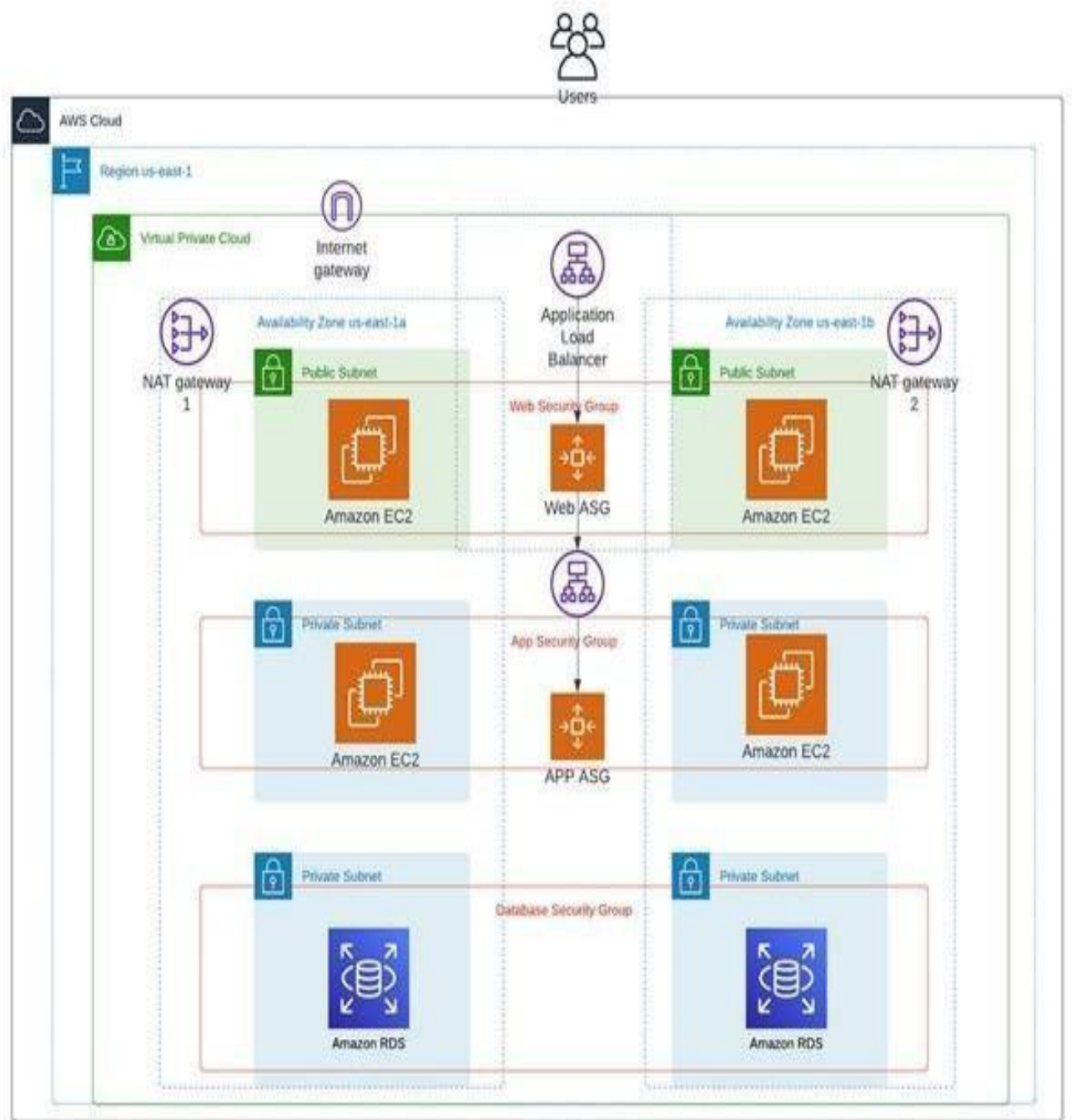


# Project -1

## 3-TIRE ARCHITECTURE

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The above architecture is the “Architecting 3 Tier Architecture on AWS”.

Creating the above architecture we have to follow the following steps:

1. Create VPC, Subnets – 6, Internet gate way – 1, Route tables – 2, Nat gate way – 1.
2. Launch an EC2 instance.
3. Create Load Balancer
4. Create an AMI (image).
5. Create Autoscaling group, Create launch template.
6. Create Subnet group.
7. Create Database (RDS).
8. Establish connection.

## Step: 1

Create VPC and its components :

**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

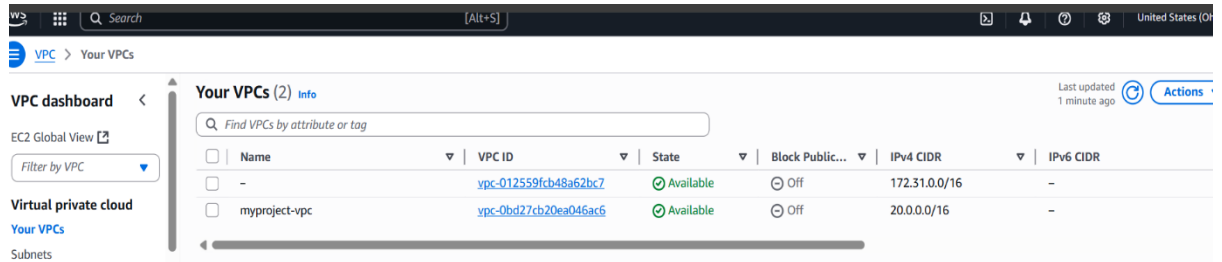
**Tenancy** [Info](#)

**Tags**  
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	
<input type="text" value="Name"/>	<input type="text" value="myproject-vpc"/>	<input type="button" value="Remove tag"/>
<input type="button" value="Add tag"/>		

You can add 49 more tags

[Cancel](#) [Preview code](#)



- Create 6 subnets (2-public, 4-private).
- Create first subnet.
- Click on subnet, click on create subnet, select our VPC (my-project-vpc).
- Give name tag as availability zones
- Go to VPC dashboard click on create VPC.
- Click on VPC only and name tag as my-vpc-project1
- Give IPV4 CIDR (classless inter domain routing) as 120.0.0.0/16
- Click on VPC, it is created

## Subnet settings

Specify the CIDR blocks and Availability Zone for the subnet.

