

Placement Empowerment Program

Cloud Computing and DevOps Centre

Set a private network in cloud – Create a VPC with subnets for your instances. Configure routing for internal communication between subnets

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Introduction

A Virtual Private Cloud (VPC) is a secure and isolated portion of a cloud provider's infrastructure where you can deploy your resources in a controlled environment. Setting up a VPC involves creating subnets, configuring routing, and implementing security measures to manage traffic and access. This setup is essential for applications that require secure internal communication while being accessible to external networks when necessary.

Objectives

1. **Create a VPC:** Establish a private network in the cloud that suits your application requirements.
2. **Configure Subnets:** Design and implement subnets within the VPC for different types of instances (e.g., public and private).
3. **Set Up Routing:** Configure routing tables to enable internal communication between subnets and external access as required.
4. **Implement Security:** Use security groups and network ACLs to control inbound and outbound traffic to your instances.
5. **Ensure High Availability:** Distribute resources across multiple Availability Zones to enhance resilience.

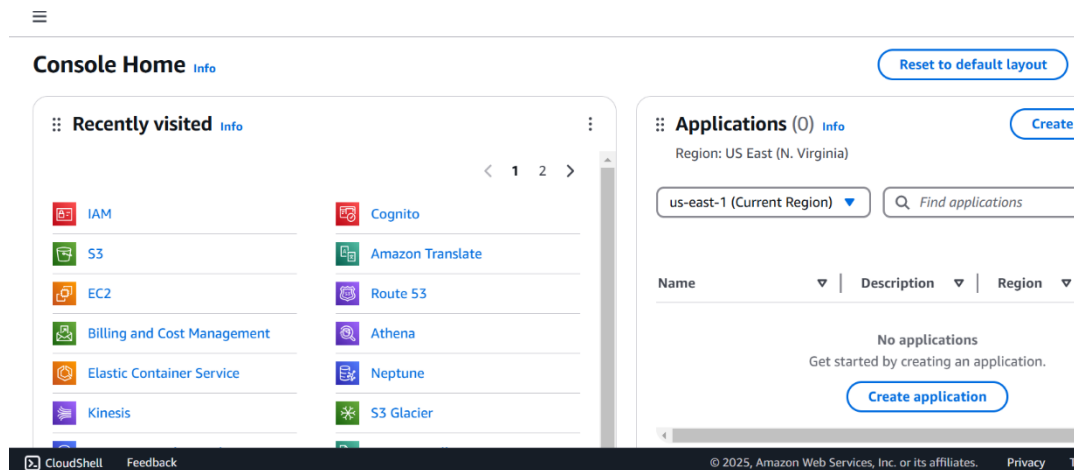
Importance

- **Security:** A VPC allows you to maintain a secure environment, isolating your resources from public internet exposure while enabling controlled access.
- **Customization:** You can tailor the network architecture to meet specific needs, such as private IP addressing and subnetwork segmentation.
- **Cost Efficiency:** Efficiently using cloud resources helps in managing costs associated with data transfer and resource allocation.
- **Scalability:** Easily scale your infrastructure to accommodate growing workloads without compromising security or performance.
- **Control:** Gain complete control over the networking environment, including IP address ranges, routing, and access controls.

Step-by-Step Overview

1. Open the console

1. Go to [AWS Management Console](#).
2. Enter your username and password to log in



2. Create VPC

Navigate to the VPC Dashboard

- In the Services menu, select "VPC" to access the VPC Dashboard.

Create a VPC

- Click on "Your VPCs" in the left menu, then click "Create VPC."
- Specify the following:
 - **Name tag:** A name for your VPC.
 - **IPv4 CIDR block:** E.g., 10.0.0.0/16 (this gives you 65,536 IP addresses).
 - **IPv6 CIDR block:** (Optional).
 - **Tenancy:** Default is usually sufficient.
- Click "Create."

[Create VPC](#)[Launch EC2 Instances](#)

Note: Your Instances will launch in the US East region.

Resources by Region

[Refresh Resources](#)

You are using the following Amazon VPC resources

[VPCs](#)US East [1](#)[► See all regions](#)[NAT Gateways](#)US East [0](#)[► See all regions](#)

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 the VPC and other networking resources.

