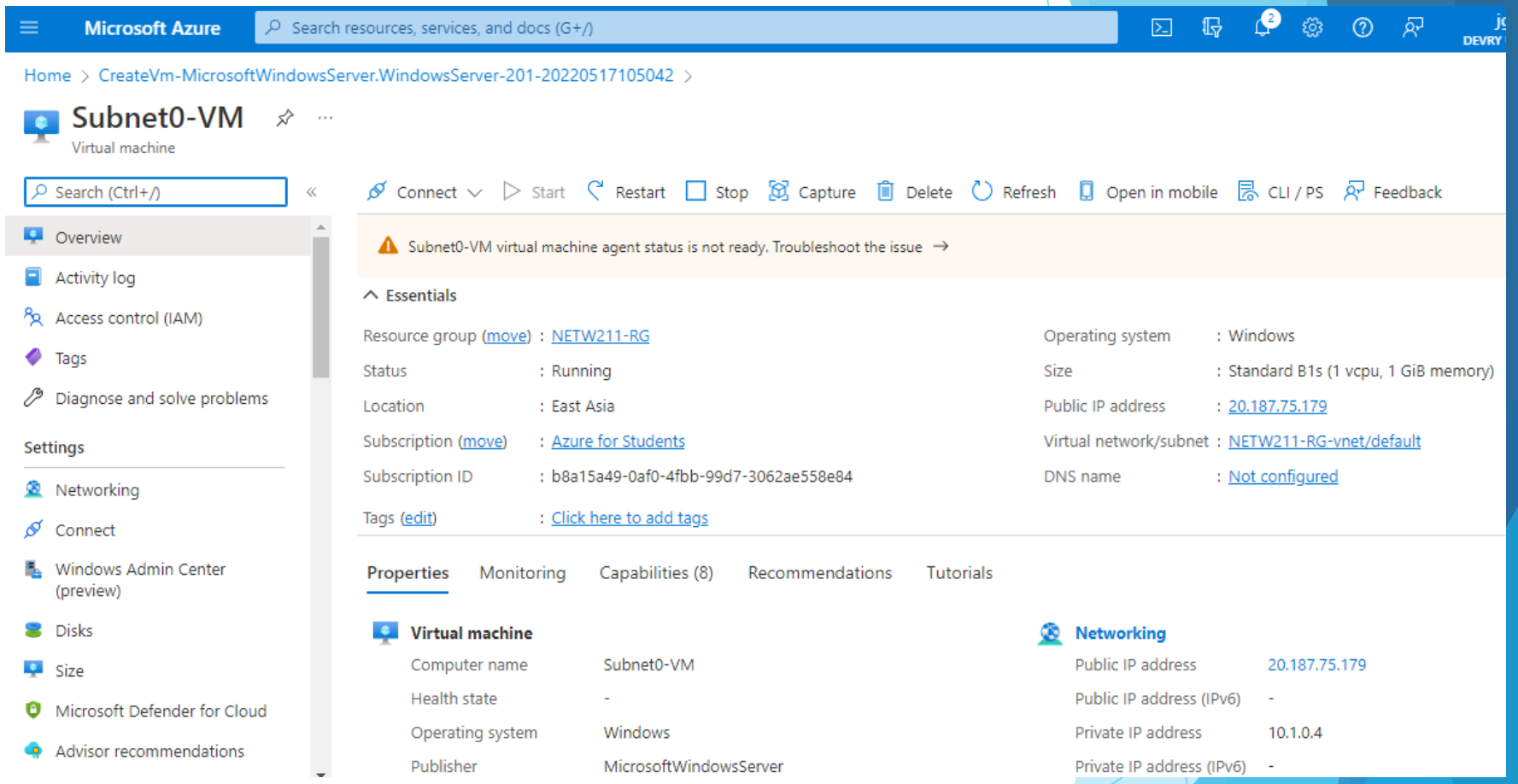
References:

1. Professor Giomi in the Week 3 Project Video

2. https://asmed.com/microsoft-azure-vnet-vm-subnet-and-security-tutorial/

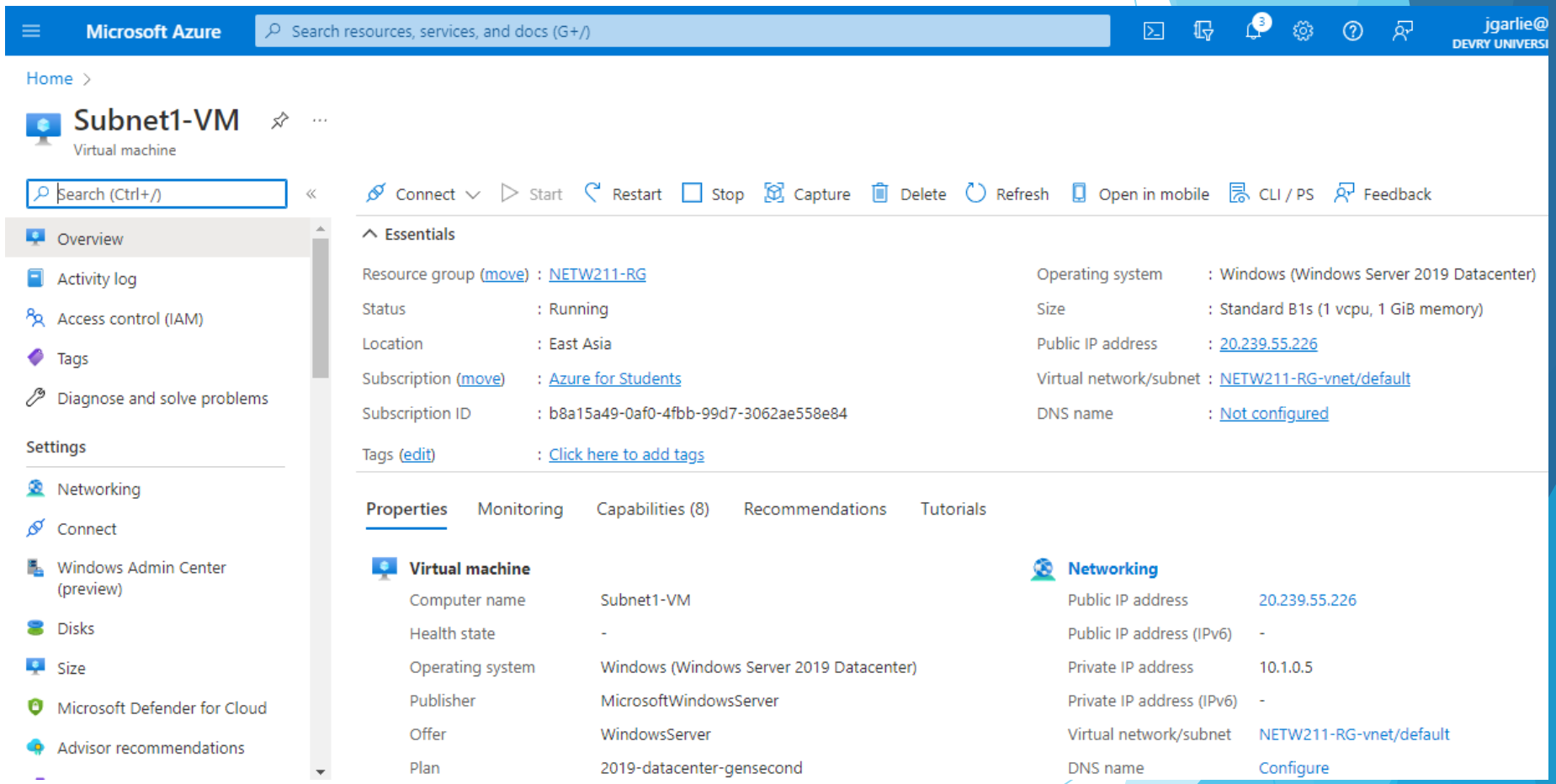
Deploying VMs into Subnets

This screenshot should show the *Properties* section of the ***Subnet0-VM*** page, showing the networking and size information of the VM.



