

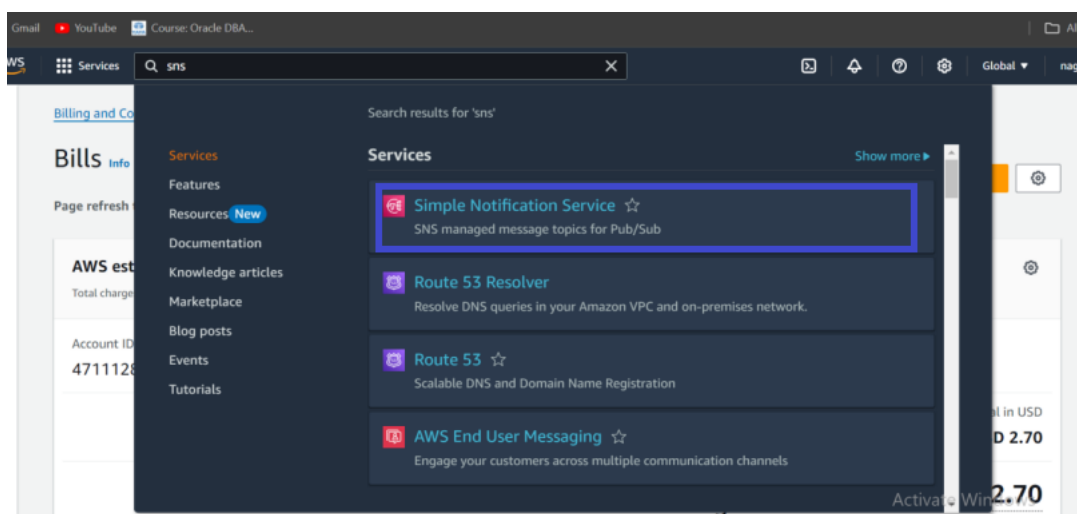
# SNS

Amazon SNS (Simple Notification Service) is a fully managed messaging service provided by AWS that allows you to send messages or notifications to a variety of subscribers, including mobile devices, email, and other AWS services. Here are some key features and concepts related to Amazon SNS:

## Key Features

1. **Pub/Sub Messaging:** SNS supports the publisher/subscriber (pub/sub) messaging model, allowing messages to be sent to multiple subscribers at once.
2. **Multiple Protocols:** You can send notifications via several protocols:
  - **Email/Email-JSON:** For email notifications.
  - **SMS:** For sending text messages to mobile phones.
  - **HTTP/HTTPS:** For sending messages to web servers.
  - **Amazon SQS:** For queuing messages.
  - **Application:** For sending messages to mobile apps (via push notifications).
3. **Topic Management:** You can create topics to which subscribers can subscribe. Publishers send messages to topics, and SNS takes care of delivering those messages to all subscribers.
4. **Message Filtering:** Allows subscribers to receive only specific messages based on filtering criteria.
5. **Delivery Status Logging:** You can monitor message delivery status and track issues through logs.
6. **Durable Storage:** SNS can store messages until they are successfully delivered to subscribers.

## Search and select SNS Service



### Give the topic name and click on next step

**Create topic**

**Topic name**  
A topic is a message channel. When you publish a message to a topic, it fans out the message to all subscribed endpoints.

MyTopic

**Next step**

[Start with an overview](#)

Activate Windows

### Here select standard

**Create topic**

**Details**

Type [Info](#)  
Topic type cannot be modified after topic is created

☐ FIFO (first-in, first-out)

- Strictly-preserved message ordering
- Exactly-once message delivery
- High throughput, up to 300 publishes/second
- Subscription protocols: SQS

☒ Standard

- Best-effort message ordering
- At-least once message delivery
- Highest throughput in publishes/second
- Subscription protocols: SQS, Lambda, HTTP, SMS, email, mobile application endpoints

**Name**

give-name

Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (\_)

► **Active tracing - optional** [Info](#)  
Use AWS X-Ray active tracing for this topic to view its traces and service map in Amazon CloudWatch. Additional costs apply.

Cancel Active **Create topic**

Go to Settings to activate M...

## Topic has been created

Amazon SNS > Topics

**Topics (2)** Edit Delete Publish message Create topic

Search

	Name	Type	ARN
<input type="radio"/>	<a href="#">demo</a>	Standard	arn:aws:sns:us-east-1:4711128591...
<input type="radio"/>	<a href="#">give-name</a>	Standard	arn:aws:sns:us-east-1:4711128591...

< 1 > ⚙️

Subscriptions Access policy Data protection policy Delivery policy (HTTP/S) Delivery status logs >

**Subscriptions (0)** Edit Delete Request confirmation Confirm subscription Create subscription

Search

ID	Endpoint	Status	Protocol
No subscriptions found You don't have any subscriptions to this topic.			

Create subscription

Activate Windows

## Create a subscription and add a email.

# Create subscription

## Details

Topic ARN

arn:aws:sns:us-east-1:471112859108:give-name

Protocol

The type of endpoint to subscribe

Email

Endpoint

An email address that can receive notifications from Amazon SNS.

give your email

### Check the mail and subscribe the sns notification.

## AWS Notification – Subscription Confirmation Inbox x

**sample-Alarm** <no-reply@sns.amazonaws.com>  
to me ▾

You have chosen to subscribe to the topic:  
**arn:aws:sns:us-east-1:471112859108:demo**

To confirm this subscription, click or visit the link below (If this was in error no action is necessary):  
[Confirm subscription](#)

Please do not reply directly to this email. If you wish to remove yourself from receiving all future SNS subscription confirmation requests please

### Add the subject

Topic ARN

arn:aws:sns:us-east-1:471112859108:demo

Subject - *optional*

Maximum 100 printable ASCII characters

Time to Live (TTL) - *optional* | [Info](#)

This setting applies only to mobile application endpoints. The number of seconds that t

### Add the message body and publish the message.

#### Message body

Message structure

- ☒ Identical payload for all delivery protocols.  
The same payload is sent to endpoints subscribed to the topic, regardless of their delivery protocol.

