



**National University of Computer and  
Emerging Sciences Peshawar**

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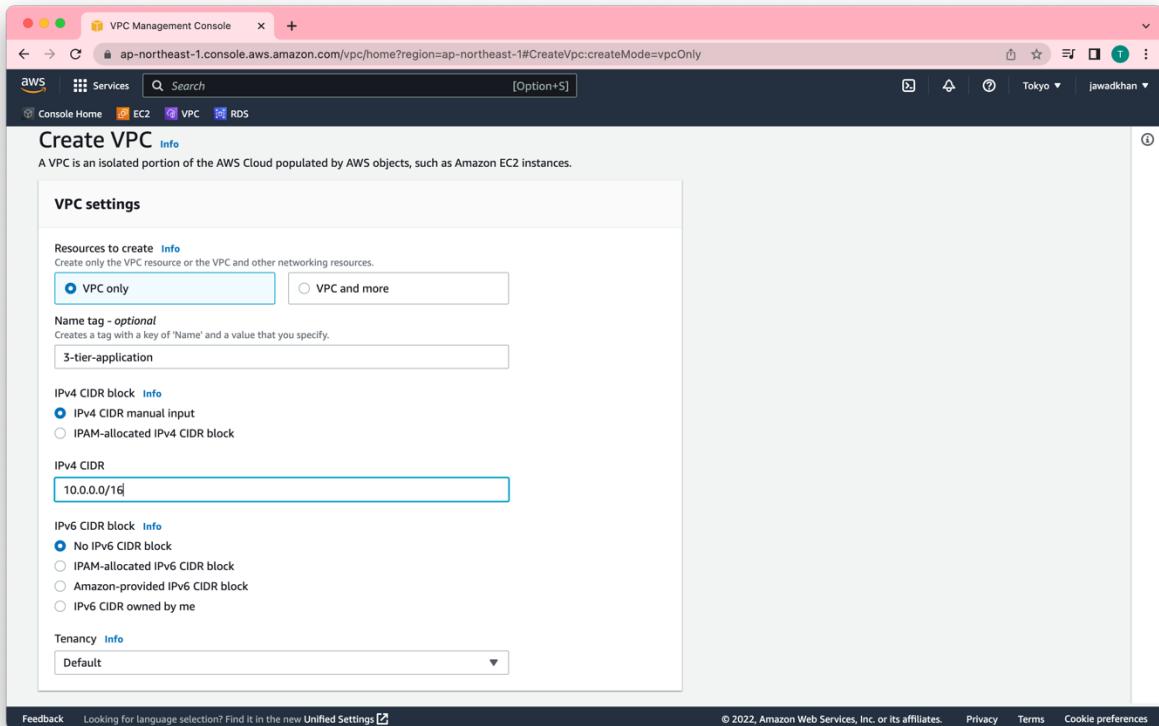
***Section:***

***BCS-7A***

***Assignment:***

***Deploying an application on a three-tier  
architecture.***

# Create a virtual private cloud



## Create the subnets (2 Public, 4 Private)

VPC Management Console x

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#CreateSubnet:

AWS Services Search [Option+S]

Console Home EC2 VPC RDS Tokyo jawadkhan

VPC > Subnets > Create subnet

## Create subnet Info

**VPC**

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

**Associated VPC CIDRs**  
IPv4 CIDRs

**Subnet settings**  
Specify the CIDR blocks and Availability Zone for the subnet.

**Subnet 1 of 6**

**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.

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VPC Management Console x

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#CreateSubnet:

AWS Services Search [Option+S]

Console Home EC2 VPC RDS Tokyo jawadkhan

**Subnet settings**  
Specify the CIDR blocks and Availability Zone for the subnet.

**Subnet 1 of 6**

**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 CIDR block Info**

**Tags - optional**

Key	Value - optional
<input type="text" value="Name"/>	<input type="text" value="web-tier-subnet-1"/>

Add new tag  
You can add 49 more tags.

