- Created 2 VMs using Microsoft Azure Student Credit.

- Created SSH key pairs for accessing VMs.

The steps are shown below.

- Using the command `ssh-keygen -t rsa -b 4096 -C "your_email@example.com"` we can generated a public-private keypair which is used to authenticate, connect and access our virtual machines. As the name suggests, public key is the one available to world (mostly on the VM) and private key must be stored safely.
- Since Microsoft Azure is a cloud service provider, we can rent a VM (with prices shown) by hour and use it to do our jobs. All the infrastructure is being maintained at Microsoft's Data center.
- We can now create 2 VMs (one with CentOS and the other with Ubuntu) and connect to them via SSH.
- We are choosing the cheapest option available with 1 VCPU and 1 GB memory and 30 GB of storage. It has been chosen according to the workloads that we'll be working on.

Home > Virtual machines >

Create a virtual machine ...

Validation passed

Basics Disks Networking Management Monitoring Advanced Tags **Review + create**

Cost given below is an estimate and not the final price. Please use Pricing calculator for all your pricing needs.

PRODUCT DETAILS

1 X Standard B1s
by Microsoft
Terms of use | Privacy policy

You are not authorized to view subscription price

Retail price 0.0104 USD/hr
Pricing for other VM sizes

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the Azure Marketplace Terms for additional details.

Name	Mickey Marcelin
Preferred e-mail address	00320381@student.necc.edu
Preferred phone number	978-556-3000

You have set SSH port(s) open to the internet. This is only recommended for testing. If you want to change this setting, go back to Basics tab.

Basics

Subscription	Azure for Students
Resource group	(new) acme-corp
Virtual machine name	CentOS
Region	West US 3
Availability options	No infrastructure redundancy required
Security type	Standard
Image	CentOS-based 7.9 - Gen2
VM architecture	x64
Size	Standard B1s (1 vcpu, 1 GiB memory)
Authentication type	SSH public key
Username	mickey
Public inbound ports	SSH
Azure Spot	No

Disks

OS disk size	Default size (31 GiB)
OS disk type	Premium SSD LRS
Use managed disks	Yes
Delete OS disk with VM	Enabled
Ephemeral OS disk	No