- ☐ Custom payload for each delivery protocol.  
Different payloads are sent to endpoints subscribed to the topic, based on their delivery protocol.

Message body to send to the endpoint

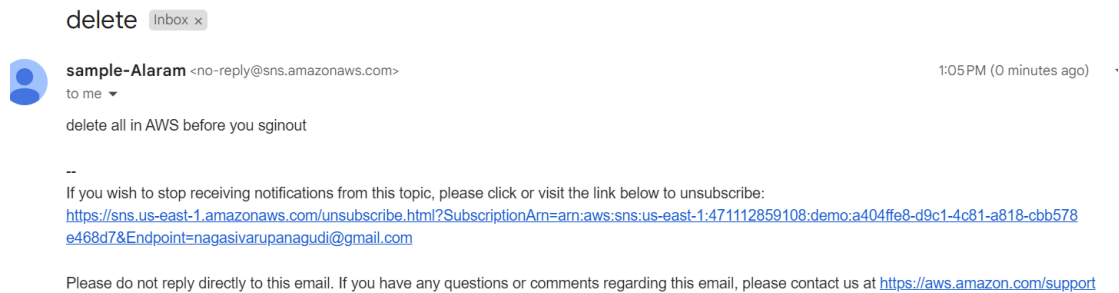
```
1 delete all in AWS before you sign out
```

Cancel

**Add Publish message**

Go to Settings to activate V

**Once notification is alert the message will popup on Email.**



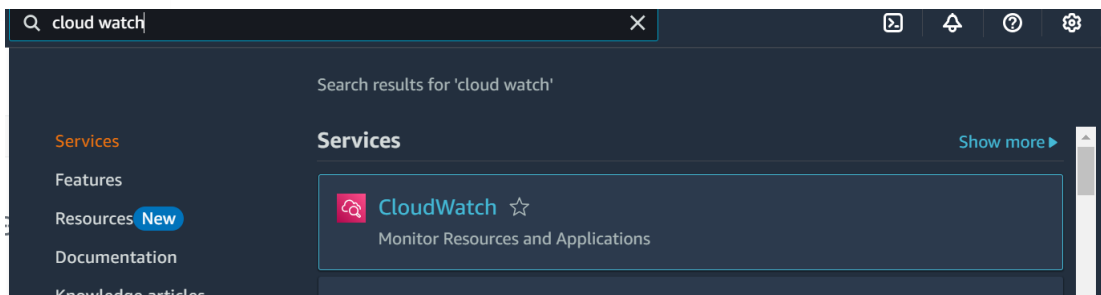
## Cloud watch

Amazon CloudWatch is a monitoring and observability service provided by AWS that enables you to collect, analyze, and act on metrics and log data from your AWS resources and applications. Here's an overview of its key features and functionalities:

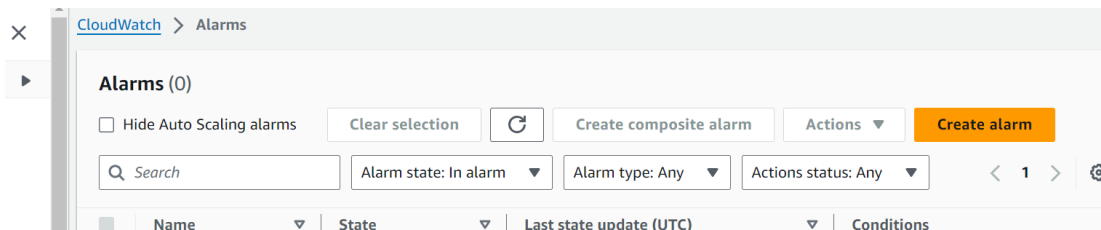
### Key Features

1. **Metrics Monitoring:** CloudWatch collects and monitors metrics from various AWS services (e.g., EC2, RDS, Lambda) and allows you to create custom metrics.
2. **Logs Management:** CloudWatch Logs lets you store, monitor, and access log files from your applications and AWS resources. You can search and filter log data, set alarms, and visualize log data.
3. **Alarms:** You can set alarms to monitor specific metrics and receive notifications when those metrics exceed predefined thresholds. Alarms can trigger actions, such as scaling resources or sending notifications via Amazon SNS.
4. **Dashboards:** Create custom dashboards to visualize your metrics and logs in real-time. Dashboards can include graphs, statistics, and other widgets to provide insights at a glance.
5. **Events:** CloudWatch Events (now part of EventBridge) helps you respond to state changes in your AWS resources by allowing you to create rules that trigger actions (like invoking a Lambda function) based on specific events.
6. **Insights and Analytics:** CloudWatch provides tools like CloudWatch Logs Insights for querying log data and gaining insights into your application's performance and behavior.
7. **Service Integrations:** CloudWatch integrates with many AWS services, allowing you to monitor a wide array of resources and applications seamlessly.

