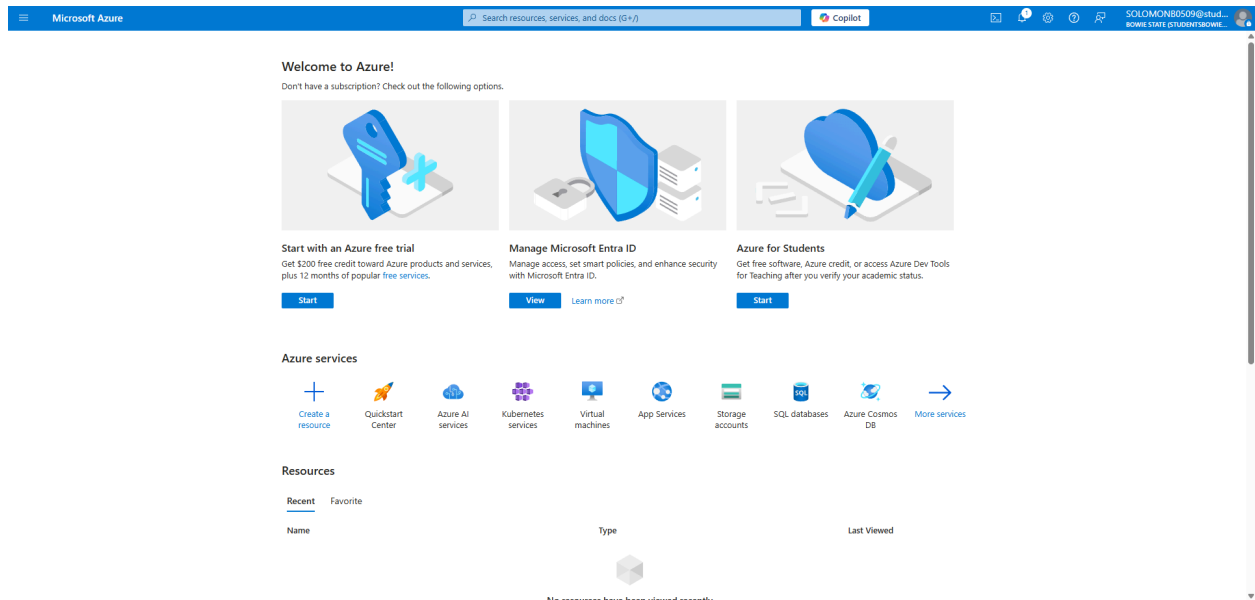



Branden Solomon  
5/6/25  
Professor Francis  
CTEC 475

## Capstone Module 4

1. Sign into your chosen cloud platform. Using the tools and services available to you in this platform, create resources needed for the following cloud deployment:



- a. One VPC or VNet



### Virtual network

Microsoft | Azure Service

★ 4.7 (143 ratings)

Plan

Virtual network

Create

Overview

Plans

Usage Information + Support


Ratings + Reviews

Create a logically isolated section in Microsoft Azure with this networking service. You can securely connect it to your on-premises datacenter or a single client machine using an IPsec connection. Virtual Networks make it easy for you to take advantage of the scalable, on-demand infrastructure of Azure while providing connectivity to data and applications on-premises, including systems running on Windows Server, mainframes, and UNIX.


Use Virtual Network to:

- Extend your datacenter
- Build distributed applications
- Remotely debug your applications


More products from Microsoft [See All](#)




**Active Directory Health Check**  
Microsoft  
Azure Service  
Assess the risk and health of Active Directory environments.



**AD Replication Status**  
Microsoft  
Azure Service  
Identify Active Directory replication issues in your environment.



**Device Update for IoT Hub**  
Microsoft  
Azure Service  
Securely and Reliably update your devices with Device Update for IoT Hub.



**Front Door and CDN profiles**  
Microsoft  
Azure Service  
Azure Front Door and CDN profiles is security led, modern cloud CDN that provides static and dynamic content acceleration, global load balancing and enhanced security for your apps.