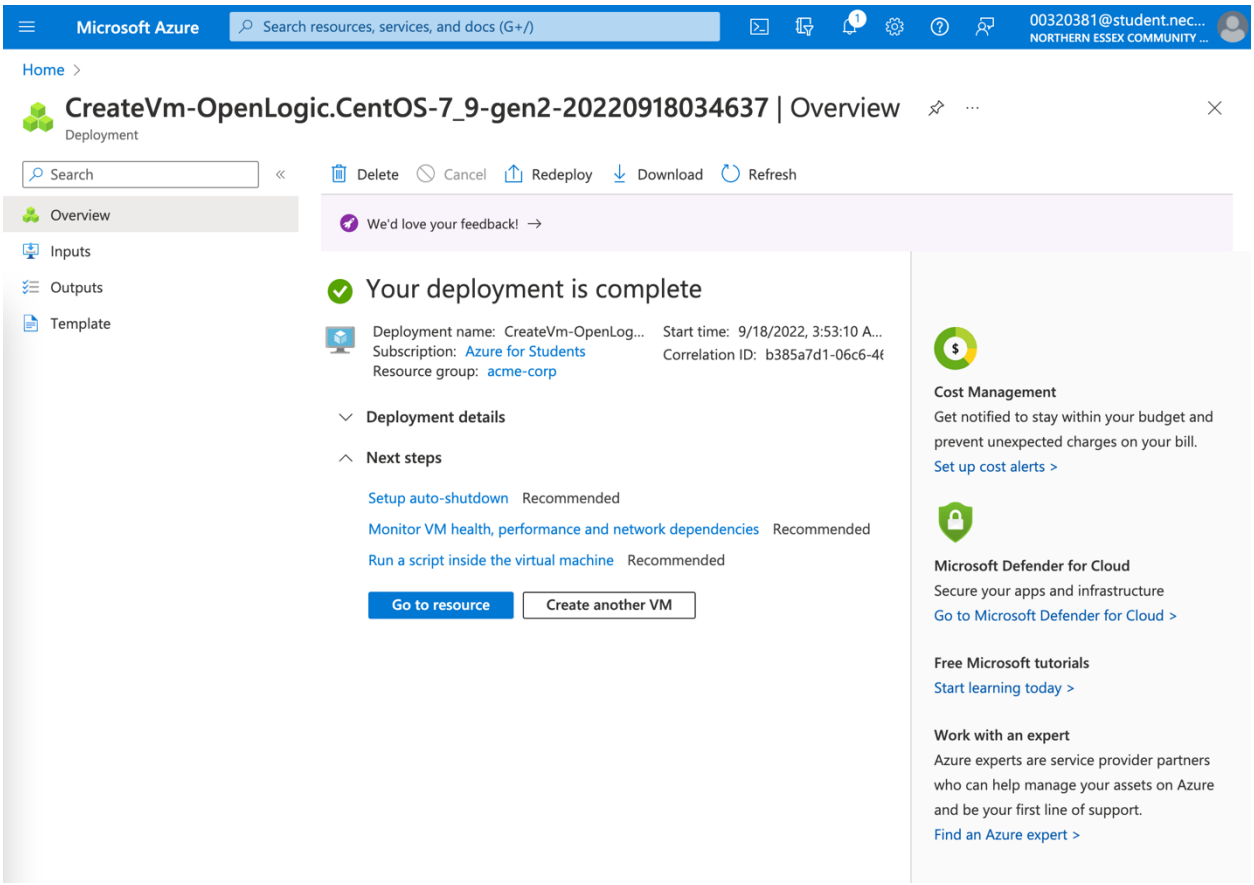
Networking

Virtual network	(new) acme-corp-vnet
Subnet	(new) default (10.1.0.0/24)
Public IP	(new) CentOS-ip
Accelerated networking	Off
Place this virtual machine behind an existing load balancing solution?	No
Delete public IP and NIC when VM is deleted	Disabled

Create < Previous Next > Download a template for automation Give feedback

Resolving host...

- We have opened port 22 on the VMs to allow access for SSH (which operates on port 22).



Home > Virtual machines >

Create a virtual machine

Basics | Disks | Networking | Management | Monitoring | Advanced | Tags | Review + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. Learn more

This subscription may not be eligible to deploy VMs of certain sizes in certain regions.

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * : Azure for Students

Resource group * : (New) acme-corp

Create new

Instance details

Virtual machine name * : CentOS

Region * : (US) West US 3

Availability options : No infrastructure redundancy required

Security type : Standard

Image * : CentOS-based 7.9 - Gen2

See all images | Configure VM generation

VM architecture : Arm64 / x64

Run with Azure Spot discount : ☐

Size * : Standard_B1s - 1 vcpu, 1 GiB memory ($7.59/month)

See all sizes

Administrator account

Authentication type : SSH public key / Password

Azure now automatically generates an SSH key pair for you and allows you to store it for future use. It is a fast, simple, and secure way to connect to your virtual machine.

Username * : mickey

SSH public key source : Use existing public key

SSH public key * :

```
ds3QyQKRM6fblwXxvJtrW3oMctArwsO6TKIwaHw==
00320381@student.necc.edu
```

Learn more about creating and using SSH keys in Azure

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * : None / Allow selected ports

Select inbound ports * : SSH (22)

This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

Create a virtual machine

Basics | Disks | Networking | Management | Monitoring | Advanced | Tags | Review + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. Learn more

This subscription may not be eligible to deploy VMs of certain sizes in certain regions.

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * : Azure for Students

Resource group * : acme-corp

Create new

Instance details

Virtual machine name * : Ubuntu

Region * : (US) West US 3

Availability options : No infrastructure redundancy required

Security type : Standard

Image * : Ubuntu Server 20.04 LTS - Gen2

See all images | Configure VM generation

VM architecture : Arm64 / x64

Run with Azure Spot discount : ☐

Size * : Standard_B1s - 1 vcpu, 1 GiB memory ($7.59/month)

See all sizes

Administrator account

Authentication type : SSH public key / Password

Azure now automatically generates an SSH key pair for you and allows you to store it for future use. It is a fast, simple, and secure way to connect to your virtual machine.

Username * : mickey

SSH public key source : Use existing public key

SSH public key * :

```
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAACAQDGk06jcqYLL92s8Vske9pqipp8fXk/
p0Lv4lBrNoQEQCavMAayF0iEqFZemXXPO0rSXOZYQzffRi+f+aNqabs1xfZYUA
```

Learn more about creating and using SSH keys in Azure

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * : None / Allow selected ports

Select inbound ports * : SSH (22)

This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

Create a virtual machine

Validation passed

Basics | Disks | Networking | Management | Monitoring | Advanced | Tags | **Review + create**

Cost given below is an estimate and not the final price. Please use Pricing calculator for all your pricing needs.