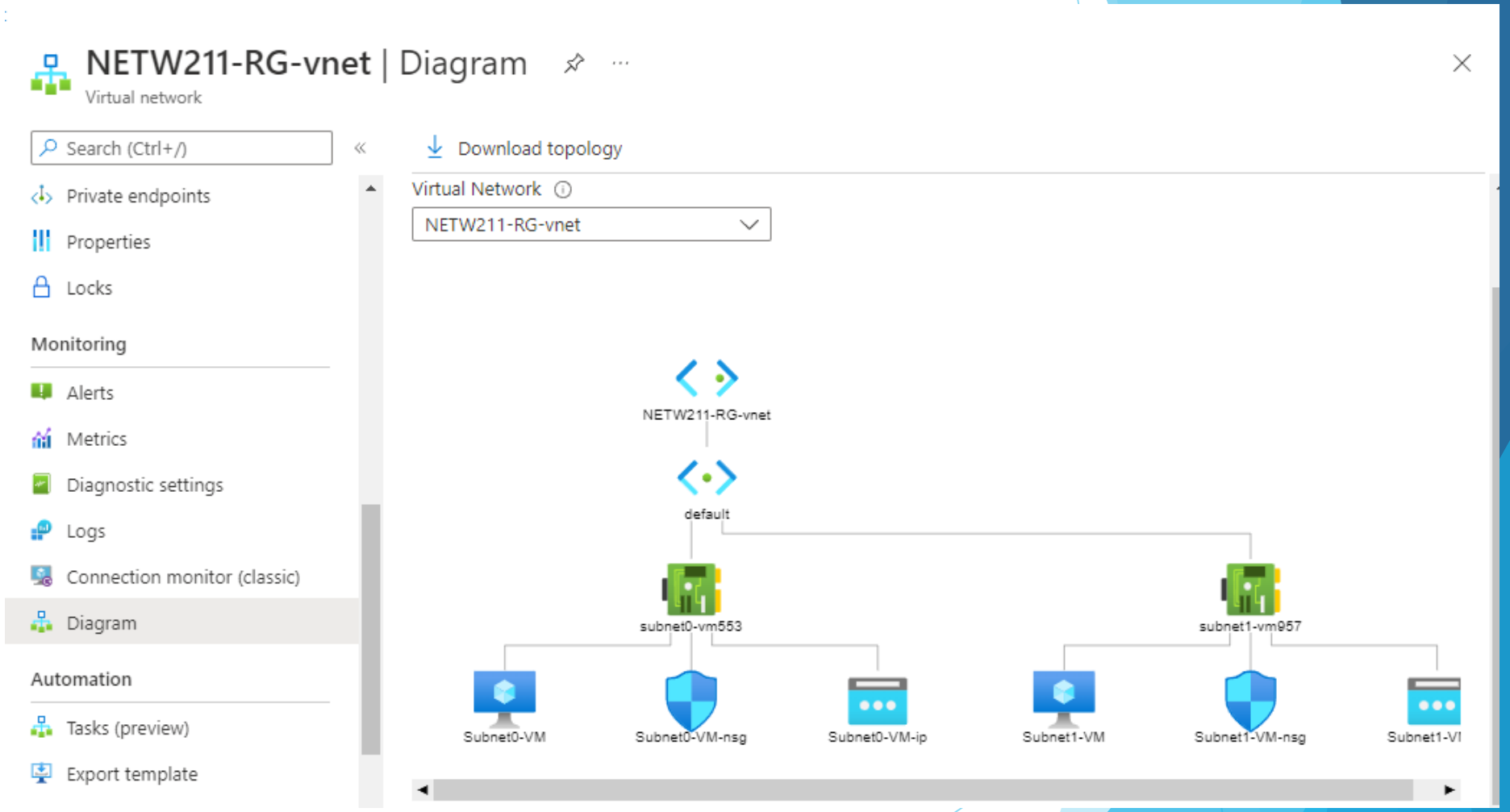
Deploying VMs into Subnets cont'd

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



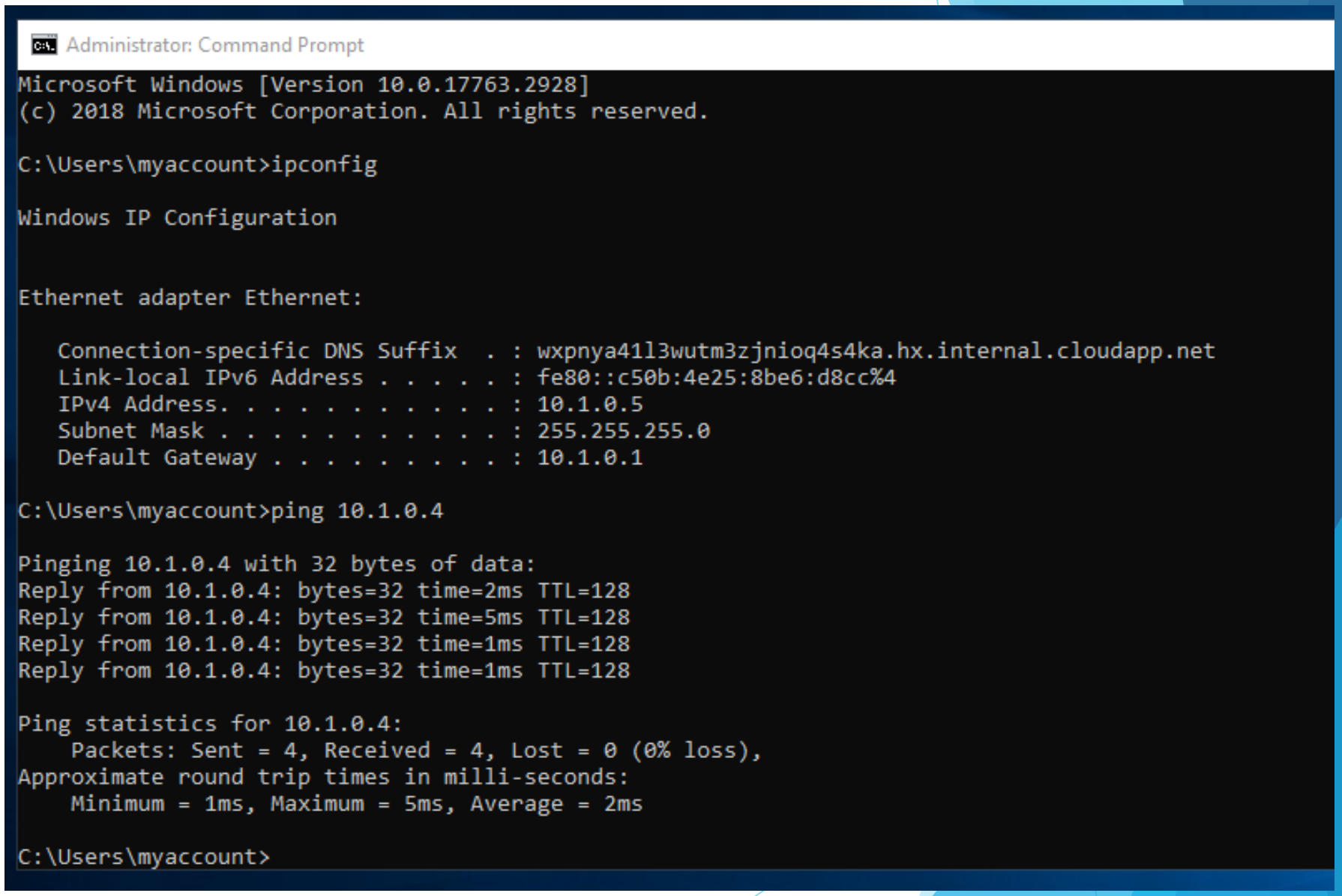
Deploying VMs into Subnets cont'd

This screenshot shows 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*).



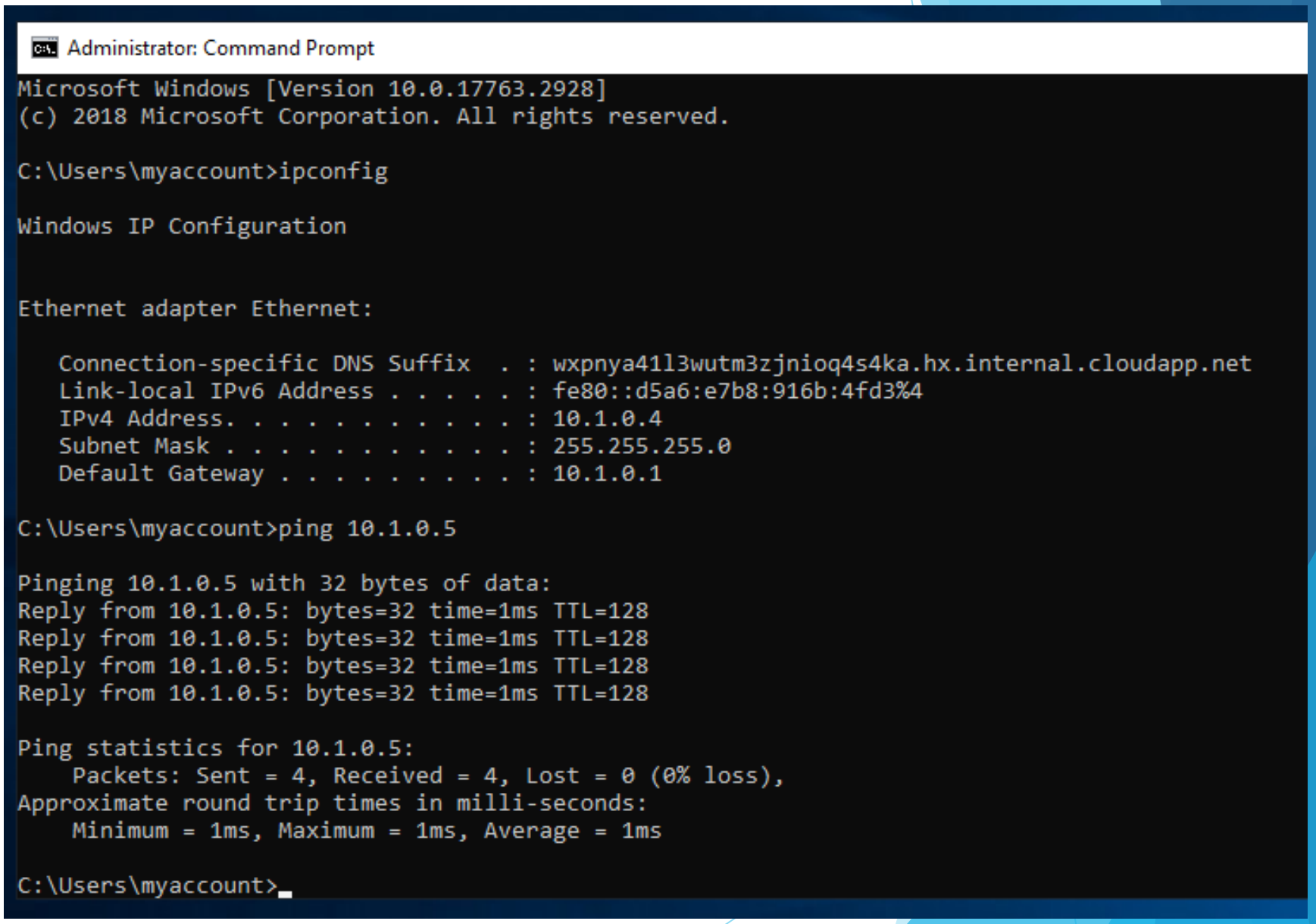
Verifying Connectivity between VMs

This screenshot shows the *ipconfig* and *ping 10.1.0.5* results in the command prompt window, including the ***Subnet0****-VM – 10.1.0.4 – Romote Desktop Connection* window title.



Verifying Connectivity between VMs cont'd

This screenshot shows the *ipconfig* and *ping 10.1.0.4* results in the command prompt window, including the ***Subnet1****-VM – 10.1.0.5 – Romote Desktop Connection* window title.