Give feedback

Basics

Tags

Review + create

**Resource group** - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization. [Learn more](#)

Subscription \*

Azure for Students

Resource group name \*

my-network-rg

Region \*

(US) East US

Microsoft Azure

Search resources, services, and docs (G+I)

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[Home](#) > [Virtual networks](#) >

## Create virtual network

[Basics](#) [Security](#) [IP addresses](#) [Tags](#) [Review + create](#)

Azure Virtual Network (VNet) is the fundamental building block for your private network in Azure. VNet enables many types of Azure resources, such as Azure Virtual Machines (VM), to securely communicate with each other, the internet, and on-premises networks. VNet is similar to a traditional network that you'd operate in your own data center, but brings with it additional benefits of Azure's infrastructure such as scale, availability, and isolation.  
[Learn more.](#)

### 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 \*

my-network-rg

[Create new](#)

### Instance details

Virtual network name \*

my-vnet

Region \*

(US) East US

[Deploy to an Azure Extended Zone](#)

Previous

Next

Review + create

[Give feedback](#)

b. Two subnets in the VPC or VNet using the CIDR blocks 172.16.0.0/24 and 172.16.1.0/24.

Home > Virtual networks >

Create virtual network

✕

Basics Security **IP addresses** Tags Review + create

Configure your virtual network address space with the IPv4 and IPv6 addresses and subnets you need. [Learn more](#)

Define the address space of your virtual network with one or more IPv4 or IPv6 address ranges. Create subnets to segment the virtual network address space into smaller ranges for use by your applications. When you deploy resources into a subnet, Azure assigns the resource an IP address from the subnet. [Learn more](#)

+ Add a subnet

172.16.0.0/16

172.16.0.0

/16

172.16.0.0 - 172.16.255.255

65,536 addresses

Delete address space

Subnets	IP address range	Size	NAT gateway
default	172.16.0.0 - 172.16.0.255	/24 (256 addresses)	-

Add IPv4 address space

Home > my-vnet

my-vnet | Address space

✕

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Settings

**Address space**

Connected devices

Subnets

Bastion

DDoS protection

Firewall

Microsoft Defender for Cloud

Network manager

DNS servers

Peerings

Service endpoints

Private endpoints

Properties

Locks

Monitoring

The address space for a virtual network is composed of one or more non-overlapping address ranges that are specified in CIDR notation. IP Address Management (IPAM) is recommended to simplify address management and avoid overlapping address space. When not using IPAM, it is recommended to use an address range that is not globally routable, such as 172.16.0.0/12, or a range defined in RFC 1918 or RFC 6598. [Learn more](#)

Address space	Address range	Address count
172.16.0.0/16	172.16.0.0 - 172.16.255.255	65,536
<div>Add additional address range</div>		

Peered virtual network address space

Peering name	Peered to	Address space
No results.		

Save Cancel

Microsoft Azure

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Home > my-vnet

my-vnet | Subnets

Virtual network

Search

+ Subnet Refresh Manage users Delete

Create subnets to segment the virtual network address space into smaller ranges for use by your applications. When you deploy resources into a subnet, Azure assigns the resource an IP address from the subnet.

Search subnets

	Name ↑	IPv4	IPv6	Available IPs	Delegated to	Security group	Route table	
<input type="checkbox"/>	subnet-172-16-1-0	172.16.1.0/24	-	251	-	-	-	
<input type="checkbox"/>	subnet-172-16-2-0	172.16.2.0/24	-	251	-	-	-	

Showing 2 subnets

Give feedback

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Settings

Address space

Connected devices

Subnets

Bastion

DDoS protection

Firewall

Microsoft Defender for Cloud

Network manager

DNS servers

Peerings

Service endpoints

Private endpoints

Properties

Locks

Monitoring

Successfully added subnet  
Successfully added subnet 'subnet-172-16-2-0' to virtual network 'my-vnet'.