PRODUCT DETAILS

1 X Standard B1s
by Microsoft
Terms of use | Privacy policy

You are not authorized to view subscription price

Retail price 0.0104 USD/hr
Pricing for other VM sizes

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the Azure Marketplace Terms for additional details.

Name	Mickey Marcelin
Preferred e-mail address	00320381@student.necc.edu
Preferred phone number	978-556-3000

You have set SSH port(s) open to the internet. This is only recommended for testing. If you want to change this setting, go back to Basics tab.

Basics

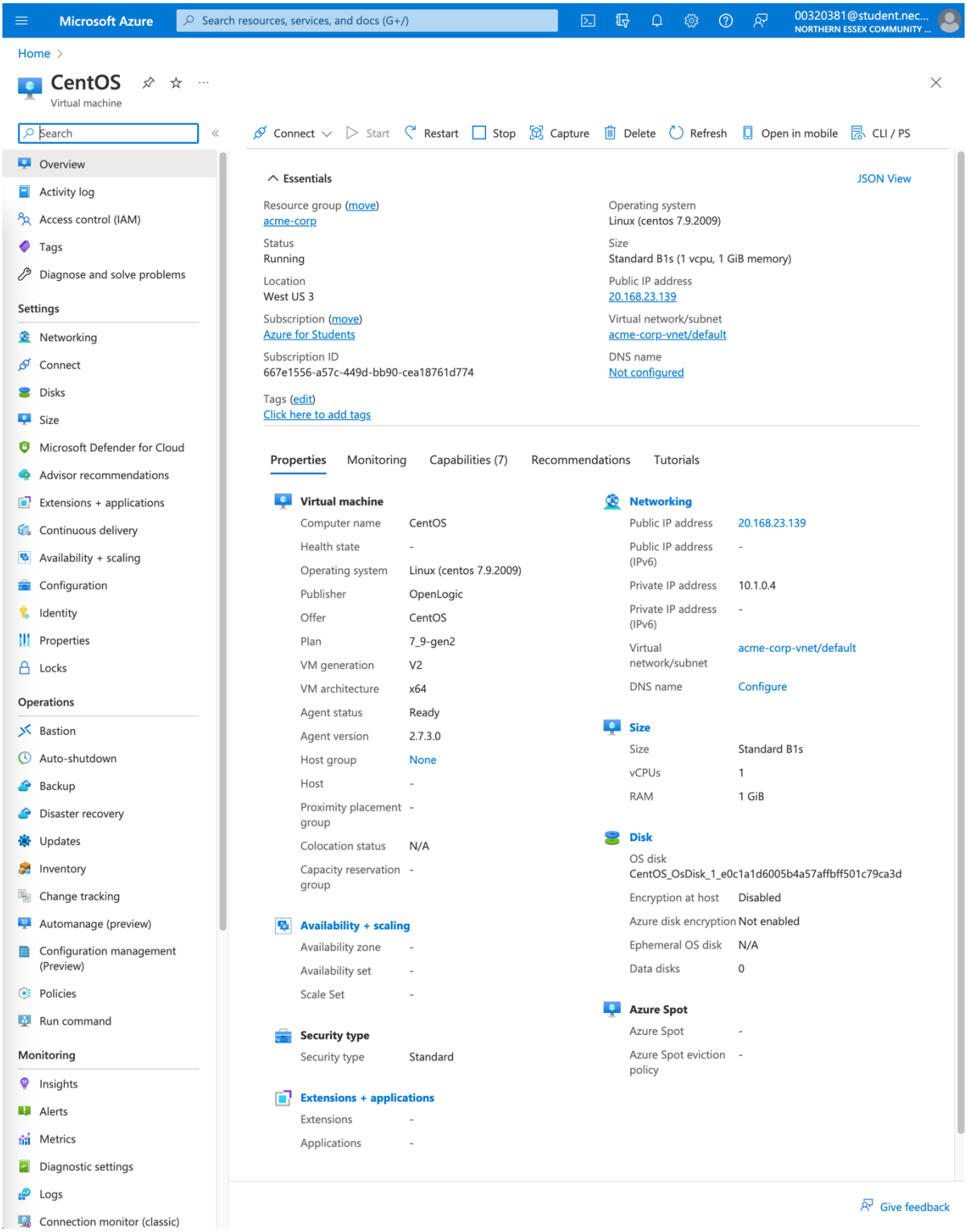
Subscription	Azure for Students
Resource group	acme-corp
Virtual machine name	Ubuntu
Region	West US 3
Availability options	No infrastructure redundancy required
Security type	Standard
Image	Ubuntu Server 20.04 LTS - Gen2
VM architecture	x64
Size	Standard B1s (1 vcpu, 1 GiB memory)
Authentication type	SSH public key
Username	mickey
Public inbound ports	SSH
Azure Spot	No

