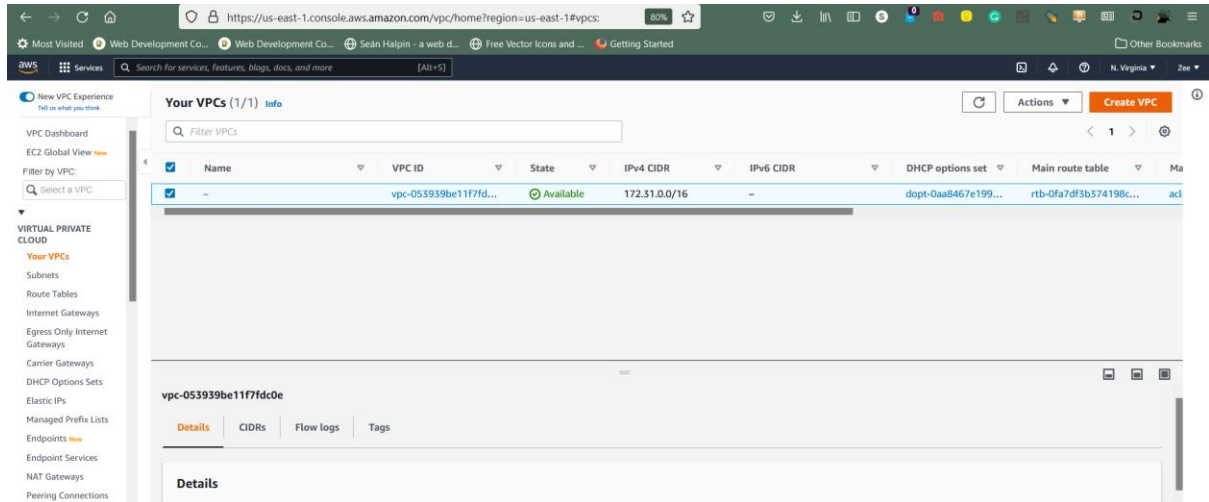


# Practical 5

Aim: Create a Virtual Private Cloud in AWS.

Steps:

1) Create VPC



VPC > Your VPCs > Create VPC

## Create VPC [Info](#)

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances.

### VPC settings

**Resources to create** [Info](#)  
Create only the VPC resource or create VPC, subnets, etc.

☒ VPC only ☐ VPC, subnets, etc.

**Name tag - optional**  
Creates a tag with a key of 'Name' and a value that you specify.

my-demo-vpc

**IPv4 CIDR block** [Info](#)

☒ IPv4 CIDR manual input ☐ IPAM-allocated IPv4 CIDR block

IPv4 CIDR

10.0.0.0/16

**IPv6 CIDR block** [Info](#)

☒ No IPv6 CIDR block ☐ IPAM-allocated IPv6 CIDR block ☐ Amazon-provided IPv6 CIDR block ☐ IPv6 CIDR owned by me

**Tenancy** [Info](#)

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Value - *optional*

🔍 my-demo-vpc

**Add new tag**

Cancel

## Create VPC

**Internet gateways (1/1) Info**

Filter by VPC:

<input checked="" type="checkbox"/>	Name	Internet gateway ID	State	VPC ID	Owner
<input checked="" type="checkbox"/>	-	igw-0031d09380fae79fd	Attached	vpc-053939be11f7fdc0e	091350768449

**igw-0031d09380fae79fd**

Details | Tags

---

**Details**

Internet gateway ID igw-0031d09380fae79fd	State Attached	VPC ID vpc-053939be11f7fdc0e	Owner 091350768449
--	-------------------	---------------------------------	-----------------------

## 2) Create Internet Gateway

VPC > Internet gateways > Create internet gateway

## Create internet gateway [Info](#)

An internet gateway is a virtual router that connects a VPC to the internet. To create a new internet gateway specify the name for the gateway below.

### Internet gateway settings

#### Name tag

Creates a tag with a key of 'Name' and a value that you specify.

