

Assignment 2 – VPC

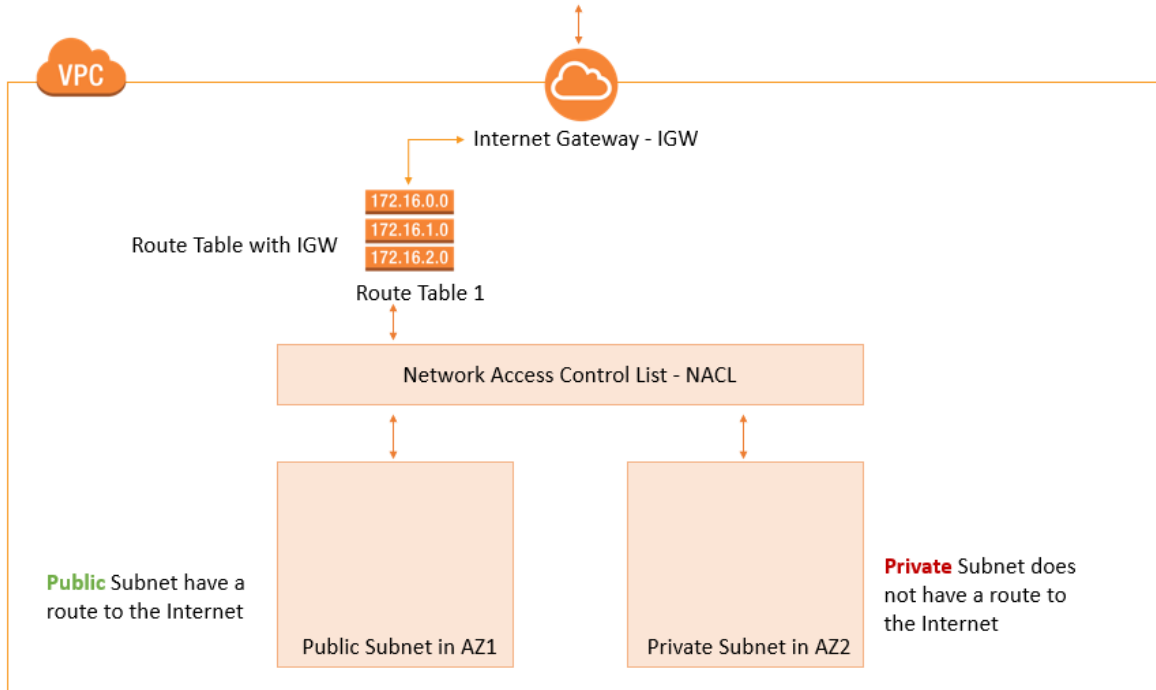
Today's task:

1. Create a VPC and create, configure its components
 - a. Internet Gateway
 - b. Update Route Table
 - c. Check NACL
 - d. Create subnets
 - e. Make some subnets public

Submit items below in one pdf file:

1. Screenshot of VPC
2. Screenshot of Subnets
3. Screenshot of Route table

Below is the architecture of what we will build today.



For your reference, use the following to create the VPC and defining subnet CIDRs:

