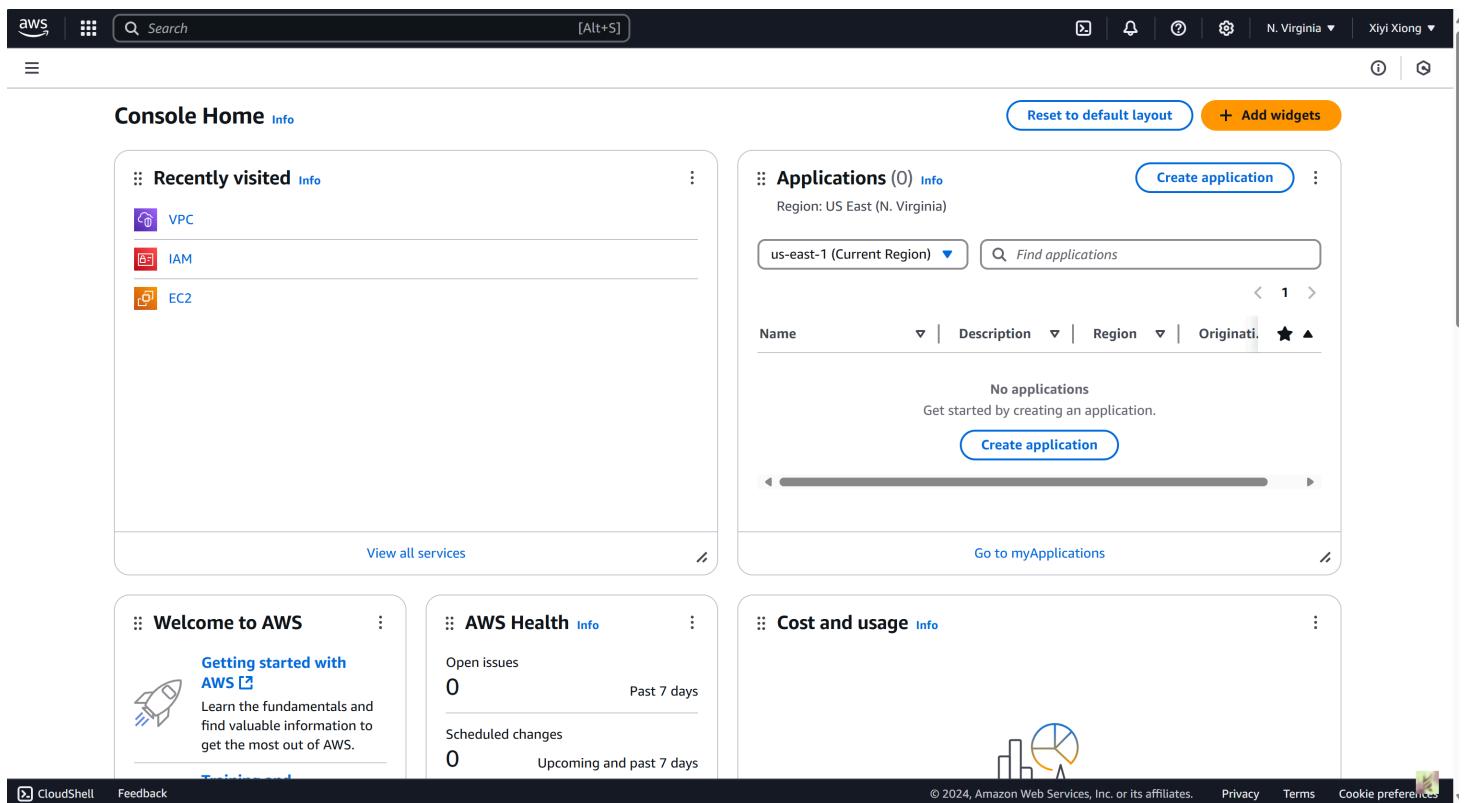


# Part A

## 1. Log in to the AWS Management Console



## 2. AWS VPC Setup

### 2.1 Create a New VPC

#### 1. Go to the VPC service:

- In the AWS Console, search for "VPC" in the top search bar and select it.

