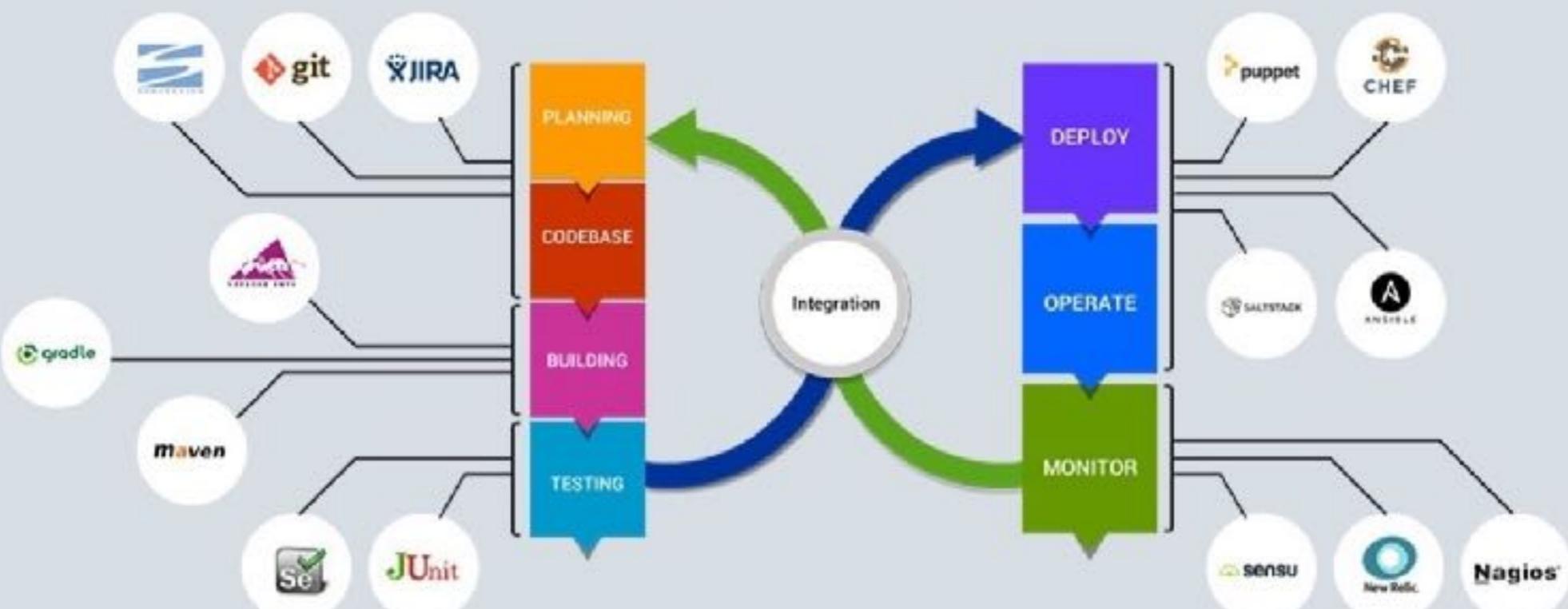


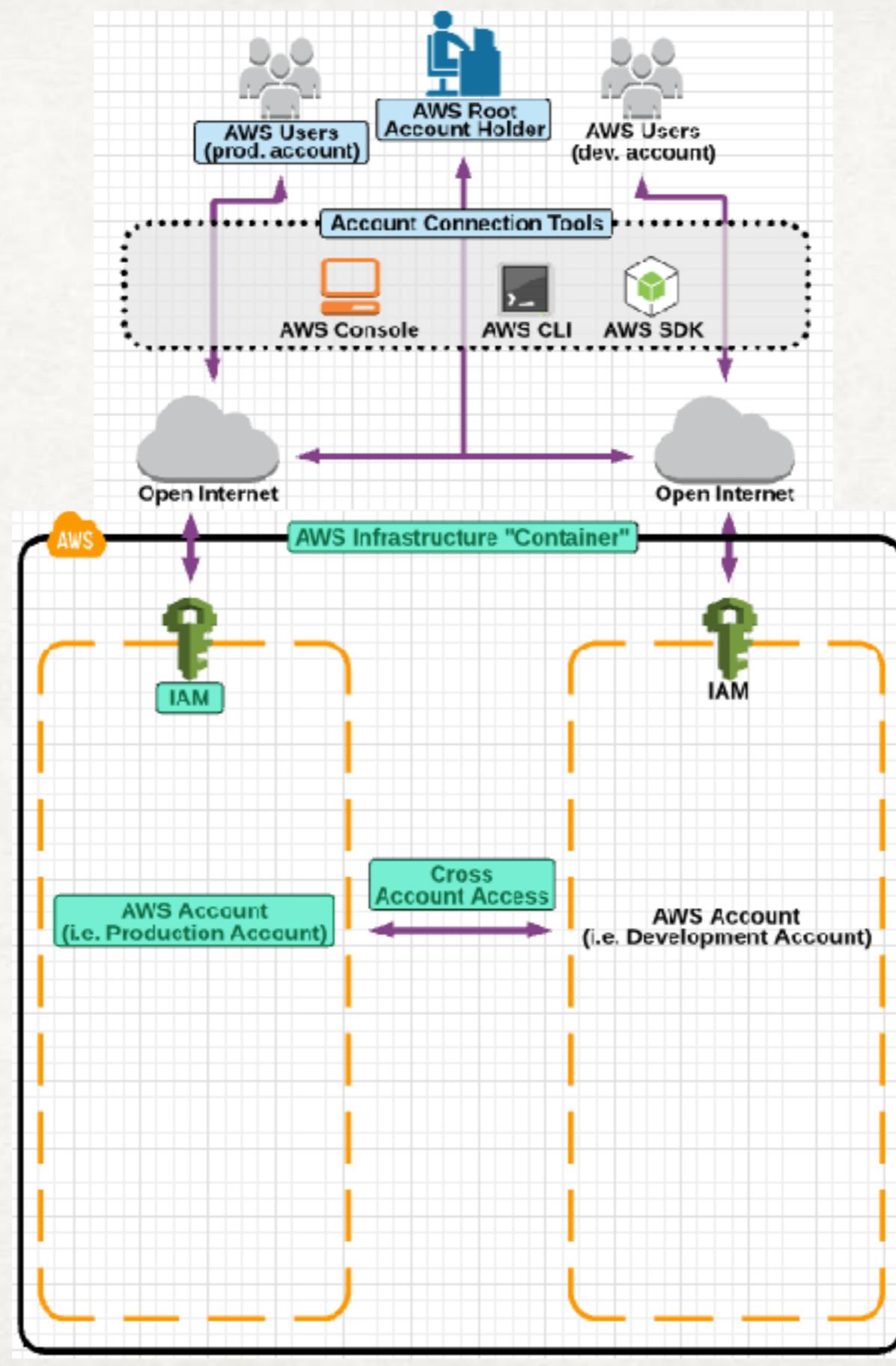
AWS

KESHAV KUMMARI

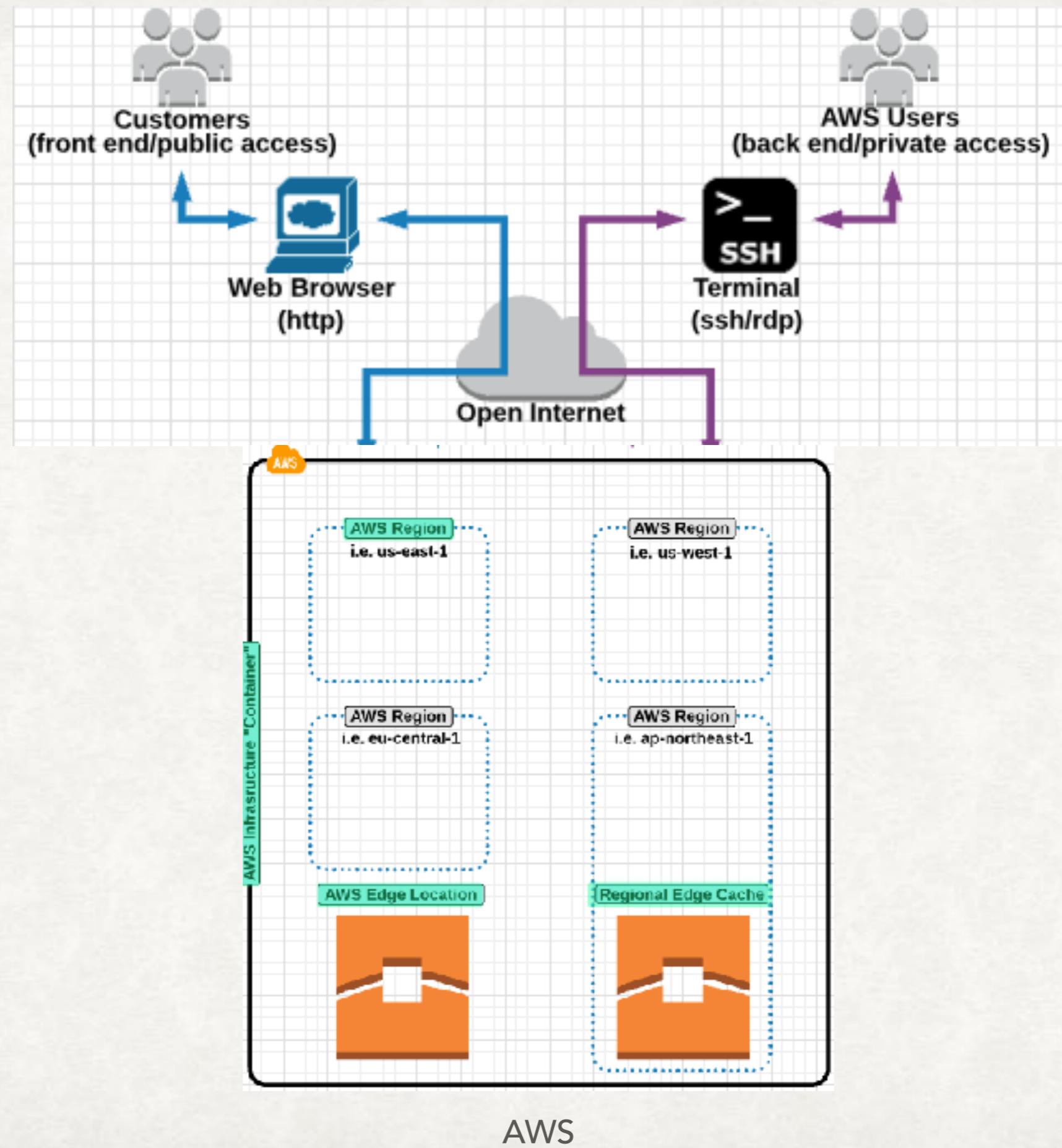
Agile | Linux | AWS | DevOps | Python

Keshav Kummari

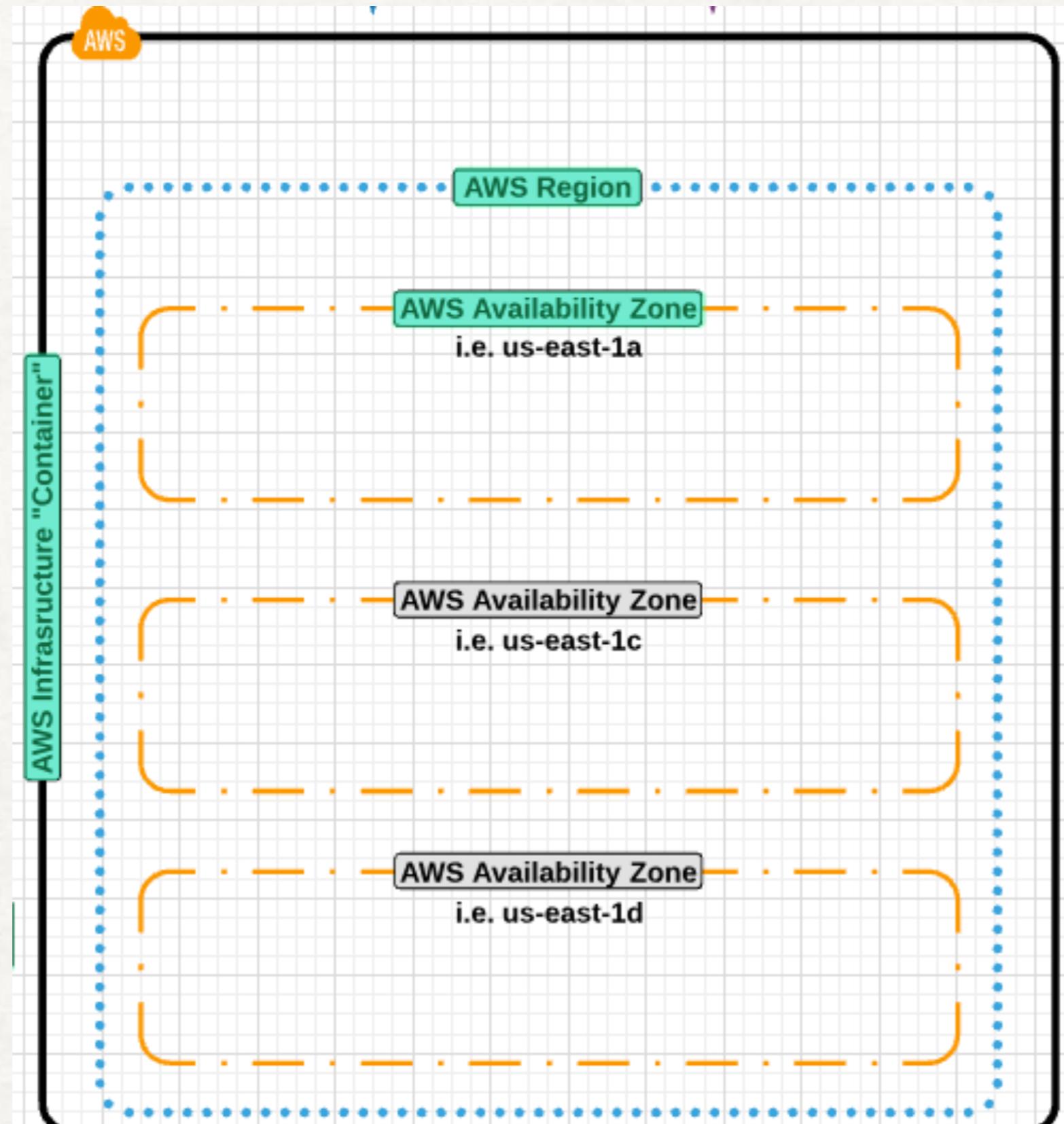




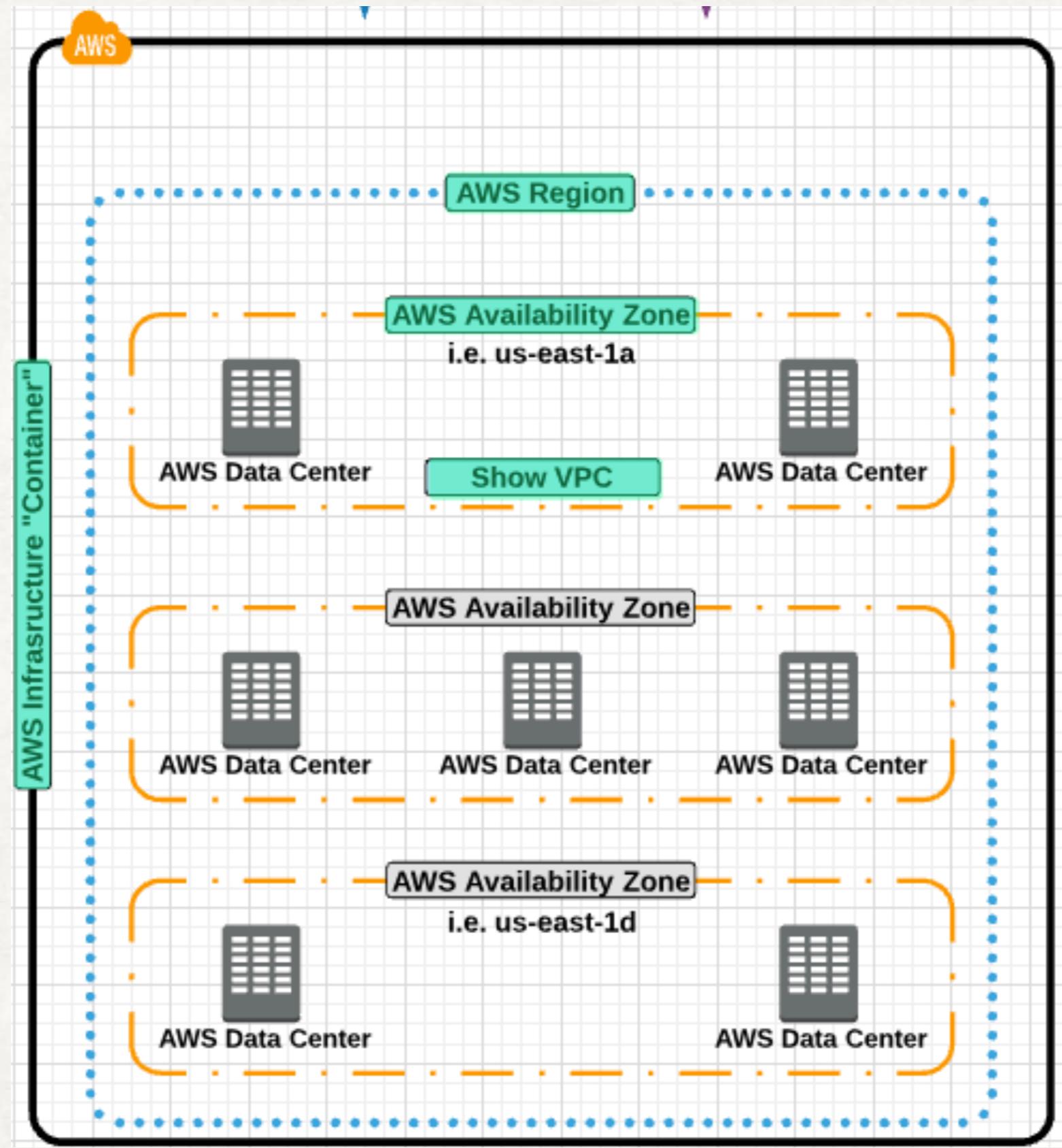
AWS



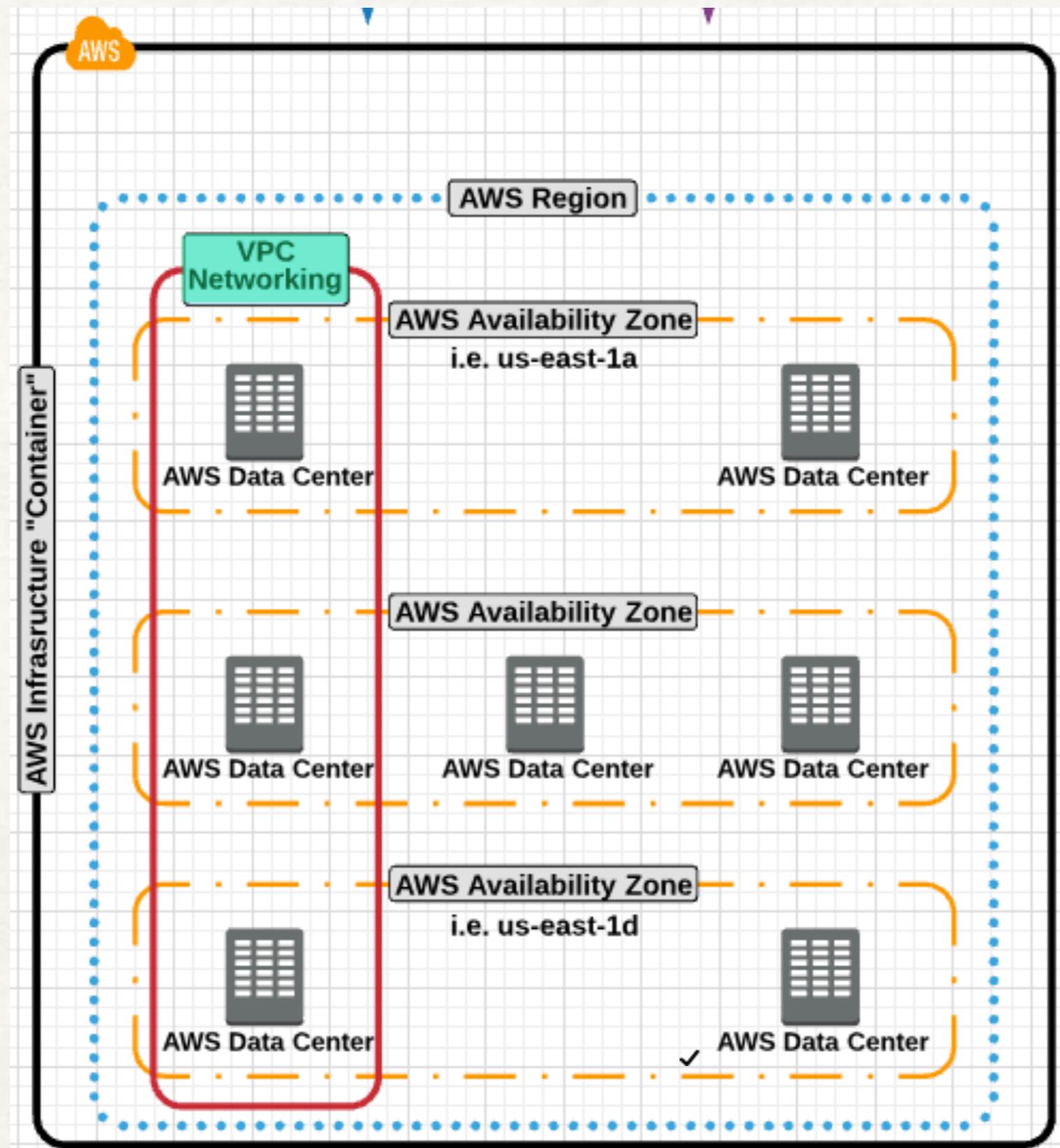
AWS



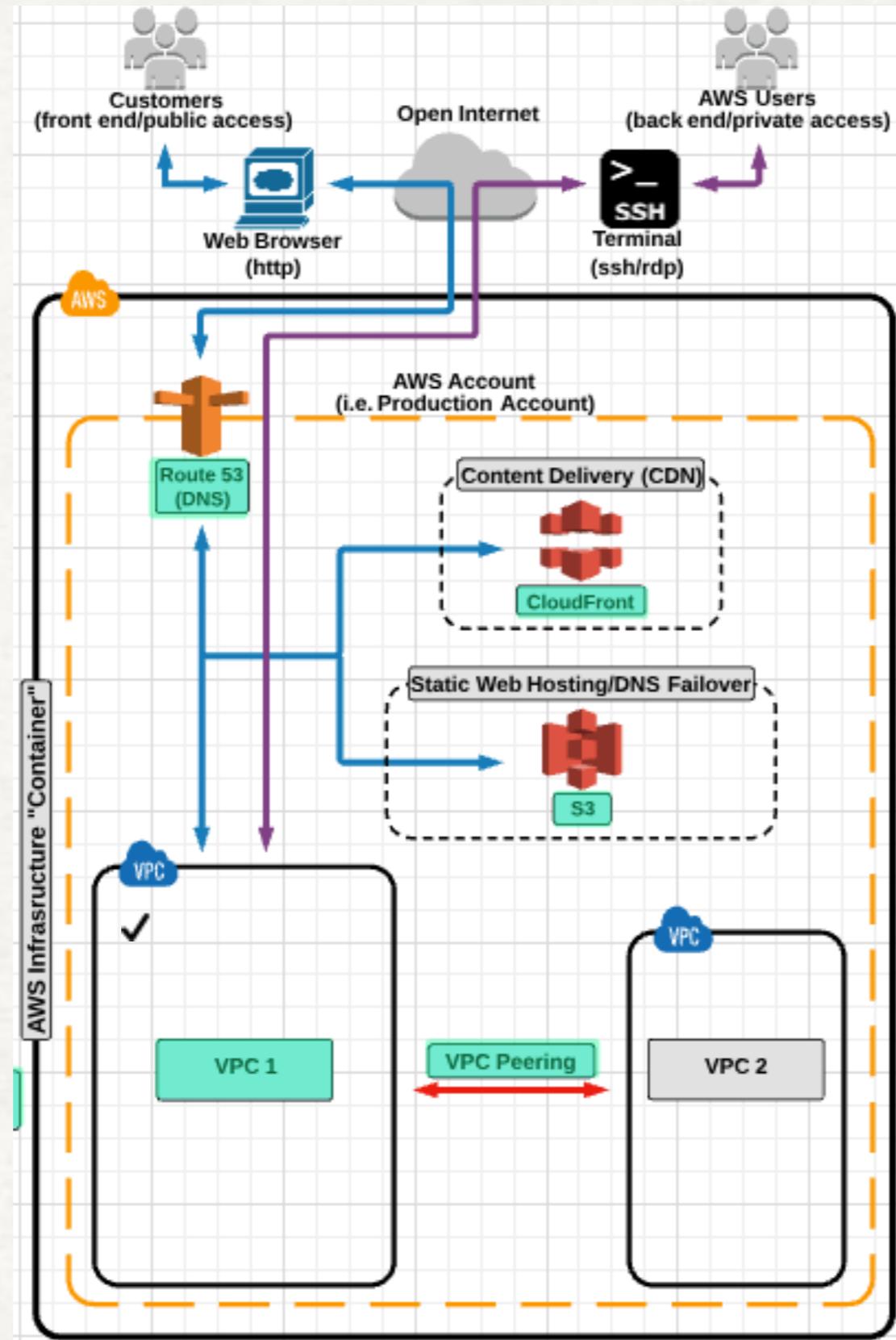
AWS - Region & Availability Zones



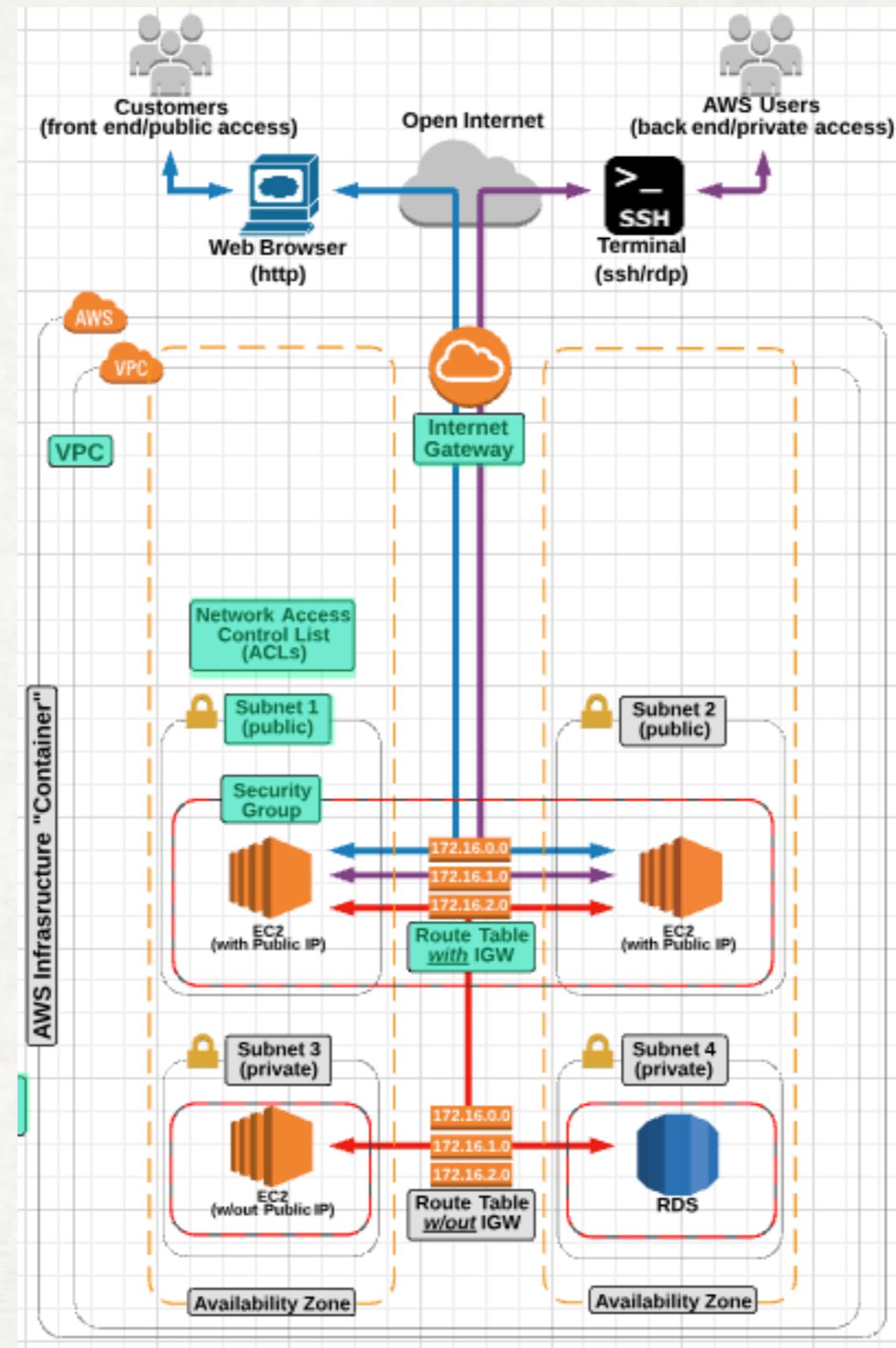