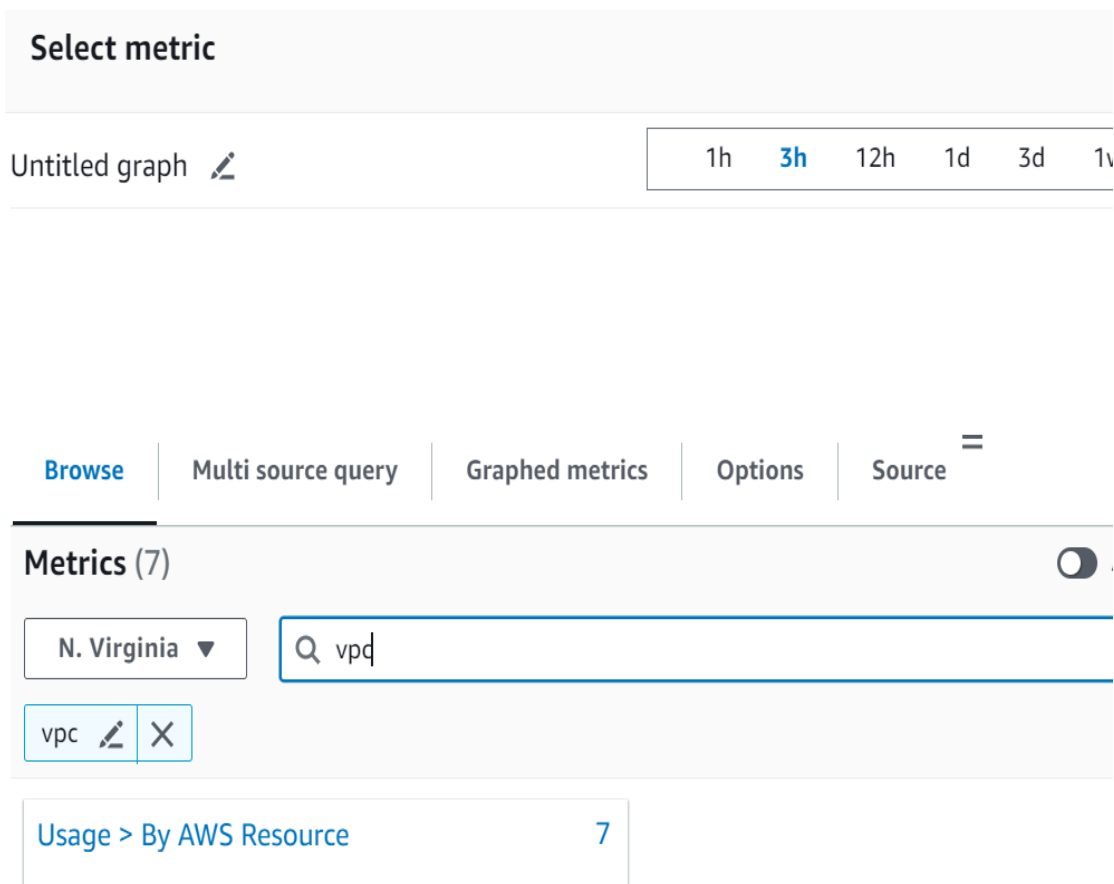
## Search and select cloud watch service.



## Create a alarm



## Select metric



## Here select the metric as Ec2.

Browse | Multi source query | Graphed metrics (1) | Options | Source

Metrics (7) Alarm recommendations Graph with SQL Graph search

N. Virginia [All](#) > [Usage](#) > By AWS Resource  < 1 >

vpc

Service 7/7	Resource	Type	Class	Metric name	Alarms	
<input checked="" type="checkbox"/>	EC2	DescribeVpcAttribute	API	None	CallCount	No ala...

Cancel Set **Select metric**

## Select the threshold type and define the value and click on next

Threshold type

☒ Static  
Use a value as a threshold

☐ Anomaly detection  
Use a band as a threshold

Whenever CallCount is...  
Define the alarm condition.

☐ Greater  
> threshold

☒ Greater/Equal  
>= threshold

☐ Lower/Equal  
<= threshold

☐ Lower  
< threshold

than...  
Define the threshold value.

Must be a number

► Additional configuration

Cancel Set **Next**

## Select the alarm in notification

Step 2  
Configure actions

Step 3  
Add name and description

Step 4  
Preview and create

**Notification**

Alarm state trigger  
Define the alarm state that will trigger this action.

☒ In alarm  
The metric or expression is outside of the defined threshold.

☐ OK  
The metric or expression is within the defined threshold.

☐ Insufficient data  
The alarm has just started or not enough data is available.

Remove

Send a notification to the following SNS topic  
Define the SNS (Simple Notification Service) topic that will receive the notification.

☒ Select an existing SNS topic

☐ Create new topic

demo

demo

Only topics belonging to this account are listed here. All persons and organizations subscribed to the selected topic will receive notifications.

## Create a alarm.

CloudWatch > Alarms > Create alarm

Step 1  
[Specify metric and conditions](#)

Step 2  
[Configure actions](#)

Step 3  
**Add name and description**

Step 4  
[Preview and create](#)

### Add name and description

**Name and description**

Alarm name  
delete-all-inAWS

Alarm description - optional [View formatting guidelines](#)

[Edit](#) | [Preview](#)

check DASH board

Up to 1024 characters (16/1024)

Cancel [Previous](#) [Next](#)

## Add a name and and description and then create a alarm

**Step 3: Add name and description** [Edit](#)

**Name and description**

Name  
delete-all-inAWS

Description  
check DASH board

**i** Markdown formatting is only applied when viewing your alarm in the console. The description will remain in plain text in the alarm notifications.

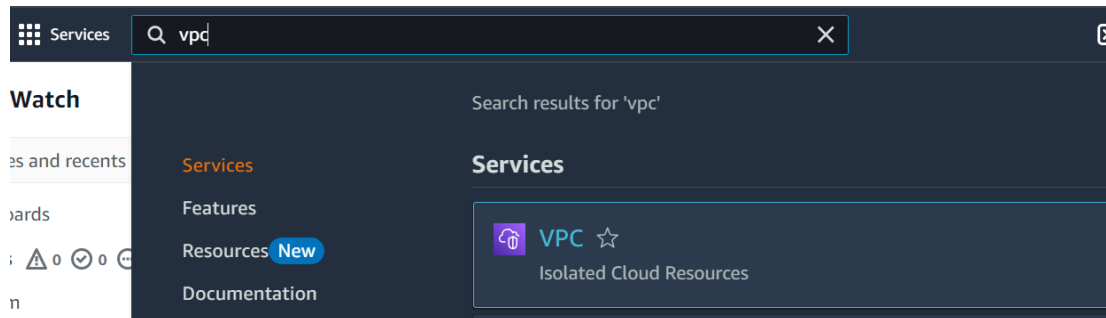
Cancel [Previous](#) [Create alarm](#)