The screenshot shows the AWS VPC service page. On the left, there's a sidebar with links like Services, Features, Resources (New), Documentation, Knowledge articles, Marketplace, Blog posts, Events, and Tutorials. The main content area has two sections: 'Services' and 'Features'. Under 'Services', there are four items: 'VPC' (Isolated Cloud Resources), 'AWS Firewall Manager' (Central management of firewall rules), 'Detective' (Investigate and Analyze potential security issues), and 'Managed Services' (IT operations management for AWS). Under 'Features', there are three items: 'Dashboard' (VPC feature), 'Route 53 VPCs' (Route 53 feature), and 'VPC Reachability Analyzer' (VPC feature). A vertical bar on the right indicates the scroll position. At the bottom, there are links for CloudShell, Feedback, and a copyright notice from 2024.

- Click "Your VPCs" > "Create VPC."

## 2. Configure the VPC:

- **Name tag:** MyVPC .
- **IPv4 CIDR block:** 10.0.0.0/16 .
- **Tenancy:** Select default .
- Click **Create VPC**.



Services

Search [Alt+S]

VPC &gt; Your VPCs &gt; Create VPC

## 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.

MyVPC

#### 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

### 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*

Name

MyVPC

Remove tag

Add tag

You can add 49 more tags

Cancel

Preview code

Create VPC

## 2.2 Create Subnets

### 1. Create Public Subnets:

- In the VPC Dashboard, click "Subnets" > "Create subnet."

The screenshot shows the AWS VPC dashboard with the 'Subnets' section selected. The left sidebar contains navigation links for EC2 Global View, Virtual private cloud (Your VPCs, Subnets, Route tables, Internet gateways, Egress-only internet gateways, Carrier gateways, DHCP option sets, Elastic IPs, Managed prefix lists, Endpoints, Endpoint services, NAT gateways, Peering connections), Security (Network ACLs, Security groups), DNS firewall (Rule groups, Domain lists), and Network Firewall (Firewalls, Firewall policies, Network Firewall rule groups). The main area displays a table of existing subnets:

Name	Subnet ID	State	VPC
-	<a href="#">subnet-0bf2e42ffe9bc73b3</a>	Available	<a href="#">vpc-0a5906ee379d2c1fa</a>
-	<a href="#">subnet-064b7e088c02b110c</a>	Available	<a href="#">vpc-0a5906ee379d2c1fa</a>
-	<a href="#">subnet-015b5deb588ccf10a</a>	Available	<a href="#">vpc-0a5906ee379d2c1fa</a>
-	<a href="#">subnet-05f44dfed4619407c</a>	Available	<a href="#">vpc-0a5906ee379d2c1fa</a>
-	<a href="#">subnet-050b4a177fa2d246f</a>	Available	<a href="#">vpc-0a5906ee379d2c1fa</a>
-	<a href="#">subnet-05c13c6d607da2226</a>	Available	<a href="#">vpc-0a5906ee379d2c1fa</a>

Below the table, a modal window titled 'Select a subnet' is open, showing a single option: 'Select a subnet'.

- Fill in the following details:

- Name tag:** PublicSubnet1 .
- VPC:** Select MyVPC .
- Availability Zone:** Choose Zone-X → select us-east-1a .
- IPv4 CIDR block:** 10.0.0.0/24 .

- Click **Create**.

## Create subnet Info

### VPC

#### VPC ID

Create subnets in this VPC.

vpc-0d4ded5df141de10a (MyVPC) ▾

#### Associated VPC CIDRs

##### IPv4 CIDRs

10.0.0.0/16

### 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.

PublicSubnet1

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 ▾

##### 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

10.0.0.0/24

256 IPs



#### ▼ Tags - optional

##### Key

Name

##### Value - optional

PublicSubnet1

Remove

Add new tag

You can add 49 more tags.

Remove

Add new subnet

Cancel

Create subnet

- Repeat the steps to create two more public subnets ( 10.0.2.0/24 and 10.0.4.0/24 ).

aws Services Search [Alt+S]

## Create subnet Info

### VPC

**VPC ID**  
Create subnets in this VPC.

vpc-0d4ded5df141de10a (MyVPC) ▾

**Associated VPC CIDRs**

IPv4 CIDRs  
10.0.0.0/16

### 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.

PublicSubnet2

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-1b ▾

**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**

10.0.2.0/24 256 IPs

< > ^ ▾

**▼ Tags - optional**

Key	Value - optional
<input type="text"/> Name	<input type="text"/> PublicSubnet2 <span>X</span> <span>Remove</span>

Add new tag

You can add 49 more tags.