**Subnet 2 of 6**

**Subnet name**

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VPC Management Console + ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#CreateSubnet:

AWS Services Search [Option+S]

Console Home EC2 VPC RDS

**Subnet 2 of 6**

**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 CIDR block** [Info](#)

**Tags - optional**

Key	Value - optional
<input type="text" value="Name"/>	<input type="text" value="web-tier-subnet-2"/> <span>X</span> <span>Remove</span>

[Add new tag](#)  
You can add 49 more tags.

Remove

**Subnet 3 of 6**

**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.

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VPC Management Console + ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#CreateSubnet:

AWS Services Search [Option+S]

Console Home EC2 VPC RDS

**Subnet 3 of 6**

**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 CIDR block** [Info](#)

**Tags - optional**

Key	Value - optional
<input type="text" value="Name"/>	<input type="text" value="app-tier-subnet-1"/> <span>X</span> <span>Remove</span>

[Add new tag](#)  
You can add 49 more tags.

Remove

**Subnet 4 of 6**

**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.

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VPC Management Console

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#CreateSubnet:

Subnet 4 of 6

**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 CIDR block** [Info](#)

**Tags - optional**

Key	Value - optional
<input type="text" value="Name"/>	<input type="text" value="app-tier-subnet-2"/>

[Add new tag](#)  
You can add 49 more tags.

[Remove](#)

**Subnet 5 of 6**

**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.

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VPC Management Console

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#CreateSubnet:

Subnet 5 of 6

**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 CIDR block** [Info](#)

**Tags - optional**

Key	Value - optional
<input type="text" value="Name"/>	<input type="text" value="db-tier-subnet-1"/>

[Add new tag](#)  
You can add 49 more tags.

[Remove](#)

**Subnet 6 of 6**

**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.

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VPC Management Console + ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#CreateSubnet:

**Subnet 6 of 6**

**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 CIDR block** Info

**Tags - optional**

Key	Value - optional
<input type="text" value="Name"/>	<input type="text" value="db-tier-subnet-2"/>

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

**Remove**

**Add new subnet**

**Create subnet**

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VPC Management Console + ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#subnets:VpcId=vpc-03caeb8bfcc18775e;sort=desc:tag:Name

**Subnets (6) Info**

<input type="checkbox"/>	Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6
<input type="checkbox"/>	web-tier-subnet-2	subnet-0c59be411840a8a8	<span>Available</span>	vpc-03caeb8bfcc18775e   3-ti...	10.0.2.0/24	-
<input type="checkbox"/>	web-tier-subnet-1	subnet-0474a472bba2aeac3	<span>Available</span>	vpc-03caeb8bfcc18775e   3-ti...	10.0.1.0/24	-
<input type="checkbox"/>	db-tier-subnet-2	subnet-0fd46b5e2ff3a0c95	<span>Available</span>	vpc-03caeb8bfcc18775e   3-ti...	10.0.6.0/24	-
<input type="checkbox"/>	db-tier-subnet-1	subnet-05e9131da23afc988	<span>Available</span>	vpc-03caeb8bfcc18775e   3-ti...	10.0.5.0/24	-
<input type="checkbox"/>	app-tier-subnet-2	subnet-023ebbed0b60582ea5	<span>Available</span>	vpc-03caeb8bfcc18775e   3-ti...	10.0.4.0/24	-
<input type="checkbox"/>	app-tier-subnet-1	subnet-004f47493a5458983	<span>Available</span>	vpc-03caeb8bfcc18775e   3-ti...	10.0.3.0/24	-

**Actions** Create subnet

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# Create an internet gateway

Create internet gateway | VPC

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#CreateInternetGateway:

AWS Services Search [Option+S]

Console Home EC2 VPC RDS

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.