☒ VPC only ☐ VPC and more

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

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

IPv4 CIDR

CIDR block size must be between /16 and /28.

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

Virtual private cloud

Your VPCs (2) Info

Last updated less than a minute ago [Actions](#) [Create VPC](#)

<input type="checkbox"/>	Name	VPC ID	State	Block Public...	IPv4 CIDR	IPv6 CIDR
<input type="checkbox"/>	-	vpc-0dc478e33f2218481	Available	Off	172.31.0.0/16	-
<input type="checkbox"/>	my vpc	vpc-0956d84ce62741b8b	Available	Off	10.0.0.0/16	-

3. Create Subnets

You need at least two private subnets for internal communication:

1. Go to Subnets → Click Create Subnet.
2. Select the VPC (MyPrivateVPC) you created earlier.
3. Create two subnets:

Subnet 1 (Private-Subnet-A)

IPv4 CIDR: 10.0.1.0/24

Availability Zone: us-east-1a (example)

Subnet 2 (Private-Subnet-B)

IPv4 CIDR: 10.0.2.0/24

Subnet 1 of 2

Subnet name

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

mysubnet1

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.

Asia Pacific (Mumbai) / ap-south-1a

IPv4 VPC CIDR block [Info](#)

Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.

10.0.0.0/16

IPv4 subnet CIDR block

10.0.0.0/24256 IPs

<>^v

▼ Tags - optional

Key

Value - optional

Q NameX

Q mysubnet1X

Remove

Add new tag

Subnet 2 of 2

Subnet name

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

mysubnet2

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.

Asia Pacific (Mumbai) / ap-south-1a

IPv4 VPC CIDR block [Info](#)

Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.

10.0.0.0/16

IPv4 subnet CIDR block

10.0.2.0/24256 IPs

<>^v

▼ Tags - optional

Key

Value - optional

Q NameX

Q mysubnet2X

Remove

Add new tag

aws

Q Search[Alt+S]

Asia Pacific (Mumbai)Nandana

VPC dashboard

EC2 Global View

Filter by VPC

▼ Virtual private cloud

Your VPCs

Subnets

Route tables

Internet gateways

Egress-only internet gateways

DHCP option sets

You have successfully created 2 subnets: subnet-034ef64165cbecf24, subnet-060e5fc14073b966d

Last updated less than a minute ago

Actions

Create subnet

Subnets (2) [Info](#)