Remove

Add new subnet

Cancel Create subnet

AWS Services Search [Alt+S]

## VPC

**VPC ID**  
Create subnets in this VPC.  
vpc-0d4ded5df141de10a (MyVPC) ▾

**Associated VPC CIDRs**

IPv4 CIDRs  
10.0.0.0/16

### 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.  
PublicSubnet3

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-1c ▾

**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**  
10.0.4.0/24 256 IPs  
< > ^ v

**Tags - optional**

Key	Value - optional	Remove
<input type="text"/> Name	<input type="text"/> PublicSubnet3	X Remove

Add new tag You can add 49 more tags. Remove

Add new subnet

Cancel Create subnet

## 2. Create Private Subnets:

- Follow the same steps to create two private subnets ( 10.0.1.0/24 and 10.0.3.0/24 ).

- **VPC**

**VPC ID**

Create subnets in this VPC.

▼**Associated VPC CIDRs**

## IPv4 CIDRs

10.0.0.0/16

**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.

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

&lt; &gt; ^ v

▼ **Tags - optional****Key****Value - optional**  

You can add 49 more tags.

- **VPC**

**VPC ID**

Create subnets in this VPC.

▼**Associated VPC CIDRs**

## IPv4 CIDRs

10.0.0.0/16

**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.

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** X XRemoveAdd new tag

You can add 49 more tags.

RemoveAdd new subnetCancelCreate subnet

## 2.3 Configure an Internet Gateway

### 1. Create an Internet Gateway:

- Click "Internet Gateways" > "Create internet gateway."

The screenshot shows the AWS VPC dashboard with the "Internet gateways" section selected. A single internet gateway is listed:

Name	Internet gateway ID	State	VPC ID	Owner
-	igw-0d3231ab60d6daf70	Attached	vpc-0a5906ee379d2c1fa	913524905792

The "Actions" dropdown menu for this gateway includes options like "Edit", "Delete", and "Detach". Below the table, a message says "Select an internet gateway above".

- **Name tag:** MyIGW .
- Click **Create Internet Gateway**.

aws Services Search [Alt+S]

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.

**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
<input type="text" value="Name"/>	<input type="text" value="MyIGW"/> <span>X</span> <span>Remove</span>

**Add new tag**  
You can add 49 more tags.

Cancel Create internet gateway

## 2. Attach to the VPC:

- Select the newly created MyIGW .

aws Services Search [Alt+S]

VPC dashboard X

Internet gateways (1/2) Info

Name	Internet gateway ID	State	VPC ID
-	igw-0d3231ab60d6daf70	Attached	vpc-0a590
<input checked="" type="checkbox"/> MyIGW	igw-044f9f639a159e105	Detached	-

**Actions** ▲ Create internet gateway

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

Owner 913524905792

igw-044f9f639a159e105 / MyIGW

Details Tags

Internet gateway ID	State	VPC ID	Owner
igw-044f9f639a159e105	Detached	-	913524905792

- Click "Actions" > "Attach to VPC," choose MyVPC , and click **Attach**.

## Attach to VPC (igw-044f9f639a159e105) [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.

X

#### ▶ AWS Command Line Interface command

[Cancel](#)

[Attach internet gateway](#)

Internet gateway igw-044f9f639a159e105 successfully attached to vpc-0d4ded5df141de10a

igw-044f9f639a159e105 / MyIGW

Details		Actions	
Internet gateway ID	vpc-0d4ded5df141de10a	State	Attached
VPC ID	vpc-0d4ded5df141de10a	Owner	913524905792

Tags

Manage tags	
Key	Value
Name	MyIGW

## 2.4 Set Up a NAT Gateway

### 1. Allocate an Elastic IP:

- Go to "Elastic IPs" > "Allocate Elastic IP address."

Elastic IP addresses

Name	Allocated IPv4 address	Type	Allocation ID	Reverse DNS record
No Elastic IP addresses found in this Region				

View IP address usage and recommendations to release unused IPs with [Public IP insights](#).