### Tags - *optional*

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key



Value - *optional*



Remove

Add new tag

You can add 49 more tags.

Cancel

Create internet gateway

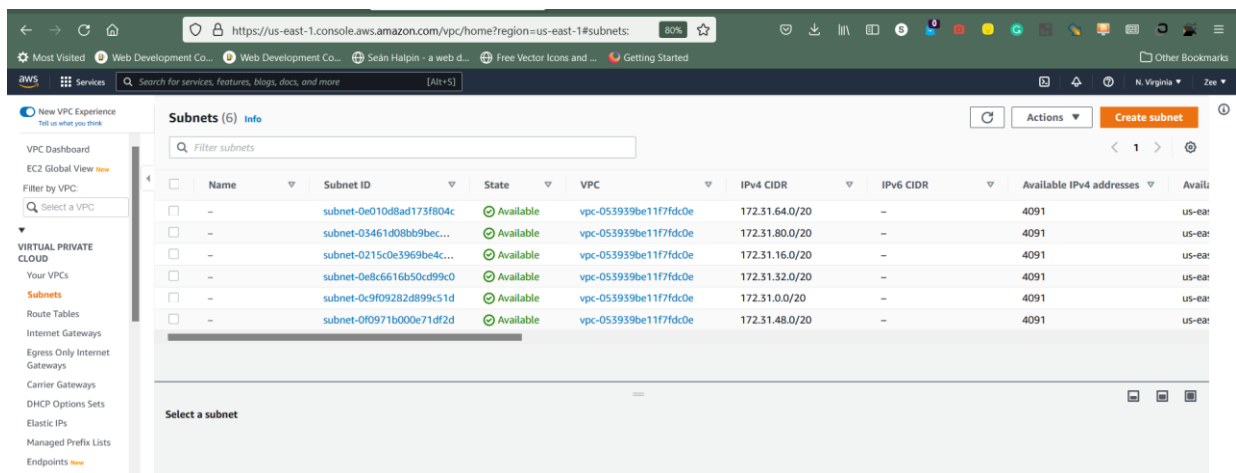
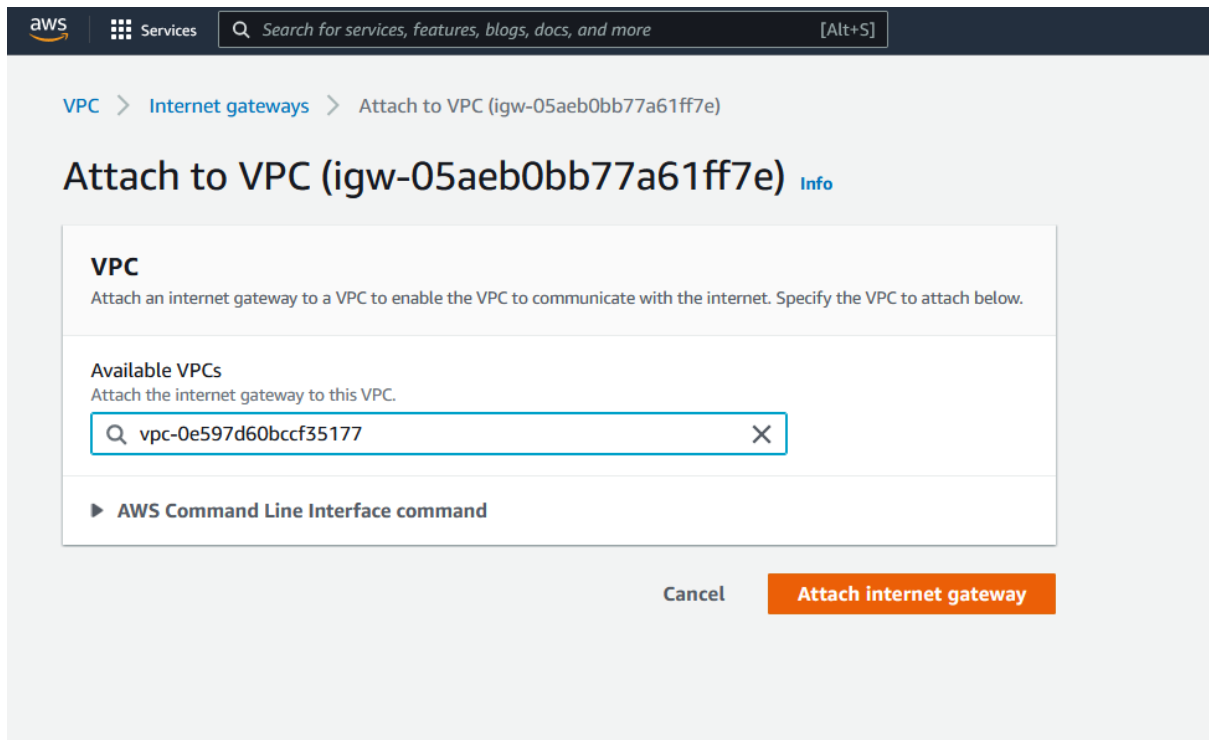
Actions ▲

