

VPC Creation

Step 1: Create a Virtual Private Cloud (VPC)

1. **Login to AWS Management Console:**
 - Open the [AWS Management Console](#).
 - Navigate to the **VPC Dashboard**.
2. **Create a VPC:**
 - In the VPC Dashboard, click **Create VPC**.
 - Provide a **VPC Name** and set the **IPv4 CIDR block** (e.g., 10.0.0.0/16).
 - Leave **IPv6 CIDR block** set to **No IPv6 CIDR block** unless you require IPv6.
 - Choose the **Tenancy** (default or dedicated).
 - Click **Create**.

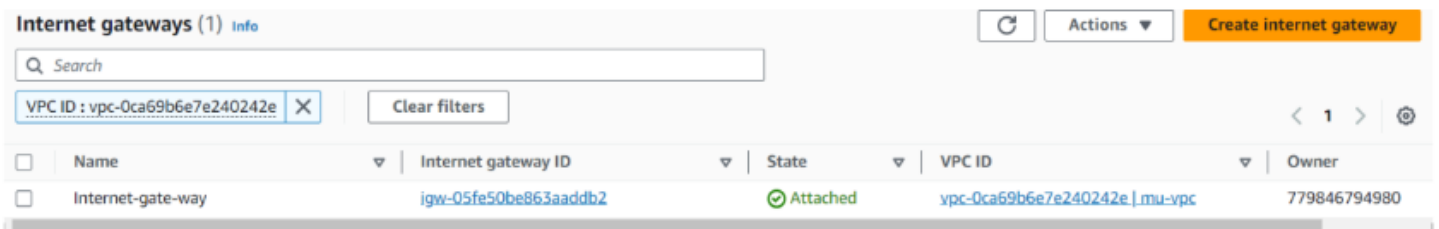
Step 2: Create Subnets

You need 6 subnets (3 public and 3 private subnets). The subnets will span across multiple Availability Zones (AZs) for high availability.

1. **Create Public Subnets:**
 - Go to **Subnets** in the VPC Dashboard.
 - Click **Create Subnet**.
 - Provide a **Subnet Name** and select an **Availability Zone** (e.g., us-east-1a).
 - Specify the **IPv4 CIDR block** (e.g., 10.0.1.0/24 for the first public subnet).
 - Repeat this process for other 2 public subnets with different CIDR blocks (e.g., 10.0.2.0/24 and 10.0.3.0/24).
 - Ensure these subnets are created in different AZs for better availability.
2. **Create Private Subnets:**
 - Repeat the process for private subnets by selecting different CIDR blocks (e.g., 10.0.4.0/24, 10.0.5.0/24, 10.0.6.0/24), ensuring they are in the different Availability Zones as required.

Step 3: Create Internet Gateway (IGW)

1. **Create an Internet Gateway:**
 - In the **VPC Dashboard**, navigate to **Internet Gateways**.
 - Click **Create Internet Gateway**.
 - Provide a **Name** for the IGW (e.g., MyIGW).
 - Click **Create**.



3. **Attach Internet Gateway to VPC:**
 - After creating the IGW, select it from the list.
 - Click **Actions**, then **Attach to VPC**.
 - Select your VPC and click **Attach**.

Step 4: Create Route Tables

1. Create Public Route Table:

- In the **VPC Dashboard**, navigate to **Route Tables**.
- Click **Create Route Table**.
- Provide a **Name** for the route table (e.g., PublicRouteTable).
- Select your VPC and click **Create**.

2. Add Route to Public Route Table:

- Select the public route table you just created.
- Click the **Routes** tab, then **Edit Routes**.
- Click **Add Route**, and set the **Destination** to 0.0.0.0/0 (for all internet traffic).
- Set the **Target** to your **Internet Gateway** (e.g., MyIGW).
- Click **Save Routes**.

3. Associate Public Subnets with Public Route Table:

- Select the **Subnet Associations** tab in the Public Route Table.
- Click **Edit subnet associations**.
- Select all the **public subnets** (e.g., 10.0.1.0/24, 10.0.2.0/24, 10.0.3.0/24).
- Click **Save**.

4. Create Private Route Table:

- Similarly, create another route table for the **private subnets** (e.g., PrivateRouteTable).
- Select your VPC and click **Create**.