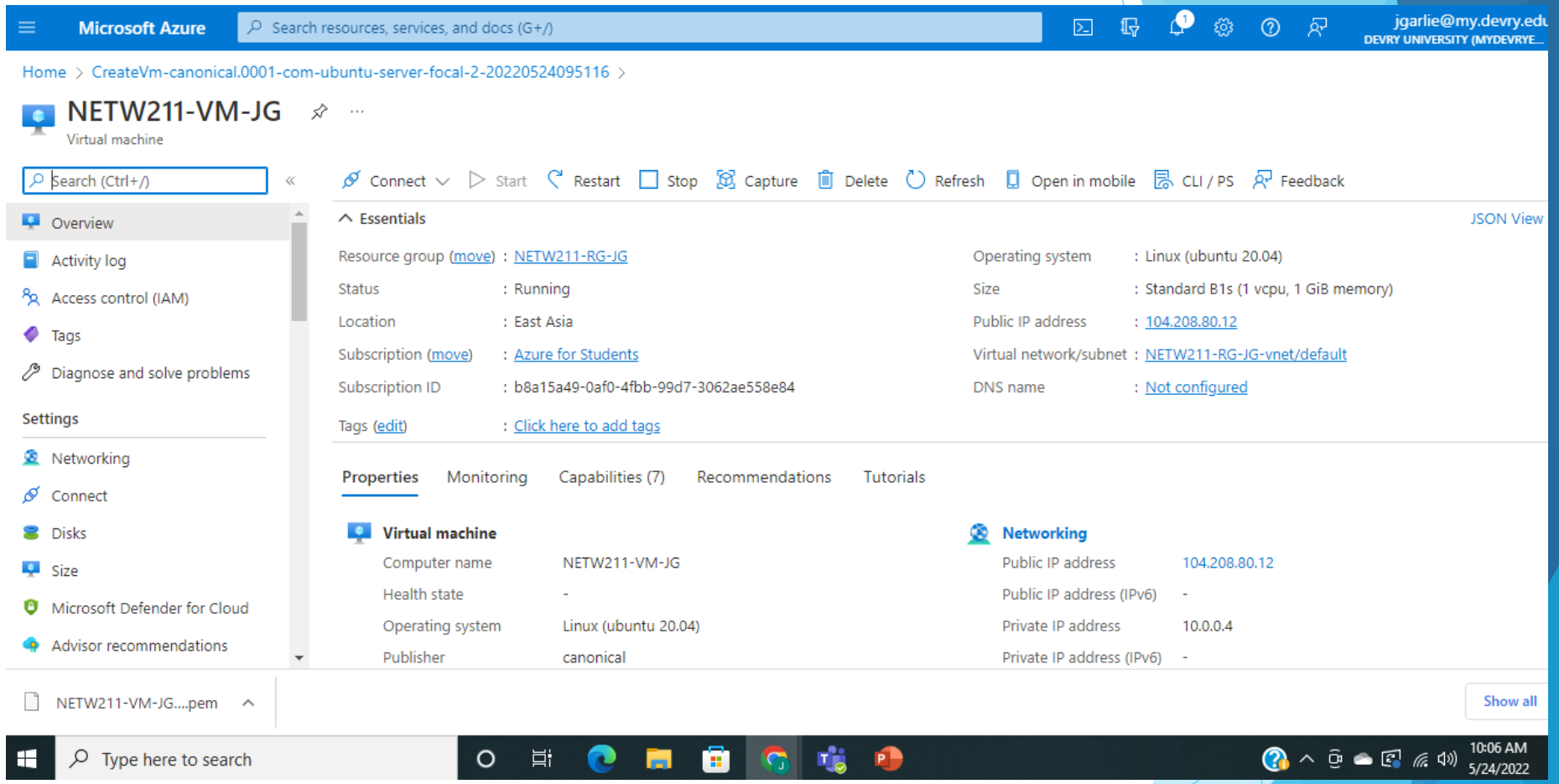
Azure VM Security

The next four slides show:

1) Launching a VM;
2) Connecting to a VM via SSH;
3) Configuring an NSG; and,
4) Configuring an NSG, cont'd.