Attach to VPC

Detach from VPC

Manage tags

Delete



3) Create Subnet.

4) Configure Subnet for public and private instance.

Create subnet [Info](#)

## VPC

## VPC ID

Create subnets in this VPC.

vpc-0e597d60bccf35177 (my-demo-vpc) ▼

## Associated VPC CIDRs

IPv4 CIDRs

10.0.0.0/16

## Subnet settings

Specify the CIDR blocks and Availability Zone for the subnet.

## Subnet 1 of 1

## Subnet name

Create a tag with a key of 'Name' and a value that you specify.

Public-Subnet

The name can be up to 256 characters long.

Availability Zone [Info](#)

Choose the zone in which your subnet will reside, or let Amazon choose one for you.

No preference ▼

IPv4 CIDR block [Info](#)

10.0.1.0/24

## Tags - optional

## Key

Name

## Value - optional

Public-Subnet

Remove

Add new tag

You can add 49 more tags.

Remove

Add new subnet

Cancel

Create subnet

← → ↻ 🔍 https://us-east-1.console.aws.amazon.com/vpc/home?region=us-east-1#subnets:Subn 80% ☆

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N. Virginia ▼ Zee ▼

New VPC Experience Tell us what you think

You have successfully created 1 subnet: subnet-0e68b26aafc5fcc2a

Subnets (1) [Info](#)

Filter subnets

Subnet ID: subnet-0e68b26aafc5fcc2a Clear filters

	Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR	Available IPv4 addresses	Availi
<input type="checkbox"/>	Public-Subnet	subnet-0e68b26aafc5fcc2a	Available	vpc-0e597d60bccf35177 [...]	10.0.1.0/24	-	251	us-ea

Select a subnet

## Subnet settings

Specify the CIDR blocks and Availability Zone for the subnet.

### Subnet 1 of 1

#### Subnet name

Create a tag with a key of 'Name' and a value that you specify.

Private-Subnet

The name can be up to 256 characters long.

#### Availability Zone [Info](#)

Choose the zone in which your subnet will reside, or let Amazon choose one for you.

No preference

#### IPv4 CIDR block [Info](#)

Q 10.0.2.0/24 X

▼ Tags - optional

Key	Value - optional	
<div><div>Q Name X</div></div>	<div><div>Q Private-Subnet X</div></div>	<div>Remove</div>
<div>Add new tag</div> <p>You can add 49 more tags.</p>		

Remove

Add new subnet

Cancel

Create subnet

**Route tables** (1/2) info

Filter route tables

	Name	Route table ID	Explicit subnet asso...	Edge associat...	M...	VPC	Owner ID
<input type="checkbox"/>		rtb-0fa7df3b574198c...	-	-	Yes	vpc-053939be11f76a0e	091350768449
<input checked="" type="checkbox"/>	Edit Name <input type="text" value="Private-IT!"/>	3...	-	-	Yes	vpc-0e597d62bccf53177	091350768449