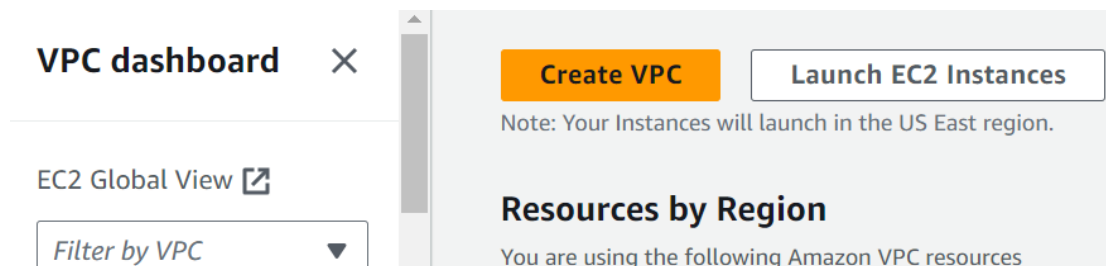
# VPC

A virtual private cloud (VPC) is a secure, isolated [private cloud](#) hosted within a [public cloud](#). VPC customers can run code, store data, host websites, and do anything else they could do in an ordinary private cloud, but the private cloud is hosted remotely by a public cloud provider. (Not all private clouds are hosted in this fashion.) VPCs combine the scalability and convenience of public cloud computing with the data isolation of private cloud computing.

## Search and select vpc service.



## Create VPC



## Select vpc only option give CIDR Block.

### VPC settings

Resources to create [Info](#)  
Create only the VPC resource or the VPC and other network resources

☒ VPC only ☐

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.

## Create a VPC

You can add 49 more tags

Cancel

Create VPC

### Your VPCs

Subnets

Route tables

<input type="checkbox"/>	alarm	<a href="#">vpc-00e84a002241f7973</a>	✔ Availab
--------------------------	-------	---------------------------------------	-----------

## List the VPC

EC2 Global View	Subnets (1/8) <a href="#">Info</a>				Last updated 4 minutes ago		Actions	Create subnet
Filter by VPC	<input type="text" value="Find resources by attribute or tag"/>							
Virtual private cloud	<input type="checkbox"/>	Name	Subnet ID	State	VPC			
Your VPCs	<input type="checkbox"/>	priv	<a href="#">subnet-015e18be08b6a0556</a>	✔ Available	<a href="#">vpc-00e84a002241f7973</a>   <a href="#">alarm</a>			
Subnets	<input checked="" type="checkbox"/>	pub	<a href="#">subnet-06a33cec7fd2c8a72</a>	✔ Available	<a href="#">vpc-00e84a002241f7973</a>   <a href="#">alarm</a>			
	<input type="checkbox"/>	-	<a href="#">subnet-0f19f1345b2059f75</a>	✔ Available	<a href="#">vpc-0db6f12f99a0f3448</a>			

## Create a subnet using already created vpc.

# Create subnet [Info](#)

## VPC

### VPC ID

Create subnets in this VPC.

[vpc-00e84a002241f7973](#) (alarm)

### Associated VPC CIDRs

#### IPv4 CIDRs

10.0.0.0/16

### Add the below details

#### 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

CloudShell Feedback

### Select the already created vpc

[VPC](#) > [Route tables](#) > Create route table

## Create route table [Info](#)

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

## List the vpc

**VPC dashboard** X

EC2 Global View

Filter by VPC ▾

Virtual private cloud

Your VPCs

Subnets

**Route tables**

**Route tables (1/4) Info** Last updated less than a minute ago

Find resources by attribute or tag

Name	Route table ID	Explicit subnet
<input checked="" type="checkbox"/> R-pub	<a href="#">rtb-0432e08b93fb76c3e</a>	<a href="#">subnet-06a33cec7fd2c8a72</a>
<input type="checkbox"/> -	<a href="#">rtb-0d7be9e3e0da1b312</a>	-
<input type="checkbox"/> -	<a href="#">rtb-0022c87cf28b492db</a>	-
<input type="checkbox"/> r-priv	<a href="#">rtb-0cbd111b7c6313192</a>	<a href="#">subnet-015e18be08b6a0556</a>

Actions ▴ **Create route table**

- View details
- Set main route table
- Edit subnet associations**
- Edit edge associations
- Edit route propagation
- Edit routes
- Manage tags
- Delete route table

## Edit the subnet association

VPC > Route tables > [rtb-0432e08b93fb76c3e](#) > Edit subnet associations

### Edit subnet associations

Change which subnets are associated with this route table.

**Available subnets (1/2)**

Filter subnet associations

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input type="checkbox"/> private	<a href="#">subnet-015e18be08b6a0556</a>	10.0.1.0/24	-	<a href="#">rtb-0cbd111b7c6313192</a> / r-priv
<input checked="" type="checkbox"/> pub	<a href="#">subnet-06a33cec7fd2c8a72</a>	10.0.0.0/24	-	<a href="#">rtb-0432e08b93fb76c3e</a> / R-pub

**Selected subnets**

[subnet-06a33cec7fd2c8a72](#) / pub X

Activate Windows  
Cancel to go to Settings **Save associations**

## Add the route table with subnet.

**VPC dashboard** X

EC2 Global View

Filter by VPC ▾

Virtual private cloud

Your VPCs

Subnets

**Route tables**

Internet gateways

Egress-only Internet gateways

**Route tables (1/4) Info** Last updated 4 minutes ago

Find resources by attribute or tag

Name	Route table ID	Explicit subnet
<input checked="" type="checkbox"/> R-pub	<a href="#">rtb-0432e08b93fb76c3e</a>	<a href="#">subnet-06a33cec7fd2c8a72</a>
<input type="checkbox"/> -	<a href="#">rtb-0d7be9e3e0da1b312</a>	-
<input type="checkbox"/> -	<a href="#">rtb-0022c87cf28b492db</a>	-
<input type="checkbox"/> r-priv	<a href="#">rtb-0cbd111b7c6313192</a>	<a href="#">subnet-015e18be08b6a0556</a>