### Subnet 1 of 2

#### Subnet name

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

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.

#### 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.

#### IPv4 subnet CIDR block

32 IPs

< > ^ v

#### ▼ Tags - optional

##### Key

X

##### Value - optional

X

Remove

Add new tag

You can add 49 more tags.

Remove

Subnet 2 of 2

Subnet name

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

public-subnet-2

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.

United States (Ohio) / us-east-2b

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.

20.0.0.0/16

IPv4 subnet CIDR block

20.0.2.0/27

32 IPs

▼ Tags - optional

Key

Value - optional

Q Name

X

Q public-subnet-2

X

Remove

Add new tag

You can add 49 more tags.

Remove

Add new subnet

Cancel

Create subnet

## Subnet settings

Specify the CIDR blocks and Availability Zone for the subnet.

### Subnet 1 of 4

Subnet name

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

private-subnet-1

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.

United States (Ohio) / us-east-2a

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.

20.0.0.0/16

IPv4 subnet CIDR block

20.0.3.0/26

64 IPs

▼ Tags - optional

Key

Value - optional

Q Name

X

Q private-subnet-1

X

Remove

Add new tag

You can add 49 more tags.

Remove

Subnet 2 of 4

Subnet name

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

private-subnet-2

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.

United States (Ohio) / us-east-2b

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.

20.0.0.0/16

IPv4 subnet CIDR block

20.0.4.0/25 128 IPs

< > ^ v

▼ Tags - optional

Key

Q Name X

Value - optional

Q private-subnet-2 X

Remove

Add new tag

You can add 49 more tags.

Remove

Subnet 3 of 4

Subnet name

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

private-subnet-3

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.

United States (Ohio) / us-east-2a

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.

20.0.0.0/16

IPv4 subnet CIDR block

20.0.5.0/24 256 IPs

< > ^ v

▼ Tags - optional

Key

Q Name X

Value - optional

Q private-subnet-3 X

Add new tag

You can add 49 more tags.

Remove

Subnet 4 of 4

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

private-subnet-4

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.

United States (Ohio) / us-east-2b

**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.

20.0.0.0/16

**IPv4 subnet CIDR block**

20.0.6.0/23 512 IPs

< > ^ v

▼ **Tags - optional**

Key Value - optional

Q, Name X Q, private-subnet-4 X Remove

Add new tag

You can add 49 more tags.

Remove

Add new subnet

Cancel Create subnet

These are the subnets we created.

**Subnets (9)** [Info](#)

Q Find subnets by attribute or tag

<input type="checkbox"/>	Name ▼	Subnet ID ▼	State ▼	VPC ▼	Block Public... ▼	IPv4 CIDR
<input type="checkbox"/>	public-subnet-2	<a href="#">subnet-0d7fef892e63c2f70</a>	Available	<a href="#">vpc-0bd27cb20ea046ac6</a>   <a href="#">myp...</a>	Off	20.0.2.0/27
<input type="checkbox"/>	public-subnet-1	<a href="#">subnet-0a05d76043deec3d4</a>	Available	<a href="#">vpc-0bd27cb20ea046ac6</a>   <a href="#">myp...</a>	Off	20.0.1.0/27
<input type="checkbox"/>	private-subnet-4	<a href="#">subnet-008bf87b742262f6b</a>	Available	<a href="#">vpc-0bd27cb20ea046ac6</a>   <a href="#">myp...</a>	Off	20.0.6.0/23
<input type="checkbox"/>	private-subnet-3	<a href="#">subnet-02226db3a06c7311c</a>	Available	<a href="#">vpc-0bd27cb20ea046ac6</a>   <a href="#">myp...</a>	Off	20.0.5.0/24
<input type="checkbox"/>	private-subnet-2	<a href="#">subnet-085c1360a2ba61374</a>	Available	<a href="#">vpc-0bd27cb20ea046ac6</a>   <a href="#">myp...</a>	Off	20.0.4.0/25
<input type="checkbox"/>	private-subnet-1	<a href="#">subnet-034c7167c05dec823</a>	Available	<a href="#">vpc-0bd27cb20ea046ac6</a>   <a href="#">myp...</a>	Off	20.0.3.0/26

- Create internet gateway name Project-IGW

- This igw is attached to VPC.
- Go to actions in internet gate way and click on attach to VPC.
- Select our VPC (my-vpc-project1). Click on attach internet gateway

**Attach to VPC (igw-004bf565871fd8b14)** [Info](#)

**VPC**  
Attach an internet gateway to a VPC to enable the VPC to communicate with the internet. Specify the VPC to attach below.

**Available VPCs**  
Attach the internet gateway to this VPC.

► AWS Command Line Interface command

[Cancel](#) [Attach internet gateway](#)

- Create route table, give name as Public-Route-Table
- Select our VPC (my-vpc-project), create it.
- 

**Create route table** [Info](#)

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

**Route table settings**

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

**VPC**  
The VPC to use for this route table.

**Tags**  
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	
<input type="text" value="Q Name"/>	<input type="text" value="Q public-route-table"/>	<a href="#">Remove</a>

[Add new tag](#)

You can add 49 more tags.

[Cancel](#) [Create route table](#)

- Click on route table id, open it.
- Go down click on edit subnet association.
- Select both public subnet and click on save association
- Go actions and click on edit routes .
- Click on add routes give all traffic (0.0.0.0/0) and select our internet gateway, save changes .

## Edit subnet associations

Change which subnets are associated with this route table.