Disks

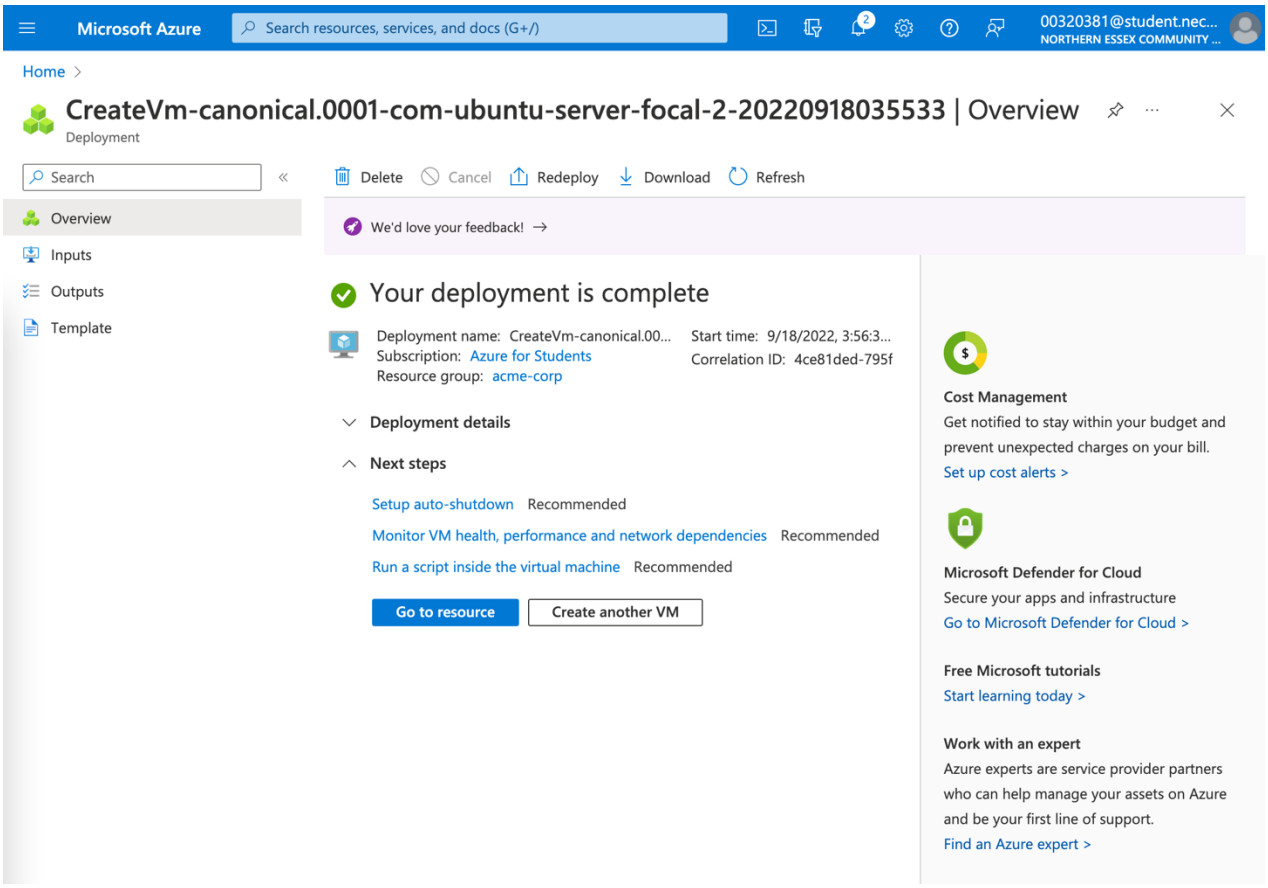
OS disk size	Default size (30 GiB)
OS disk type	Premium SSD LRS
Use managed disks	Yes
Delete OS disk with VM	Enabled
Ephemeral OS disk	No

