

Lab 180

Configuring a VPC

Objectives

- Create a VPC with a private and public subnet, an internet gateway, and a NAT gateway.
- Configure route tables associated with subnets to local and internet-bound traffic by using an internet gateway and a NAT gateway.
- Launch a bastion server in a public subnet.
- Use a bastion server to log in to an instance in a private subnet.

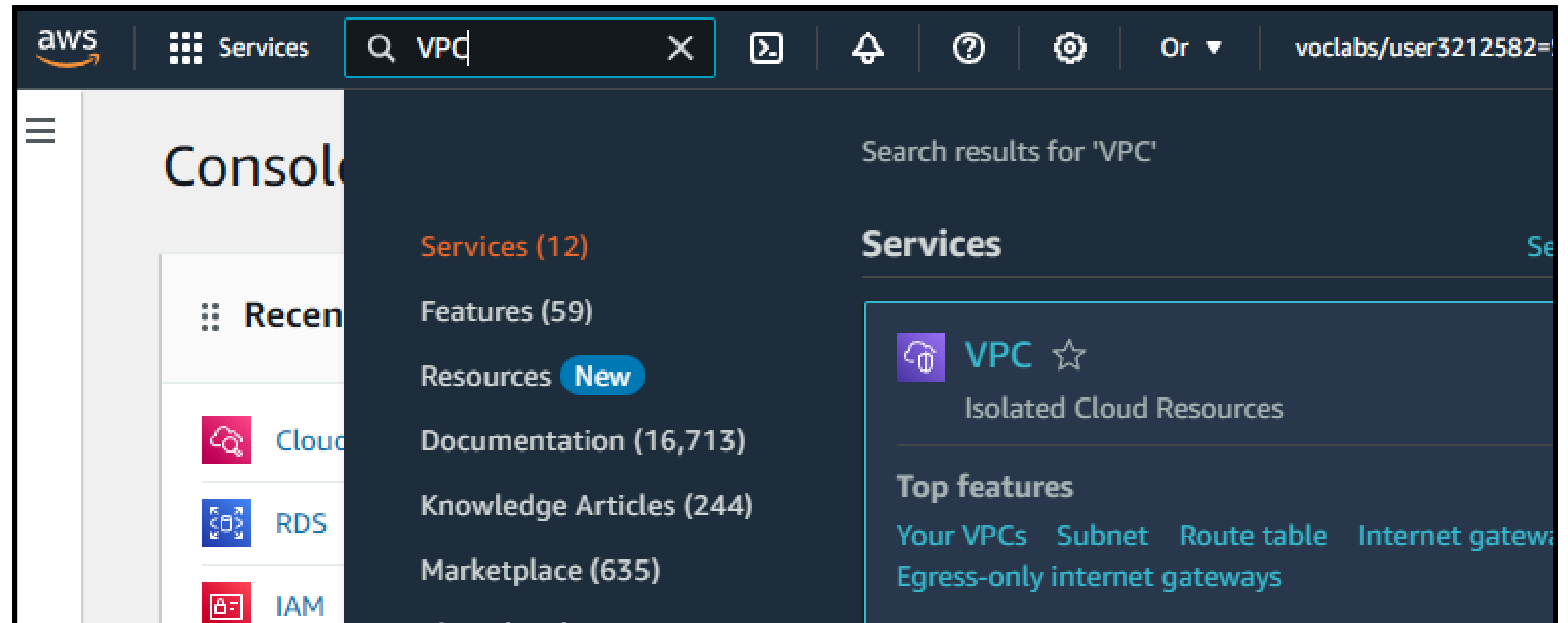
Task 1

Creating a VPC



Step 1. Create VPC

On the AWS Management Console, in the Search bar, enter and choose VPC to go to the VPC Management Console



In the left navigation pane, for Virtual private cloud, choose Your VPCs.

▼ Virtual private cloud

- Your VPCs
- Subnets

Choose VPC only.

Name tag: Enter Lab VPC.

IPv4 CIDR block: Choose IPv4 CIDR manual input.

IPv4 CIDR: Enter 10.0.0.0/16.

IPv6 CIDR block: Choose No IPv6 CIDR block.

Tenancy: Choose Default.

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	
Q Name X	Q Lab VPC X	Remove tag

Add tag

You can add 49 more tags

Cancel

Create VPC

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.

Lab VPC

IPv4 CIDR block [Info](#)

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

IPv4 CIDR

10.0.0.0/16

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](#)

Default

- Choose "Create VPC"

Actions ▲
Create flow log
Edit VPC settings

Choose Edit VPC settings.

In the DNS settings section, select Enable DNS hostnames.

EC2 instances launched into the VPC now automatically receive a public IPv4 Domain Name System (DNS) hostname.

Choose Save.