**Available subnets (2/6)**

<input checked="" type="checkbox"/>	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input type="checkbox"/>	private-subnet-3	subnet-0226db3a06c7311c	20.0.5.0/24	-	Main (rtb-02482d63f8c273265)
<input type="checkbox"/>	private-subnet-1	subnet-034c7167c05dec823	20.0.3.0/26	-	Main (rtb-02482d63f8c273265)
<input type="checkbox"/>	private-subnet-4	subnet-008bf87b742262f6b	20.0.6.0/23	-	Main (rtb-02482d63f8c273265)
<input type="checkbox"/>	private-subnet-2	subnet-085c1360a2ba61374	20.0.4.0/25	-	Main (rtb-02482d63f8c273265)
<input checked="" type="checkbox"/>	public-subnet-1	subnet-0a05d76043deec3d4	20.0.1.0/27	-	Main (rtb-02482d63f8c273265)
<input checked="" type="checkbox"/>	public-subnet-2	subnet-0d7fef892e63c2f70	20.0.2.0/27	-	Main (rtb-02482d63f8c273265)

**Selected subnets**  
subnet-0a05d76043deec3d4 / public-subnet-1  subnet-0d7fef892e63c2f70 / public-subnet-2

VPC > Route tables > rtb-03e43fab21ec02e2a > Edit routes

## Edit routes

Destination	Target	Status	Propagated
20.0.0.0/16	local	Active	No
<input type="text" value="0.0.0.0/0"/>	<input type="text" value="local"/>	-	No
<input type="button" value="Add route"/>	<input type="text" value="Internet Gateway"/>		<input type="button" value="Remove"/>
	<input type="text" value="igw-004bf565871fd8b14"/>		
	Use: "igw-004bf565871fd8b14"		
	igw-004bf565871fd8b14 (project-igw)		

- Create private route table name as Private-Route-Table
- Select our VPC, (my-vpc-project1), create it.
- Click on route table id, open it.
- Go down click on edit subnet association.
- Select all private subnet and click on save association

## Create route table [Info](#)

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

**Route table settings**  
**Name - optional**  
Create a tag with a key of 'Name' and a value that you specify.  
  
**VPC**  
The VPC to use for this route table.

**Tags**  
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**  
    
  
You can add 49 more tags.



## Edit subnet associations

Change which subnets are associated with this route table.

**Available subnets (4/6)**

<input checked="" type="checkbox"/>	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input checked="" type="checkbox"/>	private-subnet-3	subnet-02226db3a06c7311c	20.0.5.0/24	–	Main (rtb-02482d63f8c273265)
<input checked="" type="checkbox"/>	private-subnet-1	subnet-034c7167c05dec823	20.0.3.0/26	–	Main (rtb-02482d63f8c273265)
<input checked="" type="checkbox"/>	private-subnet-4	subnet-008bf87b742262f6b	20.0.6.0/23	–	Main (rtb-02482d63f8c273265)
<input checked="" type="checkbox"/>	private-subnet-2	subnet-085c1360a2ba61374	20.0.4.0/25	–	Main (rtb-02482d63f8c273265)
<input type="checkbox"/>	public-subnet-1	subnet-0a05d76043deec3d4	20.0.1.0/27	–	rtb-03e43f4b21ec02e2a / public-rout...
<input type="checkbox"/>	public-subnet-2	subnet-0d7fef892e63c2f70	20.0.2.0/27	–	rtb-03e43f4b21ec02e2a / public-rout...

**Selected subnets**  
subnet-034c7167c05dec823 / private-subnet-1 ✕ subnet-085c1360a2ba61374 / private-subnet-2 ✕ subnet-008bf87b742262f6b / private-subnet-4 ✕ subnet-02226db3a06c7311c / private-subnet-3 ✕

Cancel Save associations

- Create NAT gateway, give name as Project-NAT
- Select public subnet(my-sub-public1).
- Select connectivity type as IPV4.
- Click on allocate Elastic IP. Now go to private route and click on actions.
- Click on edit routes and add route.
- Give all traffic (0.0.0.0/0) and select NAT gateway

Elastic IP address 3.148.67.159 (eipalloc-09fe86b09177f6cadq) allocated. ✕

### Create NAT gateway [info](#)

A highly available, managed Network Address Translation (NAT) service that instances in private subnets can use to connect to services in other VPCs, on-premises networks, or the internet.

**NAT gateway settings**  
**Name - optional**  
Create a tag with a key of 'Name' and a value that you specify.  
  
The name can be up to 256 characters long.  
**Subnet**  
Select a subnet in which to create the NAT gateway.  
  
**Connectivity type**  
Select a connectivity type for the NAT gateway.  
☒ Public  
☐ Private  
**Elastic IP allocation ID [info](#)**  
Assign an Elastic IP address to the NAT gateway.  
  
[Allocate Elastic IP](#)

▶ **Additional settings** [info](#)

**Tags**  
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	
<input type="text" value="Name"/>	<input type="text" value="myproject-NAT"/>	<a href="#">Remove</a>
<a href="#">Add new tag</a>		

You can add 49 more tags.

Cancel Create NAT gateway

VPC > Route tables > rtb-0402b4d6/9f9b377d6 > Edit routes

### Edit routes

Destination	Target	Status	Propagated
20.0.0.0/16	local	Active	No
0.0.0.0/0	NAT Gateway	-	No

Buttons: Add route, Remove, Cancel, Preview, Save changes

## Step2: Launch an EC2 instance.

- Go to EC2 dashboard click on launch instance.
- Name as and select ami as ubuntu
- Instance type as t2.micro and key pair as project.
- Click on edit network settings, select our VPC and public subnet.
- Auto assign IP enable and create a security group as project-sg.
- Launch the instance.