AWS Region & AZ's



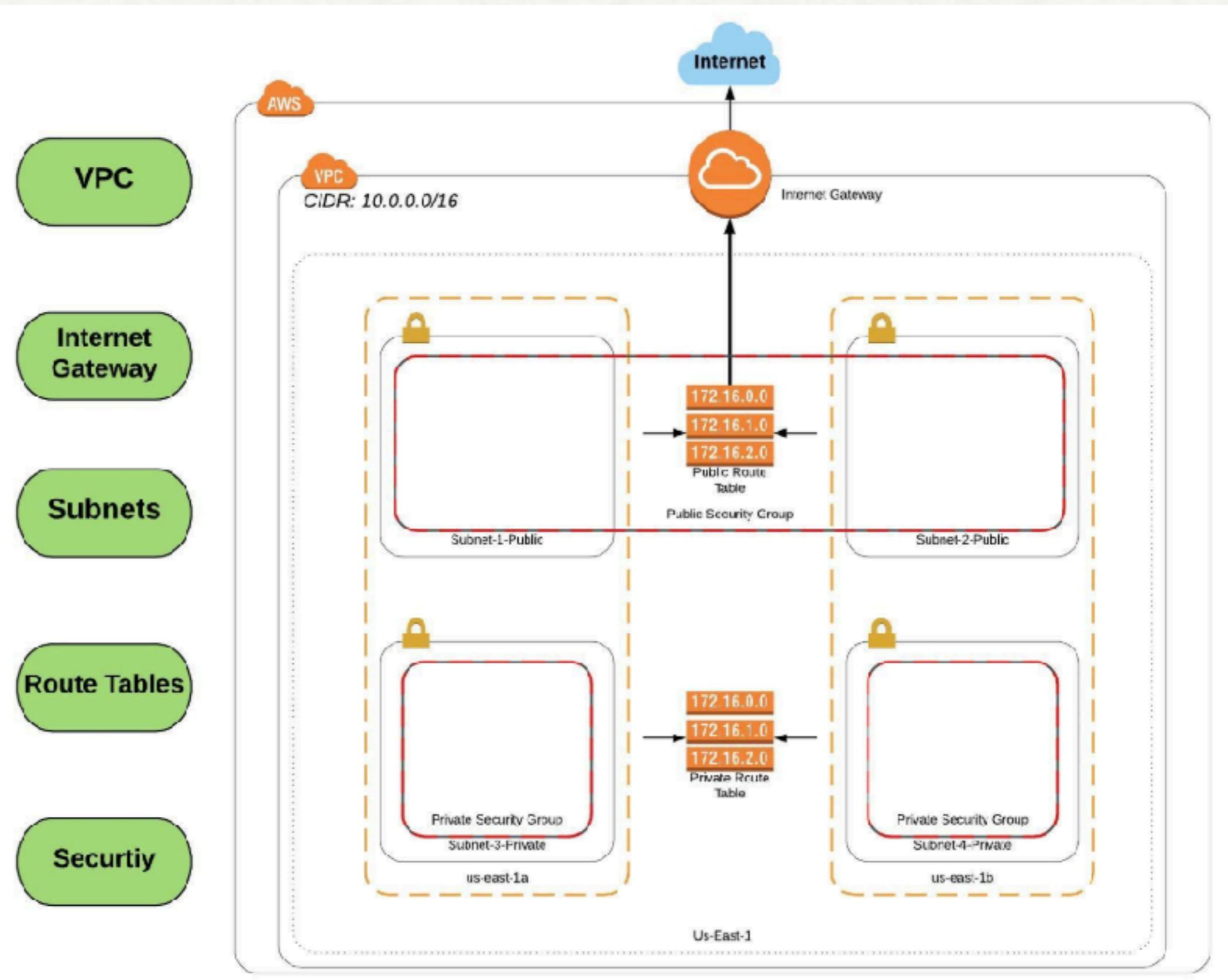
AWS - VPC



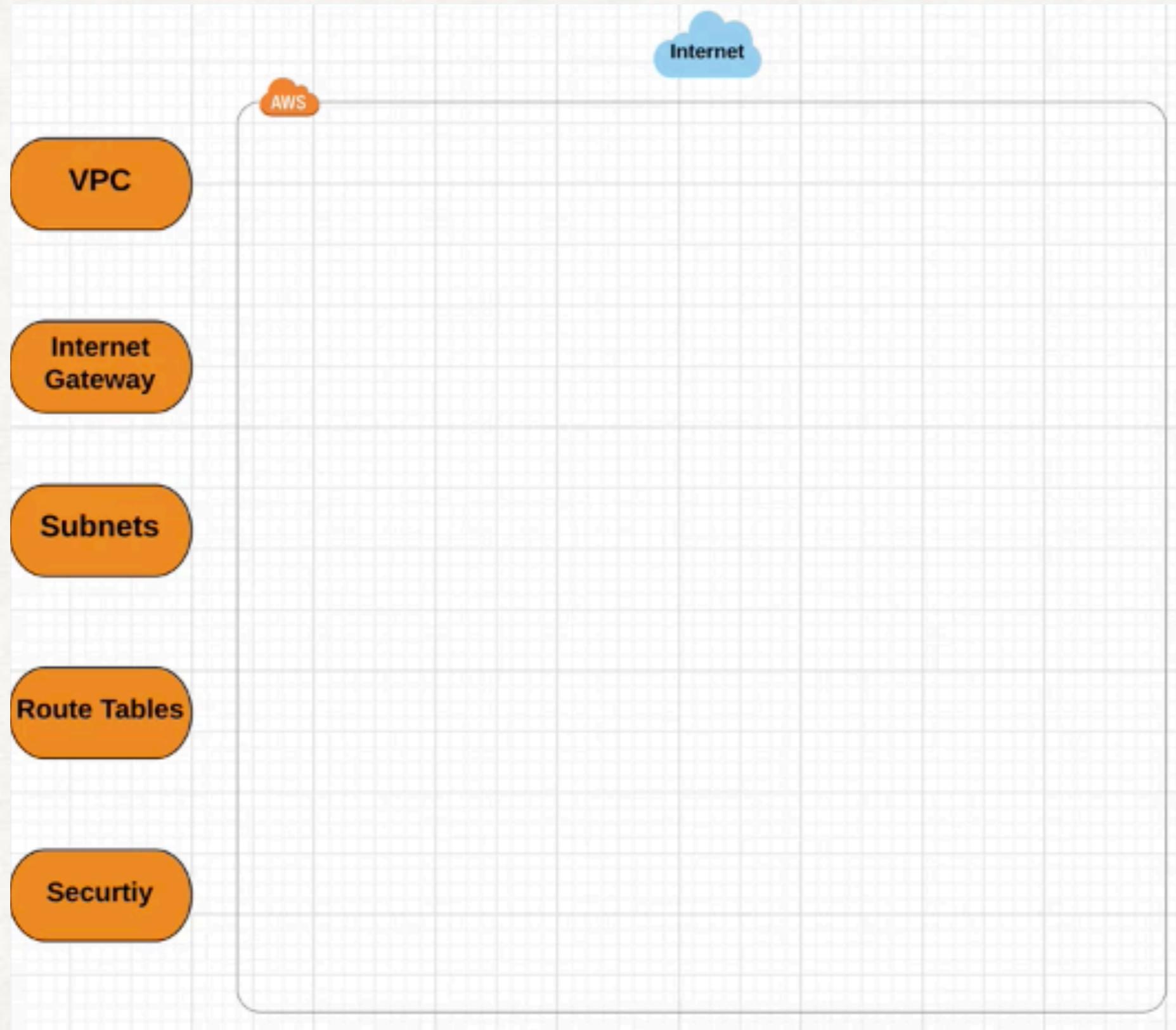
AWS - VPC



Inside VPC



VPC



Create a VPC

CREATE A VPC

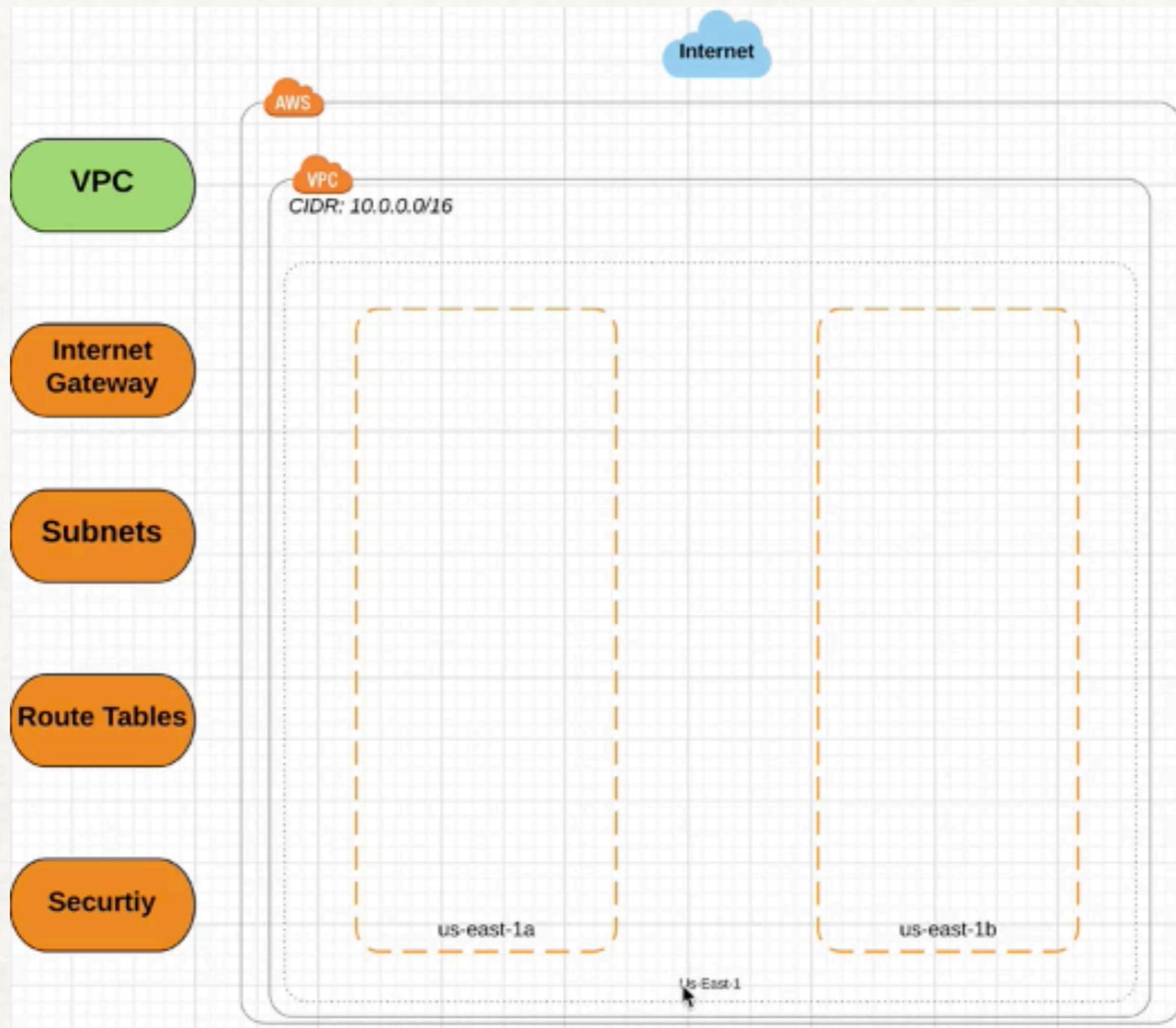
The screenshot shows the AWS VPC Dashboard. On the left sidebar, under 'Your VPCs', the 'Create VPC' button is highlighted. The main area displays a search bar and a table header for managing VPCs. A modal window titled 