Cancel Save

### Edit routes

Destination	Target	Status	Propagated
10.0.0.0/16	Q. local	Active	No
Q. 0.0.0.0/0	Q. igw-05ae0bb77a61ff7d	-	No

Add route Remove

Cancel Preview Save changes

VPC > Route tables > rtb-0711c1c65605f831d > Edit subnet associations

### Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (1/2)

Filter subnet associations

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input type="checkbox"/> Private-Subnet	subnet-0fd367343db4df186	10.0.2.0/24	-	Main (rtb-0711c1c65605f831d / Public-RT)
<input checked="" type="checkbox"/> Public-Subnet	subnet-0e68b26aafc5fcc2a	10.0.1.0/24	-	Main (rtb-0711c1c65605f831d / Public-RT)

Selected subnets

subnet-0e68b26aafc5fcc2a / Public-Subnet X

Cancel Save associations

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VPC > Route tables > rtb-06be739d5a4001445 > Edit subnet associations

### Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (1/2)

Filter subnet associations

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input checked="" type="checkbox"/> Private-Subnet	subnet-0fd367343db4df186	10.0.2.0/24	-	Main (rtb-0711c1c65605f831d / Public-RT)
<input type="checkbox"/> Public-Subnet	subnet-0e68b26aafc5fcc2a	10.0.1.0/24	-	rtb-0711c1c65605f831d / Public-RT

Selected subnets

subnet-0fd367343db4df186 / Private-Subnet X

Cancel Save associations

## 6) Create Security groups.

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New VPC Experience Tell us what you think

VPC Dashboard

Elastic Global View

Filter by VPC:

Selected a VPC

VIRTUAL PRIVATE CLOUD Your VPCs

### Security Groups (1/2) info

Filter security groups

Name	Security group ID	Security group	VPC ID	Description	Owner	Inbound rules	Outbound rules
<input checked="" type="checkbox"/> default-sg	sg-08ba9205ba0529325	default	vpc-0e597d60bccf35177	default VPC security...	091350768449	1 Permission entry	1 Permission entry
<input type="checkbox"/> -	sg-0c9a8fee12c941...	default	vpc-053939be11f76c0e	default VPC security...	091350768449	1 Permission entry	1 Permission entry

Actions Export security groups to CSV Create security group

VPC > Security Groups > sg-08ba9205ba0529325 - default > Edit inbound rules

### Edit inbound rules info

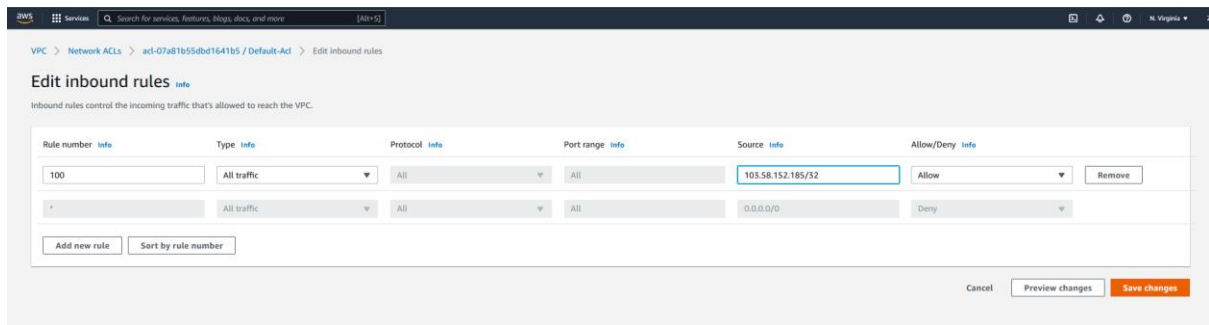
Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules info