5. Add Route to Private Route Table:

- Select the **PrivateRouteTable** and navigate to the **Routes** tab.
- Click **Edit Routes** and **Add Route**.
- Add a route with **Destination** 0.0.0.0/0 and leave **Target** as None (because the private subnets will route traffic through the NAT Gateway).
- Click **Save Routes**.

6. Associate Private Subnets with Private Route Table:

- Go to the **Subnet Associations** tab of the Private Route Table.
- Click **Edit subnet associations**.
- Select all the **private subnets** (e.g., 10.0.4.0/24, 10.0.5.0/24, 10.0.6.0/24).
- Click **Save**.

Route tables (2/3) Info							Last updated 3 minutes ago	Actions	Create route table
Find resources by attribute or tag									
VPC: vpc-0ca69b6e7e240242e X Clear filters									
<	1	>							
	Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC			
<input type="checkbox"/>	-	rtb-04f5db5286cefbad2	-	-	Yes	vpc-0ca69b6e7e240242e r			
<input checked="" type="checkbox"/>	public-route-table	rtb-093cd29fa25b6f613f	2 subnets	-	No	vpc-0ca69b6e7e240242e r			
<input checked="" type="checkbox"/>	private-route-table	rtb-06b26c4a16b8e8ac4	2 subnets	-	No	vpc-0ca69b6e7e240242e r			

VPC > Route tables > rtb-093d29fa25b6f613f > Edit routes

Edit routes

Destination	Target	Status	Propagated
20.0.0.0/22	local	Active	No
0.0.0.0/0	Internet Gateway	Active	No

Use: "igw-05fe50be863aaddb2"
 igw-05fe50be863aaddb2 (Internet-gate-way)

Step 5: Create NAT Gateway

1. Allocate an Elastic IP Address:

- Go to the **EC2 Dashboard**, and navigate to **Elastic IPs**.
- Click **Allocate new address**, and then **Allocate**.
- This will give you an Elastic IP (EIP) that can be used for the NAT Gateway.

2. Create NAT Gateway:

- In the **VPC Dashboard**, go to **NAT Gateways**.
- Click **Create NAT Gateway**.
- Select a **Public Subnet** (e.g., 10.0.1.0/24).
- Choose the previously allocated **Elastic IP**.
- Click **Create NAT Gateway**.

3. Update Route Table for Private Subnets:

- Go to the **Private Route Table**.
- Click **Edit Routes**, and add a new route for 0.0.0.0/0.
- Set the **Target** to the **NAT Gateway** (e.g., NatGateway-1).
- Click **Save Routes**.

Step 6: Create Security Groups

1. Create Security Groups:

- Go to the **EC2 Dashboard** and click **Security Groups**.
- Click **Create Security Group**.
- Provide a **Name** and **Description**.
- Add inbound and outbound rules as required (e.g., allow HTTP/HTTPS traffic to public subnets, allow SSH traffic for EC2 management, etc.).

2. Assign Security Groups:

- When launching EC2 instances in public and private subnets, assign them the appropriate security group for controlling inbound and outbound traffic.

Step 7: Verify and Test

1. Launch EC2 Instances:

- Launch EC2 instances in both public and private subnets.
- Ensure that EC2 instances in the public subnets can access the internet.
- Ensure that EC2 instances in the private subnets can access the internet through the NAT Gateway.

2. Test Connectivity:

i-0a5b0086dd1ede4c2 (frontend)

Instance ID

 i-0a5b0086dd1ede4c2 (frontend)

IPv6 address

–

Hostname type

IP name: ip-20-0-0-50.ap-southeast-1.compute.internal

Answer private resource DNS name

–

Auto-assigned IP address

 18.142.44.189 [Public IP]

Public IPv4 address

 18.142.44.189 | [open address](#) 

Instance state

 Running

Private IP DNS name (IPv4 only)

 ip-20-0-0-50.ap-southeast-1.compute.internal

Instance type

t2.micro

VPC ID

 vpc-0ca69b6e7e240242e (mu-vpc) 

Private IPv4 addresses

 20.0.0.50

Public IPv4 DNS

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Elastic IP addresses

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AWS Compute Optimizer finding

 [Opt-in to AWS Compute Optimizer for recommendation](#)

Lokesh Notes