'Create VPC' is open, providing instructions and configuration fields. The configuration includes:

- Name tag: Lab_VPC
- IPv4 CIDR block*: 10.0.0.0/16
- IPv6 CIDR block*: No IPv6 CIDR Block
- Tenancy: Default

At the bottom of the modal are 'Cancel' and 'Yes, Create' buttons.

Click on Yes

VPC IS CREATED WITH 2 SUBNETS



VPC

VPC Dashboard

Filter by VPC:

Select a VPC

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Create internet gateway Actions ▾

Filter by tags and attributes or search by keyword

Name	ID	State
lab_igw	igw-c61e65be	detached

Go to Actions

VPC Dashboard

Filter by VPC:

Select a VPC

Virtual Private Cloud

Your VPCs

Create internet gateway Actions ^

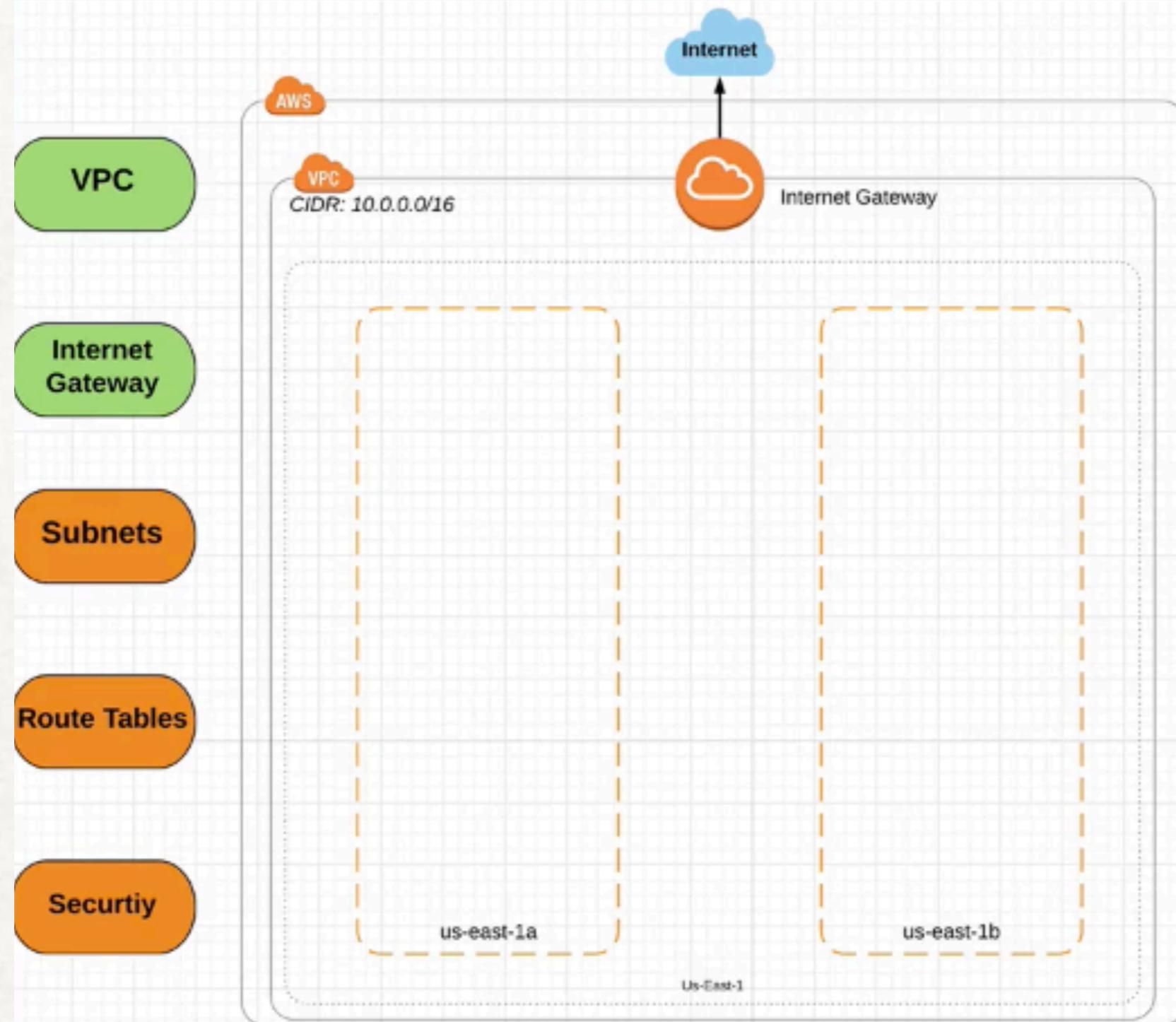
Filter by tags and attributes

Name	ID	State
lab_igw	igw-c61e65be	detached

- Delete internet gateway
- Attach to VPC** (Mouse Hover)
- Detach from VPC
- Add/Edit Tags

