1. Create VPC with 2 private and 2 public subnets.

**. Go to the VPC Dashboard**

* In the search bar, type **"VPC"** and go to the **VPC Dashboard**.
* Click **“Create VPC”**
*  **Name tag**: MyVPC01
*  **IPv4 CIDR block**: 10.0.0.0/16
* Create vpc

**Create Subnets**

**📍 Public Subnet 1**

* Go to **Subnets > Create subnet**
* **VPC ID**: Choose MyCustomVPC
* **Subnet name**: Public-Subnet-1
* **Availability Zone**: Pick one (e.g., us-east-1a)
* **IPv4 CIDR block**: 10.0.1.0/24

**📍 Public Subnet 2**

* Same process, use:
  + **Name**: Public-Subnet-2
  + **AZ**: us-east-1b
  + **CIDR**: 10.0.2.0/24

**📍 Private Subnet 1**

* **Name**: Private-Subnet-1
* **AZ**: us-east-1a
* **CIDR**: 10.0.3.0/24

**📍 Private Subnet 2**

* **Name**: Private-Subnet-2
* **AZ**: us-east-1b
* **CIDR**: 10.0.4.0/24

**Create Internet Gateway**

* Go to **Internet Gateways > Create Internet Gateway**
* Name: MyIGW
* Click **Create**
* Then select the IGW > **Actions > Attach to VPC** > select MyCustomVPC
* **Update Route Table for Public Subnets**
* Go to **Route Tables**
* Find the main route table or create a new one
* Associate it with **Public-Subnet-1** and **Public-Subnet-2**
* Edit routes:
* Add route: 0.0.0.0/0 → Target: your **Internet Gateway**

**Create NAT Gateway**

Go to **NAT Gateways**

* Click **Create NAT Gateway**
* **Subnet**: Choose one of your public subnets
* **Elastic IP**: Allocate or use existing
* Click **Create**
* Then update the **private subnet route table**:
* Add route 0.0.0.0/0 → Target: the **NAT Gateway**

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1. Enable DNS Hostname in VPC

Click the checkbox next to your custom VPC

 With the VPC selected, click **Actions > Edit VPC settings**

 Set the following:

* ✅ **Enable DNS hostnames** → check this
* ✅ (Optional) **Enable DNS resolution** → keep this enabled (usually is by default)

 Click **Save**

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1. Enable Auto Assign Public ip in 2 public subnets
2. **Go to VPC Dashboard → Subnets**
3. Click the **Subnet ID** (not the checkbox) for the **public subnet**
4. Scroll down to the **Subnet settings** section
5. Click the **Edit** button near “Auto-assign IP settings”
6. Enable:
   * ✅ "Auto-assign IPv4 address"
7. Click **Save changes**

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1. Add 2 private subnets in private route table

**🔹 1. Go to the VPC Dashboard**

* Open the [AWS VPC Console](https://console.aws.amazon.com/vpc)
* In the left-hand menu, click on **Route Tables**

**🔹 2. Select Your Private Route Table**

* Identify your **private route table** (not associated with an internet gateway)
* Click the **Route Table ID**

**🔹 3. Go to Subnet Associations**

* Click the **“Subnet associations”** tab
* Click **“Edit subnet associations”**

**🔹 4. Add Your Private Subnets**

* From the list of available subnets, check the boxes next to:
  + Private-Subnet-1
  + Private-Subnet-2
* Click **Save associations**

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**✅ Result**

Your two private subnets are now associated with the private route table, meaning:

* They will **route traffic through a NAT Gateway (if configured)** instead of directly to the internet.
* They are **not directly exposed to the internet**, which is ideal for databases, backend services, etc.

1. Add 2 public subnets in public route table

**🔹 1. Go to the VPC Dashboard**

* Open the [AWS VPC Console](https://console.aws.amazon.com/vpc)
* In the left-hand menu, click **Route Tables**

**🔹 2. Select Your Public Route Table**

* Find the route table that is:
  + Associated with your **Internet Gateway**
  + Contains a route like 0.0.0.0/0 → igw-xxxx
* Click the **Route Table ID**

**🔹 3. Go to Subnet Associations**

* Click the **Subnet associations** tab
* Click **Edit subnet associations**

**🔹 4. Add the Public Subnets**

* From the list, check:
  + Public-Subnet-1
  + Public-Subnet-2
* Click **Save associations**

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**✅ Result**

Now, your public subnets will:

* Inherit the route to the **Internet Gateway**
* Allow EC2 instances with public IPs to access the internet

1. Public route table will have the routes to internet and local

In the **Routes** tab, you should see these two routes:

1. **Internet route:**
   * **Destination**: 0.0.0.0/0
   * **Target**: igw-xxxxxxxx (your Internet Gateway)
2. **Local route:**
   * **Destination**: 10.0.0.0/16 (or the CIDR block for your VPC)
   * **Target**: local

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Your public route table will now allow:

* **Instances in public subnets** to access the internet via the **Internet Gateway**
* **Instances within the VPC** to communicate with each other via the **local route**

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1. Create Ec2 in public subnet with t2micro and install php

**🔹 Step 1: Open EC2 Launch Wizard**

* Go to: [EC2 Dashboard](https://console.aws.amazon.com/ec2/)
* Click **"Launch Instance"**

**🔹 Step 2: Instance Configuration**

* **Name**: php-server
* **AMI**: Amazon Linux 2 (or Ubuntu if you prefer)
* **Instance Type**: t2.micro
* **Key Pair**: Select your existing key (e.g., car)
* **Network Settings**:
  + **VPC**: Select your VPC
  + **Subnet**: Choose a **public subnet**
  + **Auto-assign Public IP**: Enable ✅
* **Security Group**:
  + Allow **SSH (port 22)**
  + Allow **HTTP (port 80)**

Then click **Launch Instance**

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In EC2 → Instances, copy the **Public IPv4 Address**

**ssh -i ~/Downloads/car.pem** [**ec2-user@54.83.123.250**](mailto:ec2-user@54.83.123.250)

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sudo yum update -y

sudo dnf install -y php php-cli php-mysqlnd httpd

sudo systemctl start httpd

sudo systemctl enable httpd

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sudo systemctl status httpd

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Now open a browser and visit

http://54.83.123.250:80

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1. COnfigure Nat gateway in public subnet and connect to private Instance

 A **VPC** with **at least two subnets**:

* **Public subnet** (with internet access via Internet Gateway)
* **Private subnet** (no direct internet access)

A **private EC2 instance** in the private subnet.

A **public subnet** where you’ll deploy the NAT Gateway.

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ssh -i car.pem ec2-user@54.164.82.182

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A computer screen shot of a computer program

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1. Install Apache Tomcat in private ec2 and deploy a sample app.

* Install **Java 17 (Amazon Corretto)**
* Install **Apache Tomcat 9**
* Deploy a **sample .war app**
* Run on **Amazon Linux 2** (or Amazon Linux 2023 with minor adjustments)

=>launch ec2 server then write the script to downlad apache tomcat.

=> after writhing script it will be installed.

=>then check whether its running or not.

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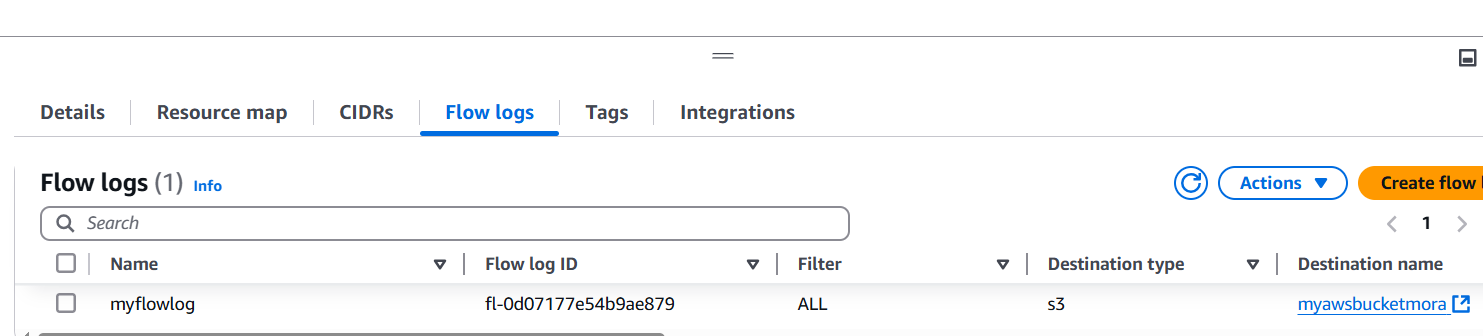
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1. COnfigure VPC flow logs and store the logs in s3 and cloudwatch.

**Step 1: Create or Choose an S3 Bucket**

1. **Open the S3 Console**:
   * Go to the **S3 Console**: [S3 Console](https://console.aws.amazon.com/s3/).
2. **Create a New Bucket** (Optional):
   * If you don't already have an S3 bucket to store the logs, create a new one.
   * Click **Create bucket** and follow the wizard to create the bucket



. Cloudwatch flow logs

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