### Launch an instance Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

#### Name and tags Info

Name

[Add additional tags](#)

#### ▼ Application and OS Images (Amazon Machine Image) Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Recents Quick Start

Amazon Linux

macOS

Ubuntu

Windows

Red Hat

SUSE Linux

Debian

#### Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type

ami-004364947f82c87a0 (64-bit (x86)) / ami-0fb8a63da4a19607d (64-bit (Arm))

Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

#### Description

Ubuntu Server 24.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Canonical, Ubuntu, 24.04, amd64 noble image

Architecture	AMI ID	Publish Date	Username
64-bit (x86)	ami-004364947f82c87a0	2025-05-30	ubuntu

Verified provider

### ▼ Key pair (login) [Info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*

sivaproject

[Create new key pair](#)

### ▼ Network settings [Info](#)

VPC - *required* [Info](#)

vpc-0bd27cb20ea046ac6 (myproject-vpc)  
20.0.0.0/16

[Create new VPC](#)

Subnet [Info](#)

subnet-0a05d76043deec3d4  
VPC: vpc-0bd27cb20ea046ac6 Owner: 013399894273 Availability Zone: us-east-2a  
Zone type: Availability Zone IP addresses available: 26 CIDR: 20.0.1.0/27

public-subnet-1

[Create new subnet](#)

Auto-assign public IP [Info](#)

Enable

Additional charges apply when outside of free tier allowance

Firewall (security groups) [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☒ Create security group

☐ Select existing security group

Security group name - *required*

myproject-sg

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_-./()#,@[]+=&:;!\$\*

Description - *required* [Info](#)

myproject-sg

## Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

### Name and tags [Info](#)

Name

public-ec2

[Add additional tags](#)

### ► Application and OS Images (Amazon Machine Image) [Info](#)

### ▼ Instance type [Info](#) | [Get advice](#)

Instance type

t2.micro

Free tier eligible

Family: t2 1 vCPU 1 GiB Memory Current generation: true  
On-Demand Ubuntu Pro base pricing: 0.0134 USD per Hour On-Demand Linux base pricing: 0.0116 USD per Hour  
On-Demand SUSE base pricing: 0.0116 USD per Hour On-Demand Windows base pricing: 0.0162 USD per Hour  
On-Demand RHEL base pricing: 0.026 USD per Hour

☒ All generations

[Compare instance types](#)

Additional costs apply for AMIs with pre-installed software

### ▼ Key pair (login) [Info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*

sivaproject

[Create new key pair](#)

▼ Network settings

Info

VPC - required

Info

vpc-0bd27cb20ea046ac6 (myproject-vpc)

20.0.0.0/16

↻

Subnet

Info

subnet-0d7fef892e63c2f70

public-subnet-2

↻

VPC: vpc-0bd27cb20ea046ac6

Owner: 013399894273

Availability Zone: us-east-2b

Zone type: Availability Zone

IP addresses available: 27

CIDR: 20.0.2.0/27

↻ Create new subnet

Auto-assign public IP

Info

Enable

▼

Additional charges apply when outside of free tier allowance

Firewall (security groups)

Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☐ Create security group

☒ Select existing security group

Common security groups

Info

Select security groups

▼

myproject-sg sg-051fb1a97fd318fb4

×

VPC: vpc-0bd27cb20ea046ac6

↻ Compare security group rules

Security groups that you add or remove here will be added to or removed from all your network interfaces.

► Advanced network configuration

## Launching private instances:

Launch an instance

Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags

Info

Name

private1-ec2

Add additional tags

► Application and OS Images (Amazon Machine Image)

Info

► Instance type

Info

Get advice

► Key pair (login)

Info

▼ Network settings

Info

VPC - required

Info

vpc-0bd27cb20ea046ac6 (myproject-vpc)

20.0.0.0/16

↻

Subnet

Info

subnet-034c7167c05dec823

private-subnet-1

↻

VPC: vpc-0bd27cb20ea046ac6

Owner: 013399894273

Availability Zone: us-east-2a

Zone type: Availability Zone

IP addresses available: 59

CIDR: 20.0.3.0/26

↻ Create new subnet

Auto-assign public IP

Info

Enable

▼

Additional charges apply when outside of free tier allowance

Firewall (security groups)

Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☐ Create security group

☒ Select existing security group

Common security groups

Info

Select security groups

▼

## Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps

### Name and tags [Info](#)

Name

private2-ec2

[Add additional tags](#)

### ▶ Application and OS Images (Amazon Machine Image) [Info](#)

### ▶ Instance type [Info](#) | [Get advice](#)

### ▶ Key pair (login) [Info](#)

### ▼ Network settings [Info](#)

VPC - *required* | [Info](#)

vpc-0bd27cb20ea046ac6 (myproject-vpc)  
20.0.0.0/16



Subnet | [Info](#)

subnet-085c1360a2ba61374  
VPC: vpc-0bd27cb20ea046ac6 Owner: 013399894273 Availability Zone: us-east-2b  
Zone type: Availability Zone IP addresses available: 123 CIDR: 20.0.4.0/25

private-subnet-2



[Create new subnet](#)

Auto-assign public IP | [Info](#)

Enable

Additional charges apply when outside of [free tier allowance](#)

Firewall (security groups) | [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☐ Create security group

☒ Select existing security group

Common security groups | [Info](#)

Select security groups

## Step 3:

- Now we create 2 LoadBalancer
- One is public instances and another one is private instances
- Then create target groups and attached the instance and check the
- Instance ssh -i copied and paste on the server
- Then next apt update -y apt install -y cd /var/www/html
- Systemctl restart apache2
- We take another instance like same procedure

## Create target group

Step 1

Specify group details

Step 2

Register targets

### Register targets

This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target group you must register your targets.

Available instances (2/4)

<input type="checkbox"/>	Instance ID	Name	State	Security groups	Zone	Private IPv4 address
<input type="checkbox"/>	i-01eb1febe9446a9a8	private2-ec2	Running	myproject-sg	us-east-2b	20.0.4.27
<input type="checkbox"/>	i-02fa3c2b8837387ea	private1-ec2	Running	myproject-sg	us-east-2a	20.0.3.36
<input checked="" type="checkbox"/>	i-020c717b89ff439f1	public2-ec2	Running	myproject-sg	us-east-2b	20.0.2.25
<input checked="" type="checkbox"/>	i-0cc75c2d5373ec4b2	public1-ec2	Running	myproject-sg	us-east-2a	20.0.1.19

Step 1

Specify group details

Step 2

Register targets

### Register targets

This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target group you must register your targets.