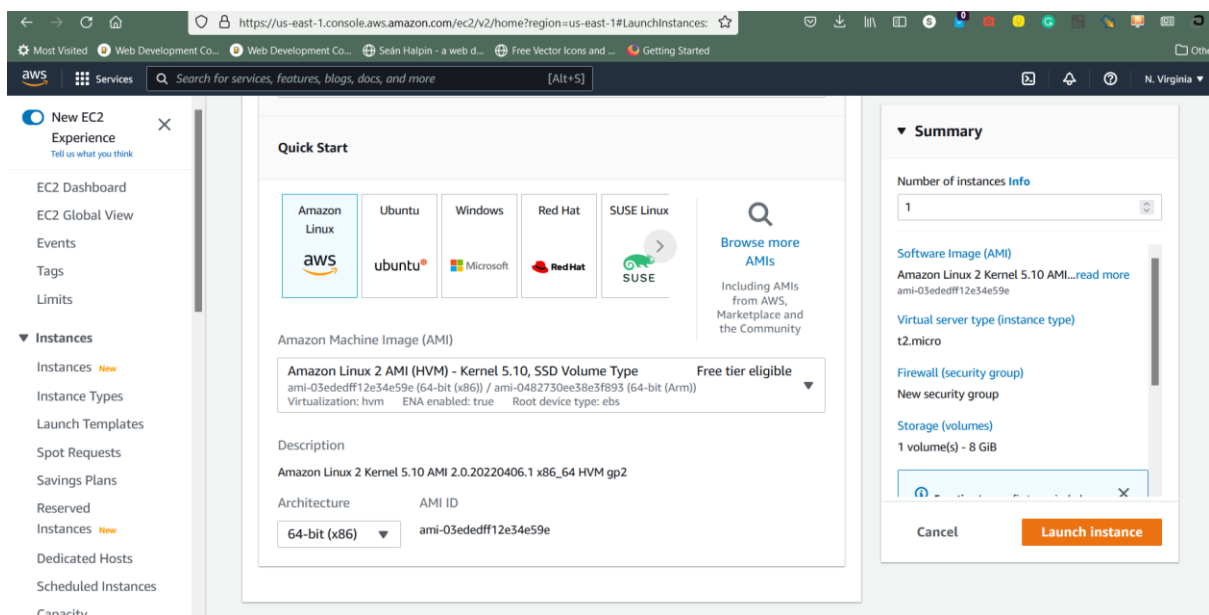
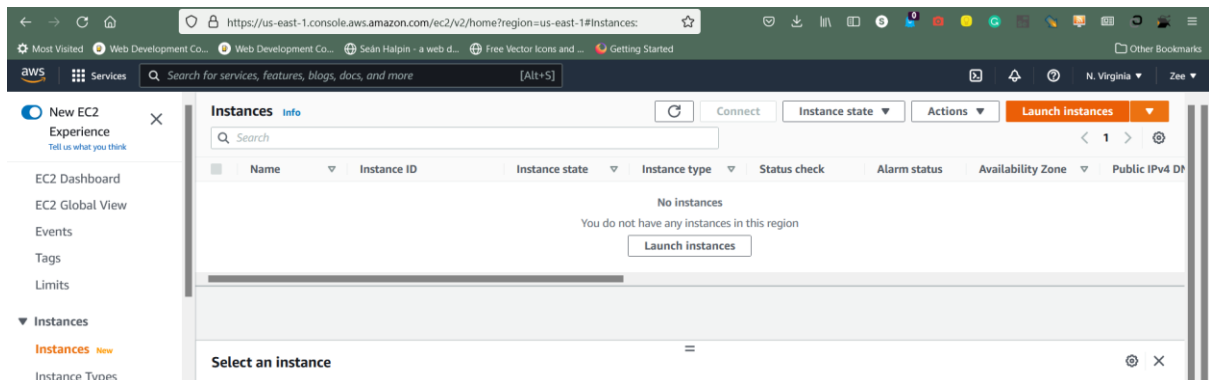
Security group rule ID	Type	Protocol	Port range	Source	Description - optional
sg-03f688ff35971d1ea	All traffic	All	All	Custom	
-	All traffic	All	All	My IP	

Add rule


Cancel Preview changes Save rules




## 7) Create a public instance.





 We noticed that you didn't select a key pair. If you want to be able to connect to your instance it is recommended that you create one.