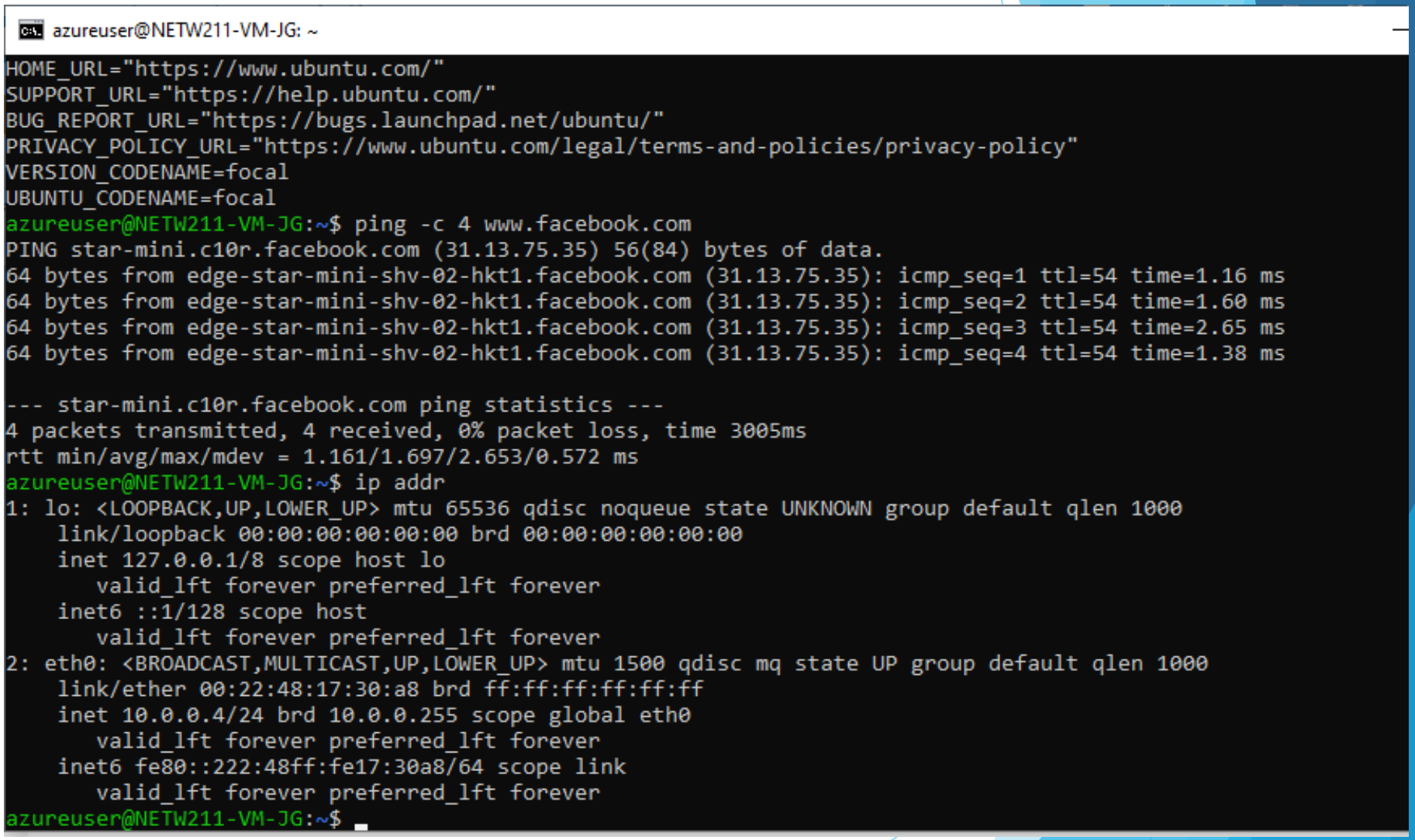
Launching a VM

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



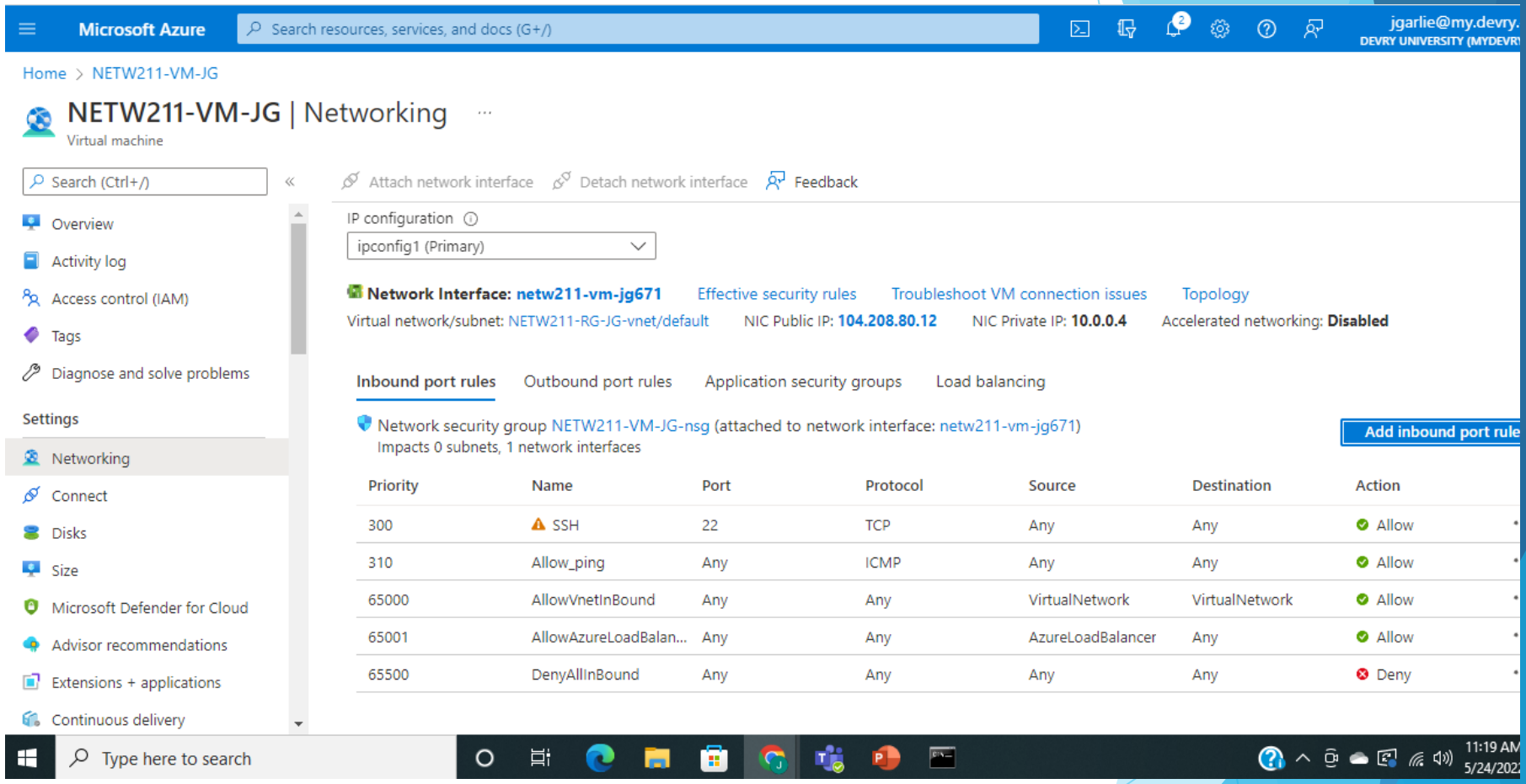
Connecting to the VM via SSH

This screenshot shows the *azureuser@NETW211-VM-My Initials* window showing the IPv4 address of the VM in the Azure cloud.