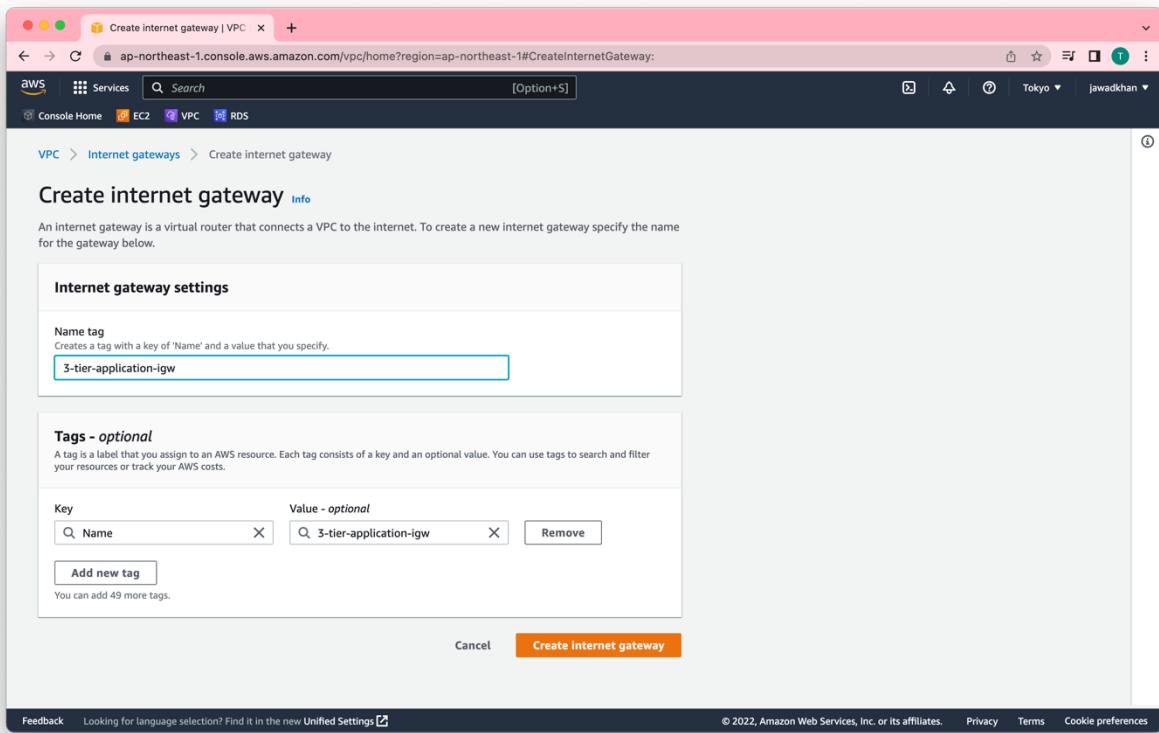
**Tags - optional**  
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - optional
<input type="text" value="Name"/>	<input type="text" value="3-tier-application-igw"/> <input type="button" value="Remove"/>

You can add 49 more tags.

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Attach internet gateway | VPC

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#AttachInternetGateway:internetGatewayId=igw-0423665cca37e0d88

AWS Services Search [Option+S]

Console Home EC2 VPC RDS

VPC > Internet gateways > Attach to VPC (igw-0423665cca37e0d88)