Available instances (2/4)

<input type="checkbox"/>	Instance ID	Name	State	Security groups	Zone	Private IPv4 address	Subnet ID	Launch time
<input checked="" type="checkbox"/>	i-01eb1febe9446a9a8	private2-ec2	Running	myproject-sg	us-east-2b	20.0.4.27	subnet-085c1360a2ba61374	June 11, 2025, 1
<input checked="" type="checkbox"/>	i-02fa3c2b8837387ea	private1-ec2	Running	myproject-sg	us-east-2a	20.0.3.36	subnet-034c7167c05dec823	June 11, 2025, 1
<input type="checkbox"/>	i-020c717b89ff439f1	public2-ec2	Running	myproject-sg	us-east-2b	20.0.2.25	subnet-0d7f6f892a63c2f70	June 11, 2025, 1
<input type="checkbox"/>	i-0cc75c2d5373ec4b2	public1-ec2	Running	myproject-sg	us-east-2a	20.0.1.19	subnet-0a05d76043dec3d4	June 11, 2025, 1

### Target groups (2) Info

<input type="checkbox"/>	Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
<input type="checkbox"/>	<a href="#">private-tg</a>	arn:aws:elasticloadbalancing:us-east-2:123456789012:targetgroup/private-tg:us-east-2:123456789012	80	HTTP	Instance	<a href="#">None associated</a>	vpc-0bd27cb20ea046ac6
<input type="checkbox"/>	<a href="#">public-tg</a>	arn:aws:elasticloadbalancing:us-east-2:123456789012:targetgroup/public-tg:us-east-2:123456789012	80	HTTP	Instance	<a href="#">None associated</a>	vpc-0bd27cb20ea046ac6

### Load balancers (2)

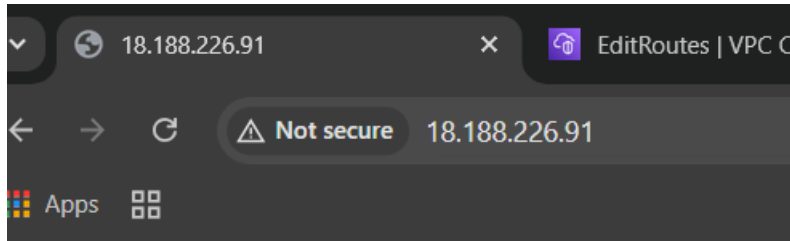
Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

<input type="checkbox"/>	Name	DNS name	State	VPC ID	Availability Zones	Type	Date created
<input type="checkbox"/>	<a href="#">public-lb</a>	public-lb-172130729.us-east-2.elb.amazonaws.com	Active	vpc-0bd27cb20ea046ac6	2 Availability Zones	application	June 11, 2025, 13:20 (UTC+05:30)
<input type="checkbox"/>	<a href="#">private-lb</a>	private-lb-863760465.us-east-2.elb.amazonaws.com	Active	vpc-0bd27cb20ea046ac6	2 Availability Zones	application	June 11, 2025, 13:25 (UTC+05:30)

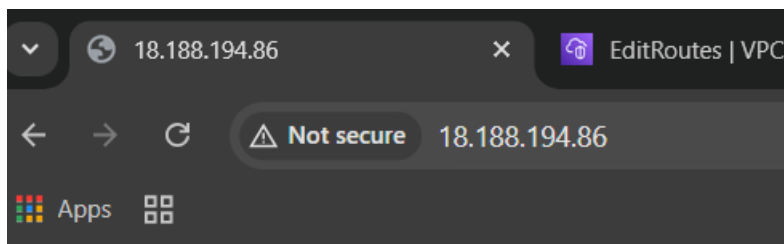
```

root@ip-20-0-1-19: /var/www/html
root@ip-20-0-1-19:~# cd /var/www/html
root@ip-20-0-1-19:/var/www/html# ls
index.html
root@ip-20-0-1-19:/var/www/html# rm index.html
root@ip-20-0-1-19:/var/www/html# vi index.html
root@ip-20-0-1-19:/var/www/html# systemctl restart apache2
root@ip-20-0-1-19:/var/www/html# |
  
```

```
root@ip-20-0-2-25: /var/www/html
root@ip-20-0-2-25:~# cd /var/www/html
root@ip-20-0-2-25:/var/www/html# ls
index.html
root@ip-20-0-2-25:/var/www/html# rm index.html
root@ip-20-0-2-25:/var/www/html# vi index.html
root@ip-20-0-2-25:/var/www/html# systemctl restart apache2
root@ip-20-0-2-25:/var/www/html# |
```



this is my project 1



this my project 2

## Step 4: Create an AMI (image)

- After running the instance, click on actions.
- Click on image and templates and click on create image.
- Give image name as my-image.
- Wait until the image is available.

**Create image** [Info](#)

An image (also referred to as an AMI) defines the programs and settings that are applied when you launch an EC2 instance. You can create an image from the configuration of an existing instance.

**Instance ID**  
i-0cc75c2d5373ec4b2 (public1-ec2)

**Image name**  
  
Maximum 127 characters. Can't be modified after creation.

**Image description - optional**  
  
Maximum 255 characters

☒ **Reboot instance**  
When selected, Amazon EC2 reboots the instance so that data is at rest when snapshots of the attached volumes are taken. This ensures data consistency.

**Instance volumes**

Storage type	Device	Snapshot	Size	Volume type	IOPS	Throughput	Delete on termination	Encrypted
EBS	/dev/sd...	Create new snapshot from v...	8	EBS General Purpose SSD - ...	3000		<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Enable

[Add volume](#)

During the image creation process, Amazon EC2 creates a snapshot of each of the above volumes.

**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.

☒ **Tag image and snapshots together**  
Tag the image and the snapshots with the same tag.

☐ **Tag image and snapshots separately**  
Tag the image and the snapshots with different tags.

No tags associated with the resource.