Creating subnets in VPC

CIDR range for the VPC – 10.0.0.0/16 – 65,536 IPs

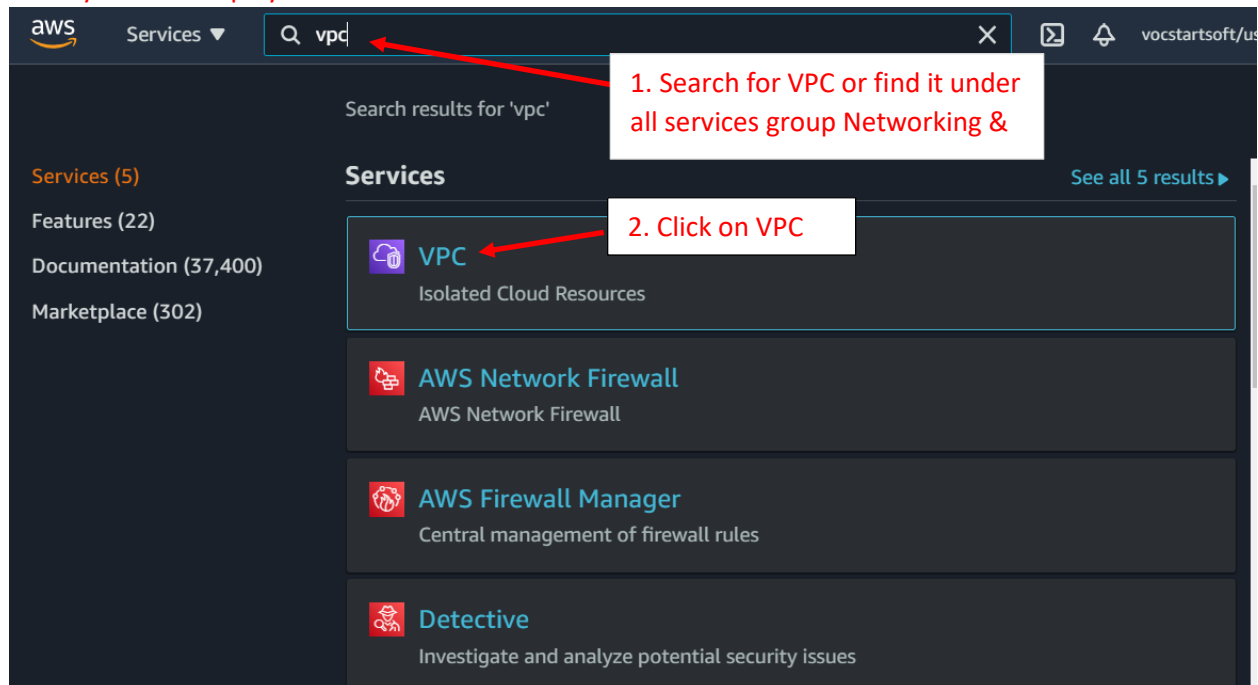
Subnets	CIDR	Available IPs	Total number of IPs
public-subnet-1a	10.0.0.0/24	10.0.0.0 – 10.0.0.255	256
public-subnet-1b	10.0.1.0/24	10.0.1.0 – 10.0.1.255	256
public-subnet-1c	10.0.2.0/24	10.0.2.0 – 10.0.2.255	256
private-subnet-1a	10.0.3.0/24	10.0.3.0 – 10.0.3.255	256
private-subnet-1b	10.0.4.0/24	10.0.4.0 – 10.0.4.255	256
private-subnet-1c	10.0.5.0/24	10.0.5.0 – 10.0.5.255	256

Note: The first (network) and the last (broadcast) IPs cannot be used. When you create resources on AWS, some of them implicitly gets an IP from the subnet.

Instruction 1. Create a VPC and required network components

1. Create a VPC (main Route table and NACL are automatically created with the VPC)

Go to your VPC display:




Your VPC Dashboard should be Displayed:

VPC Dashboard

Filter by VPC:

 Select a VPC

-  VIRTUAL PRIVATE CLOUD
- Your VPCs
- Subnets
- Route Tables
- Internet Gateways
- Egress Only Internet Gateways

[Launch VPC Wizard](#)

[Launch EC2 Instances](#)

US East (N. Virginia) region.

3. Click on one of the Links to your VPC

Resources by Region [Refresh Resources](#)

You are using the following Amazon VPC resources

[VPCs](#)

N. Virginia 1

[See all regions](#) ▼

[NAT Gateways](#)

N. Virginia 0

[See all regions](#) ▼

[Subnets](#)

N. Virginia 6

[See all regions](#) ▼

[VPC Peering Connections](#)

N. Virginia 0

[See all regions](#) ▼

Create a VPC:

The screenshot shows the AWS Management Console interface. At the top, the region is set to 'N. Virginia'. A red arrow points to this dropdown menu with the label '1. Verify Region'. Below the navigation pane, the 'Your VPCs' section displays a table with one VPC listed: 'vpc-14df4769' in the 'Available' state with an IPv4 CIDR of '172.31.0.0/16'. A red arrow points to the 'Create VPC' button in the top right corner of the VPCs list, labeled '2. Click Create VPC'.