Actions ▴ **Create route table**

- View details
- Set main route table
- Edit subnet associations
- Edit edge associations
- Edit route propagation
- Edit routes**
- Manage tags
- Delete route table

**rtb-0432e08b93fb76c3e / R-pub**

Details Routes Subnet associations Edge associations Route propagation Tags

## Select internet gateway

VPC > Route tables > rtb-0cbd111b7c6313192 > Edit routes

### Edit routes

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

Use: "igw-048d8cbf94f28b9c9"

igw-048d8cbf94f28b9c9 (alarm)

## Attach the vpc

VPC dashboard X

EC2 Global View

Filter by VPC

Virtual private cloud

Your VPCs

Subnets

Route tables

Internet gateway igw-048d8cbf94f28b9c9 successfully detached from vpc-00e84a002241f7973

### Internet gateways (1/2) Info

Search

Name	Internet gateway ID
alarm	igw-048d8cbf94f28b9c9
-	igw-0e6d1bc6e5dba6b90

## Attach vpc to internet gateway

VPC > Internet gateways > Attach to VPC (igw-048d8cbf94f28b9c9)

### Attach to VPC (igw-048d8cbf94f28b9c9) Info

**VPC**

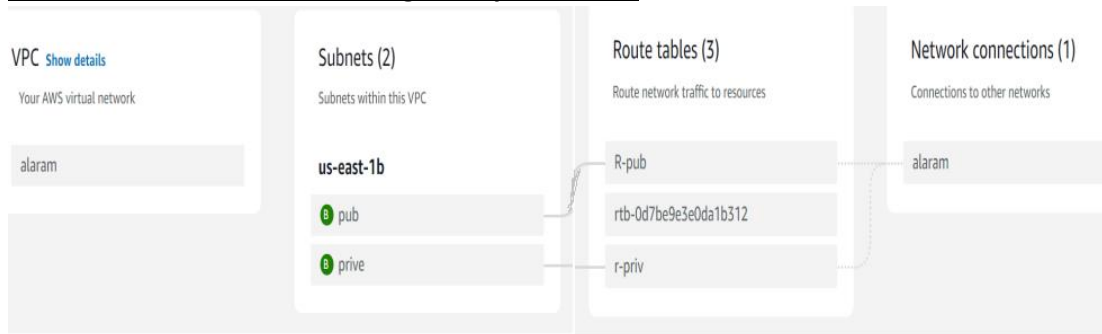
Attach an internet gateway to a VPC to enable the VPC to communicate with the internet. Specify the VPC to attach below.

Available VPCs

Attach the internet gateway to this VPC.

vpc-00e84a002241f7973 - alarm

### Subnet route table and internet gateway is created.



### In Ec2 select the network setting and give an option edit

▼ **Network settings** [Info](#)
Edit

Network [Info](#)  
vpc-0db6f12f99a0f3448  
Subnet [Info](#)  
No preference (Default subnet in any availability zone)

### Here select already created vpc and subnet and create a EC2 instance

▼ **Network settings** [Info](#)

VPC - required [Info](#)  

vpc-00e84a002241f7973 (alarm)  
10.0.0.0/16

↻

Subnet [Info](#)  

subnet-06a33cec7fd2c8a72  
VPC: vpc-00e84a002241f7973   Owner: 471112859108  
Availability Zone: us-east-1b   Zone type: Availability Zone  
IP addresses available: 250   CIDR: 10.0.0.0/24

pub

↻ [Create new subnet](#)

Auto-assign public IP [Info](#)  

Disable

Firewall (security groups) [Info](#)

# VPC

Amazon VPC (Virtual Private Cloud) allows you to create a private network within the Amazon Web Services (AWS) cloud. Here are some key features and concepts associated with Amazon VPC:

## Key Features

1. **Isolation:** Your VPC is isolated from other virtual networks in the AWS Cloud, ensuring that your resources are secure.
2. **Subnets:** You can divide your VPC into subnets (public and private) to organize resources and control traffic flow. Public subnets can access the internet, while private subnets are restricted.
3. **Route Tables:** You can create route tables to manage traffic between subnets and to/from the internet.
4. **Internet Gateway:** This allows resources in your public subnet to connect to the internet.
5. **NAT Gateway/Instance:** Enables instances in a private subnet to initiate outbound traffic to the internet while preventing inbound traffic.
6. **Security Groups and Network ACLs:** Security groups act as a virtual firewall for your EC2 instances, while Network ACLs provide an additional layer of security at the subnet level.
7. **Peering Connections:** You can connect multiple VPCs for resource sharing without using the public internet.
8. **VPN Connections:** Establish secure connections between your VPC and your on-premises network.
9. **VPC Endpoints:** These allow private connections to AWS services without needing an internet gateway.

## CODE:

```
provider "aws" {
  region = "eu-west-1"
}
resource "aws_vpc" "demo-vpc" {
  cidr_block = "10.0.0.0/16"
  tags = {
    Name = "demo-vpc"
  }
}
```

Check in the folder .tf file is created.