[Add new tag](#)  
You can add up to 50 more tags.

aws [Search](#) [Alt+S]

[EC2](#) > AMIs

**EC2**

- Dashboard
- EC2 Global View
- Events
- ▼ **Instances**
  - Instances
  - Instance Types
  - Launch Templates
  - Spot Requests
  - Savings Plans
  - Reserved Instances
  - Dedicated Hosts
  - Capacity Reservations
- ▼ **Images**
  - AMIs**

**Amazon Machine Images (AMIs) (1)** [Info](#)

Owned by me

<input type="checkbox"/>	Name <a href="#">↗</a>	AMI name	AMI ID	Source	Owner
<input type="checkbox"/>		project-image	ami-03176134071aab806	013399894273/project-image	013399894273



### **Step 5:** Create Autoscaling group.

- For creating autoscaling group we need to create an launch template.
- After available of image. Click on create a launch template.
- Template name as my-public-template, description as nothing.
- Select AMI's as share with me, select my-image.
- Instance type as t2.micro and key pair as project.
- Select existing security group (my-instance-SG) which is used to launch an EC2 instance
- Now click on create launch template.
- Open autoscaling group.
- Click on create autoscaling group.
- Give name as public-AS
- Choose the created launch template (my-public-tm) and click on next.
- Select our VPC (my-project-vpc), and both public subnets.
- Click on next and click on no load balancer
- Give desired capacity as 2 in sizing desired capacity min – 2 and max – 3
- and click on next.
- Click on add notification, give name as my-topic and give email.
- Click on next and click on create auto scaling group

Create launch template

Creating a launch template allows you to create a saved instance configuration that can be reused, shared and launched at a later time. Templates can have multiple versions.

Launch template name and description

Launch template name - required

myProject-template

Must be unique to this account. Max 128 chars. No spaces or special characters like '&', "'", '@'.

Template version description

allow

Max 255 chars

Auto Scaling guidance

Info

Select this if you intend to use this template with EC2 Auto Scaling

☒ Provide guidance to help me set up a template that I can use with EC2 Auto Scaling

Template tags

Source template

Launch template contents

Specify the details of your launch template below. Leaving a field blank will result in the field not being included in the launch template.

Application and OS Images (Amazon Machine Image) - required

Info

Instance type

Info

Get advice

Advanced

Instance type

Don't include in launch template

All generations

Compare instance types

Network settings

Info

Subnet

Info

Don't include in launch template

Create new subnet

Firewall (security groups)

Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Select existing security group

Create security group

Security groups

Info

Select security groups

myproject-sg sg-051fb1a97fd318fb4

Compare security group rules

Advanced network configuration

Storage (volumes)

Info

EBS Volumes

Hide details

Volume 1 (AMI Root) : 8 GiB, EBS, General purpose SSD (gp3), 3000 IOPS

AMI Volumes are not included in the template unless modified

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

Add new volume

The selected AMI contains instance store volumes, however the instance does not allow any instance store volumes. None of the instance store volumes from the AMI will be accessible from the instance

Summary

Software image (AMI)

allow

ami-03176134071aab806

Virtual server type (instance type)

-

Firewall (security group)

myproject-sg

Storage (volumes)

1 volume(s) - 8 GiB

Free tier:

In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GB of bandwidth to the internet.

Cancel

Create launch template

Step 1

● Choose launch template

Step 2

○ Choose instance launch options

Step 3 - optional

○ Integrate with other services

Step 4 - optional

○ Configure group size and scaling

Step 5 - optional

○ Add notifications

Step 6 - optional

○ Add tags

Step 7

○ Review

### Choose launch template Info

Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group.

#### Name

**Auto Scaling group name**  
Enter a name to identify the group.

public-autoscaling

Must be unique to this account in the current Region and no more than 255 characters.

#### Launch template Info

For accounts created after May 31, 2023, the EC2 console only supports creating Auto Scaling groups with launch templates. Creating Auto Scaling groups with launch configurations is not recommended but still available via the CLI and API until December 31, 2023.

**Launch template**  
Choose a launch template that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.

myProject-template

Create a launch template

**Version**

Default (1)

Create a launch template version

<b>Description</b> allow	<b>Launch template</b> myProject-template lt-092342c7215805b6a	<b>Instance type</b> -
<b>AMI ID</b> ami-03176134071aab806	<b>Security groups</b> -	<b>Request Spot Instances</b> No
<b>Key pair name</b> sivaproject	<b>Security group IDs</b> sg-051fb1a97fd318fb4	

**Additional details**

<b>Storage (volumes)</b> -	<b>Date created</b> Wed Jun 11 2025 15:15:12 GMT+0530 (India Standard Time)
-------------------------------	--

### Network Info

For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.

**VPC**

Choose the VPC that defines the virtual network for your Auto Scaling group.

vpc-0bd27cb20ea046ac6 (myproject-vpc)

Create a VPC

**Availability Zones and subnets**

Define which Availability Zones and subnets your Auto Scaling group can use in the chosen VPC.

Select Availability Zones and subnets

us-east-2a | subnet-0a05d76043deec3d4 (public-subnet-1)

us-east-2b | subnet-0d7fef892e63c2f70 (public-subnet-2)

Create a subnet

**Availability Zone distribution - new**

Auto Scaling automatically balances instances across Availability Zones. If launch failures occur in a zone, select a strategy.

☒ **Balanced best effort**  
If launches fail in one Availability Zone, Auto Scaling will attempt to launch in another healthy Availability Zone.

☐ **Balanced only**  
If launches fail in one Availability Zone, Auto Scaling will continue to attempt to launch in the unhealthy Availability Zone to preserve balanced distribution.

[Cancel](#)

[Skip to review](#)

[Previous](#)

[Next](#)

## Integrate with other services - *optional* [Info](#)

Use a load balancer to distribute network traffic across multiple servers. Enable service-to-service communications with VPC Lattice. Shift resources away from impaired Availability Zones with zonal shift. You can also customize health check replacements and monitoring.

### Load balancing [Info](#)

Use the options below to attach your Auto Scaling group to an existing load balancer, or to a new load balancer that you define.

- ☐ No load balancer  
Traffic to your Auto Scaling group will not be fronted by a load balancer.
- ☒ Attach to an existing load balancer  
Choose from your existing load balancers.
- ☐ Attach to a new load balancer  
Quickly create a basic load balancer to attach to your Auto Scaling group.

### Attach to an existing load balancer

Select the load balancers that you want to attach to your Auto Scaling group.

- ☒ Choose from your load balancer target groups  
This option allows you to attach Application, Network, or Gateway Load Balancers.
- ☐ Choose from Classic Load Balancers

#### Existing load balancer target groups

Only instance target groups that belong to the same VPC as your Auto Scaling group are available for selection.