Edit VPC Details:

The screenshot shows the 'Create VPC' wizard. The 'VPC settings' section includes the following fields and options:

- Name tag - optional:** A text field containing 'my-lab-vpc'. A red arrow points to this field with the label '1. Name VPC'.
- IPv4 CIDR block:** A text field containing '10.0.0.0/16'. A red arrow points to this field with the label '2. Fill in IP Range'.
- IPv6 CIDR block:** Three radio button options: 'No IPv6 CIDR block' (selected), 'Amazon-provided IPv6 CIDR block', and 'IPv6 CIDR owned by me'.
- Tenancy:** A dropdown menu set to 'Default'.

The screenshot shows the 'Tags' section of the 'Create VPC' wizard. It includes a list of tags with a 'Key' of 'Name' and a 'Value' of 'my-lab-vpc'. Below the list is an 'Add new tag' button. At the bottom of the wizard, there are 'Cancel' and 'Create VPC' buttons. A red arrow points to the 'Create VPC' button with the label '3. Click Create VPC'.

1A) Inspect the main route table. You should be able to see an entry 10.0.0.0/16 and local:

The screenshot shows the AWS VPC console with a table of VPCs. The first VPC, 'my-lab-vpc' (ID: vpc-0b978358e22761686), is selected. Below the table, the 'Details' tab is active, showing various VPC settings. A red box highlights the 'Main route table' field, which points to 'rtb-04bdd6d487305b930'. A red arrow points from a text box to this field.

1. Go Back to your VPC display and select the VPC that you just created. Click on Main Route Table under Details.

Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR (Network border)
my-lab-vpc	vpc-0b978358e22761686	Available	10.0.0.0/16	-
-	vpc-14df4769	Available	172.31.0.0/16	-

Details

VPC ID	State	DNS hostnames	DNS resolution
vpc-0b978358e22761686	Available	Disabled	Enabled
Tenancy	DHCP options set	Main route table	Main network ACL
Default	dopt-5c676226	rtb-04bdd6d487305b930	acl-07fe2e769d6af6dd2

You should be able to see an entry Destination 10.0.0.0/16 and Target local under the Routes tab. That means all resources in this VPC can talk to one another through private IP.

The screenshot shows the AWS VPC console with the 'Route tables' section. The route table 'rtb-04bdd6d487305b930' is selected. The 'Routes' tab is active, showing a single route with Destination '10.0.0.0/16' and Target 'local'. A red box highlights the route entry, and a red arrow points from a text box to the 'Routes' tab.

1. Select Routes Tab

2. Entry

Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC
-	rtb-04bdd6d487305b930	-	-	Yes	vpc-0b978358e22761686

Routes (1)

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No

1B) Inspect NACL to Verify it allows all inbound and outbound traffic:

1. Go Back to your VPC display and select the VPC that you just created. Click on Main Network ACL under Details.

Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR (Network border)
my-lab-vpc	vpc-0b978358e22761686	Available	10.0.0.0/16	-
-	vpc-14df4769	Available	172.31.0.0/16	-

Details

Property	Value
VPC ID	vpc-0b978358e22761686
State	Available
Tenancy	Default
DHCP options set	dopt-5c676226
DNS hostnames	Disabled
Main route table	rtb-04bdd6d487305b930
DNS resolution	Enabled
Main network ACL	acl-07fe2e769d6af6dd2

View Rules in NACL Display

1. Select Inbound Rules Tab

2. All Inbound Traffic Allowed

Name	Network ACL ID	Associated with	Default	VPC ID
-	acl-07fe2e769d6af6dd2	-	Yes	vpc-0b978358e22761686 / my-lab-vpc

acl-07fe2e769d6af6dd2

Inbound rules (2)

Rule number	Type	Protocol	Port range	Source	Allow/Deny
100	All traffic	All	All	0.0.0.0/0	Allow
*	All traffic	All	All	0.0.0.0/0	Deny

ac1-07fe2e769d6af6dd2

Details | Inbound rules | **Outbound rules** | Subnet associations | Tags

Outbound rules (2) Edit outbound rules

Filter outbound rules

Rule number	Type	Protocol	Port range	Destination	Allow/Deny
100	All traffic	All	All	0.0.0.0/0	Allow
*	All traffic	All	All	0.0.0.0/0	Deny

3. Select Outbound Rules

4. All Outbound Traffic Allowed

2. Create an Internet Gateway and attached it to the VPC.

Go to Internet Gateways Display

Learn more

VPC Dashboard

Filter by VPC:

Select a VPC

VIRTUAL PRIVATE CLOUD

- Your VPCs
- Subnets
- Route Tables
- Internet Gateways
- Egress Only Internet Gateways
- Carrier Gateways
- DHCP Options Sets
- Elastic IPs
- Managed Prefix Lists
- Endpoints
- Endpoint Services
- NAT Gateways
- Peering Connections

Launch VPC Wizard

Launch EC2 Instances

Note: Your Instances will launch in the US East (N. Virginia) region.