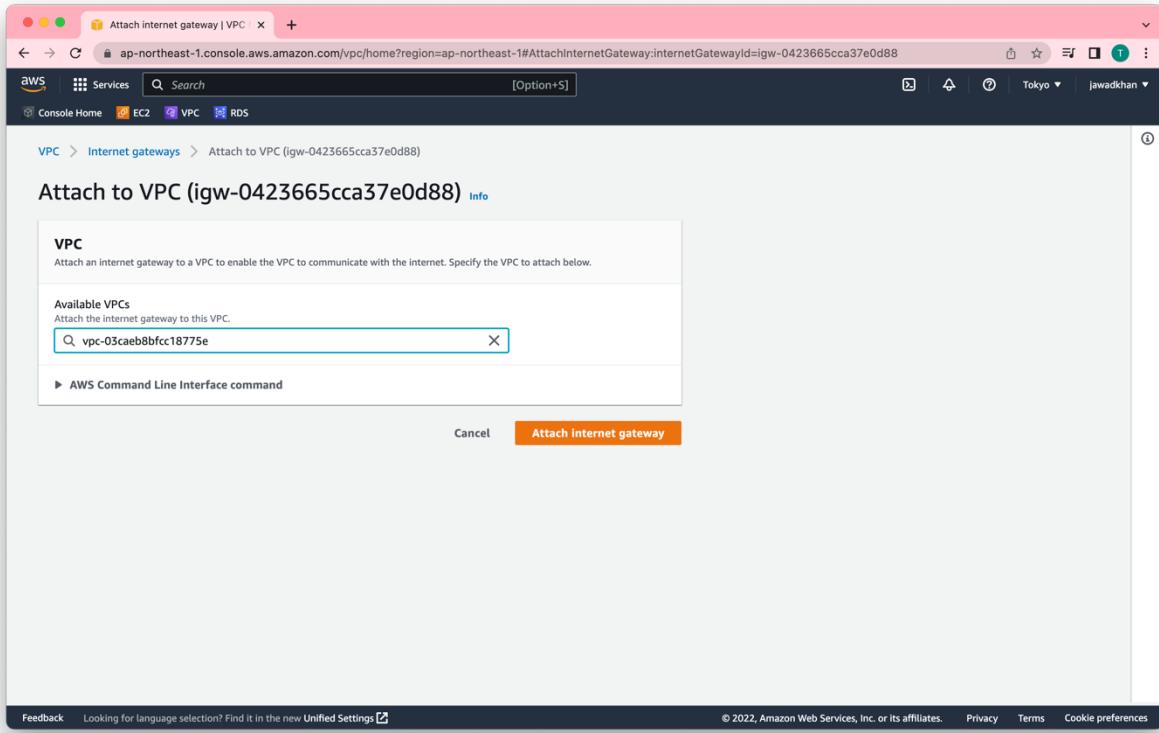
## Attach to VPC (igw-0423665cca37e0d88) Info

**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.

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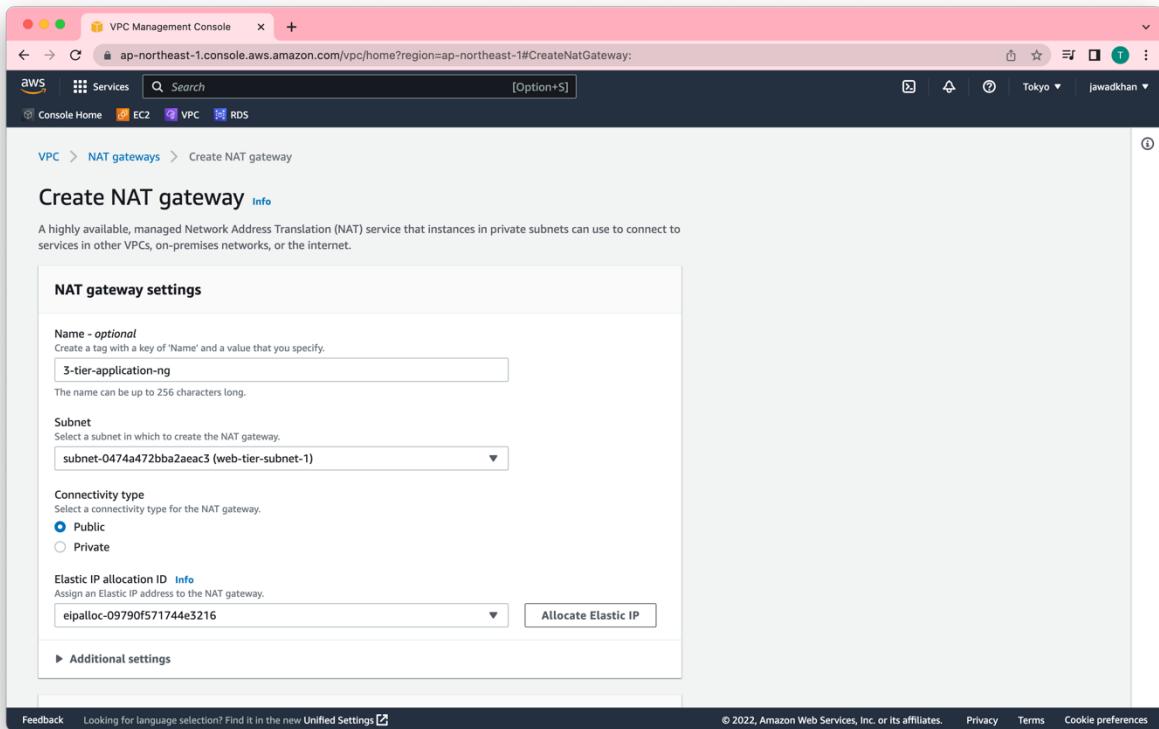