- Click **Allocate**.
- [VPC](#) > [Elastic IP addresses](#) > Allocate Elastic IP address

## Allocate Elastic IP address [Info](#)

### Elastic IP address settings [Info](#)

Public IPv4 address pool

- Amazon's pool of IPv4 addresses
- Public IPv4 address that you bring to your AWS account with BYOIP. (option disabled because no pools found) [Learn more](#)
- Customer-owned pool of IPv4 addresses created from your on-premises network for use with an Outpost. (option disabled because no customer owned pools found) [Learn more](#)
- Allocate using an IPv4 IPAM pool (option disabled because no public IPv4 IPAM pools with AWS service as EC2 were found)

### Network border group [Info](#)



Global static IP addresses

AWS Global Accelerator can provide global static IP addresses that are announced worldwide using anycast from AWS edge locations. This can help improve the availability and latency for your user traffic by using the Amazon global network. [Learn more](#)

[Create accelerator](#)

### 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.

No tags associated with the resource.

[Add new tag](#)

You can add up to 50 more tag

[Cancel](#)
[Allocate](#)

## 2. Create a NAT Gateway:

- Go to "NAT Gateways" > "Create NAT Gateway."
- **Name tag:** MyNATGateway .
- **Subnet:** Select a public subnet ( PublicSubnet1 ).
- **Elastic IP allocation ID:** Select the allocated Elastic IP.
- Click **Create NAT Gateway**.

## 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.

### ► 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*

You can add 49 more tags.

The screenshot shows the AWS VPC dashboard. In the top navigation bar, there are tabs for Services, Search, and [Alt+S]. The main content area displays a success message: "NAT gateway nat-08d6d08863ea9308d | MyNATGateway was created successfully." Below this, the path is shown as VPC > NAT gateways > nat-08d6d08863ea9308d. The title of the page is "nat-08d6d08863ea9308d / MyNATGateway". On the left sidebar, under "Virtual private cloud", the "NAT gateways" option is selected. The main pane shows the "Details" tab for the NAT gateway, listing its ID, ARN, connectivity type (Public), state (Pending), and creation details. Below this are tabs for "Secondary IPv4 addresses", "Monitoring", and "Tags". The "Secondary IPv4 addresses" tab shows a search bar and a message stating "Secondary IPv4 addresses are not available for this nat gateway."

## 2.5 Configure Route Tables

### 1. Public Subnet Route Table:

- Click "Route Tables" > "Create route table."

The screenshot shows the AWS VPC dashboard. The "Route tables" section is highlighted. It displays three existing route tables with their IDs and associated VPCs. A "Create route table" button is visible at the top right of the table. Below the table, there is a section titled "Select a route table" with three small icons.

Name	Route table ID	Explicit subnet assoc...	Edge associations	Main	VPC
-	rtb-05d1a72959ef376f9	-	-	Yes	vpc-0a5906ee379d2c1fa
-	rtb-0ad12063362b279b2	-	-	Yes	vpc-0a31e73cd4a4c3b6
-	rtb-02472d443e279c9fc	-	-	Yes	vpc-0dd4ded5df141de10a

- Name tag:** PublicRouteTable .
- VPC:** Select MyVPC .
- Click Create.**

## 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="Name"/>	<input type="text" value="PublicRouteTable"/>	<input type="button" value="Remove"/>
<input type="button" value="Add new tag"/>		
You can add 49 more tags.		

Cancel
Create route table

## 2. Edit Routes:

- Select PublicRouteTable .
- Go to "Routes" > "Edit routes."

aws Services Search [Alt+S] N. Virginia Xiyi Xiong

VPC dashboard > VPC > Route tables > rtb-006d4bc8ea1058f75 / PublicRouteTable Actions

**Details** Info

Route table ID <input type="text" value="rtb-006d4bc8ea1058f75"/>	Main <input type="checkbox"/>	Explicit subnet associations -	Edge associations -
VPC <input type="text" value="vpc-0d4ded5df141de10a   MyVPC"/>	Owner ID <input type="text" value="913524905792"/>		

**Routes** (1)

Destination	Target	Status	Propagated	
10.0.0.16	local	Active	No	<input type="button" value="Both"/> <input type="button" value="Edit routes"/> < > <input type="button" value="Delete"/>

- Add the following route:

- **Destination:** 0.0.0.0/0
- **Target:** Internet Gateway ( MyIGW ).

- Click **Save routes**.

### 3. Associate Subnets:

- Click "Subnet associations" > "Edit subnet associations."

