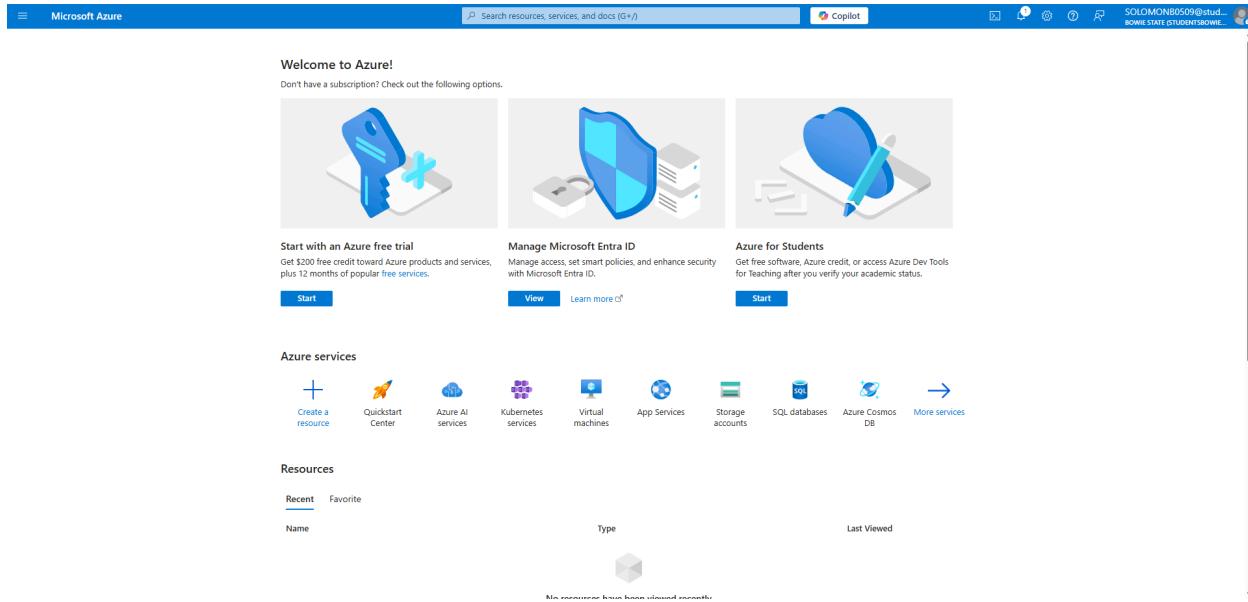


Branden Solomon  
5/6/25  
Professor Francis  
CTEC 475

## 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:



The screenshot shows the Microsoft Azure portal homepage. At the top, there's a navigation bar with 'Microsoft Azure' on the left, a search bar in the center, and various icons on the right, including one for 'Copilot'. Below the navigation bar, a banner says 'Welcome to Azure!' and encourages users to start with an Azure free trial or manage their Microsoft Entra ID. There are three main sections: 'Start with an Azure free trial', 'Manage Microsoft Entra ID', and 'Azure for Students'. Each section has a 'Start' button. Below these, there's a section titled 'Azure services' with icons for 'Create a resource', 'Quickstart Center', 'Azure AI services', 'Kubernetes services', 'Virtual machines', 'App Services', 'Storage accounts', 'SQL databases', 'Azure Cosmos DB', and a 'More services' button. At the bottom, there's a 'Resources' section with tabs for 'Recent' (which is selected) and 'Favorite', and a table showing columns for 'Name', 'Type', and 'Last Viewed'. A note at the bottom states 'No resources have been viewed recently.'

- a. One VPC or VNet

Microsoft Azure

Home > Virtual network

**Virtual network**

Add to Favorites

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 Security 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 fast and dynamic content acceleration, geolocation balancing and enhanced security for your apps.

Give feedback

Microsoft Azure

Home > Resource groups

**Create a resource group**

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 \*

Resource group name \*

Region \*

Previous

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

SOLOMONB0509@stud... SOONER STATE STUDENT\SOONER...

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. It's 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 \*

Resource group \*  [Create new](#)

**Instance details**

Virtual network name \*

Region \*  [Deploy to an Azure Extended Zone](#)

Previous   [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.

Microsoft Azure

Home > Virtual networks > Create virtual network

IP addresses

Add a subnet

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

Add IPv4 address space

Previous Next Review + create Give feedback

Microsoft Azure

my-vnet | Address space

Address space

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

Add additional address range

Peered virtual network address space

Peering name	Peer to	Address space	Address range
No results.			

Save Cancel Give feedback

Microsoft Azure

Home > my-vnet

my-vnet | Subnets

Virtual network

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

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

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.

