VPC components

Step 1: Create a VPC

1. Open the **AWS Management Console** and navigate to **VPC Dashboard**.
2. Click on **Create VPC**.
3. Enter a **Name tag** (e.g., `MyVPC`).
4. Set the **IPv4 CIDR block** (e.g., `10.0.0.0/16`).
5. Choose "No IPv6 CIDR block" (optional).
6. Keep the "Tenancy" as "Default".
7. Click **Create VPC**.

Step 2: Create a Public Subnet

1. In the **VPC Dashboard**, go to **Subnets**.
2. Click **Create Subnet**.
3. Choose the **VPC** created earlier.
4. Enter a **Name tag** (e.g., `PublicSubnet`).
5. Select an **Availability Zone**.
6. Set the **IPv4 CIDR block** (e.g., `10.0.1.0/24`).
7. Click **Create Subnet**.

Step 3: Create a Private Subnet

1. Repeat the steps above but with:
   - **Name tag**: `PrivateSubnet`
   - **CIDR block**: `10.0.2.0/24`

Step 4: Create an Internet Gateway (IGW)

1. In the **VPC Dashboard**, go to **Internet Gateways**.
2. Click **Create Internet Gateway**.
3. Enter a **Name tag** (e.g., `MyIGW`).
4. Click **Create Internet Gateway**.
5. Select the newly created IGW and click **Attach to VPC**.

6. Select the **VPC** and click **Attach Internet Gateway**.

Step 5: Create a Route Table for Public Subnet

1. In the **VPC Dashboard**, go to **Route Tables**.
2. Click **Create Route Table**.
3. Enter a **Name tag** (e.g., `PublicRouteTable`).
4. Select the **VPC**.
5. Click **Create**.
6. Select the created route table and go to the **Routes** tab.
7. Click **Edit Routes** > **Add Route**.
8. Set **Destination** to `0.0.0.0/0` and **Target** to the **Internet Gateway** (`MyIGW`).
9. Click **Save routes**.
10. Associate the **Public Subnet**:
    - Go to the **Subnet Associations** tab.
    - Click **Edit subnet associations**.
    - Select **PublicSubnet**.
    - Click **Save associations**.

Step 6: Create a Route Table for Private Subnet

1. Repeat the above steps but **do not** add a route to the Internet Gateway.
2. Associate it with **PrivateSubnet**.

Step 7: Launch a Public EC2 Instance

1. Go to **EC2 Dashboard** and click **Launch Instance**.
2. Select an AMI (e.g., Amazon Linux 2).
3. Choose an **Instance Type**.
4. Select **MyVPC** under "Network".
5. Choose **PublicSubnet** under "Subnet".
6. Enable **Auto-assign Public IP**.
7. Add a key pair (or use an existing one).
8. Configure security group to allow SSH (port 22).
9. Click **Launch Instance**.

Step 8: Launch a Private EC2 Instance

1. Repeat the steps above but select **PrivateSubnet**.
2. **Do not enable public IP assignment**.

Step 9: Verify Configuration

1. Go to **VPC Dashboard** > **Subnets** to verify subnets.
2. Check **Route Tables** for correct associations.
3. Test SSH connection to the **Public EC2** instance.
4. Use the Public EC2 instance as a bastion host to connect to the **Private EC2** instance.