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
PublicSubnet1	<a href="#">subnet-0a8acc38e62a22fea</a>	10.0.0.0/24	-
PublicSubnet2	<a href="#">subnet-0b42180045df9f270b</a>	10.0.2.0/24	-
PublicSubnet3	<a href="#">subnet-0cb55a9714f379d61</a>	10.0.4.0/24	-
PrivateSubnet1	<a href="#">subnet-04a6874cb77643d1b</a>	10.0.1.0/24	-
PrivateSubnet2	<a href="#">subnet-0a194321d4867209e</a>	10.0.3.0/24	-

- Select all public subnets and click **Save**.

Sales Services Search [Alt+S] N. Virginia Xiyi Xiong

VPC > Route tables > rtb-006d4bcbea1058f75 > Edit subnet associations

## Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (3/5)					
<input type="text"/> Filter subnet associations					
Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID	
<input checked="" type="checkbox"/> PublicSubnet1	subnet-0a8acc38e62a22fea	10.0.0.0/24	-	Main (rtb-02472d443e279c9fc)	
<input checked="" type="checkbox"/> PublicSubnet2	subnet-0b42180045d9f270b	10.0.2.0/24	-	Main (rtb-02472d443e279c9fc)	
<input checked="" type="checkbox"/> PublicSubnet3	subnet-0cb55a9714f379d61	10.0.4.0/24	-	Main (rtb-02472d443e279c9fc)	
<input type="checkbox"/> PrivateSubnet1	subnet-04a6874cb77643d1b	10.0.1.0/24	-	Main (rtb-02472d443e279c9fc)	
<input type="checkbox"/> PrivateSubnet2	subnet-0a194321d4867209e	10.0.3.0/24	-	Main (rtb-02472d443e279c9fc)	

**Selected subnets**

- subnet-0a8acc38e62a22fea / PublicSubnet1 X
- subnet-0b42180045d9f270b / PublicSubnet2 X
- subnet-0cb55a9714f379d61 / PublicSubnet3 X

[Cancel](#) [Save associations](#)

## 4. Private Subnet Route Table:

- Create another route table ( `PrivateRouteTable` ) and configure routes to use the NAT Gateway as the target.
- [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, and your VPN connection.

#### Route table settings

##### Name - optional

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

PrivateRouteTable

##### VPC

The VPC to use for this route table.

vpc-0d4ded5df141de10a (MyVPC) ▾

#### 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

Name

PrivateRouteTable

[Remove](#)

[Add new tag](#)

You can add 49 more tags.

[Cancel](#)

[Create route table](#)

Destination: 10.0.0.0/16  
Target: local  
Status: Active  
Propagated: No

Destination: 0.0.0.0/0  
Target: NAT Gateway  
Status: -  
Propagated: No

Add route Remove

Cancel Preview Save changes

## 2.6 Configure Security Groups

### 1. Windows Server Security Group:

- Click "Security Groups" > "Create security group."

Destination: 10.0.0.0/16  
Target: local  
Status: Active  
Propagated: No

Destination: 0.0.0.0/0  
Target: NAT Gateway  
Status: -  
Propagated: No

Add route Remove

Cancel Preview Save changes

- Fill in the following:
  - Group name:** WindowsServerSG .
  - VPC:** Select MyVPC .
- Add an inbound rule:
  - Type:** RDP
  - Protocol:** TCP
  - Port Range:** 3389
  - Source:** MY IP.
- Click **Create**.

## Create security group Info

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

**Basic details**

Security group name Info  
 Name cannot be edited after creation.

Description Info

VPC Info

**Inbound rules Info**

Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>
RDP	TCP	3389	My IP	<input type="text" value="31.205.226.8/32"/> X

**Add rule**

**Outbound rules Info**

Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Destination <small>Info</small>	Description - optional <small>Info</small>
All traffic	All	All	Custom	<input type="text" value="0.0.0.0/0"/> X

**Add rule**

## 2. Web Service Security Group:

- Create another security group ( WebServerSG ).
- Add inbound rules for:
  - **HTTP:** Port 80.
  - **MySQL/Aurora:** Port 3306.
  - Adjust **Source** to **0.0.0.0/0** or a specific IP range.

### Create security group Info

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

**Basic details**

Security group name Info  
WebServerSG  
Name cannot be edited after creation.