VPC details

VPC ID
vpc-091d4f5523a662795

Name
Lab VPC

DHCP settings

DHCP option set [Info](#)
dopt-0e9d3c8756d18ddc5 ▼

DNS settings

☒ Enable DNS resolution [Info](#)

☒ Enable DNS hostnames [Info](#)

Network Address Usage metrics settings

☐ Enable Network Address Usage metrics [Info](#)

Cancel Save

Task 2

Creating subnets



2.1 Creating a public subnet



In the left navigation pane, for Virtual private cloud, choose Subnets.

Subnet 1 of 1

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
 256 IPs

Tags - optional

Key	Value - optional
<input type="text" value="Name"/>	<input type="text" value="Public Subnet"/>
<input type="button" value="Remove"/>	<input type="button" value="Remove"/>
<input type="button" value="Add new tag"/>	

You can add 49 more tags.

Choose Create subnet and configure the following options:

- **VPC ID:** Choose Lab VPC.
- **Subnet name:** Enter Public Subnet.
- **Availability Zone:** First Availability Zone in the list.
- **IPv4 CIDR block:** Enter 10.0.0.0/24.



Edit subnet settings [Info](#)

Subnet

Subnet ID



subnet-045f76340408edbc7

Name



Public Subnet

Auto-assign IP settings [Info](#)

Enable AWS to automatically assign a public IPv4 or IPv6 address to a new primary network interface for an instance in this subnet.

☒ Enable auto-assign public IPv4 address [Info](#)

☐ Enable auto-assign customer-owned IPv4 address [Info](#)
Option disabled because no customer owned pools found.

Select Public Subnet.

Choose Actions, and then choose Edit subnet settings.

In the Auto-assign IP settings section, select Enable auto-assign public IPv4 address.

Choose Save.

Task 2.2: Creating a private subnet

Subnet settings

Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name

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

Private Subnet

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.

No preference

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

10.0.2.0/23

512 IPs

Tags - optional

Key

Value - optional

Q Name X

Q Private Subnet X

Remove

Add new tag

You can add 49 more tags.

Remove

To create the private subnet, repeat the steps from the previous task, and choose the following options:

VPC ID: Choose Lab VPC.

Subnet name: Enter Private Subnet.

Availability Zone: Choose the first Availability Zone on the list.

IPv4 CIDR block: Enter 10.0.2.0/23.

<input type="checkbox"/>	Public Subnet	subnet-045f76340408edbc7	✔ Available	vpc-091d4f5523a662795 Lab ...	10.0.0.0/24	-
<input type="checkbox"/>	Private Subnet	subnet-0239acb4ccc42aa9e	✔ Available	vpc-091d4f5523a662795 Lab ...	10.0.2.0/23	-

Task 3

Creating an
internet gateway



1.- In the left navigation pane, for Virtual private cloud, choose Internet gateways.

2.- Choose Create internet gateway, and then for Name tag, enter Lab IGW

3.- Choose Create internet gateway.

Create internet gateway [Info](#)

An internet gateway is a virtual router that connects a VPC to the internet. To create a new internet gateway specify the name for the gateway below.

Internet gateway settings

Name tag

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

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.

Key

Value - optional

You can add 49 more tags.

4.- Choose Actions, then choose Attach to a VPC.



Actions ▼

Create Internet gateway

Attach to VPC (igw-02c29336f66f1ab08) [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

You can perform the same actions on this page by using the AWS Command Line Interface (CLI) tools. [Learn more](#).

Platform

Choose the platform from which you'll be running this command. The command parameters may be specified differently depending on the platform. [Learn more about specifying parameter values](#).

Linux/Unix/OS X

CLI command

If you're using the AWS CLI tools, you can copy and paste this command - which includes the parameters you specified on this page - into your command line prompt or terminal. [Learn more about the available AWS CLI commands](#).

```
aws ec2 attach-internet-gateway --vpc-id "vpc-091d4f5523a662795" --internet-gateway-id "igw-02c29336f66f1ab08" --region us-west-2
```

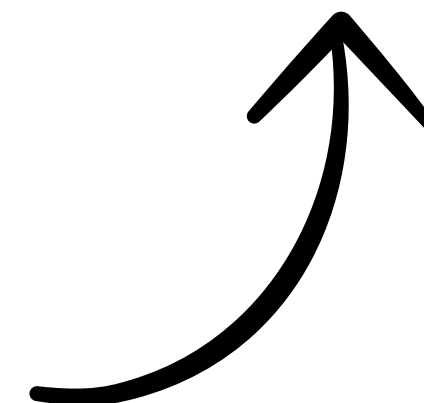
Copy

Cancel

Attach Internet gateway

State

✓ Attached





Task 4

Configuring route tables

In the left navigation pane, for Virtual private cloud, choose Route tables.