Networking

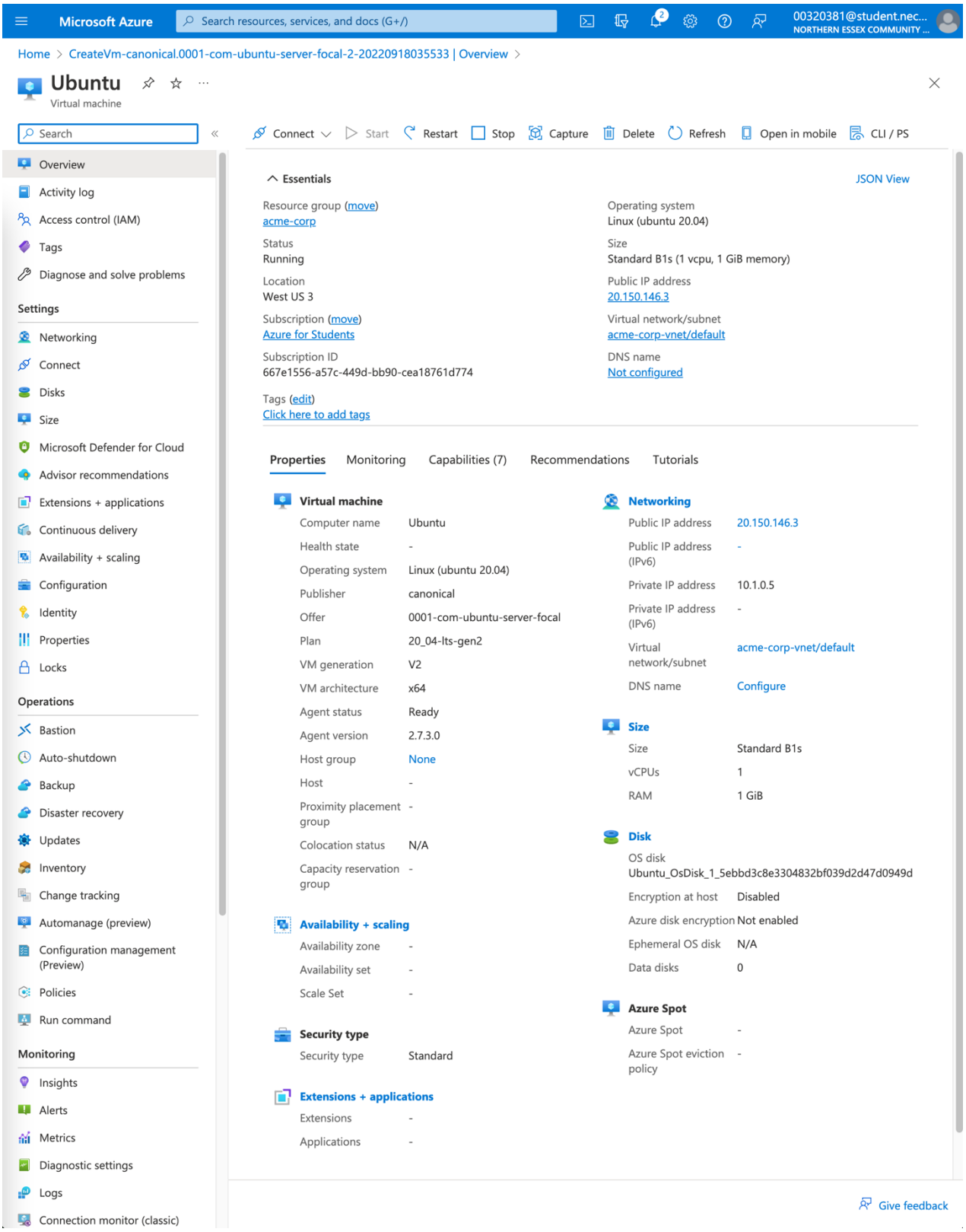
Virtual network	acme-corp-vnet
Subnet	default (10.1.0.0/24)
Public IP	None
Accelerated networking	Off
Place this virtual machine behind an existing load balancing solution?	No
Delete NIC when VM is deleted	Disabled



- Here we have successfully created a VM with CentOS whose public IP is 20.168.23.139 (required for accessing the VM via SSH).