Description Info  
Security group for web server allowing HTTP and MySQL access.

VPC Info  
vpc-0d4ded5df141de10a (MyVPC)

**Inbound rules Info**

Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>
HTTP	TCP	80	Anyw... ▾	<input type="text"/> 0.0.0.0/0 <span>X</span>
MySQL/Aurora	TCP	3306	Anyw... ▾	<input type="text"/> 0.0.0.0/0 <span>X</span>

**Add rule**

⚠ Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

**Outbound rules Info**

Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Destination <small>Info</small>	Description - optional <small>Info</small>
All traffic	All	All	Custom ▾	<input type="text"/> 0.0.0.0/0

**Add rule**

## 2.7. Launch EC2 Instances

### Creating EC2 Instances

1. Open the **EC2 Dashboard** and click **Launch Instances**.

The screenshot shows the AWS EC2 Home page. On the left, a sidebar lists navigation options: Dashboard, Instances, Images, Elastic Block Store, Network & Security, Load Balancing, Auto Scaling, and Settings. The main content area is titled 'Resources' and displays various EC2 metrics: Instances (running) 0, Auto Scaling Groups 0, Capacity Reservations 0, Dedicated Hosts 0, Elastic IPs 1, Instances 0, Key pairs 0, Load balancers 0, Placement groups 0, Security groups 4, Snapshots 0, and Volumes 0. Below this, there are several cards: 'Launch instance' (with a red arrow pointing to the 'Launch instance' button), 'Service health' (AWS Health Dashboard), 'Instance alarms' (View in CloudWatch), 'Scheduled events' (US East (N. Virginia)), and 'Migrate a server'. To the right, there's a sidebar for 'EC2 Free Tier' offers, 'Account attributes' (Default VPC vpc-0a5906ee379d2c1fa), and 'Explore AWS' sections (10 Things You Can Do Today to Reduce AWS Costs, Save up to 90% on EC2 with Spot Instances, and Enable Best Price-Performance with AWS Graviton2). The URL in the address bar is https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

## 2. Choose an appropriate AMI:

- Windows Server 2016 for the Windows Server instance.
- Amazon Linux for the Apache/MySQL/PHP server.

## 3. Assign the following resources to the instances:

### • Windows Server Instance:

- Subnet: PublicSubnet2
- Security Group: WindowsServerSG

## 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

WindowsServerInstances

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.

Q. Search our full catalog including 1000s of application and OS images

AMI from catalog

Recents

Quick Start

Name

Microsoft Windows Server 2016 Base

Verified provider

Free tier eligible

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Description

Microsoft Windows 2016 Datacenter edition. [English]

Microsoft Windows Server 2016 with Desktop Experience Locale English AMI provided by Amazon

Image ID

ami-029e3dc669a519be5

Username

root

Catalog

Quick Start AMIs

Published

2024-11-14T01:51:57.000Z

Architecture

x86\_64

Virtualization

hvm

Root device type

ebs

ENI Enabled

Yes

## ▼ Summary

Number of instances [Info](#)

1

### Software Image (AMI)

Microsoft Windows Server 2016 ...[read more](#)

ami-029e3dc669a519be5

### Virtual server type (instance type)

t2.micro

### Firewall (security group)

WindowsServerSG

### Storage (volumes)

1 volume(s) - 30 GiB

ⓘ Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel

Launch instance

Preview code

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

Instance type

t2.micro

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

Free tier eligible

All generations

Compare instance types

Additional costs apply for AMIs with pre-installed software

Feedback

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### ▼ 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

[Create new key pair](#)

For Windows instances, you use a key pair to decrypt the administrator password. You then use the decrypted password to connect to your instance.

### ▼ Network settings [Info](#)

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



#### Subnet [Info](#)

subnet-0b42180045d9f270b	PublicSubnet2
VPC: vpc-0d4ded5df141de10a	Owner: 913524905792 Availability Zone: us-east-1b
Zone type: Availability Zone	IP addresses available: 250 CIDR: 10.0.2.0/24

[Create new subnet](#)

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

**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](#)

[Compare security group rules](#)

WindowsServerSG sg-0d0694746113c6604	X
VPC: vpc-0d4ded5df141de10a	

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

### ► Advanced network configuration

### ▼ Configure storage [Info](#)

[Advanced](#)

1x  GiB  Root volume (Not encrypted)

 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 more instance store volumes than the instance allows. Only the first 0 instance store volumes from the AMI will be accessible from the instance.