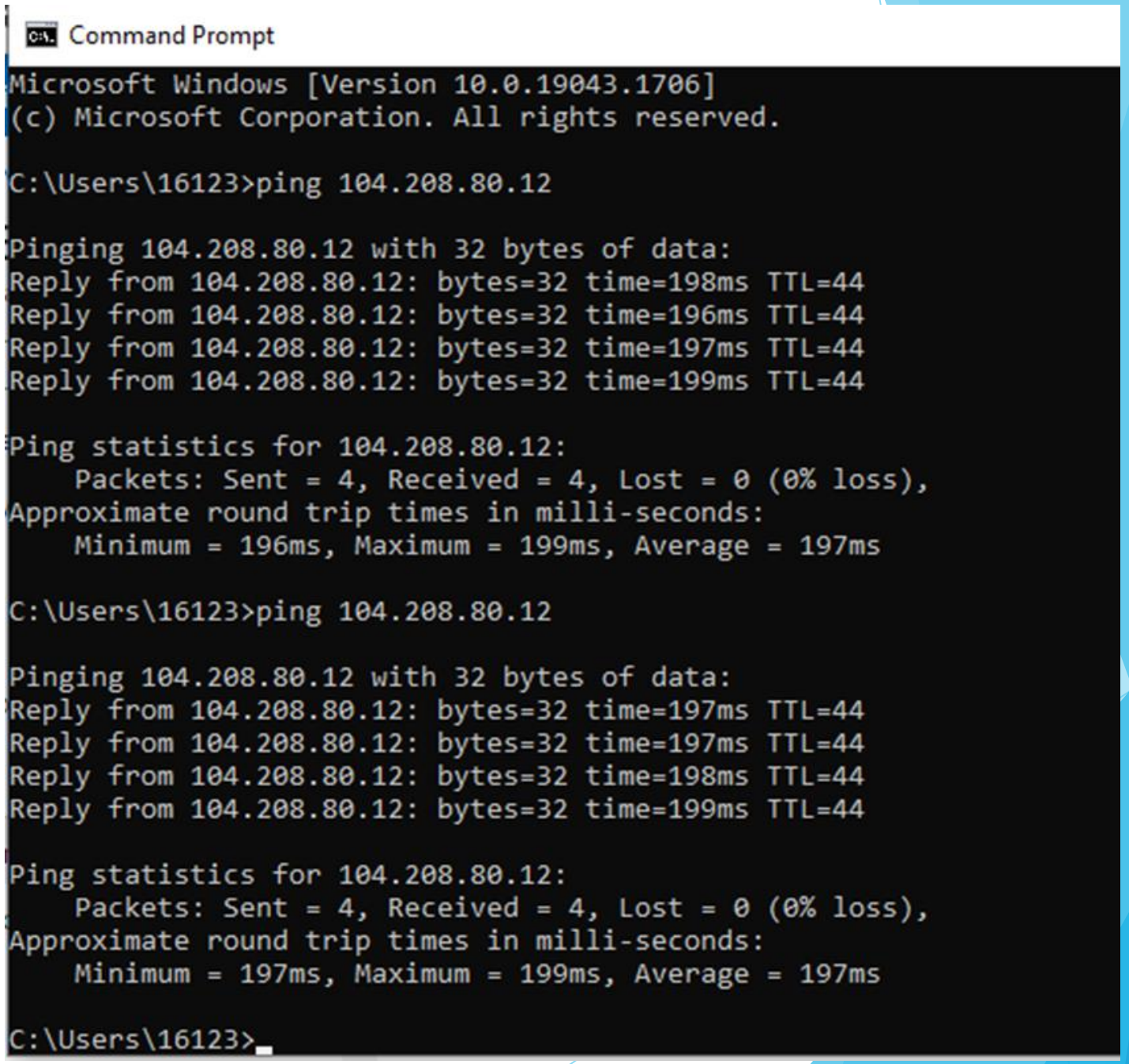
Configuring an NSG

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



Configuring an NSG cont'd

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



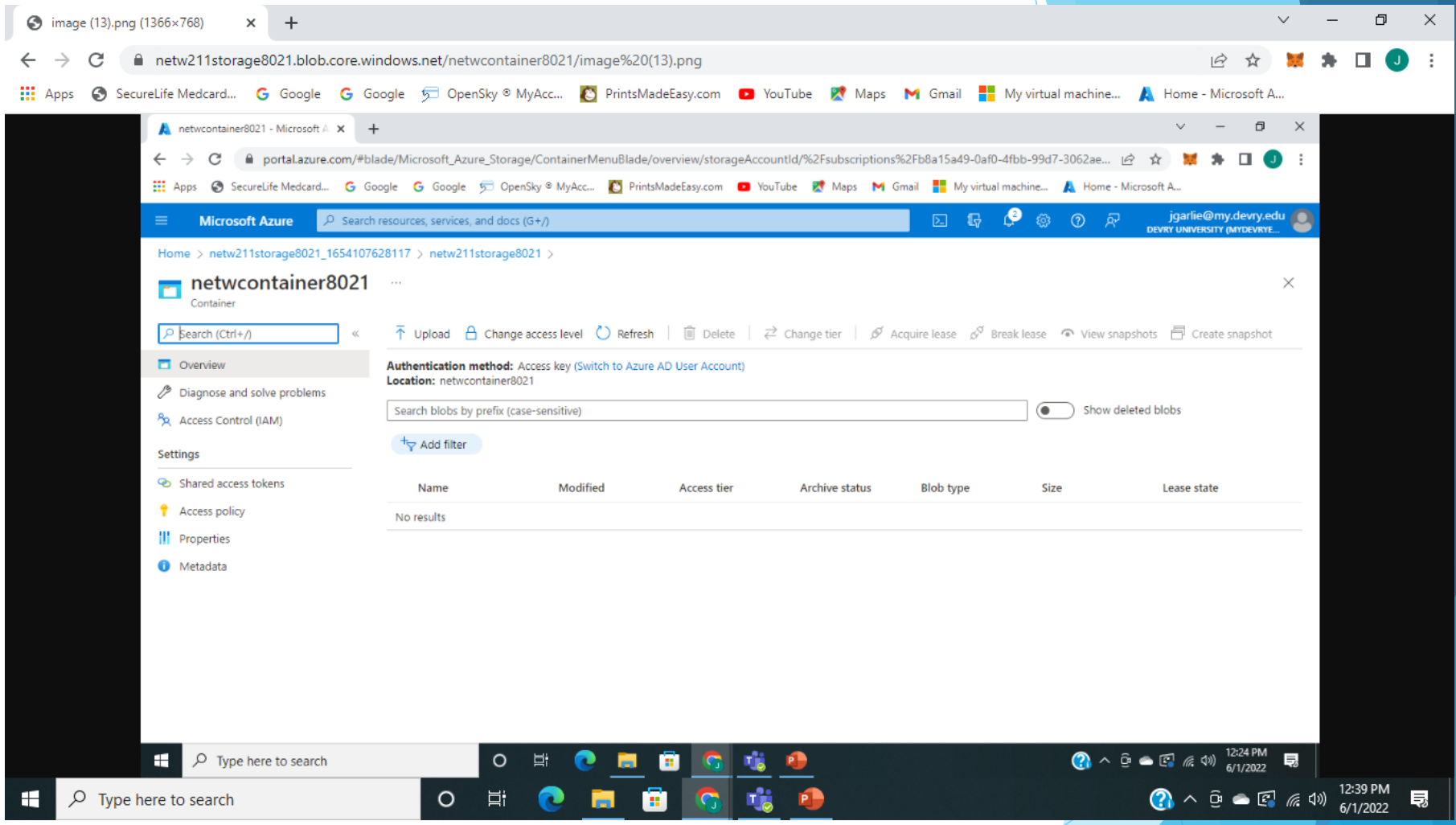
Cloud Storage

The next four slides show:

1) Uploading and Accessing a File;
2) Questions;
3) Creating Blob Snapshots; and,
4) Enabling Blob Versioning.

Uploading and Accessing a File

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



Questions

What does the access tier setting do?

Data stored in the cloud grows at an exponential pace. To manage costs for your expanding storage needs, it can be helpful to organize your data based on how frequently it will be accessed and how long it will be retained. Azure storage offers different access tiers so that you can store your blob data in the most cost-effective manner based on how it's being used. Azure Storage access tiers include:

What are the Azure blob storage access tiers?

•**Hot tier** - An online tier optimized for storing data that is accessed or modified frequently. The Hot tier has the highest storage costs, but the lowest access costs.

•**Cool tier** - An online tier optimized for storing data that is infrequently accessed or modified. Data in the Cool tier should be stored for a minimum of 30 days. The Cool tier has lower storage costs and higher access costs compared to the Hot tier.

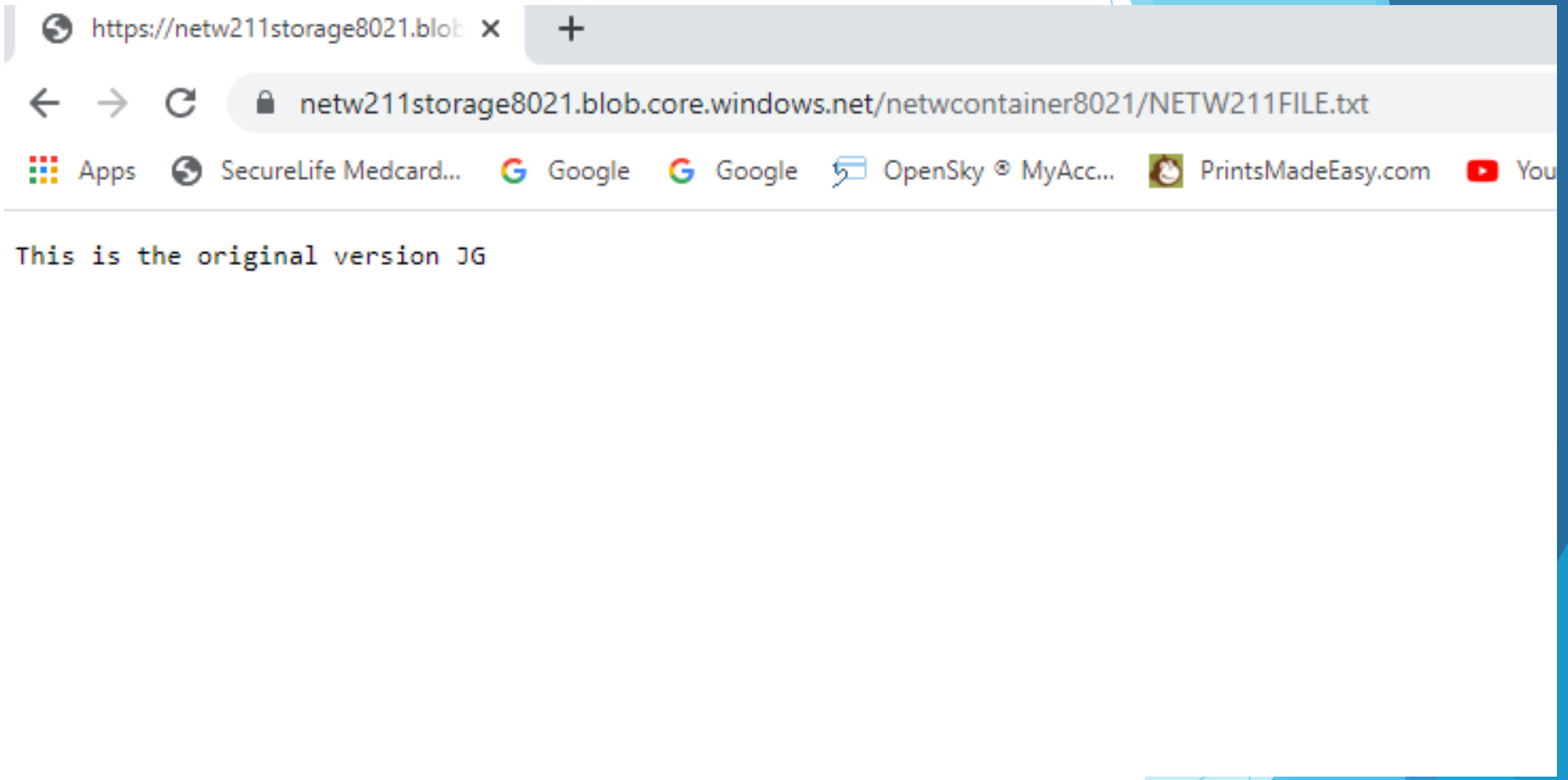
•**Archive tier** - An offline tier optimized for storing data that is rarely accessed, and that has flexible latency requirements, on the order of hours. Data in the Archive tier should be stored for a minimum of 180 days.