Q Find resources by attribute or tag

Subnet ID : subnet-034ef64165cbecf24X

Subnet ID : subnet-060e5fc14073b966dX

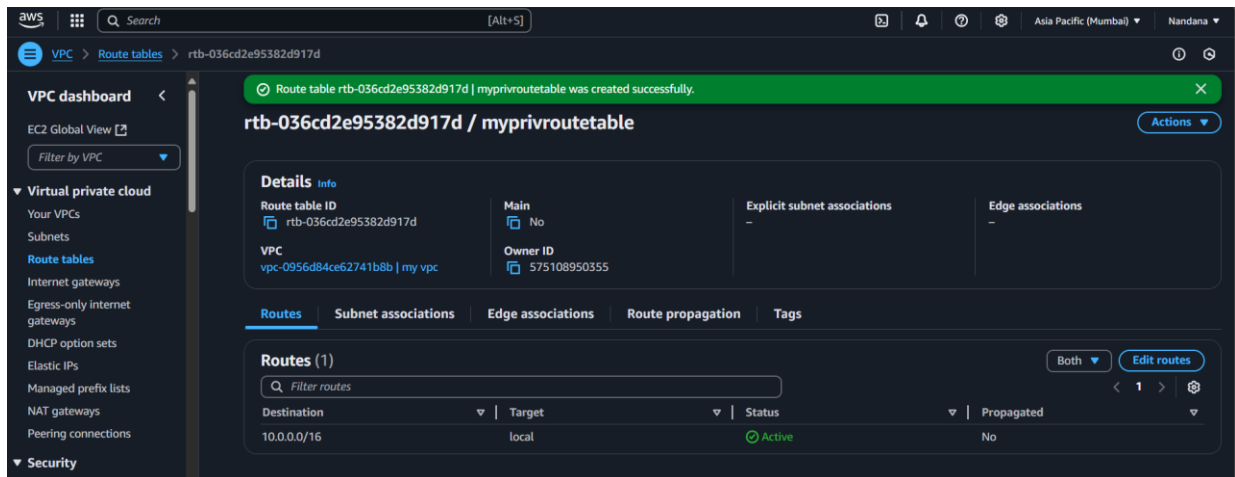
Clear filters

<1>

	Name	Subnet ID	State	VPC	Block Public...	IP
<input type="checkbox"/>	mysubnet2	subnet-060e5fc14073b966d	Available	vpc-0956d84ce62741b8b my ...	Off	11
<input type="checkbox"/>	mysubnet1	subnet-034ef64165cbecf24	Available	vpc-0956d84ce62741b8b my ...	Off	11