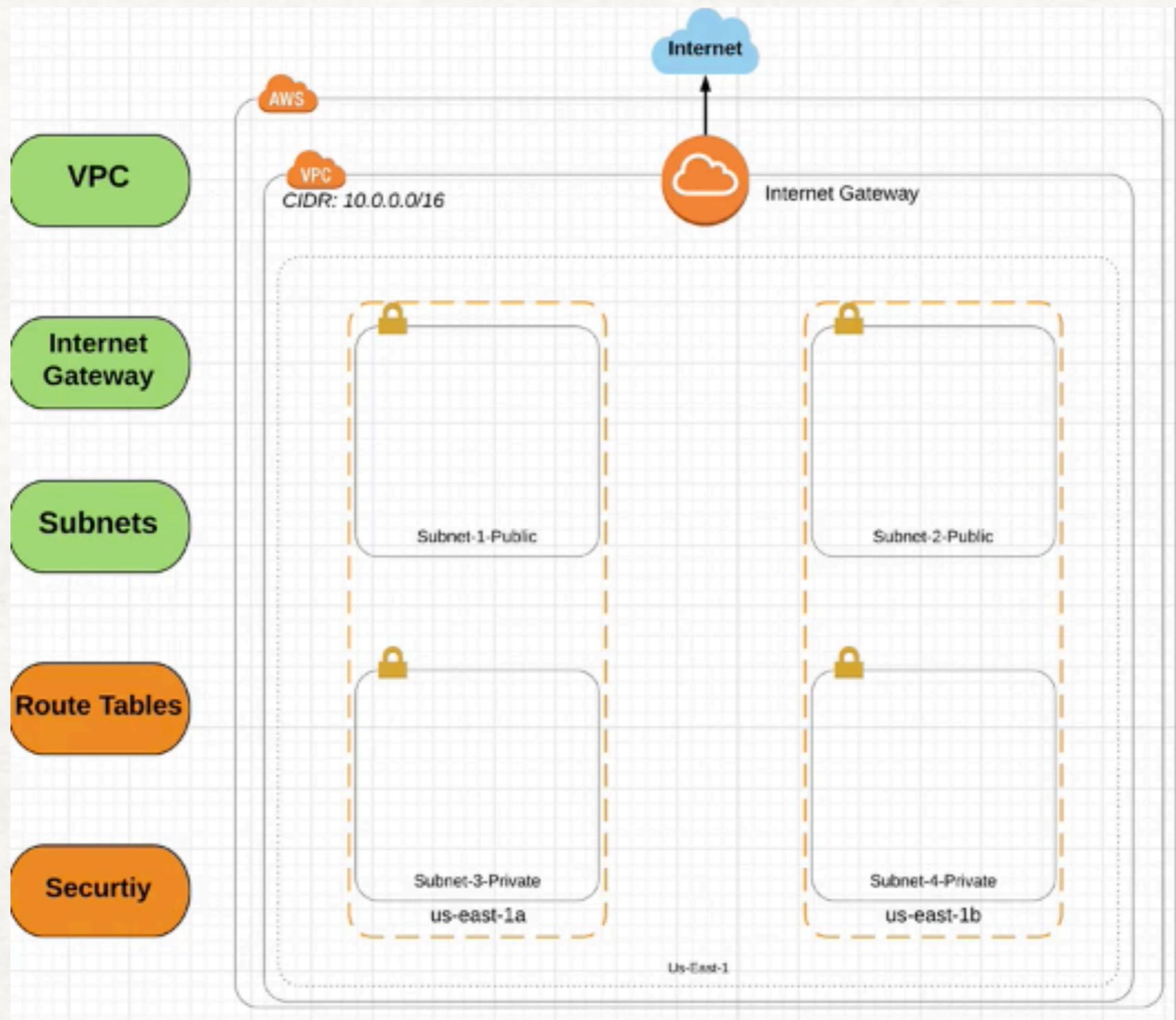
Attach to newly created VPC

IGW HAS BEEN CREATED



IGW

LET'S CREATE SUBNETS



4 Subnets i.e. 2 Public & 2 Private Subnets

STEP-1 : PUBLIC SUBNET-1

The screenshot shows the AWS VPC Dashboard. On the left sidebar, under 'Your VPCs', the 'Subnets' option is selected. A modal window titled 'Create Subnet' is open in the center. The modal contains fields for 'Name tag' (Subnet-1-Public), 'VPC' (vpc-e7bf8c9c | Lab_VPC), 'CIDR' (10.0.0.0/16), 'Availability Zone' (us-east-1a), and 'IPv4 CIDR block' (10.0.1.0/24). At the bottom right of the modal are 'Cancel' and 'Yes, Create' buttons, with 'Yes, Create' being highlighted with a mouse cursor. Below the modal, a message says 'Select a subnet above'.

Click "Yes, Create"

STEP-2 : PUBLIC SUBNET-2

The screenshot shows the AWS VPC Dashboard. On the left sidebar, under 'Subnets', the 'Create Subnet' button is highlighted. A modal window titled 'Create Subnet' is open, prompting the user to specify a CIDR block for the subnet. The 'Name tag' is set to 'Subnet-2-Public', the 'VPC' is 'vpc-e7bf8c9c | Lab_VPC', and the 'CIDR' is '10.0.0.0/16'. The 'Availability Zone' is 'us-east-1b' and the 'IPv4 CIDR block' is '10.0.2.0/24'. At the bottom right of the modal are 'Cancel' and 'Yes, Create' buttons. Below the modal, a summary of the subnet's configuration is displayed.

Attribute	Value	Status	Reason
CIDR	10.0.0.0/16	associated	

Attribute	Value
Availability Zone	us-east-1b
IPv4 CIDR block	10.0.2.0/24

subnet-322ad06e | Subnet-1-Public

Attribute	Value	Attribute	Value
Subnet ID	subnet-322ad06e Subnet-1-Public	Availability Zone	us-east-1a
IPv4 CIDR	10.0.1.0/24	Route table	rtb-63f5141c
IPv6 CIDR		Network ACL	acl-052aba7f
State	available	Default subnet	no
VPC	vpc-e7bf8c9c Lab_VPC	Auto-assign Public IP	no
Available IPs	251	Auto-assign IPv6 address	no

Click on Yes, Create

STEP-3 : PRIVATE SUBNET-3

The screenshot shows the AWS VPC Dashboard. On the left sidebar, under 'Your VPCs', 'Subnets' is selected. A modal window titled 'Create Subnet' is open in the center. The modal contains fields for 'Name tag' (Subnet-3-Private), 'VPC' (vpc-e7bf8c9c | Lab_VPC), 'CIDR' (10.0.0.0/16), 'Availability Zone' (us-east-1a), and 'IPv4 CIDR block' (10.0.3.0/24). At the bottom right of the modal are 'Cancel' and 'Yes, Create' buttons. In the background, a table lists existing subnets: 'subnet-06b07c61 | Subnet-2-Public'. The table includes columns for Name, Subnet ID, State, VPC, IPv4 CIDR, Available IPv4, and IPv6 CIDR. The 'Summary' tab is selected for the public subnet.

Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
subnet-06b07c61	subnet-06b07c61 Subnet-2-Public	available	vpc-e7bf8c9c Lab_VPC	10.0.2.0/24	251	

Click on "Yes, Create"

STEP-4 : PRIVATE SUBNET-4

VPC Dashboard

Create Subnet Subnet Actions

Filter by VPC: Select a VPC

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet Gateways

DHCP Options Sets

Elastic IPs

Endpoints

Endpoint Services

NAT Gateways

Peering Connections

Security

Network ACLs

Security Groups

VPN Connections

Customer Gateways

Virtual Private Gateways

VPN Connections

Create Subnet

Search Subnets and their pro X

1 to 3 of 3 Subnets

Name Subnet ID State VPC IPv4 CIDR Available IPv4 IPv6

Create Subnet

Use the CIDR format to specify your subnet's IP address block (e.g., 10.0.0.0/24). Note that block sizes must be between a /16 netmask and /28 netmask. Also, note that a subnet can be the same size as your VPC. An Pv6 CIDR block must be a /64 CIDR block.

Name tag Subnet-4-Private

VPC vpc-e7bf8c9c | Lab_VPC

VPC CIDRs CIDR Status Status Reason

10.0.0.0/16 associated

Availability Zone us-east-1b

IPv4 CIDR block 10.0.4.0/24

Cancel Yes, Create

subnet-fb2cd6a7 | Subnet-3-Private

Summary Route Table Network ACL Flow Logs Tags

Subnet ID: subnet-fb2cd6a7 | Subnet-3-Private Availability Zone: us-east-1a

IPv4 CIDR: 10.0.3.0/24 Route table: rtb-63f5141c

IPv6 CIDR:

State: available Network ACL: acl-052aba7f

VPC: vpc-e7bf8c9c | Lab_VPC Default subnet: no

Available IPs: 251 Auto-assign Public IP: no

Auto-assign IPv6 address: no

Click on "Yes, Create"

4 SUBNETS WERE CREATED SUCCESSFULLY

VPC Dashboard

Create Subnet Subnet Actions

Filter by VPC:

Select a VPC

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet Gateways

DHCP Options Sets

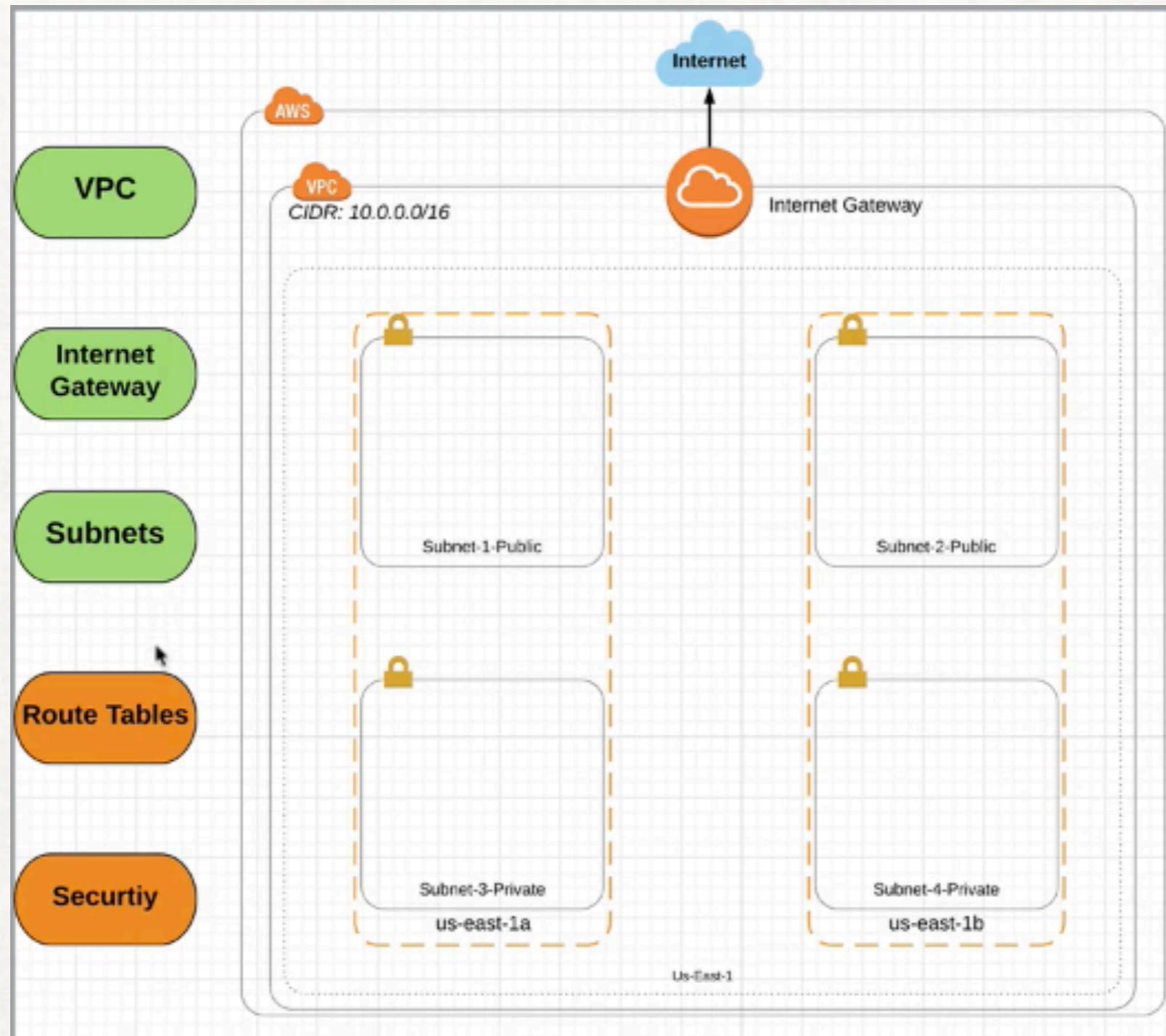
Elastic IPs

Search Subnets and their proj X << 1 to 4 of 4 Subnets

Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4 Address Range
Subnet-4-Private	subnet-52b87435	available	vpc-e7bf8c9c Lab_VPC	10.0.4.0/24	251
Subnet-1-Public	subnet-322ad06e	available	vpc-e7bf8c9c Lab_VPC	10.0.1.0/24	251
Subnet-3-Private	subnet-fb2cd6a7	available	vpc-e7bf8c9c Lab_VPC	10.0.3.0/24	251
Subnet-2-Public	subnet-06b07c61	available	vpc-e7bf8c9c Lab_VPC	10.0.2.0/24	251

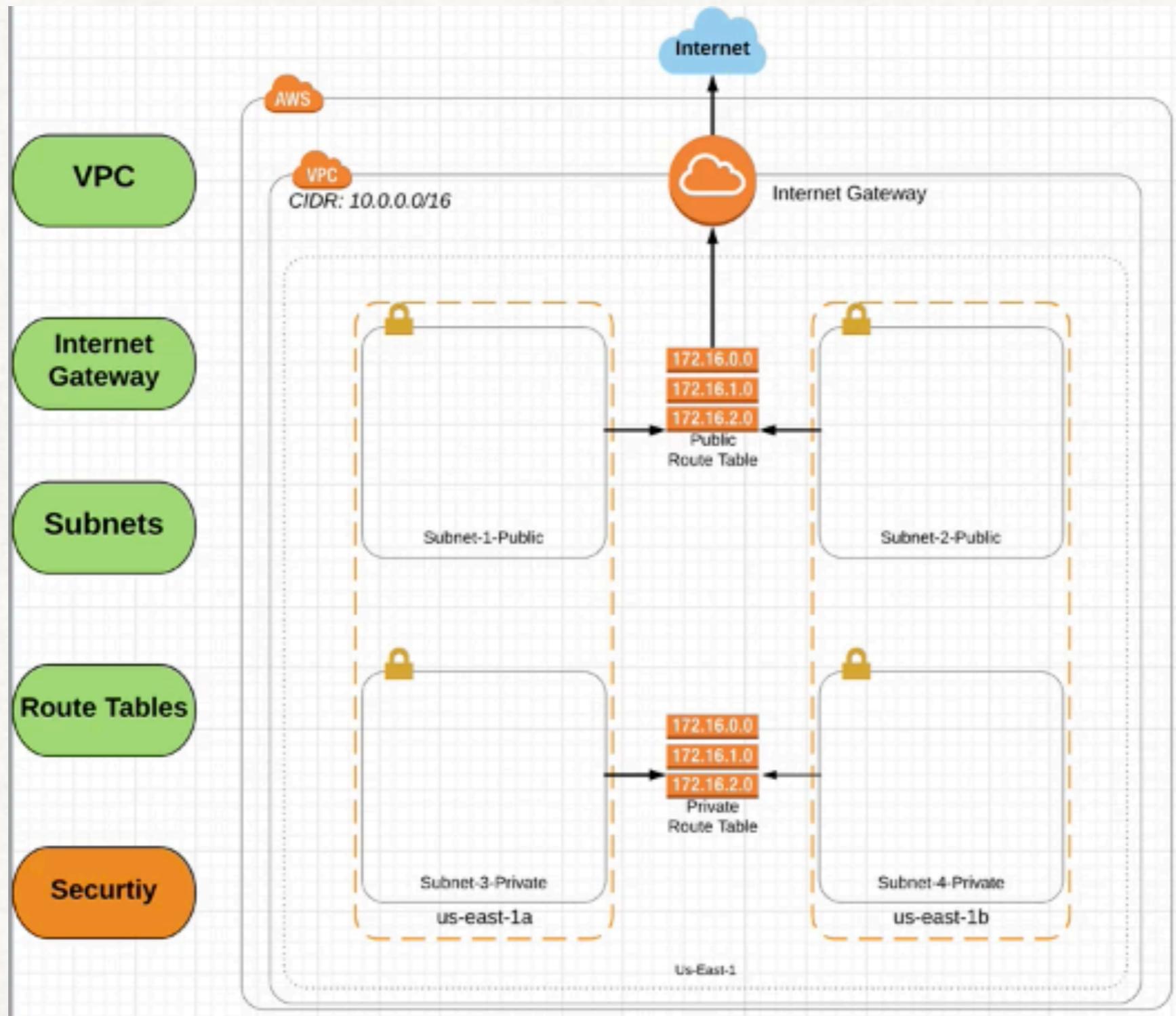
2 Public & 2 Private Subnets

VPC, IGW & SUBNETS WERE CREATED



Continue with Route Tables

CREATE 2 ROUTE TABLES



1. Public & 1. Private Route Tables

STEP-1 PUBLIC ROUTE TABLE



Public Route Table

STEP-2 : PRIVATE ROUTE TABLE

VPC Dashboard

Filter by VPC:

Select a VPC

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet Gateways

DHCP Options Sets

Elastic IPs

Endpoints

Endpoint Services

NAT Gateways

Peering Connections

Security

Create Route Table

Delete Route Table

Set As Main Table

Search Route Tables and their routes

1 to 2 of 2 Results

Name

Route Table ID

Explicitly Associated

Main

VPC

Create Route Table

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

Name tag: Private-RouteTable

VPC: vpc-e7bf8c9c | Lab_VPC

Cancel Yes, Create

This screenshot shows the 'Create Route Table' dialog box overlaid on the AWS VPC Route Tables list. The dialog box contains fields for 'Name tag' (set to 'Private-RouteTable') and 'VPC' (set to 'vpc-e7bf8c9c | Lab_VPC'). The 'Yes, Create' button at the bottom right is highlighted with a mouse cursor. The background shows a list of existing route tables and navigation controls like 'Create Route Table', 'Delete Route Table', and 'Set As Main Table'.

Private Route Table

ROUTES TRAFFIC VIA IGW

VPC Dashboard

Create Route Table Delete Route Table Set As Main Table

Filter by VPC: Select a VPC

Virtual Private Cloud Your VPCs Subnets Route Tables Internet Gateways Egress Only Internet Gateways DHCP Options Sets Elastic IPs Endpoints Endpoint Services NAT Gateways Peering Connections Security Network ACLs Security Groups VPN Connections Customer Gateways Virtual Private Gateways VPN Connections

Search Route Tables and their X

Name	Route Table ID	Explicitly Associated	Main	VPC
	rtb-63f5141c	0 Subnets	Yes	vpc-e7bf8c9c Lab_VPC
	Private-RouteTable	rtb-afc829d0	0 Subnets	No vpc-e7bf8c9c Lab_VPC
Public-RouteTable	rtb-7ac52705	0 Subnets	No	vpc-e7bf8c9c Lab_VPC

rtb-7ac52705 | Public-RouteTable

Summary Routes Subnet Associations Route Propagation Tags

Cancel Save

View: All rules

Destination	Target	Status	Propagated	Remove
10.0.0.0/16	local	Active	No	
0.0.0.0/0	igw-c61e65be		No	

Add another route

The screenshot shows the AWS VPC Route Table configuration interface. On the left, a sidebar lists various VPC-related services. The main area displays a list of Route Tables, with one named 'Public-RouteTable' selected. This table has two routes: one for the local subnet (10.0.0.0/16) and another pointing to an Internet Gateway (igw-c61e65be). The 'Routes' tab is active.

Route IGW on IPV4

SUBNET ASSOCIATIONS WITH PUBLIC SUBNETS

VPC Dashboard

Create Route Table Delete Route Table Get As Main Table

Filter by VPC:

Select a VPC

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet Gateways

DHCP Options Sets

Elastic IPs

Endpoints

Endpoint Services

NAT Gateways

Peering Connections

Security

Network ACLs

Security Groups

VPN Connections

Customer Gateways

Virtual Private Gateways

VPN Connections

Search Route Tables and their X

Name	Route Table ID	Explicitly Associated	Main	VPC
	rtb-63f5141c	0 Subnets	Yes	vpc-e7bf8:9c Lab_VPC
Private-RouteTable	rtb-afc829d0	0 Subnets	No	vpc-e7bf8:9c Lab_VPC
Public-RouteTable	rtb-7ac62705	0 Subnets	No	vpc-e7bf8:9c Lab_VPC

rtb-7ac62705 | Public-RouteTable

Summary Routes Subnet Associations Route Propagation Tags

Cancel Save

Associate	Subnet	IPv4 CIDR	IPv6 CIDR	Current Route Table
<input checked="" type="checkbox"/>	subnet-322ad06e Subnet-1-Public	10.0.1.0/24	-	Main
<input checked="" type="checkbox"/>	subnet-06b07c61 Subnet-2-Public	10.0.2.0/24	-	Main
<input type="checkbox"/>	subnet-fb2cd6a7 Subnet-3-Private	10.0.3.0/24	-	Main
<input type="checkbox"/>	subnet-52b87435 Subnet-4-Private	10.0.4.0/24	-	Main

Click on Public Subnet 1 & 2

NO NEED TO ROUTE WITH PRIVATE SUBNETS

VPC Dashboard

Create Route Table Delete Route Table Set As Main Table

Search Route Tables and their X

Name	Route Table ID	Explicitly Associated	Main	VPC
	rtb-63f5141c	0 Subnets	Yes	vpc-e7bf8c9c Lab_VPC
Private-RouteTable	rtb-afc829d0	0 Subnets	No	vpc-e7bf8c9c Lab_VPC
	rtb-7ac62705	2 Subnets	No	vpc-e7bf8c9c Lab_VPC

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

- Internet Gateways
- Egress Only Internet Gateways
- DHCP Options Sets
- Elastic IPs
- Endpoints
- Endpoint Services
- NAT Gateways
- Peering Connections