References:

1. Professor Giomi
2. https://docs.microsoft.com/en-us/azure/storage/blobs/access-tiers-overview

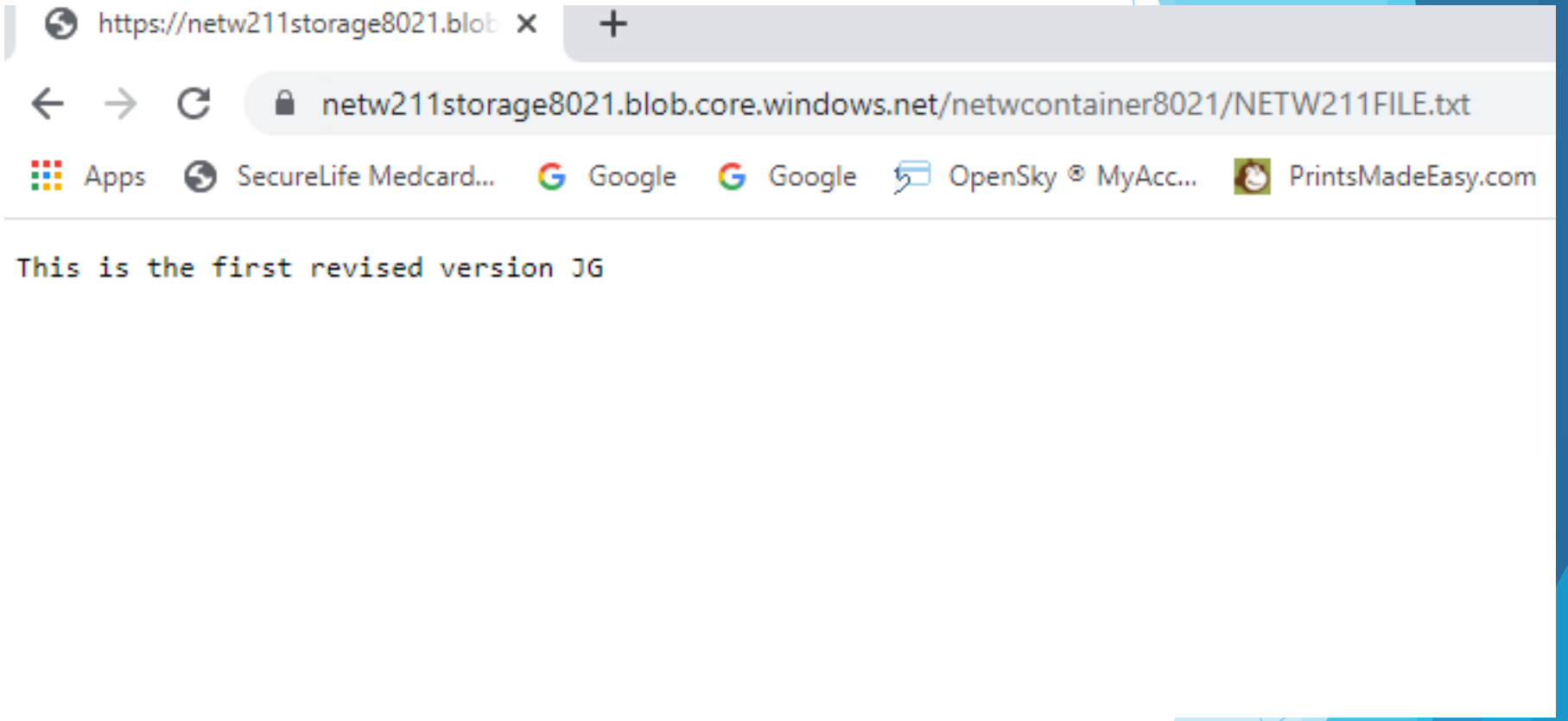
Creating Blob Snapshots

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



Enabling Blob Versioning

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



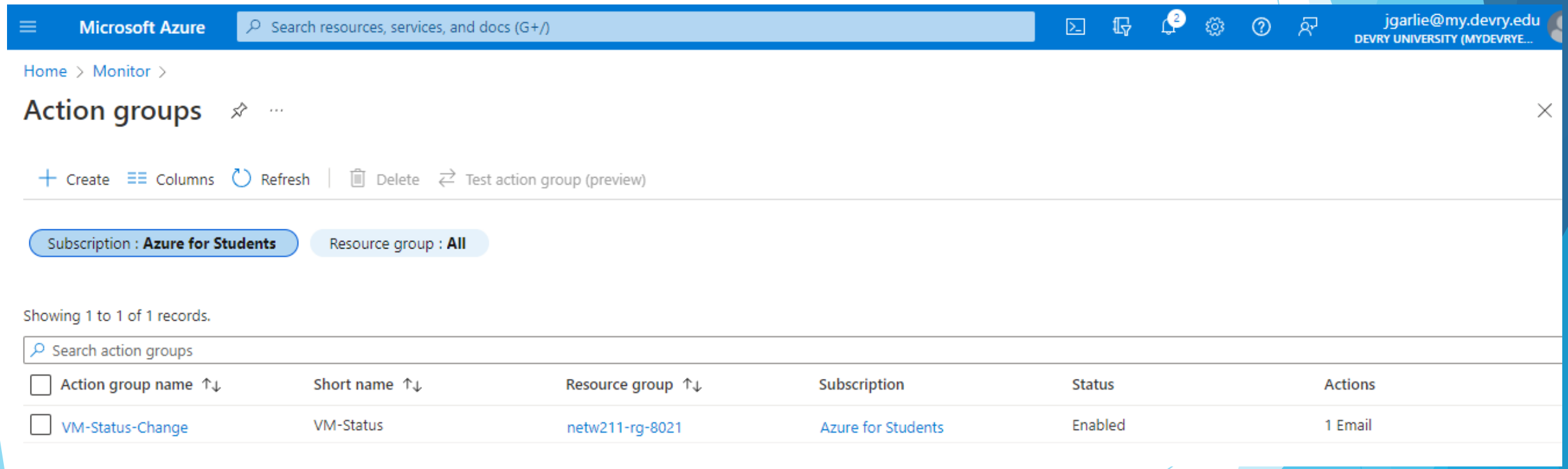
Cloud Monitoring

The next four slides show:

1) Setting up an Action Group and Notifications;
2) Setting up Alert Rules;
3) Testing Alerts; and,
4) Testing Alerts, contd.