Add or remove favorites by pressing Ctrl+Shift+F

c. A VM instance in each subnet with access to the Internet

Microsoft Azure

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Home > Compute infrastructure | Virtual machines >

Create a virtual machine

✕

🔗 Help me create a low cost VM

Help me create a VM optimized for high availability

Help me choose the right VM size for my workload

Virtual machine name \*

vm-172-16-0-1

Region \*

(US) East US

Availability options

Availability zone

Zone options

☒ Self-selected zone  
Choose up to 3 availability zones, one VM per zone

☐ Azure-selected zone (Preview)  
Let Azure assign the best zone for your needs

☐ Using an Azure-selected zone is not supported in region 'East US'.

Availability zone \*

Zone 1

☒ You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type

Trusted launch virtual machines

[Configure security features](#)

☒ Trusted launch virtual machine is required when using IP Gallery images.

Image \*

Ubuntu Server 24.04 LTS - x64 Gen2

[See all images](#) | [Configure VM generation](#)

VM architecture

☐ Arm64

☒ x64

Run with Azure Spot discount

☐

Size \*

Standard\_D2s\_v3 - 2 vcpus, 8 GiB memory (\$70.08/month)

[See all sizes](#)

Enable Hibernation

☐

< Previous

Next : Disks >

Review + create

Give feedback

Microsoft Azure

Search resources, services, and docs (G+/I)

Copilot

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Home > Compute infrastructure | Virtual machines >

Create a virtual machine

✕

🔗 Help me create a low cost VM

Help me create a VM optimized for high availability

Help me choose the right VM size for my workload

Basics

Disks

Networking

Management

Monitoring

Advanced

Tags

Review + create

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution.

[Learn more](#)

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network \*

(new) vm-172-16-0-1-vnet

[Create new](#)

Subnet \*

(new) default (10.0.0.0/24)

[Create new](#)

Public IP

(new) vm-172-16-0-1-ip

[Create new](#)

NIC network security group

☐ None

☒ Basic

☐ Advanced

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.

Delete public IP and NIC when VM is deleted

☐

< Previous

Next : Management >

Review + create

Give feedback

Microsoft Azure

Search resources, services, and docs (G+I)

Copilot

Home > Compute infrastructure > Virtual machines >

## Create a virtual machine

Help me create a low cost VM | Help me create a VM optimized for high availability | Help me choose the right VM size for my workload

Virtual machine name \*

Region \*

Availability options

Zone options ☒ Self-selected zone  
Choose up to 3 availability zones, one VM per zone  
☐ Azure-selected zone (Preview)  
Let Azure assign the best zone for your needs  
**Using an Azure-selected zone is not supported in region 'East US'.**

Availability zone \*   
**You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)**

Security type   
Configure security features  
**Trusted launch virtual machine is required when using 1P Gallery images.**

Image \*   
[See all images](#) | [Configure VM generation](#)

VM architecture ☐ Arm64  
☒ x64

Run with Azure Spot discount ☐

Size \*   
[See all sizes](#)

Enable Hibernation ☐

< Previous | Next > | **Review + create**

[Give feedback](#)

Microsoft Azure

Search resources, services, and docs (G+I)

Copilot

Home > Compute infrastructure > Virtual machines >

## Create a virtual machine

Help me create a low cost VM | Help me create a VM optimized for high availability | Help me choose the right VM size for my workload

### Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network \*   
[Create new](#)

Subnet \*

Public IP \*   
[Create new](#)