Key pairs allow you to connect to your instance securely.

Enter the name of the key pair below. When prompted, store the private key in a secure and accessible location on your computer. **You will need it later to connect to your instance.** [Learn more](#) 

☒ Create new key pair

☐ Proceed without key pair

Key pair name

new-pair-key

The name can include upto 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

☒ RSA

RSA encrypted private and public key pair

☐ ED25519

ED25519 encrypted private and public key pair (Not supported for Windows instances)

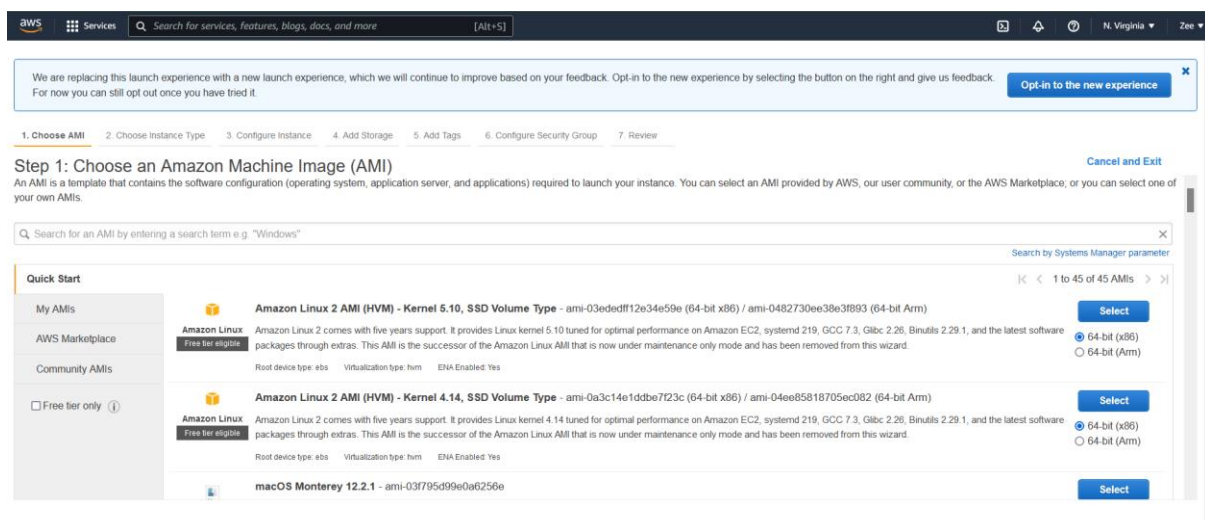
Private key file format

☒ .pem

For use with OpenSSH

☐ .ppk

## 8) Create a private instance.



The screenshot shows the AWS Management Console interface for creating a new EC2 instance. The top navigation bar includes the AWS logo, 'Services' link, a search bar, and the current region 'N. Virginia'. A notification banner at the top states: 'We are replacing this launch experience with a new launch experience, which we will continue to improve based on your feedback. Opt-in to the new experience by selecting the button on the right and give us feedback. For now you can still opt out once you have tried it.' Below this, the wizard steps are: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, 7. Review. The current step is 'Step 1: Choose an Amazon Machine Image (AMI)'. A sub-header reads: 'An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace, or you can select one of your own AMIs.' A search bar prompts the user to 'Search for an AMI by entering a search term e.g. "Windows"'. On the left, a sidebar shows 'Quick Start' with 'My AMIs', 'AWS Marketplace', and 'Community AMIs'. The main area displays a list of AMIs. The first two are 'Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type' and 'Amazon Linux 2 AMI (HVM) - Kernel 4.14, SSD Volume Type'. Both are marked as 'Free tier eligible'. The third is 'macOS Monterey 12.2.1'. Each AMI entry includes its ID, architecture (64-bit x86 or 64-bit Arm), and a 'Select' button. A 'Cancel and Exit' link is in the top right of the wizard area.