Name	IPv4	IPv6	Available IPs	Delegated to	Security group	Route table
subnet-172-16-1-0	172.16.1.0/24	-	251	-	-	-
subnet-172-16-2-0	172.16.2.0/24	-	251	-	-	-

Search subnets

Add or remove filters by pressing Ctrl + Shift + F

Showing 2 subnets

Give feedback

Search resources, services, and docs (G+)

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

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

Microsoft Azure

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

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  x64

Run with Azure Spot discount

Size \*  ▾

See all sizes

Enable Hibernation

< Previous Next : Disks > Review + create Give feedback

Microsoft Azure

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 \*  Create new

Subnet \*  Create new

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

< Previous Next : Management > Review + create Give feedback

Microsoft Azure

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 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 \*   
See all sizes

Enable Hibernation

< Previous Next : Disks > Review + create Give feedback

Microsoft Azure

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

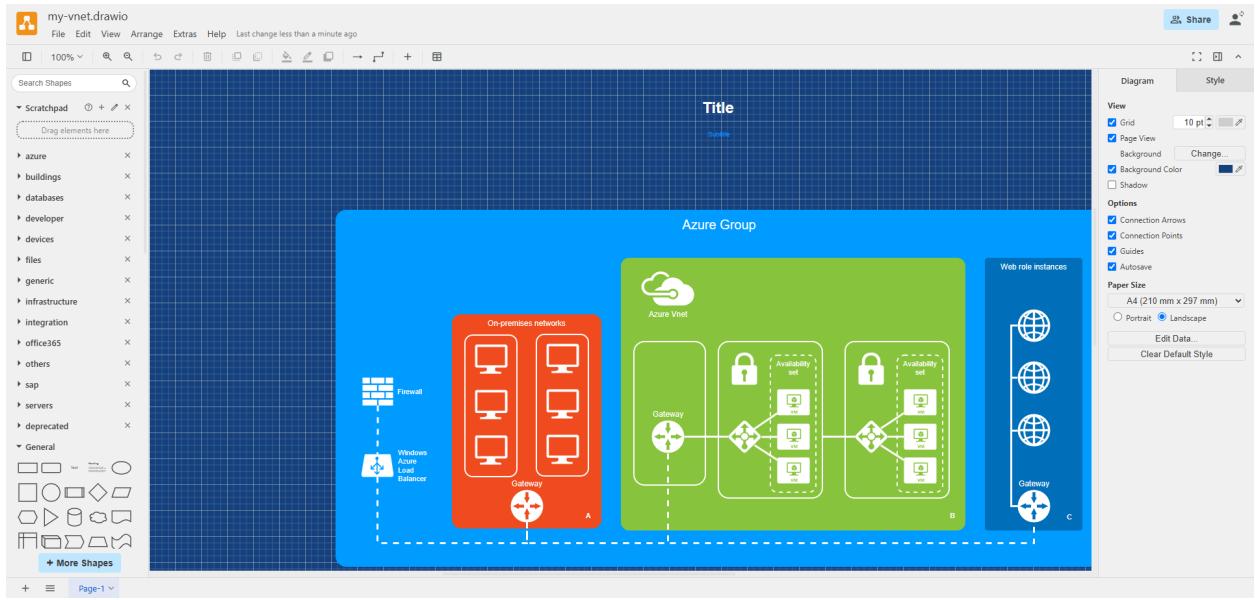
Enable accelerated networking

**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 Give feedback

[https://portal.azure.com/?Microsoft\\_Azure\\_Education\\_correlationId=3ff69c14-7dff-4f7d-8c42-4e5528ca6a47#](https://portal.azure.com/?Microsoft_Azure_Education_correlationId=3ff69c14-7dff-4f7d-8c42-4e5528ca6a47#)

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** | Compute infrastructure | Virtual machines

Virtual machines Get started

Subscription equals all Type equals all Resource group equals all Location equals all Add filter

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	Standard
vm-172-16-1-1	Azure for Students	vm-172-16-1-1_group	East US	Running	Linux	Standard

< 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)**

Name	Resource type
vm-172-16-0-1	VirtualMachine
vm-172-16-1-1	VirtualMachine

Apply force delete for selected Virtual machines and Virtual machine scale sets (Optional)

Enter "delete" to confirm deletion \*

**delete**

**Delete** **Cancel**

**Microsoft Azure** | Virtual networks | vm-172-16-0-1-vnet

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

Virtual network 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

vm-172-16-0-1-vnet

Device 1 Type 1

vm-172-16-0-1641\_1 Network interface

< Previous Page 1 of 1 Next >

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)**

Resource	Resource Type
vm-172-16-0-1641_1	Network interface

Enter "delete" to confirm deletion \*

**delete**

**Delete** **Cancel**

Microsoft Azure

Home > Virtual networks

Bowie State (studentbowiestate.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

No grouping List view

Showing 0 to 0 of 0 records.

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 ↗

Microsoft Azure

Home > Resource groups

Bowie State (studentbowiestate.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

my-network-rg

Resource group

Search

+ Create Manage view Delete resource group Refresh Export to CSV Open query

Overview

Essentials

Subscription (move) : Azure for Students

Subscription ID : 09047fb7-a8e7-44f5-a691-ac73987dc0a9

Deployment Location

Tags

Resource visualizer

Events

Settings

Deployments

Activity log

Access control (IAM)

Security

Deployment stacks

Policies

Properties

Locks

Cost Management

Monitoring

Automation

Help

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 filters

+ Create resources Clear filters

Learn more

Give feedback

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

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

Add or remove favorites by pressing Ctrl+Shift+F

Microsoft Azure

Home >

Recent ...

Manage view Refresh Export to CSV Clear Assign tags

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

Group by none

No resources to display

Try changing or clearing your filters.

Showing 1 - 0 of 0. Display count: auto

Give feedback

Microsoft Azure

Home >

Resource groups ...

Bowie State (studentsbowiestate.onmicrosoft.com)

Create Manage view Refresh Export to CSV Open query Assign tags

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

Group by none

Name	Subscription	Location
Subscription	Subscription	Location

Showing 1 - 1 of 1. Display count: auto

Give feedback

1 / 1