NIC network security group ☐ None  
☒ Basic  
☐ Advanced

Public inbound ports \* ☐ None  
☒ Allow selected ports

Select inbound ports \*

**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.**

Delete public IP and NIC when VM is deleted ☐

Enable accelerated networking ☒

### Load balancing

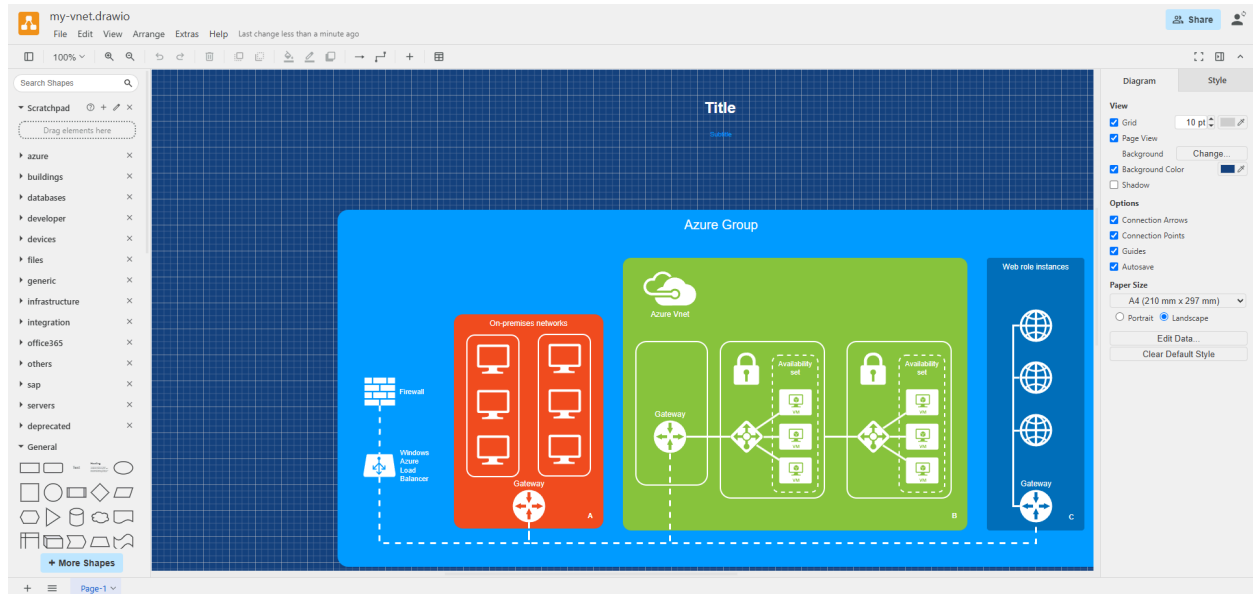
You can place this virtual machine in the backend pool of an existing Azure load balancing solution. [Learn more](#)

< Previous | Next: Management > | **Review + create**

[https://portal.azure.com/?Microsoft\\_Azure\\_Education\\_correlationId=3ff69c44-7d9f-4f79-8c42-4e5532c6a479](https://portal.azure.com/?Microsoft_Azure_Education_correlationId=3ff69c44-7d9f-4f79-8c42-4e5532c6a479)

[Give feedback](#)

2. Use a drawing app, such as Visio or app.diagrams.net, to draw the VPC or VNet and its resources that you created in this project, showing logical connections and relative position of each resource.



3. When your deployment is complete and fully running, take screenshots to document the configurations required in Step 1.

I did it.

4. Delete all the resources you created in this project. Check through your account to confirm that all related resources have been deleted.



Microsoft Azure

Search resources, services, and docs (G+)

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Home > Compute infrastructure

Compute infrastructure | Virtual machines

Virtual machines

Overview

All resources

Infrastructure

Virtual machines

Virtual Machine Scale Set (VMSS)

Compute Fleet (preview)

> Disks + images

> Capacity + placement

> Related services

> Help

Get started

+ Create

Switch to classic

Reservations

Manage view

Refresh

Export to CSV

Open query

Assign tags

Start

Rest

Filter for any field...

Subscription equals all

Type equals all

Resource group equals all

Location equals all

Add filter

Showing 1 to 2 of 2 records.

Name	Subscription	Resource group	Location	Status	Operating system	Size
vm-172-16-0-1	Azure for Students	vm-172-16-0-1.group	East US	Running	Linux	Stand
vm-172-16-1-1	Azure for Students	vm-172-16-1-1.group	East US	Running	Linux	Stand

< Previous | Page 1 of 1 | Next >

Add or remove favorites by pressing Ctrl+Shift+F

Delete Resources

The selected resources along with their related resources and contents will be permanently deleted. If you are unsure of the selected resource dependencies, navigate to the individual resource page to perform the delete operation. More details of the resource dependencies are available in the manage experience.