Services

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[Alt+S]

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Add Tags

6. Configure Security Group

7. Review

N. Virginia

Zee

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance families Current generation Show/Hide Columns

Currently selected: t2.micro (- ECU, 1 vCPUs, 2.5 GHz, -, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
	t2	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
	t2	t2.micro	1	1	EBS only	-	Low to Moderate	Yes
	t2	t2.small	1	2	EBS only	-	Low to Moderate	Yes
	t2	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
	t2	t2.large	2	8	EBS only	-	Low to Moderate	Yes
	t2	t2.xlarge	4	16	EBS only	-	Moderate	Yes
	t2	t2.2xlarge	8	32	EBS only	-	Moderate	Yes
	t3	t3.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes
	t3	t3.micro	2	1	EBS only	Yes	Up to 5 Gigabit	Yes

Cancel

Previous

Review and Launch

Next: Configure Instance Details

Services

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[Alt+S]

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Add Tags

6. Configure Security Group

7. Review

N. Virginia

Zee

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances 1 Launch into Auto Scaling Group

Purchasing option ☐ Request Spot instances

Network vpc-0e597d60bcc35177 | my-demo-vpc Create new VPC

Subnet subnet-0e68b26aafc5fcc2a | Public-Subnet | us-east-2 251 IP Addresses available Create new subnet

Auto-assign Public IP Use subnet setting (Disable)

Hostname type Use subnet setting (IP name)

DNS Hostname ☒ Enable IP name IPv4 (A record) DNS requests ☒ Enable resource-based IPv4 (A record) DNS requests ☐ Enable resource-based IPv6 (AAAA record) DNS requests

Placement group ☐ Add instance to placement group

Capacity Reservation Open

Domain join directory No directory Create new directory

IAM role None Create new IAM role

Cancel

Previous

Review and Launch

Next: Add Storage

Services

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[Alt+S]

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Add Tags

6. Configure Security Group

7. Review

N. Virginia

Zee

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☐ Create a new security group ☒ Select an existing security group

Security Group ID	Name	Description	Actions
sg-08ba9205ba0529325	default	default VPC security group	<a href="#">Copy to new</a>

Inbound rules for sg-08ba9205ba0529325 (Selected security groups: sg-08ba9205ba0529325)