CloudShell [Feedback](#)

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[Success](#)

Successfully initiated launch of instance (i-05efcdc1668af3afc)

## • Apache/MySQL/PHP Instance:

- o Subnet: PublicSubnet3
- o Security Group: WebServerSG

aws Search [Alt+S]

EC2 > Instances > Launch an 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  
WebServerInstance Add additional tags

#### Summary

Number of instances Info  
1

Software Image (AMI)  
Amazon Linux 2023 AMI 2023.6.2... read more  
ami-0453ec754f44f9a4a

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
WebServerSG

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

#### 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

Search our full catalog including 1000s of application and OS images

Quick Start
Browse more AMIs X

Amazon Linux 
macOS 
Ubuntu 
Windows 
Red Hat 
SUSE Linux 
D 
>

**Amazon Machine Image (AMI)**

Amazon Linux 2023 AMI ami-0453ec754f44f9a4a (64-bit (x86), uefi-preferred) / ami-0ed83e7a8a23014e (64-bit (Arm), uefi) Virtualization: hvm ENA enabled: true Root device type: ebs	Free tier eligible <small>▼</small>
--	-------------------------------------

**Description**  
Amazon Linux 2023 is a modern, general purpose Linux-based OS that comes with 5 years of long term support. It is optimized for AWS and designed to provide a secure, stable and high-performance execution environment to develop and run your cloud applications.

Amazon Linux 2023 AMI 2023.6.20241121.0 x86\_64 HVM kernel-6.1

Architecture <small>▼</small>	Boot mode	AMI ID	Username <small>Info</small>
64-bit (x86)	uefi-preferred	ami-0453ec754f44f9a4a	ec2-user <small>Verified provider</small>

#### Instance type Info | Get advice

Instance type  
 t2.micro Free tier eligible

CloudShell Feedback

EC2 > Instances > Launch an instance

**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**  
 [Create new key pair](#)

**Network settings** [Info](#)

**VPC - required** [Info](#)  
 [Create new VPC](#)

**Subnet** [Info](#)  
 [Create new subnet](#)

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

**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](#)  
 [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**

**Configure storage** [Info](#)

1x  GiB  Root volume (Not encrypted) [Advanced](#)

[Launch instance](#) [Preview code](#)

The screenshot shows the AWS EC2 Instances Launch log page. At the top, there is a green success message: "Success Successfully initiated launch of instance (i-0fb56abf463c9a7e)". Below the message is a "Launch log" button. A "Next Steps" section follows, containing a search bar and six cards:

- Create billing and free tier usage alerts**: To manage costs and avoid surprise bills, set up email notifications for billing and free tier usage thresholds. Includes a "Create billing alerts" button.
- Connect to your instance**: Once your instance is running, log into it from your local computer. Includes "Connect to instance" and "Learn more" buttons.
- Connect an RDS database**: Configure the connection between an EC2 instance and a database to allow traffic flow between them. Includes "Connect an RDS database", "Create a new RDS database", and "Learn more" buttons.
- Create EBS snapshot policy**: Create a policy that automates the creation, retention, and deletion of EBS snapshots. Includes a "Create EBS snapshot policy" button.
- Manage detailed monitoring**: Enable or disable detailed monitoring for the instance. If you enable detailed monitoring, the Amazon EC2 console displays monitoring graphs with a 1-minute period. Includes a "Manage detailed monitoring" button.
- Create Load Balancer**: Create a application, network gateway or classic Elastic Load Balancer. Includes a "Create Load Balancer" button.
- Create AWS budget**: AWS Budgets allows you to create budgets, forecast spend, and take action on your costs and usage from a single location. Includes a "Create AWS budget" button.
- Manage CloudWatch alarms**: Create or update Amazon CloudWatch alarms for the instance. Includes a "Manage CloudWatch alarms" button.