Name	Status	Date modified	Type	Size
.terraform	✖	07-10-2024 09:55	File folder	
.terraform.lock.hcl	✖	07-10-2024 09:56	HCL File	2 KB
main.tf	✖	07-10-2024 09:55	TF File	1 KB

```

File Edit Selection View Go Run ... TerraformVPC
EXPLORER
  OPEN EDITORS
    Welcome
    X main.tf
  TERRAFORMVPC
    .terraform
    .terraform.lock.hcl
    main.tf
  OUTLINE
  TIMELINE

main.tf
1 provider "aws" {
2   region = "eu-west-1" # Replace with your desired AWS region
3 }
4
5 resource "aws_vpc" "demo-vpc" {
6   cidr_block = "10.0.0.0/16"
7   tags = {
8     Name = "demo-vpc"
9   }
10
11
12 }

TERMINAL
- Installed hashicorp/aws v5.70.0 (signed by HashiCorp)
Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
PS C:\Users\prana\OneDrive\ドキュメント\Edurekha\TerraformVPC>

```

Search				
<input type="checkbox"/>	Name	VPC ID	State	IPv4 CIDR
<input type="checkbox"/>	demo-vpc	<a href="#">vpc-006725d3243b0ef7e</a>	Available	10.0.0.0/16

Change the CIDR number and check the status

```

main.tf
1 provider "aws" {
2   region = "eu-west-1" # Replace with your desired AWS region
3 }
4
5 resource "aws_vpc" "vpcblock" {
6   cidr_block = "10.0.0.0/24"
7   tags = {
8     Name = "demo-vpc"
9   }
10
11
12 }

TERMINAL
+ owner_id = (known after apply)
+ tags = {
+   "Name" = "demo-vpc"
+ }
+ tags_all = {
+   "Name" = "demo-vpc"
+ }

Plan: 1 to add, 0 to change, 1 to destroy.

Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run
"terraform apply" now.
PS C:\Users\prana\OneDrive\ドキュメント\Edurekha\TerraformVPC>

```



<input type="checkbox"/>	demo-vpc	<a href="#">vpc-0e1277809917c939</a>	<span>Available</span>	10.0.0.0/16
<input type="checkbox"/>	demo-vpc	<a href="#">vpc-07f6e7c7a31967e35</a>	<span>Available</span>	10.0.0.0/24

## INTERNET GATEWAY

An internet gateway is a logical connection between the vpc and internet. It allows communication between resources within the vpc and the internet. Each vpc has only one IGW and supports both IPv4 and IPv6 traffic.

### CODE:

```
resource "aws_internet_gateway" "demo-igw" {
  vpc_id = aws_vpc.demo-vpc.id
  tags = {
    Name = "demo-vpc-IGW"
  }
}
```

```

11
12 }
13
14 resource "aws_internet_gateway" "demo-igw" {
15   vpc_id = aws_vpc.demo-vpc.id
16   tags = {
17     Name = "demo-vpc-IGW"
18   }
19 }

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

}
}

```

Plan: 2 to add, 0 to change, 0 to destroy.

Internet gateways (2) <a href="#">Info</a>					<a href="#">Refresh</a>	<a href="#">Actions</a>	<a href="#">Create internet gateway</a>
<input type="text" value="Search"/>					<a href="#">&lt;</a> <a href="#">1</a> <a href="#">&gt;</a> <a href="#">Settings</a>		
<input type="checkbox"/>	Name	Internet gateway ID	State	VPC ID			
<input type="checkbox"/>	-	<a href="#">igw-0745f9c516b4d1387</a>	<span>Attached</span>	<a href="#">vpc-0f323fcfa55b80180</a>			
<input type="checkbox"/>	demo-vpc-IGW	<a href="#">igw-09f8c6dedee7a9be9</a>	<span>Attached</span>	<a href="#">vpc-09eac89f1b7279802   demo-vpc</a>			

# SUBNET

- A subnet is a range of IP addresses in your VPC.
- You launch AWS resources, such as Amazon EC2 instances, into your subnets.
- Subnets are regional resources.
- Each subnet defines a range of IPv4 addresses.
- Traffic to and from instances can be controlled with network firewall rules.

## **CODE:**

```
resource "aws_subnet" "private-subnet-1" {
  vpc_id   = aws_vpc.demo-vpc.id
  cidr_block = "10.0.1.0/24"
  availability_zone = "eu-west-1a"
  tags = {
    Name = "private-subnet-1"
  }
}
```

```
resource "aws_subnet" "private-subnet-2" {
  vpc_id   = aws_vpc.demo-vpc.id
  cidr_block = "10.0.2.0/24"
  availability_zone = "eu-west-1b"
  tags = {
    Name = "private-subnet-2"
  }
}
```

```
resource "aws_subnet" "public-subnet-1" {
  vpc_id   = aws_vpc.demo-vpc.id
  cidr_block = "10.0.3.0/24"
  availability_zone = "eu-west-1a"
  tags = {
    Name = "public-subnet-1"
  }
}
```

```
resource "aws_subnet" "public-subnet-2" {
  vpc_id   = aws_vpc.demo-vpc.id
  cidr_block = "10.0.4.0/24"
  availability_zone = "eu-west-1b"
  tags = {
    Name = "public-subnet-2"
  }
}
```

```

14 resource "aws_subnet" "public-subnet-1" {
15     vpc_id      = aws_vpc.vpcblock.id
16     cidr_block  = "10.0.0.0/24"
17     availability_zone = "eu-west-1a"
18     tags = {
19         Name = "public-subnet-1"
20     }
21 }

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

+ vpc_id      = "vpc-07f6e7c7a31967e35"
}

```

Plan: 1 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?  
Terraform will perform the actions described above.  
Only 'yes' will be accepted to approve.