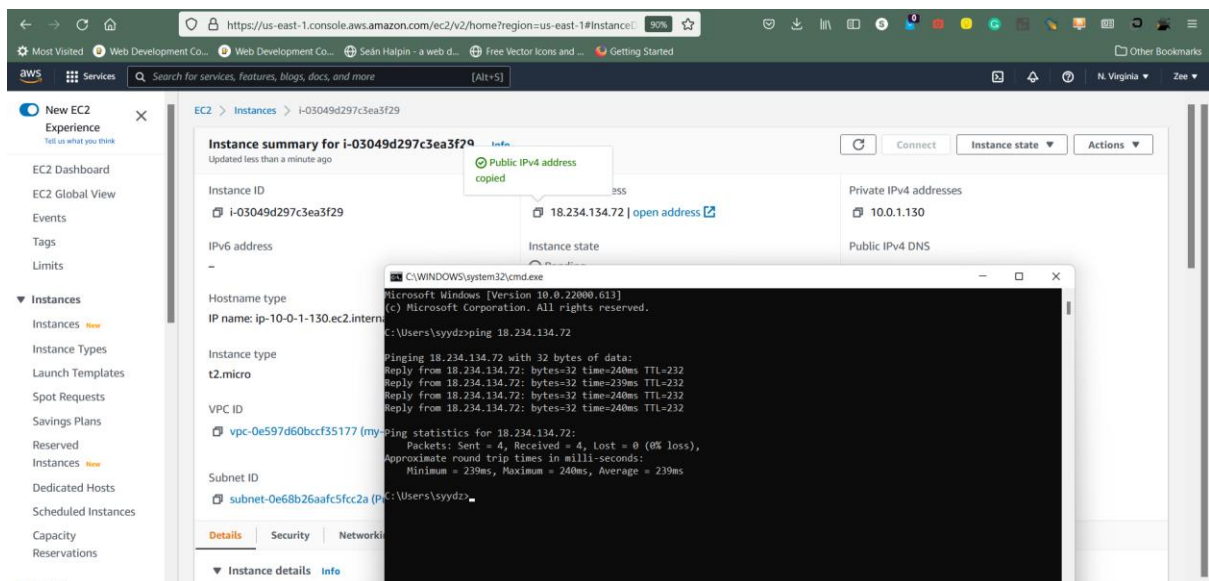
Type	Protocol	Port Range	Source	Description
All traffic	All	All	103.58.152.185/32	
All traffic	All	All	sg-08ba9205ba0529325 (default)	

Cancel

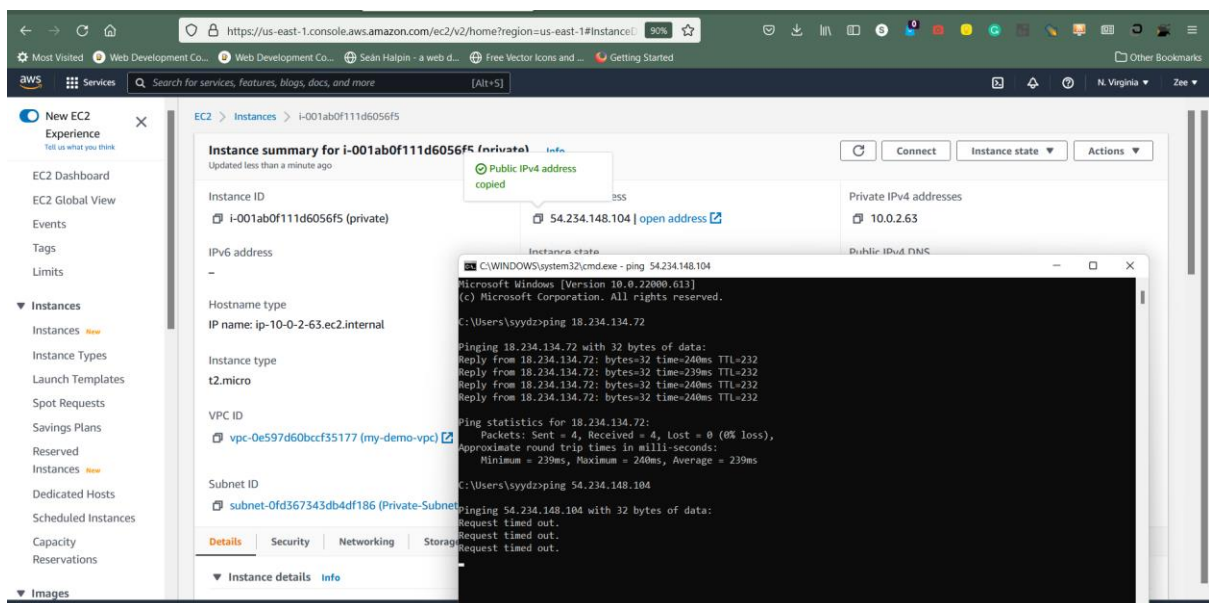
Previous

Review and Launch

## 9) Ping public-ec2 instance.



## 10) Ping private-ec2 instance.



Conclusion: Virtual private cloud implemented successfully.