Select target groups ▼ 🔄

public-tg | HTTP  
Application Load Balancer: public-lb ✕

### VPC Lattice integration options [Info](#)

To improve networking capabilities and scalability, integrate your Auto Scaling group with VPC Lattice. VPC Lattice facilitates communications between AWS services and helps you connect and manage your applications across compute services in AWS.

Select VPC Lattice service to attach

Define your group's desired capacity and scaling limits. You can optionally add automatic scaling to adjust the size of your group.

### Group size [Info](#)

Set the initial size of the Auto Scaling group. After creating the group, you can change its size to meet demand, either manually or by using automatic scaling.

#### Desired capacity type

Choose the unit of measurement for the desired capacity value. vCPUs and Memory(GiB) are only supported for mixed instances groups configured with a set of instance attributes.

Units (number of instances) ▼

#### Desired capacity

Specify your group size.

2

### Scaling [Info](#)

You can resize your Auto Scaling group manually or automatically to meet changes in demand.

#### Scaling limits

Set limits on how much your desired capacity can be increased or decreased.

##### Min desired capacity

2

Equal or less than desired capacity

##### Max desired capacity

3 ▲▼

Equal or greater than desired capacity

#### Automatic scaling - *optional*

Choose whether to use a target tracking policy [Info](#)

You can set up other metric-based scaling policies and scheduled scaling after creating your Auto Scaling group.

- ☒ No scaling policies  
Your Auto Scaling group will remain at its initial size and will not dynamically resize to meet demand.
- ☐ Target tracking scaling policy  
Choose a CloudWatch metric and target value and let the scaling policy adjust the desired capacity in proportion to the metric's value.

- In similar way create another launch template name as private-tm and create auto scaling group name as MY-PRIVATE-AS
- In it select create VPC and give two private subnets

- Now create private auto scaling

Step 1: Choose launch template

Step 2: Choose instance launch options

Step 3 - optional: Integrate with other services

Step 4 - optional: Configure group size and scaling

Step 5 - optional: Add notifications

Step 6 - optional: Add tags

Step 7: Review

**Review** [Info](#)

**Step 1: Choose launch template** [Edit](#)

**Group details**

**Auto Scaling group name**  
private-autoscaling

**Launch template**

Launch template	Version	Description
private <a href="#">🔗</a> lt-0f1160d0b295f9116	Default	allow

**Step 2: Choose instance launch options** [Edit](#)

**Network**

**VPC**  
vpc-0bd27cb20ea046ac6 [🔗](#)

**Availability Zones and subnets**

Availability Zone	Subnet	Subnet CIDR range
us-east-2a	subnet-054c7167c05dec823 <a href="#">🔗</a>	20.0.3.0/26
us-east-2b	subnet-085c1360a2ba61374 <a href="#">🔗</a>	20.0.4.0/25

**Availability Zone distribution**  
Balanced best effort

- After creating autoscaling group we can get the four extra servers from
- both public and private auto scaling group.

Instances (8) [Info](#)

Find Instance by attribute or tag (case-sensitive)

All states

Last updated 1 minute ago [🔗](#) [Connect](#)

<input type="checkbox"/>	Name <a href="#">🔗</a>	Instance ID	Instance state <a href="#">🔗</a>	Instance type <a href="#">🔗</a>	Status check <a href="#">🔗</a>	Alarm status <a href="#">🔗</a>	Availability Zone <a href="#">🔗</a>	Public IPv4 DNS <a href="#">🔗</a>	Public IPv4 ... <a href="#">🔗</a>
<input type="checkbox"/>		i-08bd64cbe75b959b2	Running <a href="#">🔗</a>	c7a.medium	3/3 checks passed	View alarms <a href="#">+</a>	us-east-2b	-	-
<input type="checkbox"/>		i-01153315777242f7e	Running <a href="#">🔗</a>	c7a.medium	Initializing	View alarms <a href="#">+</a>	us-east-2b	-	-
<input type="checkbox"/>		i-0c24cb2c7e72f445a	Running <a href="#">🔗</a>	c7a.medium	3/3 checks passed	View alarms <a href="#">+</a>	us-east-2a	-	-
<input type="checkbox"/>		i-0427980b4ab6c7143	Running <a href="#">🔗</a>	c7a.medium	Initializing	View alarms <a href="#">+</a>	us-east-2a	-	-
<input type="checkbox"/>	private1-ec2	i-02fa3c2b8837387ea	Running <a href="#">🔗</a>	t2.micro	2/2 checks passed	View alarms <a href="#">+</a>	us-east-2a	-	18.225.98.200
<input type="checkbox"/>	private2-ec2	i-01eb1febe9446a9a8	Running <a href="#">🔗</a>	t2.micro	2/2 checks passed	View alarms <a href="#">+</a>	us-east-2b	-	3.138.197.217
<input type="checkbox"/>	public1-ec2	i-0cc75c2d5373ec4b2	Running <a href="#">🔗</a>	t2.micro	2/2 checks passed	View alarms <a href="#">+</a>	us-east-2a	-	18.188.226.91
<input type="checkbox"/>	public2-ec2	i-020c717b89ff439f1	Running <a href="#">🔗</a>	t2.micro	2/2 checks passed	View alarms <a href="#">+</a>	us-east-2b	-	18.188.194.86

## Step 6: Create subnet group

- Give name as my-subnet-grp and description nothing.
- Select created VPC.
- Give availability zones and select private subnets from each zone.
- Create the DB subnet group.

### Create DB subnet group

To create a new subnet group, give it a name and a description, and choose an existing VPC. You will then be able to add subnets related to that VPC.