Security

Network ACLs

Security Groups

VPN Connections

Customer Gateways

Virtual Private Gateways

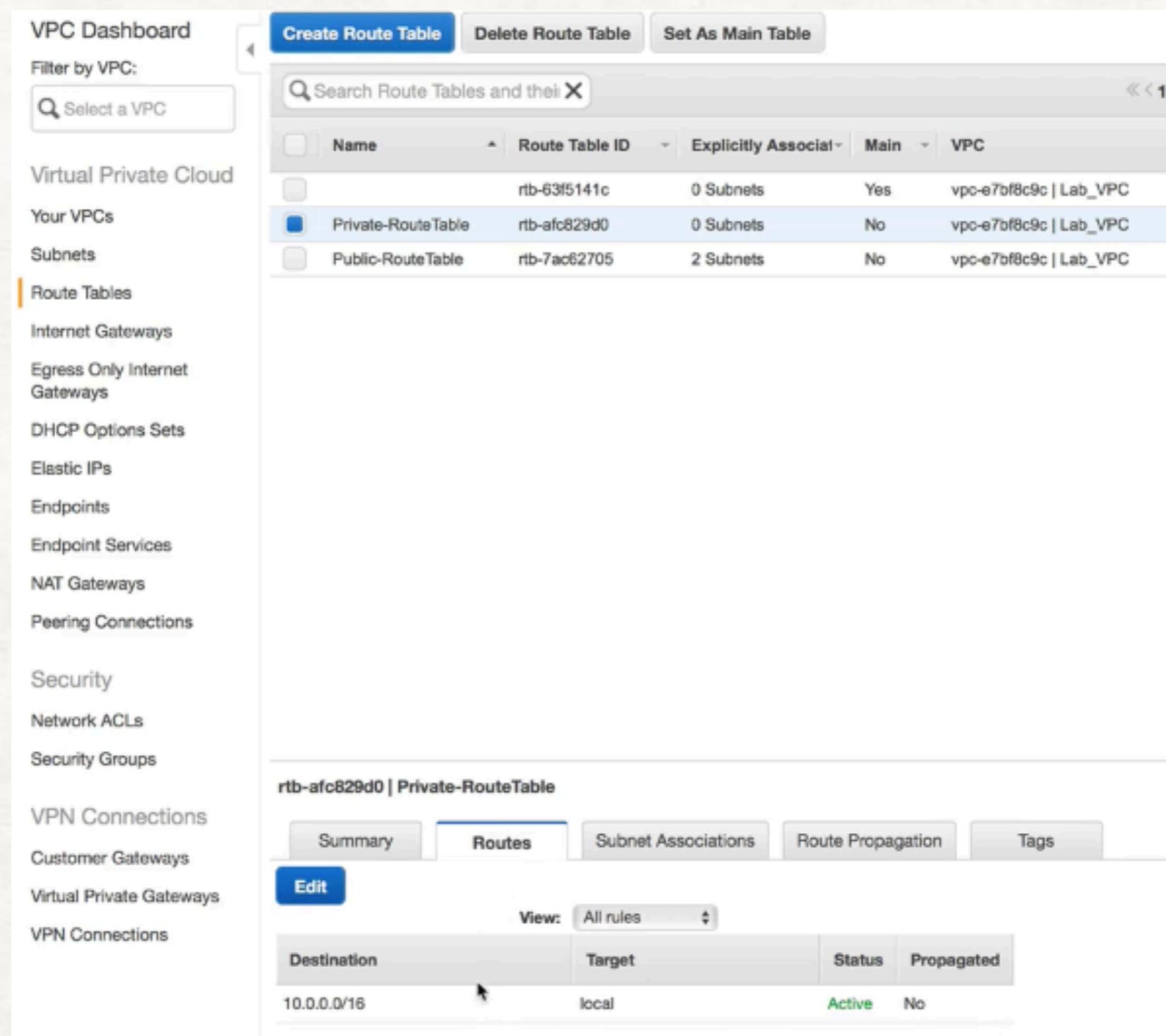
VPN Connections

rtb-afc829d0 | Private-RouteTable

Summary Routes Subnet Associations Route Propagation Tags

Edit View: All rules

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No



Click on Subnet Associations

ADD SUBNET ASSOCIATIONS WITH PRIVATE SUBNETS

VPC Dashboard

Create Route Table Delete Route Table Set As Main Table

Search Route Tables and their X

Name	Route Table ID	Explicitly Associated	Main	VPC
	rtb-6365141c	0 Subnets	Yes	vpc-e7bf8c9c Lab_VPC
Private-RouteTable	rtb-afc829d0	0 Subnets	No	vpc-e7bf8c9c Lab_VPC
	rtb-7ac62705	2 Subnets	No	vpc-e7bf8c9c Lab_VPC

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

- Internet Gateways
- Egress Only Internet Gateways
- DHCP Options Sets
- Elastic IPs
- Endpoints
- Endpoint Services
- NAT Gateways
- Peering Connections

Security

Network ACLs

Security Groups

VPN Connections

Customer Gateways

Virtual Private Gateways

VPN Connections

rtb-afc829d0 | Private-RouteTable

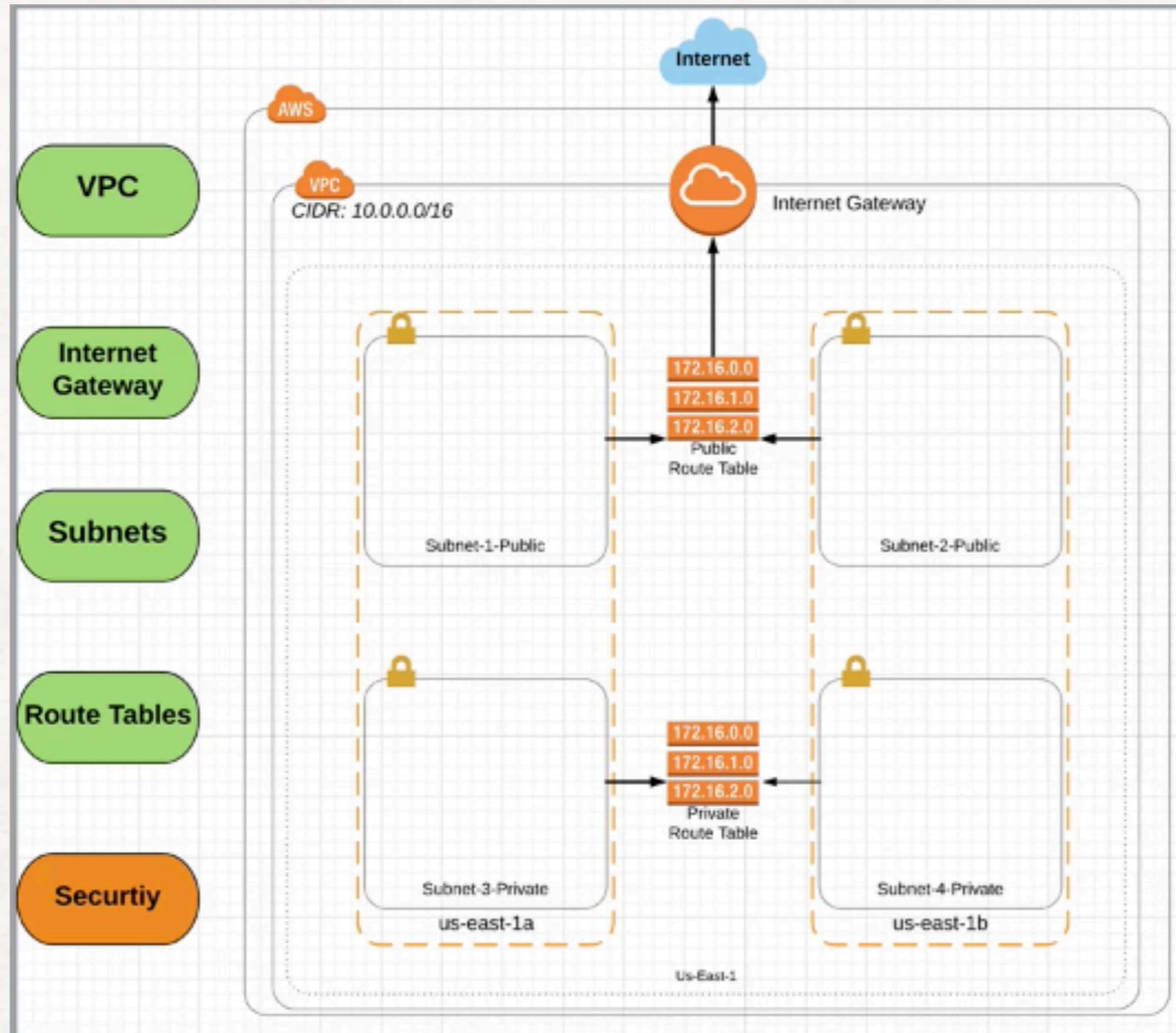
Summary Routes Subnet Associations Route Propagation Tags

Cancel Save

Associate	Subnet	IPv4 CIDR	IPv6 CIDR	Current Route Table
<input type="checkbox"/>	subnet-322ad08e Subnet-1-Public	10.0.1.0/24	-	rtb-7ac62705 Public-RouteTable
<input type="checkbox"/>	subnet-08b07c61 Subnet-2-Public	10.0.2.0/24	-	rtb-7ac62705 Public-RouteTable
<input checked="" type="checkbox"/>	subnet-fb2cd6a7 Subnet-3-Private	10.0.3.0/24	-	Main
<input checked="" type="checkbox"/>	subnet-52b87435 Subnet-4-Private	10.0.4.0/24	-	Main