Select the route table that includes Lab VPC in the VPC column.

Create route table Info

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

Choose Create route table and configure the following options:

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.

Key	Value - optional
<input type="text" value="Name"/>	<input type="text" value="LAB VPC"/>

- Choose "Create Route Table"



Cancel
Create route table

After the route table is created, in the Routes tab, choose Edit routes

Destination	Target
10.0.0.0/16	local
<input type="text" value="0.0.0.0/0"/>	<input type="text" value="local"/>
	Internet Gateway
	<input type="text" value="igw-02c29336f66f1ab08"/>

Add route

Choose Add route and then configure the following options:

Destination: Enter 0.0.0.0/0.

Target: Choose Internet Gateway, and then choose Lab IGW from the list

Choose the Subnet associations tab and choose Edit subnet associations.

Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (1/2)

< 1 > ⚙

<input type="checkbox"/>	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input checked="" type="checkbox"/>	Public Subnet	subnet-045f76340408edbc7	10.0.0.0/24	-	rtb-0fbefc489b5e64702 / LAB VPC
<input type="checkbox"/>	Private Subnet	subnet-0239acb4ccc42aa9e	10.0.2.0/23	-	Main (rtb-082a6d5ddba975e53)

Selected subnets

✕

Cancel


Save associations

Select Public Subnet.
Choose Save associations.