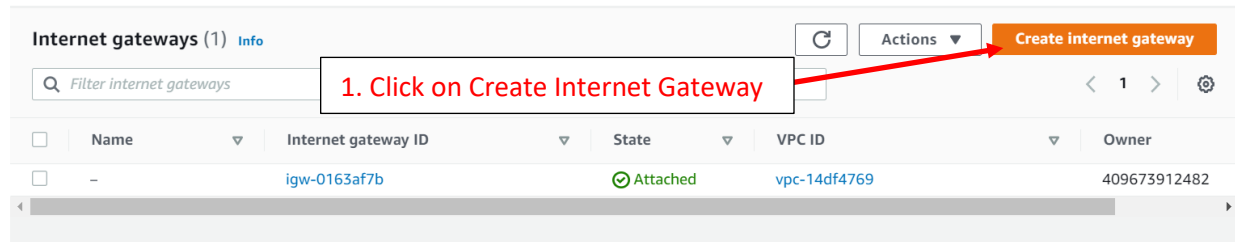
Resources by Region Refresh Resources

You are using the following Amazon VPC resources

VPCs	N. Virginia 2	NAT Gateways	N. Virginia 0
Subnets	N. Virginia 6	VPC Peering Connections	N. Virginia 0
Route Tables	N. Virginia 2	Network ACLs	N. Virginia 2
Internet Gateways	N. Virginia 1	Security Groups	N. Virginia 5
Egress-only Internet Gateways	N. Virginia 0	Customer Gateways	N. Virginia 0

1. Click on one of the Links to Internet Gateway

Create Internet Gateway



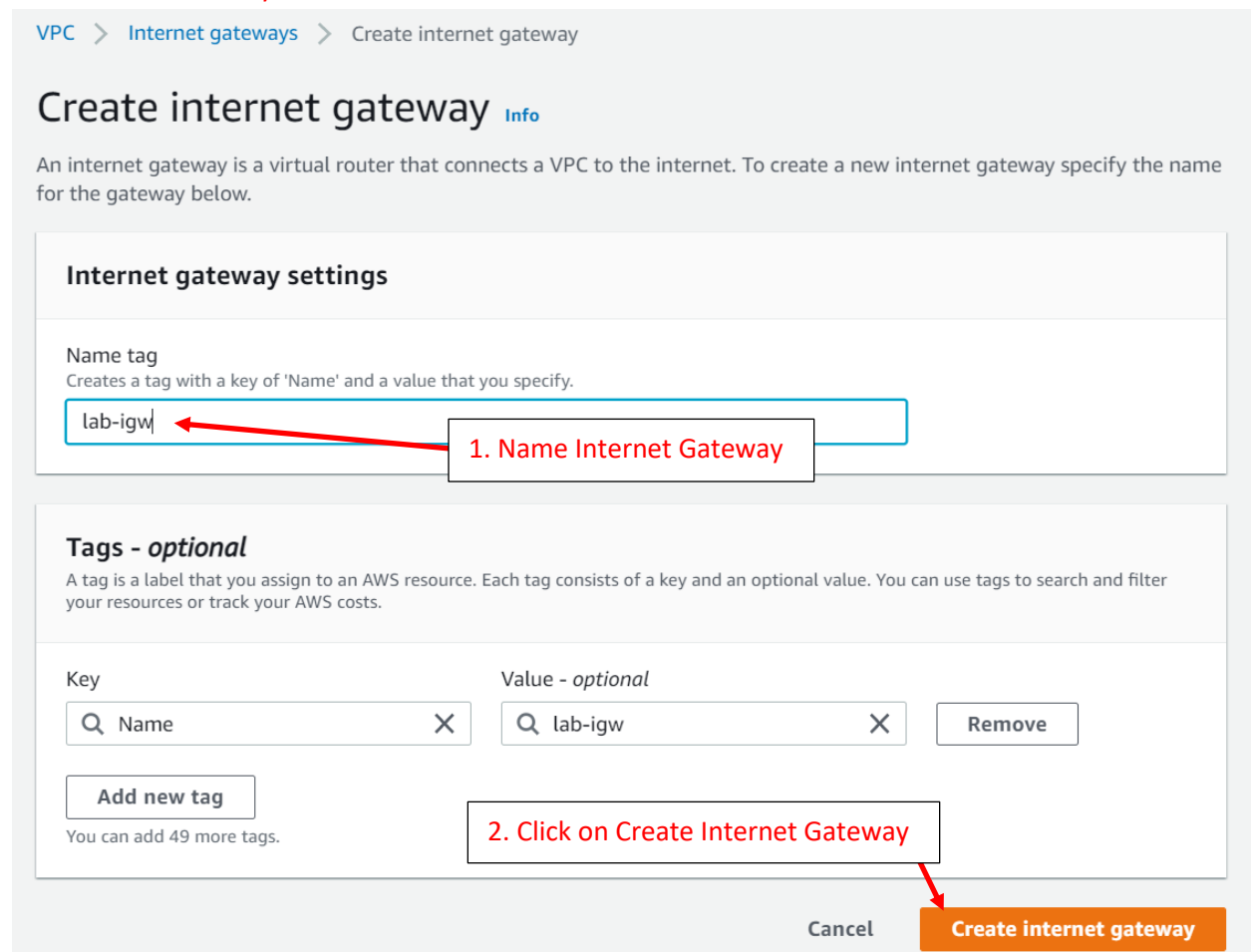
Internet gateways (1) [Info](#)