The screenshot shows the AWS VPC Management console with the 'Internet gateways' page open. The left sidebar has sections for 'Virtual private cloud' (Your VPCs, Subnets, Route tables, Internet gateways, Egress-only internet gateways, Carrier gateways, DHCP option sets, Elastic IPs, Managed prefix lists, Endpoints, Endpoint services, NAT gateways, Peering connections) and 'Security' (Network ACLs, Security groups). The main area displays a table of Internet gateways:

Name	Internet gateway ID	State	VPC ID	Owner
-	igw-019d82dd340ed46c1	Attached	vpc-0ec83d1e5eacd9c09	255966850935
3-tier-application-igw	igw-0423665cca37e0d88	Attached	vpc-03cae8bfcc18775e   3-tier-appli...	255966850935

A message at the bottom says 'Select an internet gateway above'.

## Create a NAT gateway



## Create route tables

VPC Management Console x +

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#CreateRouteTable:

AWS Services Search [Option+S]

Console Home EC2 VPC RDS

## 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="public-route"/>

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

**Create route table**

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VPC Management Console x +

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#CreateRouteTable:

AWS Services Search [Option+S]

Console Home EC2 VPC RDS

## 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="private-route"/>

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

**Create route table**

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VPC Management Console

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#RouteTables:sort=tag:Name

Services Search [Option+S]

Console Home EC2 VPC RDS

VPC dashboard

EC2 Global View New

Filter by VPC: Select a VPC

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 Endpoint services NAT gateways Peering connections

Security

Network ACLs Security groups

Route tables (4) info

Filter route tables

Name Route table ID Explicit subnet associations Edge associations Main VPC

Name	Route table ID	Explicit subnet associations	Edge associations	Main	VPC
-	rtb-09b1454aca5419ef9	-	-	Yes	vpc-03caeb8bfcc18775e   3-ti...
-	rtb-08ae4034bd83a7b83	-	-	Yes	vpc-0ec83d1e5eacd9c09
private-route	rtb-036f77e355e31c74	-	-	No	vpc-03caeb8bfcc18775e   3-ti...
public-route	rtb-0f881d8c5797c9e73	-	-	No	vpc-03caeb8bfcc18775e   3-ti...

Select a route table

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VPC Management Console

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#EditRouteTableSubnetAssociations:RouteTableId=rtb-0f881d8c5797c9e73

Services Search [Option+S]

Console Home EC2 VPC RDS

VPC > Route tables > rtb-0f881d8c5797c9e73 > Edit subnet associations

## Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (2/6)

Filter subnet associations

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
web-tier-subnet-2	subnet-0c5c9be411840a8a8	10.0.2.0/24	-	Main (rtb-09b1454aca5419ef9)
db-tier-subnet-2	subnet-0fd46b5e2ff3a0c95	10.0.6.0/24	-	Main (rtb-09b1454aca5419ef9)
web-tier-subnet-1	subnet-0474a472bba2aeac3	10.0.1.0/24	-	Main (rtb-09b1454aca5419ef9)
app-tier-subnet-2	subnet-023eb0b60582ea5	10.0.4.0/24	-	Main (rtb-09b1454aca5419ef9)
app-tier-subnet-1	subnet-004f47493a5458983	10.0.3.0/24	-	Main (rtb-09b1454aca5419ef9)
db-tier-subnet-1	subnet-05e9131da23afc988	10.0.5.0/24	-	Main (rtb-09b1454aca5419ef9)