#### Subnet group details

**Name**  
You won't be able to modify the name after your subnet group has been created.  
my-subnet-rds

**Description**  
allow

**VPC**  
Choose a VPC identifier that corresponds to the subnets you want to use for your DB subnet group. You won't be able to choose a different VPC identifier after your subnet group has been created.  
myproject-vpc (vpc-0bd27cb20ea046ac6)  
6 Subnets, 2 Availability Zones

#### Add subnets

**Availability Zones**  
Choose the Availability Zones that include the subnets you want to add.  
Choose an availability zone  
us-east-2a us-east-2b

**Subnets**  
Choose the subnets that you want to add. The list includes the subnets in the selected Availability Zones.  
Select subnets  
private-subnet-3 Subnet ID: subnet-02226db3a06c7311c CIDR: 20.0.5.0/24 private-subnet-4 Subnet ID: subnet-008bf87b742262f6b CIDR: 20.0.6.0/23

For Multi-AZ DB clusters, you must select 3 subnets in 3 different Availability Zones.

Availability zone	Subnet name	Subnet ID	CIDR block
us-east-2a	private-subnet-3	subnet-02226db3a06c7311c	20.0.5.0/24
us-east-2b	private-subnet-4	subnet-008bf87b742262f6b	20.0.6.0/23

Cancel Create

Aurora and RDS
Subnet groups

Successfully created my-subnet-rds. View subnet group

Subnet groups (2)
Filter by subnet group

	Name	Description	Status	VPC
<input type="checkbox"/>	default-vpc-012559fcb48a62bc7	Created from the RDS Management Console	Complete	vpc-012559fcb48a62bc7
<input type="checkbox"/>	my-subnet-rds	allow	Complete	vpc-0bd27cb20ea046ac6

## Step 7: Create Database(RDS)

- Click on create database, select standard create, select engine type as MySQL.
- Select templates as production and select multi-AZ DB cluster.
- Select on self-managed, give password and confirm the password.
- Select memory optimized class.
- In connectivity, click on Don't connect to the EC2 compute resource and select created vpc (my-vpc-project1).
- Select subnet group (my-project-dbs) and give public access as yes.

- Choose existing security group (instance1-SG).
- Go to VPC dashboard, click on VPC, click on actions, go to edit VPC settings and click on the enable DNS hostnames.
- Create the database.

#### Choose a database creation method

##### Standard create

You set all of the configuration options, including ones for availability, security, backups, and maintenance.

##### Easy create

Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

#### Engine options

Engine type [Info](#)

☐ Aurora (MySQL Compatible)



☐ Aurora (PostgreSQL Compatible)



☒ MySQL



☐ PostgreSQL



☐ MariaDB



☐ Oracle

ORACLE

☐ Microsoft SQL Server



☐ IBM Db2

IBM Db2

Edition

☒ MySQL Community

Choose a sample template to meet your use case.

##### Production

Use defaults for high availability and fast, consistent performance.

##### Dev/Test

This instance is intended for development use outside of a production environment.

##### Free tier

Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. [Info](#)

#### Availability and durability

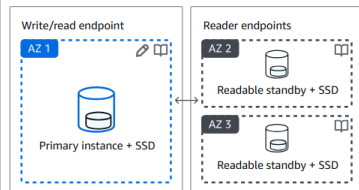
Deployment options [Info](#)

Choose the deployment option that provides the availability and durability needed for your use case. AWS is committed to a certain level of uptime depending on the deployment option you choose. Learn more in the [Amazon RDS service level agreement \(SLA\)](#).

##### Multi-AZ DB cluster deployment (3 instances)

Creates a primary DB instance with two readable standbys in separate Availability Zones. This setup provides:

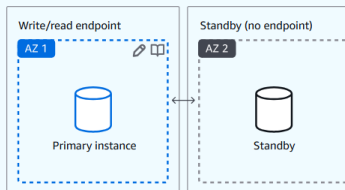
- 99.95% uptime
- Redundancy across Availability Zones
- Increased read capacity
- Reduced write latency



##### Multi-AZ DB instance deployment (2 instances)

Creates a primary DB instance with a non-readable standby instance in a separate Availability Zone. This setup provides:

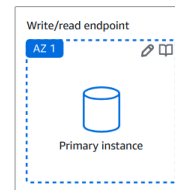
- 99.95% uptime
- Redundancy across Availability Zones



##### Single-AZ DB instance deployment (1 instance)

Creates a single DB instance without standby instances. This setup provides:

- 99.5% uptime
- No data redundancy





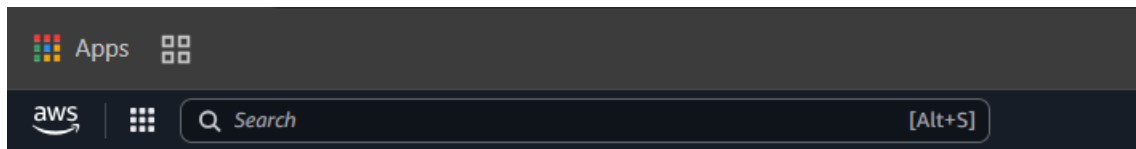




Use commands like:

```
CREATETABLE  
  Gowri ( ID int  
    NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int,  
    PRIMARY KEY (ID)  
  );
```

- we can insert data into that table using this command
- INSERT INTO Gowri (ID, LastName, FirstName, Age)
- VALUES (432, 'shiva', 'sankar', 23);
- show tables; (to show tables in that DB)
- Select \* from Table name



```
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database Gowri;
Query OK, 1 row affected (0.00 sec)

mysql> show databases;
+-----+
| Database |
+-----+
| Gowri    |
| information_schema |
| mysql    |
| performance_schema |
| sys      |
+-----+
5 rows in set (0.00 sec)

mysql> use Gowri;
Database changed
mysql> CREATE TABLE Gowri ( ID int NOT NULL,
    -> LastName varchar(255) NOT NULL, FirstName varchar(255),
    -> Age int,
    -> PRIMARY KEY (ID)
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO Gowri (ID, LastName, FirstName, Age)
    -> VALUES (432, 'shiva', 'sankar', 23);
Query OK, 1 row affected (0.00 sec)

mysql> select * from Gowri;
+-----+-----+-----+-----+
| ID | LastName | FirstName | Age |
+-----+-----+-----+-----+
| 432 | shiva    | sankar    | 23  |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql>
```

**i-0cc75c2d5373ec4b2 (public1-ec2)**

PublicIPs: 18.188.226.91 PrivateIPs: 20.0.1.19