Filter internet gateways

1. Click on Create Internet Gateway

<input type="checkbox"/>	Name	Internet gateway ID	State	VPC ID	Owner
<input type="checkbox"/>	-	igw-0163af7b	Attached	vpc-14df4769	409673912482

Edit Internet Gateway Details



VPC > Internet gateways > 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.

lab-igw

1. Name Internet Gateway

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	
Name	lab-igw	Remove

[Add new tag](#)

You can add 49 more tags.

2. Click on Create Internet Gateway

Cancel [Create internet gateway](#)

Go Back to Internet Gateways Display and Attach Internet Gateway to your VPC

Internet gateways (1/2) [Info](#)

Filter internet gateways

	Name	Internet gateway ID	State	VPC ID
<input type="checkbox"/>	-	igw-0163af7b	Attached	vpc-14df47
<input checked="" type="checkbox"/>	lab-igw	igw-02d4ef907bcfe79bd	Detached	-

1. Select your Internet Gateway

2. Click Attach to VPC Under Actions

- View details
- Attach to VPC
- Detach from VPC
- Manage tags
- Delete internet gateway

Create internet gateway

Owner

409673912482

409673912482

VPC > Internet gateways > Attach to VPC (igw-02d4ef907bcfe79bd)

Attach to VPC (igw-02d4ef907bcfe79bd) [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.

Q vpc-0b978358e2276168d X

3. Select your VPC from the Dropdown

► AWS Command Line Interface command

4. Click Attach Internet Gateway

Cancel Attach internet gateway

2A) Go to the VPC Routing Table and Create an Entry Pointing to the Internet Gateway

Route tables (1/1) Info

Filter route tables

Route table ID: rtb-04bdd6d487305b930 Clear filters

<input checked="" type="checkbox"/>	Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC
<input checked="" type="checkbox"/>	-	rtb-04bdd6d487305b930	-	-	Yes	vpc-0b978358e22761686

Details Routes Subnet associations Edge associations Route propagation Tags

Routes (1)

Filter routes Both

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No

1. Click Edit Routes Under Routes Tab

Edit routes

VPC > Route tables > rtb-04bdd6d487305b930 > Edit routes

Edit routes

3. Enter Destination 0.0.0.0/0 for Everything

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
0.0.0.0/0	-	-	No

Add route

2. Click Add Route

5. Save Changes

4. Select Target Internet Gateway and then the Internet Gateway you Created

Carrier Gateway
Egress Only Internet Gateway
Gateway Load Balancer Endpoint
Instance
Internet Gateway
local
NAT Gateway
Network Interface
Outpost Local Gateway

Cancel Preview Save changes

igw-02d4ef907bcfe79bd (lab-igw)

3. Create subnets. Refer the image below.

Go to the Subnets Display

New VPC Experience [Learn more](#)

VPC Dashboard

Filter by VPC:

Select a VPC

VIRTUAL PRIVATE CLOUD

- Your VPCs
- Subnets**
- Route Tables
- Internet Gateways
- Egress Only Internet Gateways
- Carrier Gateways
- DHCP Options Sets

Resources by Region [Refresh Resources](#)

Note: Your Instances will launch in the US East (N. Virginia) region.