Enter a value: yes

aws\_subnet.public-subnet-1: Creating...

aws\_subnet.public-subnet-1: Creation complete after 1s [id=subnet-03612d6933e24d9be]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

☐ vpcpublicsubnet [subnet-03612d6933e24d9be](#) ✔ Available [vpc-07f6e7c7a31967e35](#) | v

VPC dashboard ×

EC2 Global View [↗](#)

Filter by VPC ▾

Virtual private cloud

Your VPCs

Subnets

Route tables

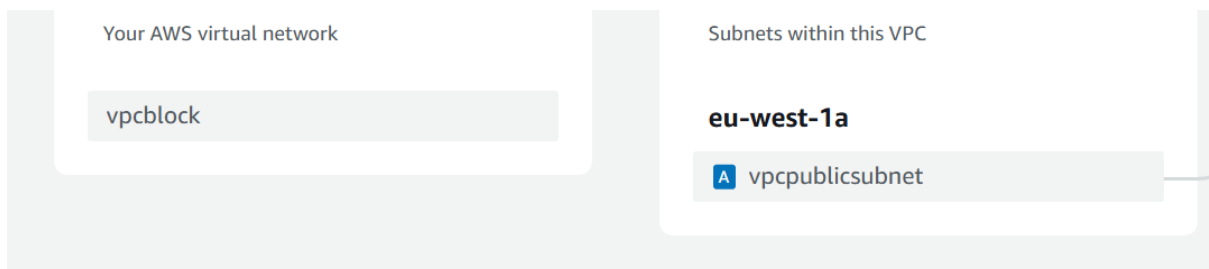
Internet gateways

Subnets (7) Info

Last updated 4 minutes ago [↻](#) Actions ▾ [Create subnet](#)

Find resources by attribute or tag

<input type="checkbox"/>	Name ▾	Subnet ID ▾	State ▾	VPC ▾	IPv4 CIDR ▾
<input type="checkbox"/>	private-subnet-1	<a href="#">subnet-0478d3f5b028a3241</a>	✔ Available	<a href="#">vpc-09eac89f1b7279802</a>   dem...	10.0.1.0/24
<input type="checkbox"/>	public-subnet-1	<a href="#">subnet-0a2ea343158ec601f</a>	✔ Available	<a href="#">vpc-09eac89f1b7279802</a>   dem...	10.0.3.0/24
<input type="checkbox"/>	private-subnet-2	<a href="#">subnet-04f7362fb54c39990</a>	✔ Available	<a href="#">vpc-09eac89f1b7279802</a>   dem...	10.0.2.0/24
<input type="checkbox"/>	-	<a href="#">subnet-06f7fd61d06080083</a>	✔ Available	<a href="#">vpc-0f323fca55b80180</a>	172.31.0.0/24
<input type="checkbox"/>	public-subnet-2	<a href="#">subnet-0a297254e4ebc99c3</a>	✔ Available	<a href="#">vpc-09eac89f1b7279802</a>   dem...	10.0.4.0/24
<input type="checkbox"/>	-	<a href="#">subnet-0b9875b1b76790292</a>	✔ Available	<a href="#">vpc-0f323fca55b80180</a>	172.31.0.0/24



# ROUTE TABLE

In AWS, a route table is a set of rules that determines where network traffic is directed. Each subnet in your AWS virtual private cloud is associated with a route table traffic flow between subnets. The route table includes details like the route table ID and the ID of its associated VPC.

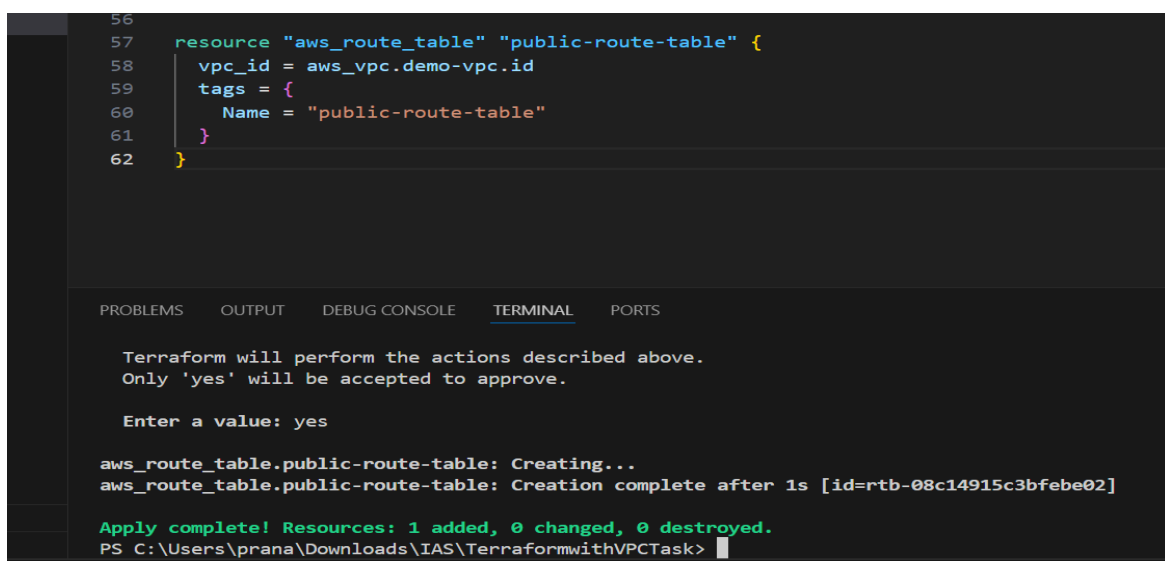
## **CODE:**

```
resource "aws_route_table" "public-route-table" {
  vpc_id = aws_vpc.demo-vpc.id
  tags = {
    Name = "public-route-table"
  }
}

resource "aws_route" "public-route" {
  route_table_id = aws_route_table.public-route-table.id
  destination_cidr_block = "0.0.0.0/0"
  gateway_id = aws_internet_gateway.demo-igw.id
}

resource "aws_route_table_association" "public-subnet-1-association" {
  subnet_id = aws_subnet.public-subnet-1.id
  route_table_id = aws_route_table.public-route-table.id
}

resource "aws_route_table_association" "public-subnet-2-association" {
  subnet_id = aws_subnet.public-subnet-2.id
  route_table_id = aws_route_table.public-route-table.id
}
```



```
56
57 resource "aws_route_table" "public-route-table" {
58   vpc_id = aws_vpc.demo-vpc.id
59   tags = {
60     Name = "public-route-table"
61   }
62 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Terraform will perform the actions described above.  
Only 'yes' will be accepted to approve.

Enter a value: yes

aws\_route\_table.public-route-table: Creating...

aws\_route\_table.public-route-table: Creation complete after 1s [id=rtb-08c14915c3bfebe02]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

PS C:\Users\prana\Downloads\IAS\TerraformwithVPCTask>

VPC dashboard

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Route tables (3) Info

Last updated less than a minute ago

Actions

Create route table

Find resources by attribute or tag

	Name	Route table ID	Explicit subnet associ...	Edge associations	Main	V
<input type="checkbox"/>	-	<a href="#">rtb-0bfab82828d24987d</a>	-	-	Yes	<a href="#">v</a>
<input type="checkbox"/>	-	<a href="#">rtb-0872909e60c45185a</a>	-	-	Yes	<a href="#">v</a>
<input type="checkbox"/>	public-route-table	<a href="#">rtb-08c14915c3bfebe02</a>	2 subnets	-	No	<a href="#">v</a>

## NAT GATEWAY

AWS NAT Gateway – stands for Network Address Translation. It is a managed AWS service that is scaled based on your usage. NAT Gateway will help you to access the internet which instances are configured in the private subnet but without proper routing, no one can access that instance from outside.

### **CODE:**