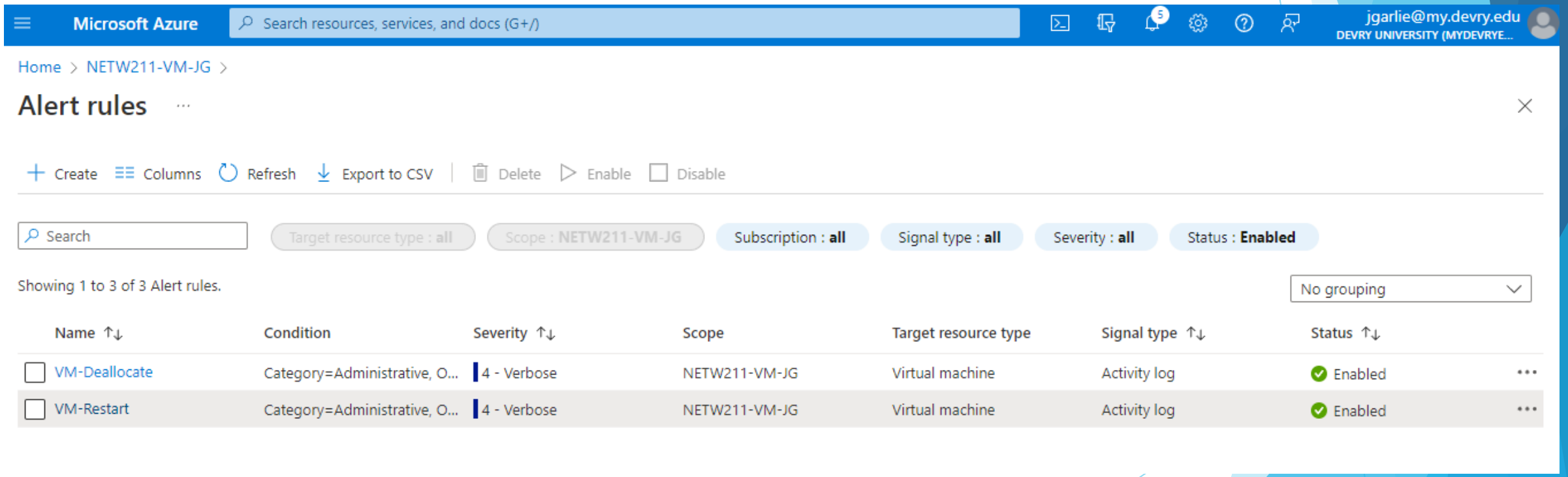
Setting up an Action Group and Notifications

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



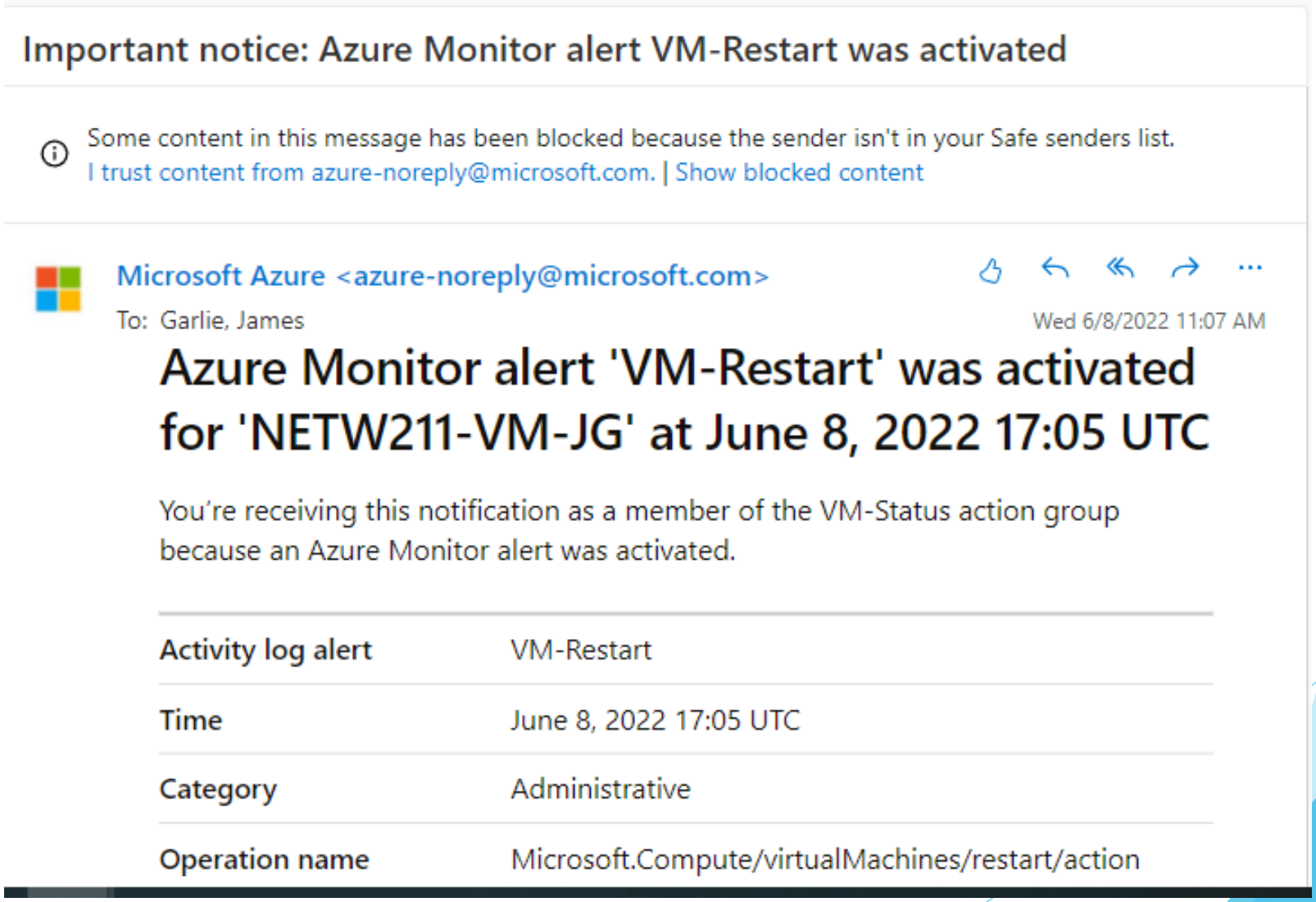
Setting up Alert Rules

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



Testing Alerts

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



Testing Alerts cont’d

This screenshot shows the *‘VM-Deallocate’ was activated* email message with the date and time of the alert.

Challenges

Challenges included:

Identifying the proper login procedures

Learning how to work with Azure

Uploading the proper programs

Testing the additions at each stage

Career Skills

I learned how to:

Further work with Azure

Verify Connectivity

How to create testing alerts

Further developed basic and advanced computer skills

Conclusion

I found this class; learning how to use Azure, including deploying VM (Virtual Machine) Instances, Azure Vnet and Subnets, VM Security, Cloud Storage, and Cloud Monitoring to be very educational.

I feel this project will help me in the future.

References

1. Professor Giomi in each weeks Project Videos

2. **https://asmed.com/microsoft-azure-vnet-vm-subnet-and-security-tutorial/**

3. https://docs.microsoft.com/en-us/azure/storage/blobs/access-tiers-overview