4. Configure Route Tables for Internal Communication

1. Go to Route Tables → Click Create Route Table.
2. Name it (e.g., myprivroutetable).
3. Select MyVPC.
4. Click Create.

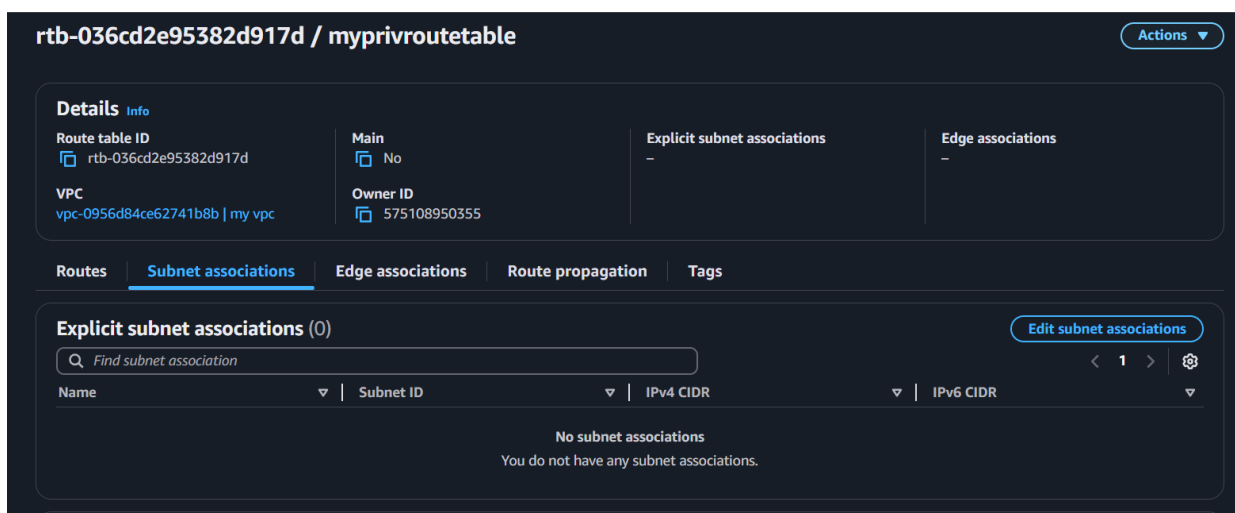


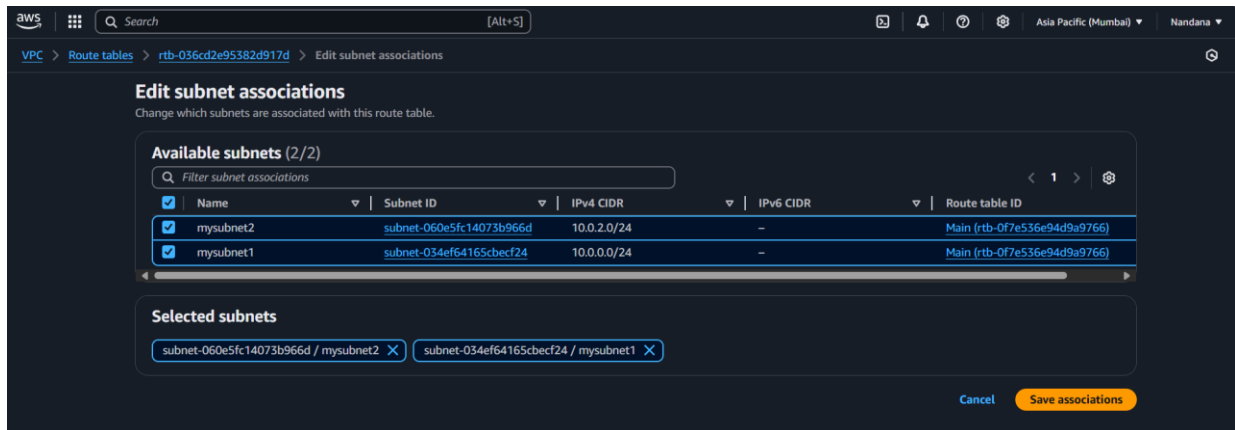
5. Associate the subnets

Go to Subnet Associations → Click Edit subnet associations.

Select mysubnet1 and mysubnet2.

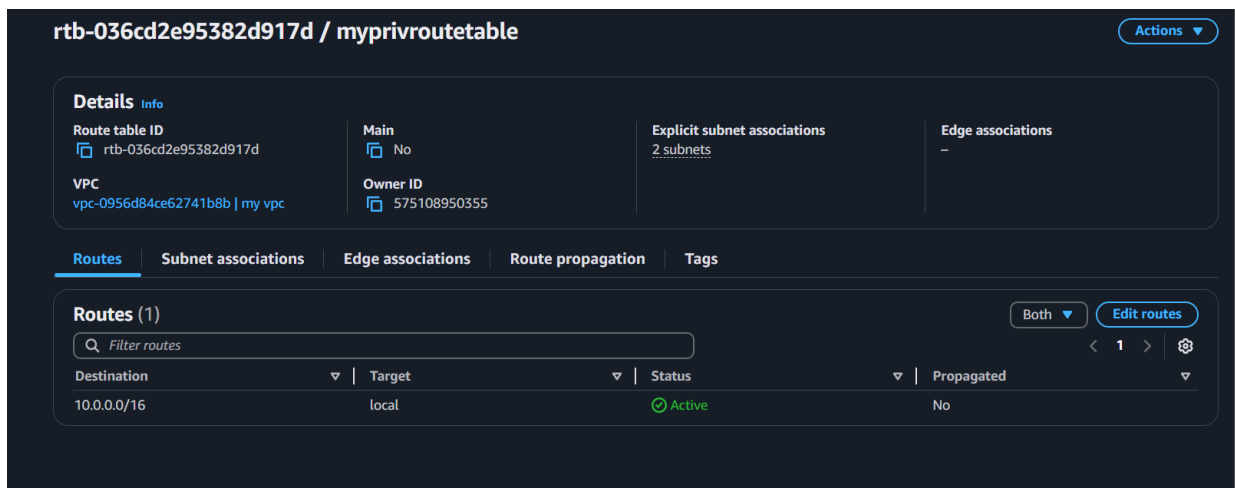
Click Save associations.