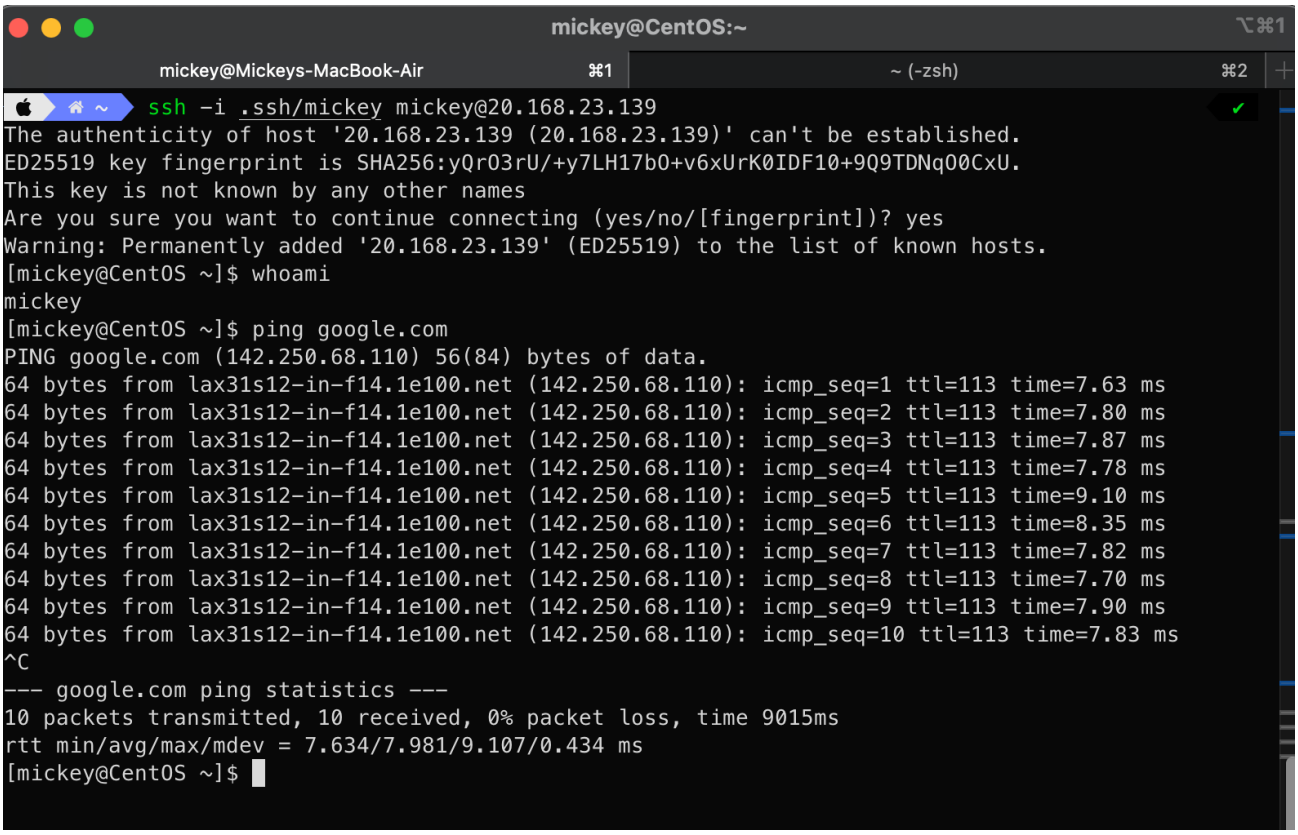
- It takes some time to allocate resources and displays the above.