[View all Instances](#)

[CloudShell](#) [Feedback](#)

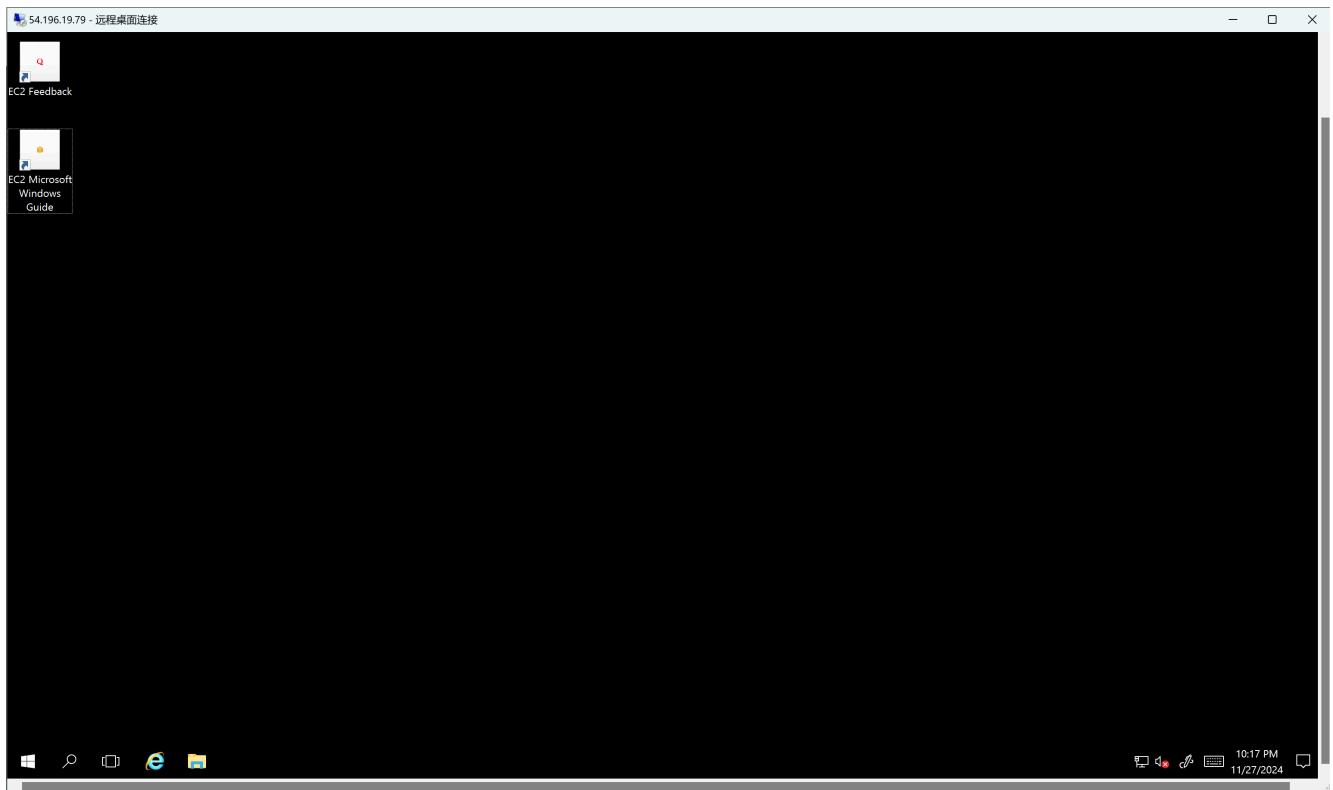
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4. Configure the instances and launch them. Wait for the instances to enter the running state.

## 3. Validation

### 1. Windows Server Instance:

- Use RDP to connect to the Windows Server instance and verify the connection is successful.
- Example Screenshot:



## 2. Apache/MySQL/PHP Instance:

- Open a browser and visit the public IP address of the instance to check if the Apache server is running (default page).
- Example Screenshot:



# It works!

## 3. Communication test results between instances

```
C:\Users\Administrator>ping 10.0.4.123
```

```
Pinging 10.0.4.123 with 32 bytes of data:
```

```
Reply from 10.0.4.123: bytes=32 time=2ms TTL=127
```

```
Reply from 10.0.4.123: bytes=32 time=1ms TTL=127
```

```
Reply from 10.0.4.123: bytes=32 time=1ms TTL=127
```

```
Reply from 10.0.4.123: bytes=32 time=1ms TTL=127
```

```
Ping statistics for 10.0.4.123:
```

```
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```

```
Approximate round trip times in milli-seconds:
```

```
        Minimum = 1ms, Maximum = 2ms, Average = 1ms
```