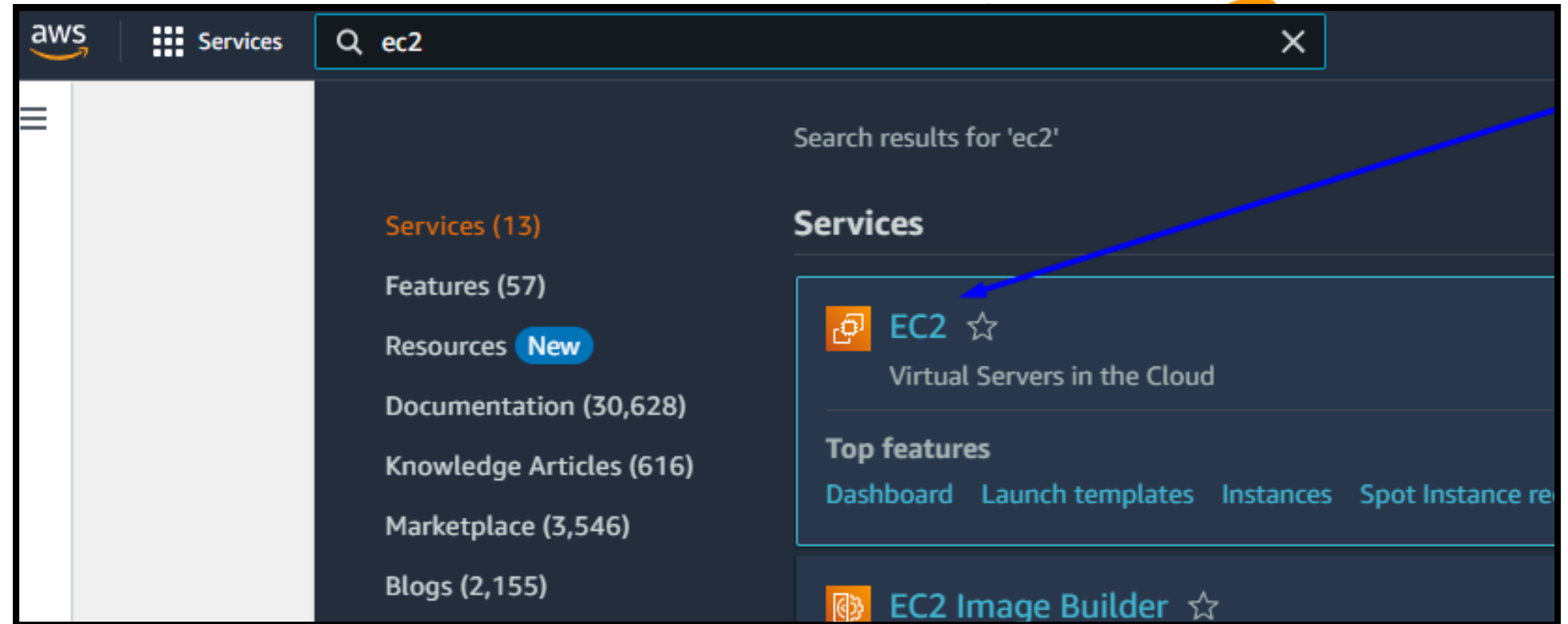


Task 5

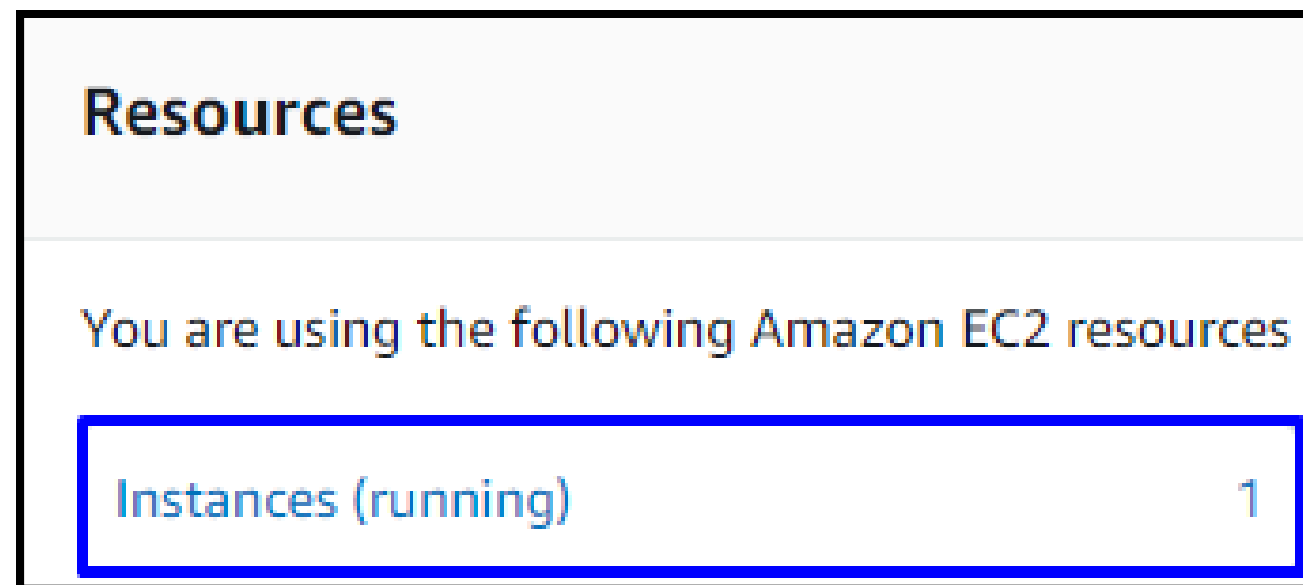
Launching a bastion server in the public subnet



- On the AWS Management Console, in the Search bar, enter and choose EC2 to go to the EC2 Management Console.



- In the left navigation pane, choose Instances.



Choose **Launch instances** and configure the following options:

- Choose **Amazon Linux 2023 AMI**.
- In the Instance type section, choose **t3.micro**.
- In the Name and tags section, enter **Bastion Server**.
- In the Key pair (login) section, choose **Proceed without a key pair**

In the Network settings section, choose Edit and configure the following options:

- VPC - required: Choose **Lab VPC**.
- Subnet: Choose **Public Subnet**.
- Auto-assign public IP: **Choose Enable**.

Firewall (security groups): Choose **Create security group**.
Security group name: Enter **Bastion Security Group**.
Description: **Enter Allow SSH**.

Security group name - *required*
Bastion Security Group

Summary

Number of instances | [Info](#)
1

Software Image (AMI)
Amazon Linux 2023 AMI 2023.5.2...[read more](#)
ami-0604d81f2fd264c7b

Virtual server type (instance type)
t3.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Cancel

Launch instance

[Review commands](#)

Inbound security groups rules:
Type: Choose **ssh**.
Source type: Choose **Anywhere**.

Choose **Launch instance**.



Task 6:

Creating a NAT gateway

On the AWS Management Console, in the Search bar, enter NAT gateways, choose the Features list, and choose NAT gateways.

Choose Create NAT gateway and configure the following options:

Name: Enter Lab NAT gateway.

Subnet: From the dropdown list, choose Public Subnet.

Choose Allocate Elastic IP.

Choose Create a NAT gateway.

Choose Allocate Elastic IP and create the NAT Gateway

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](#)

1. In the left navigation pane, choose Route tables, and then select Private Route Table.and choose Route Tables tab.

2. Choose “Edit Routes” and then “Add route” to configure the following options:

3. Choose “Save Changes”.

Edit routes

Destination	Target	Status
10.0.0.0/16	local	✓ Active
<input type="text" value="0.0.0.0/0"/>	<input type="text" value="local"/>	
	NAT Gateway	-
	<input type="text" value="nat-0d37db12fe5045a60"/>	

Add route



¡Muchas
gracias!

- Sebastián Aguilera
- Esteban Camejo
- Agustín Esteche
- Sony Etcheverry
- Fidel Fernández
- Elisa Gamarra
- Balter Velázquez
- Benjamín Sabaño