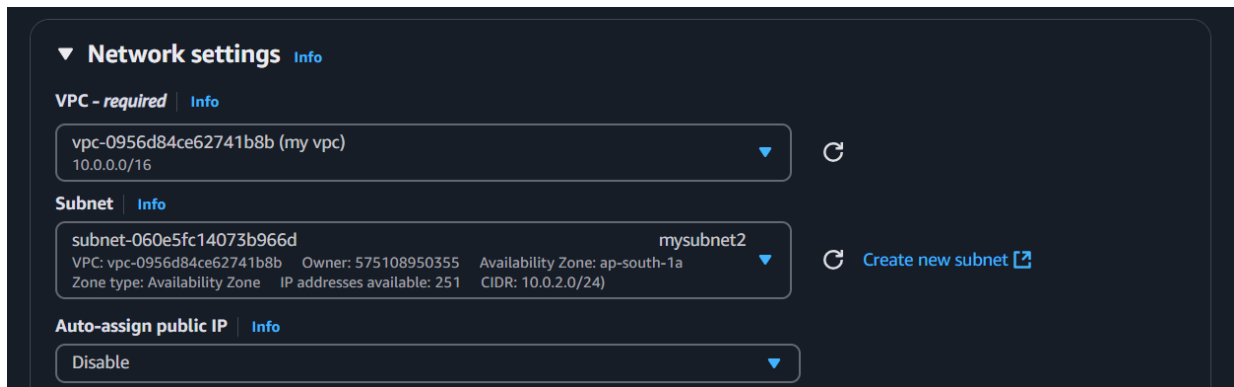
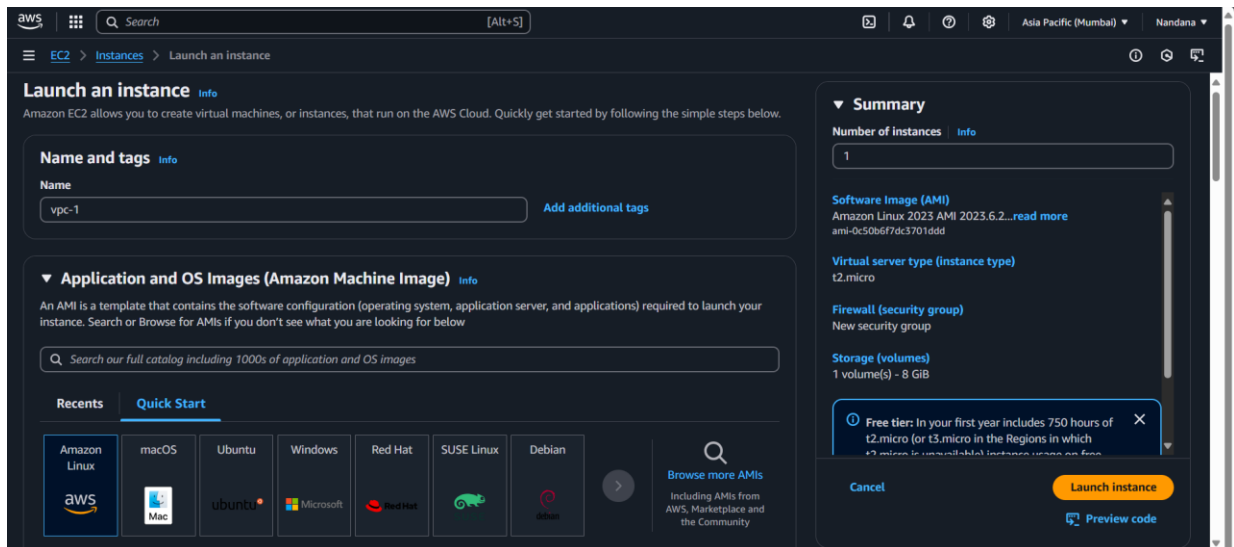
6. Default route

10.0.0.0/16 → local (Automatically added).



7. Launch Instances in Private Subnets

- Go to EC2 Dashboard → Launch Instance.
- Select an AMI (Amazon Linux, Ubuntu, etc.).
- Choose an Instance Type (e.g., t2.micro).
- Under Network settings:
 - Select MyPrivateVPC.
 - Select Private Subnet-A or Private-Subnet-B.
 - Disable Auto-assign Public IP (to keep it private).



8. Enable Internal Communication

Instances inside the private subnets can communicate without an internet gateway.

If instances need internet access (for updates, etc.), configure a NAT Gateway in a Public Subnet.

Use Security Groups to allow inbound traffic only from internal sources (e.g., allow SSH from 10.0.0.0/16).

9. Network is setup!

Now, your private network is set up, and instances inside can communicate securely! Let me know if you need extra configurations like VPN, Bastion Host, or NAT setup.

Outcome

After following these steps, you will have:

- A VPC that is isolated from other networks.
- One or more subnets for your instances, with at least one public subnet that can communicate with the Internet.
- Proper routing configured for internal communication between subnets