```
resource "aws_nat_gateway" "nat-gateway" {
  allocation_id = aws_eip.nat-eip.id
  subnet_id    = aws_subnet.public-subnet-1.id
  tags = {
    Name = "nat-gateway"
  }
}
```

```
78
79
80 resource "aws_eip" "nat-eip" {
81   vpc = true
82   tags = {
83     Name = "nat-eip"
84   }
85 }
86
87 resource "aws_nat_gateway" "nat-gateway" {
88   allocation_id = aws_eip.nat-eip.id
89   subnet_id     = aws_subnet.public-subnet-1.id
90   tags = {
91     Name = "nat-gateway"
92   }
93 }
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
with aws_eip.nat-eip,
on main.tf line 81, in resource "aws_eip" "nat-eip":
81:   vpc = true

use domain attribute instead
```

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.

NAT gateways (2) Info

Find resources by attribute or tag

< 1 > ⚙

Actions

Create NAT gateway

	Name	NAT gateway ID	Connectivity...	State	State message	Primary public I
<input type="radio"/>	nat-gateway	<a href="#">nat-0f3dbadbed36a701e</a>	Public	✔ Available	-	<a href="#">54.217.216.193</a>
<input type="radio"/>	nat-gateway	<a href="#">nat-0a7627a8f0a9db911</a>	Public	⊖ Deleted	-	<a href="#">54.247.73.128</a>

## SECURITY GROUPS

Security group, which functions as a virtual firewall to regulate the inbound and outgoing traffic for AWS EC2 instances or other AWS resources in a VPC. We shall go over a security group's definition and formation in this article.

### CODE:

```
resource "aws_security_group" "secgroup" {
  name = "secgroup"
  description = "awssecuritygroup"
  vpc_id = aws_vpc.demo-vpc.id
```

```
  ingress {
    from_port = 0
    to_port = 65535
    protocol = "tcp"
    cidr_blocks = ["0.0.0.0/0"]
  }
```

```
  egress {

    from_port = 0
    to_port = 65535
    protocol = "tcp"
    cidr_blocks = ["0.0.0.0/0"]
  }
```

```
  tags = {
    name = "secgroup"
  }
}
```

```

108
109
110     from_port = 0
111     to_port = 65535
112     protocol = "tcp"
113     cidr_blocks = ["0.0.0.0/0"]
114   }
115   tags = {
116     name = "secgroup"
117   }
118 }

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS

Terraform will perform the actions described above.
Only 'yes' will be accepted to approve.

Enter a value: yes

aws_security_group.secgroup: Creating...
aws_security_group.secgroup: Creation complete after 5s [id=sg-0594c96f4e9b90b6d]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
PS C:\Users\jagade\Downloads\IAT5\Terraform\withVPC>

```

Security Groups (3) Info					Export security groups to CSV	Create security group
Find resources by attribute or tag					< 1 >	
<input type="checkbox"/>	Name	Security group ID	Security group name	VPC ID		
<input type="checkbox"/>	-	<a href="#">sg-0a590f2bab1cb454d</a>	default	<a href="#">vpc-09eac89f1b7279802</a>		
<input type="checkbox"/>	-	<a href="#">sg-0259071f7129959cb</a>	default	<a href="#">vpc-0f323fca55b80180</a>		
<input type="checkbox"/>	-	<a href="#">sg-0594c96f4e9b90b6d</a>	secgroup	<a href="#">vpc-09eac89f1b7279802</a>		

### PROCESS:

Created vpc with region eu-west-1 with IP address 10.0.0.0/16 and named demo vpc.

Created a internet gateway for demo vpc.

Created 4 subnets; 2 private, 2 public –

- Private subnet-1, cidr 10.0.1.0/24, availability zone eu-west-1a
- Private subnet-2, cidr 10.0.2.0/24, availability zone eu-west-1b
- Public subnet-1, cidr 10.0.3.0/24, availability zone eu-west-1a
- Public subnet-1, cidr 10.0.4.0/24, availability zone eu-west-1b

Created route table for vpc named as public route table, connect to internet gateway through routes with cidr 0.0.0.0/0 and attaching public subnets to the route table.

Created NAT Gateway for the public subnet and named as nat gateway.

Created security group for vpc with inbound and outbound rules as port from port 0 to port 65535 and cidr blocks 0.0.0.0/0.

At the end we have allowed internet access to public subnets using IGW to private subnets using NGW.

### CONCLUSION:

VPC provides a secure and flexible way to deploy applications in the cloud.