- The Public IP of the Ubuntu VM is 20.150.146.3

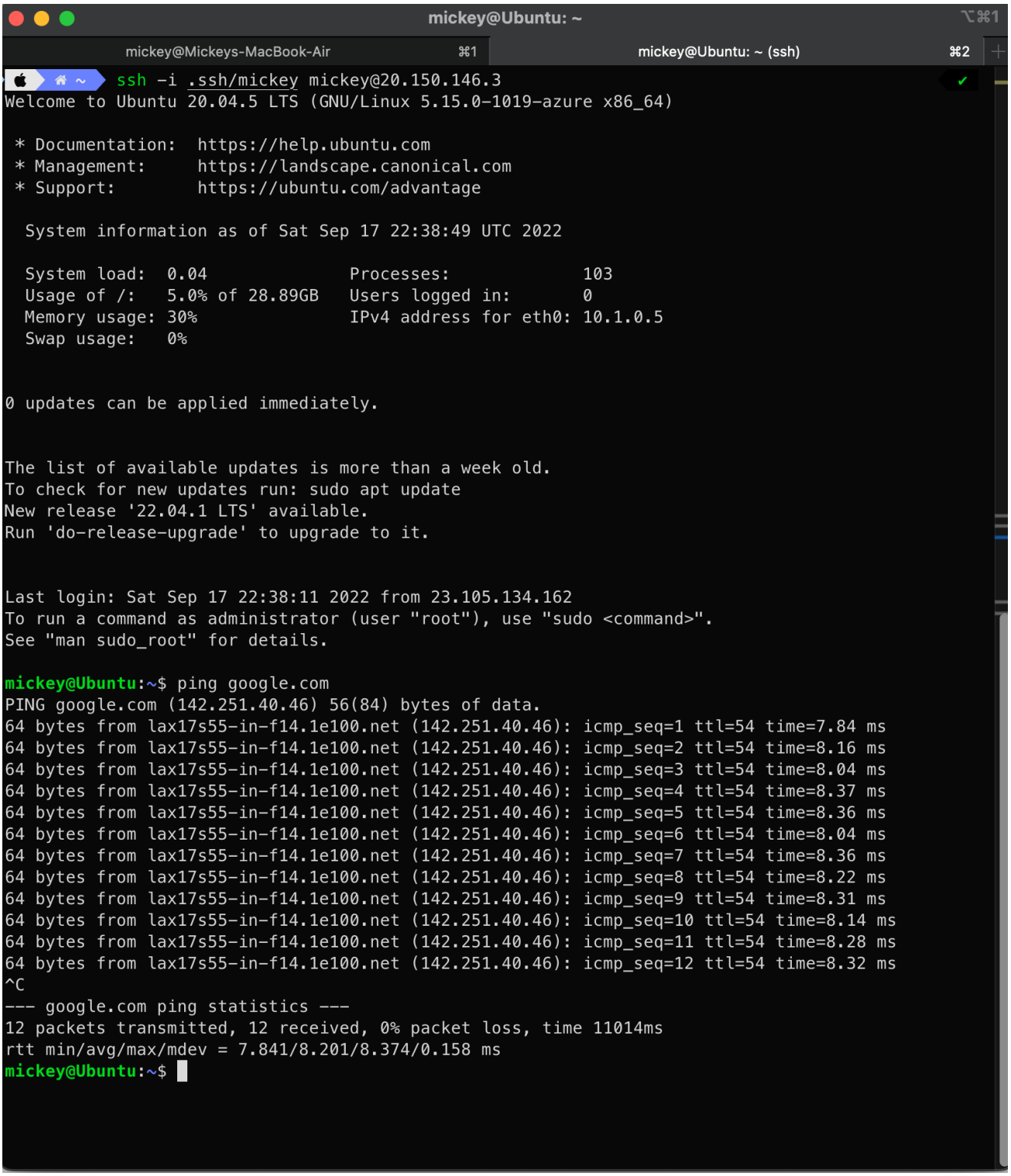
- After the VMs are deployed I can login into the system using SSH and the private-public keypair.

- We can login to the VMs using the command `ssh -i <private key> user@hostname`.
- My private-key is present under the directory ~/.ssh/mickey
- After logging in the successful ping to google.com suggests that both the VMs have internet access.