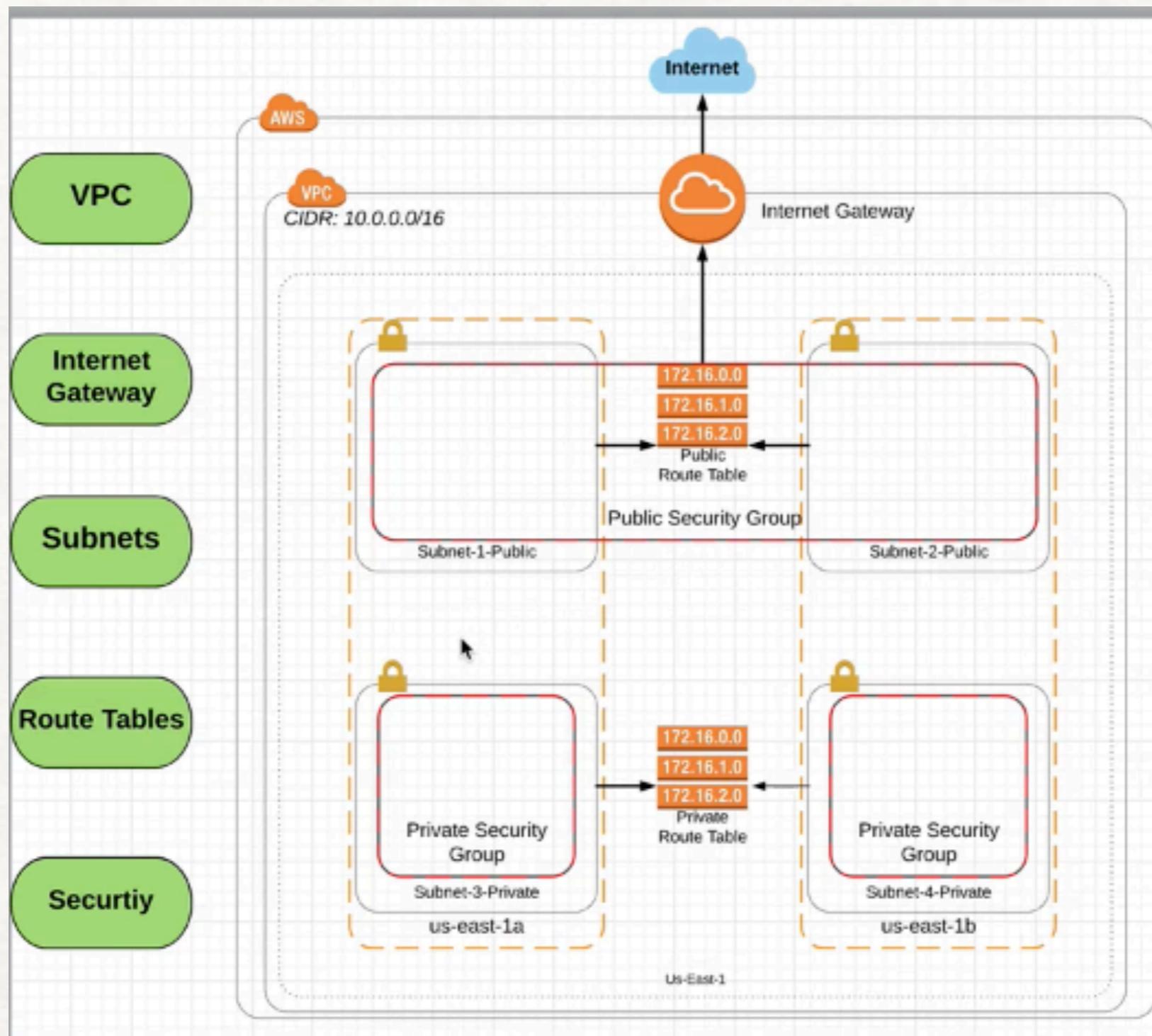
Click on Save

ROUTE TABLES & SUBNETS WERE CREATED SUCCESSFULLY



Route Tables are created

SECURITY - STATEFUL & STATELESS



Security Groups

CREATE SECURITY GROUP ON PUBLIC SUBNET

The screenshot shows the AWS VPC Dashboard. On the left sidebar, under the 'Virtual Private Cloud' section, the 'Security Groups' item is selected. In the main content area, a modal window titled 'Create Security Group' is open. The modal contains fields for 'Name tag' (Lab_SG), 'Group name' (Lab_SG), 'Description' (Lab_SG), and 'VPC' (vpc-2d211c56 | Lab_VPC). The 'VPC' field is highlighted with a blue border. At the bottom right of the modal are 'Cancel' and 'Yes, Create' buttons. The background shows a list of security groups with one entry visible: 'sg-753ea43d'.

VPC Dashboard

Filter by VPC:
Select a VPC

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Egress Only Internet Gateways

DHCP Options Sets

Elastic IPs

Endpoints

Endpoint Services

NAT Gateways

Peering Connections

Security

Network ACLs

Security Groups

Create Security Group

Security Group Actions

All security groups

Search Security Groups and t X

1 to 1 of 1

Name tag

Group ID

Group Name

VPC

Description

Create Security Group

Name tag: Lab_SG

Group name: Lab_SG

Description: Lab_SG

VPC: vpc-2d211c56 | Lab_VPC

Cancel

Yes, Create

sg-753ea43d

Stat-full Security Group

ENABLE THE HTTP PORT PART OF SECURITY GROUP

The screenshot shows the AWS VPC Dashboard. On the left sidebar, under the 'Security' section, the 'Security Groups' item is selected. In the main content area, the 'Create Security Group' button is visible at the top. Below it, a table lists two security groups: 'Lab_SG' and 'default'. The 'Lab_SG' row is selected, showing its details: Group ID (sg-2a701562), Group Name (Lab_SG), VPC (vpc-2d211c56 | Lab_VPC), and Description (Lab_SG). At the bottom of the screen, the configuration for 'sg-2a701562 | Lab_SG' is shown. The 'Inbound Rules' tab is selected. A single rule is listed: Type (HTTP (80)), Protocol (TCP (6)), Port Range (80), Source (0.0.0.0/0), and Description (Web Traffic). The 'Save' button is highlighted in blue.

Name tag	Group ID	Group Name	VPC	Description
Lab_SG	sg-2a701562	Lab_SG	vpc-2d211c56 Lab_VPC	Lab_SG
	sg-753ea43d	default	vpc-2d211c56 Lab_VPC	default VPC security group

sg-2a701562 | Lab_SG

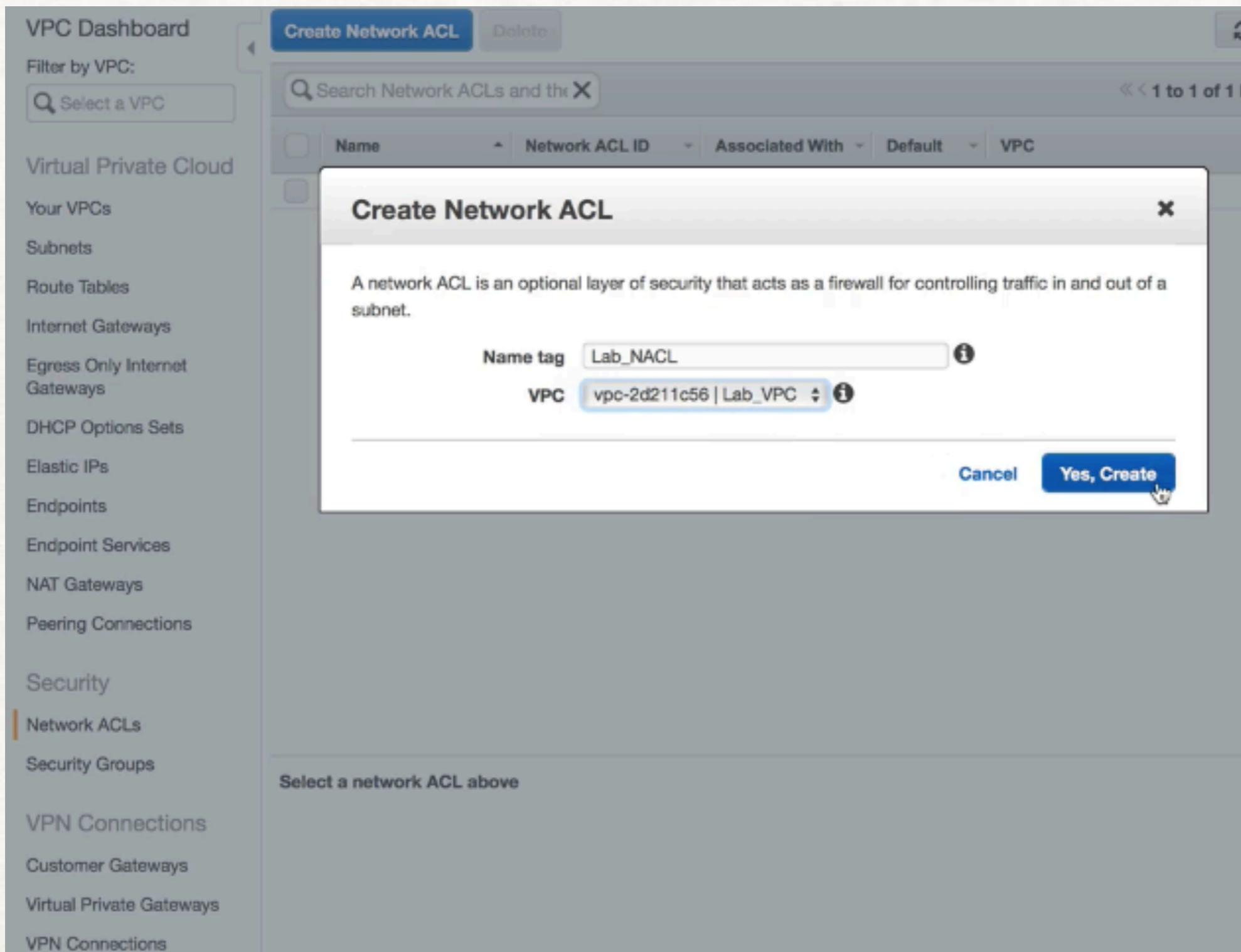
Inbound Rules

Type: HTTP (80) | Protocol: TCP (6) | Port Range: 80 | Source: 0.0.0.0/0 | Description: Web Traffic

Add another rule

Click on Save

LET'S CREATE NACL



NACL

ALL HTTP PORT ON NACL

The screenshot shows the AWS VPC Dashboard with the 'Network ACLs' section selected. A search bar at the top right shows '1 to 2 of 2 Networks'. The main table lists two Network ACLs:

Name	Network ACL ID	Associated With	Default	VPC
acl-7575e70f		4 Subnets	Yes	vpc-2d211c56 Lab_VPC
Lab_NACL	acl-6d059717	0 Subnets	No	vpc-2d211c56 Lab_VPC

Below the table, the details for 'acl-6d059717 | Lab_NACL' are shown. The 'Inbound Rules' tab is selected. A note states: 'Allows inbound traffic. Because network ACLs are stateless, you must create inbound and outbound rules.' The 'Edit' button is visible. The 'View: All rules' dropdown is set to 'All rules'. The inbound rules table is as follows:

Rule #	Type	Protocol	Port Range	Source	Allow / Deny
100	HTTP (80)	TCP (6)	80	0.0.0.0/0	ALLOW
*	All Traffic	ALL	ALL	0.0.0.0/0	DENY

Under Inbound Rules

ALLOW PORT HTTP IN NACL

The screenshot shows the AWS VPC Dashboard with the 'Network ACLs' section selected. A new Network ACL named 'Lab_NACL' has been created and is listed in the table. The 'Outbound Rules' tab is selected, and a successful edit message is displayed. The table lists two rules: one allowing port 80 (HTTP) and another denying all traffic.

Rule #	Type	Protocol	Port Range	Destination	Allow / Deny
100	HTTP (80)	TCP (6)	80	0.0.0.0/0	ALLOW
*	All Traffic	ALL	ALL	0.0.0.0/0	DENY

Under Outbound Rules

PUBLIC SUBNET ASSOCIATIONS WITH NACL'S

The screenshot shows the AWS VPC Dashboard. On the left, there's a sidebar with various VPC-related options like Virtual Private Cloud, Your VPCs, Subnets, Route Tables, Internet Gateways, Egress Only Internet Gateways, DHCP Options Sets, Elastic IPs, Endpoints, Endpoint Services, NAT Gateways, Peering Connections, Security, Network ACLs (which is selected), and Security Groups. The main area shows a table of Network ACLs. One row is selected, labeled "Lab_NACL" with ID "acl-6d059717/17". This row has 0 subnets associated with it and is marked as non-default. It is associated with the VPC "vpc-2d211c5b | Lab_VPC". Below this, a detailed view for "acl-6d059717 | Lab_NACL" is shown. It has tabs for Summary, Inbound Rules, Outbound Rules, Subnet Associations (which is selected), and Tags. Under Subnet Associations, there are four rows: two public subnets (Subnet-1 and Subnet-2) are checked and associated with the NACL, while Subnet-3 and Subnet-4 remain unassociated.

Name	Network ACL ID	Associated With	Default	VPC
	acl-7575e70f/0f	4 Subnets	Yes	vpc-2d211c5b Lab_VPC
Lab_NACL	acl-6d059717/17	0 Subnets	No	vpc-2d211c5b Lab_VPC

Associate	Subnet	IPv4 CIDR	IPv6 CIDR	Current Network ACL
<input checked="" type="checkbox"/>	subnet-bc67abdb Subnet-1-Public	10.0.1.0/24	-	acl-7575e70f
<input checked="" type="checkbox"/>	subnet-10488f3e Subnet-2-Public	10.0.2.0/24	-	acl-7575e70f
<input type="checkbox"/>	subnet-fc62ae9b Subnet-3-Private	10.0.3.0/24	-	acl-7575e70f
<input type="checkbox"/>	subnet-445e996a Subnet-4-Private	10.0.4.0/24	-	acl-7575e70f

Public Subnets with NACL's