Launch VPC Wizard **Launch EC2 Instances**

Subnets N. Virginia 6 [See all regions](#)

VPCs N. Virginia 2 [See all regions](#)

NAT Gateways N. Virginia 0 [See all regions](#)

VPC Peering Connections N. Virginia 0 [See all regions](#)

Route Tables N. Virginia 2 [See all regions](#)

Network ACLs N. Virginia 2 [See all regions](#)

Create Subnet

Subnets (6) [Info](#)

[Filter subnets](#)

[Refresh](#) [Actions](#) **Create subnet**

<input type="checkbox"/>	Name	Subnet ID	State	VPC	IPv4 CIDR
<input type="checkbox"/>	-	subnet-256b6d2b	Available	vpc-14df4769	172.31.64.0/20
<input type="checkbox"/>	-	subnet-cfe7acee	Available	vpc-14df4769	172.31.80.0/20
<input type="checkbox"/>	-	subnet-c2f3ef8f	Available	vpc-14df4769	172.31.16.0/20
<input type="checkbox"/>	-	subnet-d1703cb7	Available	vpc-14df4769	172.31.0.0/20
<input type="checkbox"/>	-	subnet-d3054c8c	Available	vpc-14df4769	172.31.32.0/20
<input type="checkbox"/>	-	subnet-9aae3eab	Available	vpc-14df4769	172.31.48.0/20

[VPC](#) > [Subnets](#) > Create subnet

Create subnet [Info](#)

VPC

VPC ID
Create subnets in this VPC.

[vpc-0b978358e22761686 \(my-lab-vpc\)](#)

Associated VPC CIDRs

IPv4 CIDRs

10.0.0.0/16

To exit full screen, move mouse to top o

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.

lab-sn-public-1A

3. Pick Name

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.

US East (N. Virginia) / us-east-1a

4. Select AZ Zone

IPv4 CIDR block [Info](#)

10.0.0.0/24

5. Select IP Range for Subnet. Must Fall within VPC Range and Be Unique for Each Subnet

▼ Tags - optional

Key

Name

Value - optional

lab-sn-public-1A

Remove

Add new tag

You can add 49 more tags.

Remove

6. Click Add New Subnet to Create More Subnets (Repeat Steps 3-5). To give each subnet 256 IPs 10.0.0.0/24, 10.0.1.0/24, 10.0.2.0/24, ...

Add new subnet

7. Click Create

Cancel

Create subnet

3A) Create public subnets by enabling **auto-assign public IPv4 addresses**.

Go Back to the Subnet Display

Subnets (1/2) [Info](#)

Filter subnets

Subnet ID: subnet-0ef43ef1cfcb561a0 X Subnet ID: subnet-0c03b58f075ea48ac X Clear filters

	Name	Subnet ID	State	VPC
<input type="checkbox"/>	lab-sn-private-1A	subnet-0c03b58f075ea48ac	Available	vpc-0b978358e22761686 m...
<input checked="" type="checkbox"/>	lab-sn-public-1A	subnet-0ef43ef1cfcb561a0	Available	vpc-0b978358e22761686 m...

1. Select Subnet

2. Click Modify Auto-Assign IP Settings Under Actions

- View details
- Create flow log
- Modify auto-assign IP settings
- Edit IPv6 CIDRs
- Edit network ACL association
- Edit route table association
- Share subnet
- Manage tags
- Delete subnet

VPC > Subnets > subnet-0ef43ef1cfcb561a0 > Modify auto-assign IP settings

Modify auto-assign IP settings [Info](#)

Enable the auto-assign IP address setting to automatically request a public IPv4 or IPv6 address for a new network interface in this subnet.

Settings

Subnet ID
subnet-0ef43ef1cfcb561a0

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

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

3. Click Enable Auto-Assign Public IPv4 Address

4. Click Save

Cancel Save