Resources to be deleted (2)

☒ Apply force delete for selected Virtual machines and Virtual machine scale sets

Enter "delete" to confirm deletion \*

delete

Delete Cancel

Microsoft Azure

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Home > Virtual networks > vm-172-16-0-1-vnet

Virtual networks

Bowie State (studentsbowiestate.onmicrosoft.com)

+ Create

Manage view

Filter for any field...

Name

vm-172-16-0-1-vnet

vm-172-16-1-1-vnet

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Settings

Address space

Connected devices

Subnets

Station

DDoS protection

Firewall

Microsoft Defender for Cloud

Network manager

DNS servers

Peerings

Service endpoints

Private endpoints

Properties

Locks

Monitoring

Refresh

Export to CSV

Delete

Search connected devices

Type: all

Subnet: all

Device	Type
vm-172-16-0-1641_z1	Network interface

Page 1 of 1

Add or remove favorites by pressing Ctrl+Shift+F

Delete connected devices

The selected resources will be permanently deleted. If you are unsure of the selected resource dependencies, navigate to the individual resource page to perform the delete operation. View the resource to see its dependencies.

Resources to be deleted (1)

Enter "delete" to confirm deletion \*

delete

Delete Cancel

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

Home

Virtual networks

Bowie State (studentsbowiestate.onmicrosoft.com)

Create

Manage view

Refresh

Export to CSV

Open query

Assign tags

Filter for any field...

Subscription equals all

Resource group equals all

Location equals all

Add filter

Showing 0 to 0 of 0 records.

No grouping

List view

Name	Resource group	Location	Subscription
------	----------------	----------	--------------



No virtual networks to display

Create a virtual network to securely connect your Azure resources to each other. Connect your virtual network to your on-premises network using an Azure VPN Gateway or ExpressRoute.

Create virtual network

Learn more

Give feedback

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

Home

Resource groups

Bowie State (studentsbowiestate.onmicrosoft.com)

Create

Group by none

You are viewing a new version of Browse experience. Some features may be missing. Click here to access the old experience.

Name

my-network-rg

NetworkWatcherRG

vm-172-16-0-1\_group

vm-172-16-1-1\_group

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Events

Settings

Deployments

Security

Deployment stacks

Policies

Properties

Locks

Cost Management

Monitoring

Automation

Help

my-network-rg

Resource group

Search

Create

Manage view

Delete resource group

Refresh

Export to CSV

Open query

Essentials

Subscription (mow) : Azure for Students

Subscription ID : 090f47b7-alle7-44f5-a691-ac73987dc0a9

Tags (edit) : Add tags

Resources

Recommendations

Filter for any field...

Type equals all

Location equals all

Add filter

Showing 0 to 0 of 0 records.

Show hidden types

Name	Type
------	------

No resources match your filter

Create resources

Clear filter

Learn more

Delete a resource group

The following resource group and all its dependent resources will be permanently deleted.

Resource group to be deleted

my-network-rg

Deployments

Location

Delete confirmation

Deleting this resource group and its dependent resources is a permanent action and cannot be undone.

Delete

Go back

Enter resource group name to confirm deletion \*

my-network-rg

Delete

Cancel

Home >

Recent

Manage view Refresh Export to CSV Clear Assign tags

Group by none

Filter for any field... Subscription equals all Resource Group equals all Type equals all Location equals all Add filter



No resources to display  
Try changing or clearing your filters.

Showing 1 - 0 of 0. Display count: auto

Give feedback

Home >

Resource groups

Bowie State (solomon80509@stud...)

Create Manage view Refresh Export to CSV Open query Assign tags

Group by none

You are viewing a new version of Browse experience. Some features may be missing. Click here to access the old experience.

Filter for any field... Subscription equals all Location equals all Add filter

Name ?	Subscription	Location
--------	--------------	----------

Showing 1 - 1 of 1. Display count: auto

Give feedback