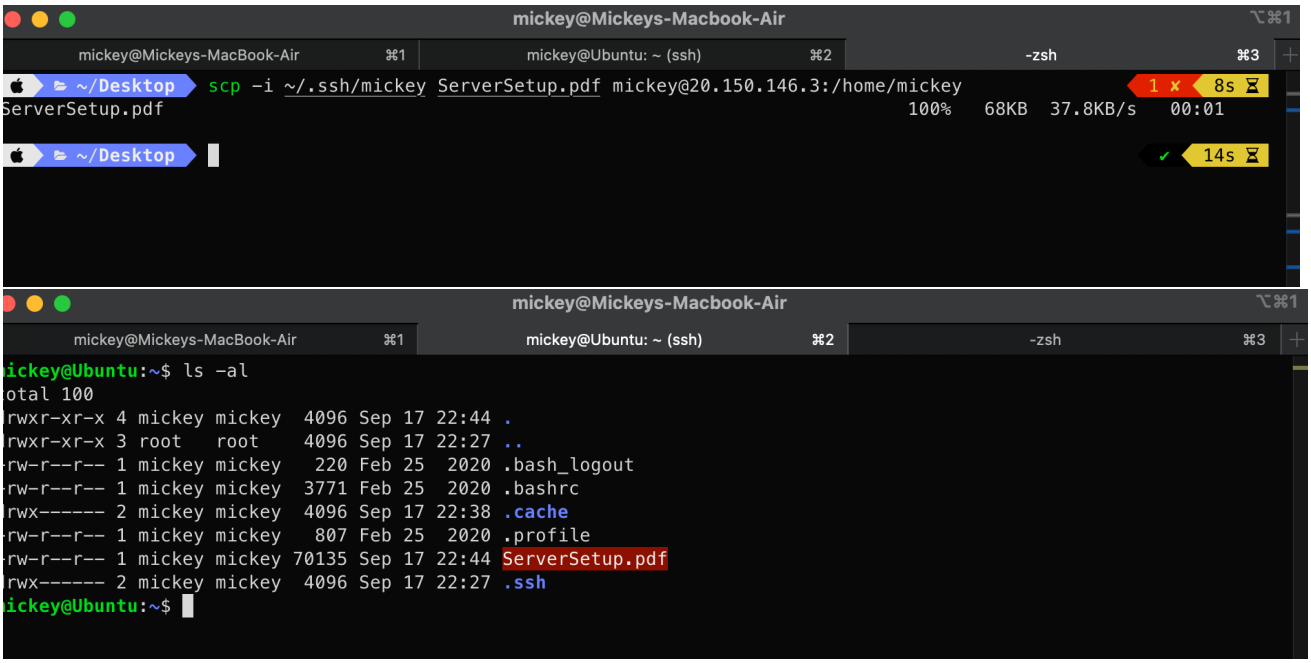


- Since we are using the same keypair we can use that private key to authenticate to one or more number of devices.

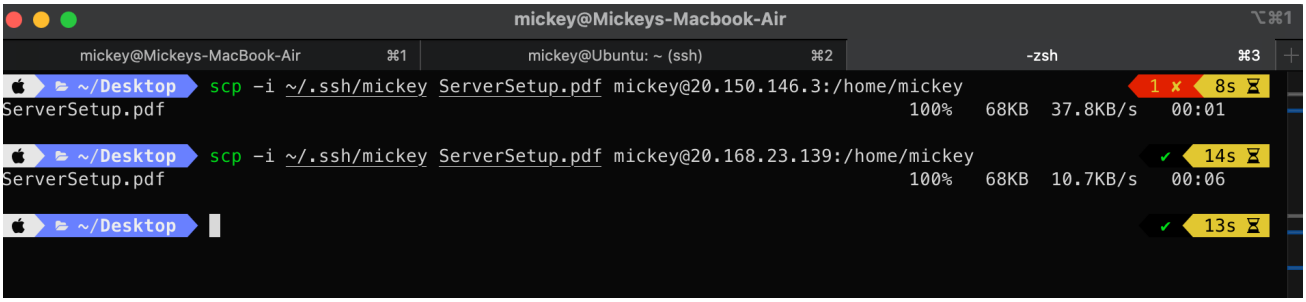
- Logging to the Ubuntu VM and ping google.com to test for internet connectivity.

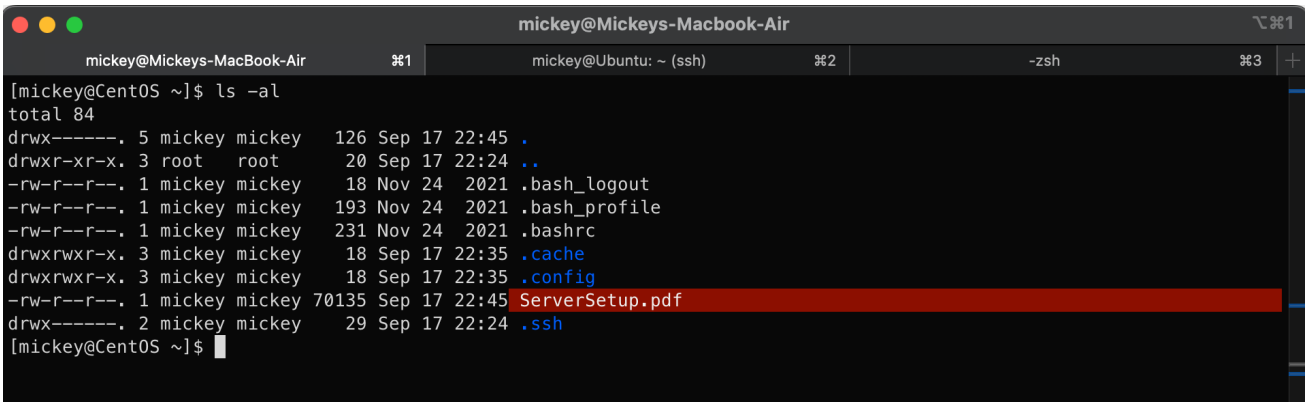


- After successful login, I can send the Assignment file - `serverSetup.pdf` to both the servers using SCP as shown below.



- The file transfer (ServerSetup.pdf) to both the VMs are successful as shown.





References:

1. https://docs.github.com/en/authentication/connecting-to-github-with-ssh/generating-a-new-ssh-key-and-adding-it-to-the-ssh-agent
2. https://learn.microsoft.com/en-us/azure/virtual-machines/linux/quick-create-portal
3. https://linuxize.com/post/how-to-use-scp-command-to-securely-transfer-files/
4. https://linux.die.net/man/1/ssh