Selected subnets

subnet-0474a472bba2aeac3 / web-tier-subnet-1 X subnet-0c5c9be411840a8a8 / web-tier-subnet-2 X

Cancel Save associations

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VPC Management Console x +

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#EditRoutes:RouteTableId=rtb-0f881d8c5797c9e73

Services Search [Option+S]

Console Home EC2 VPC RDS Tokyo jawadkhan

VPC > Route tables > rtb-0f881d8c5797c9e73 > Edit routes

## Edit routes

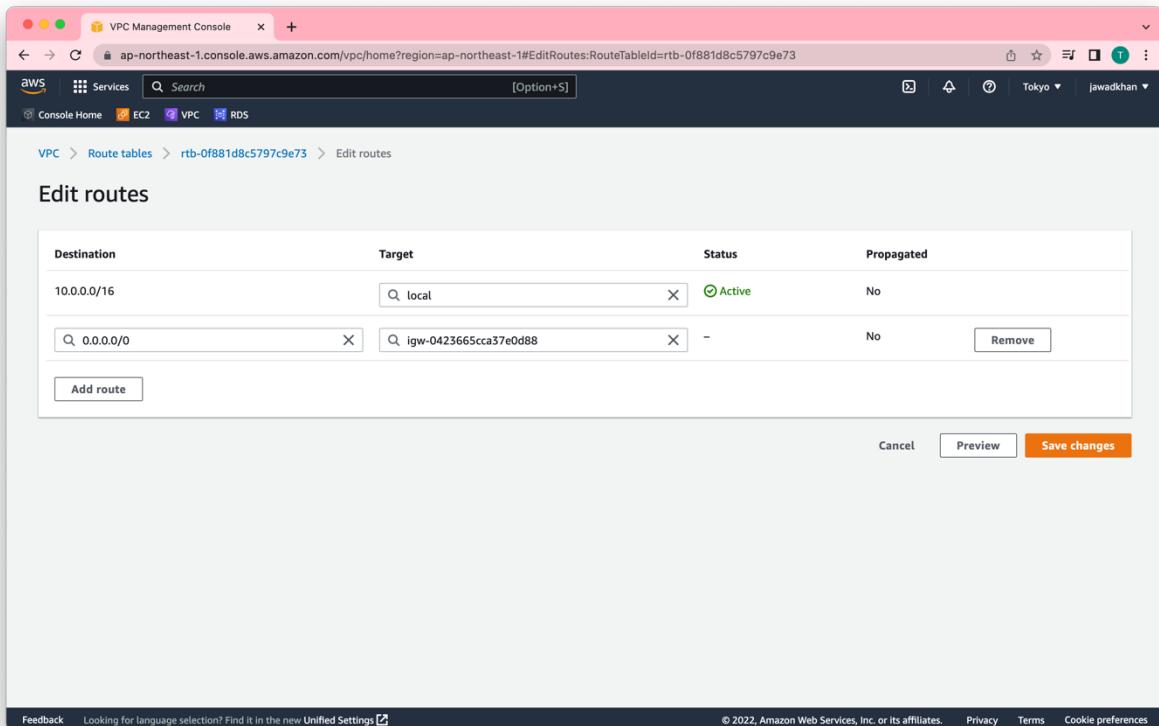
Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
0.0.0.0/0	igw-0423665cca37e0d88	-	No

Add route Remove

Cancel Preview Save changes

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VPC Management Console x +

ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#EditRouteTableSubnetAssociations:RouteTableId=rtb-036f7f7e355e31c74

Services Search [Option+S]

Console Home EC2 VPC RDS Tokyo jawadkhan

VPC > Route tables > rtb-036f7f7e355e31c74 > Edit subnet associations

## Edit subnet associations

Change which subnets are associated with this route table.

**Available subnets (2/6)**

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
app-tier-subnet-2	subnet-023ebed0b60582ea5	10.0.4.0/24	-	Main (rtb-09b1454aca5419ef9)
app-tier-subnet-1	subnet-004f47493a5458983	10.0.3.0/24	-	Main (rtb-09b1454aca5419ef9)

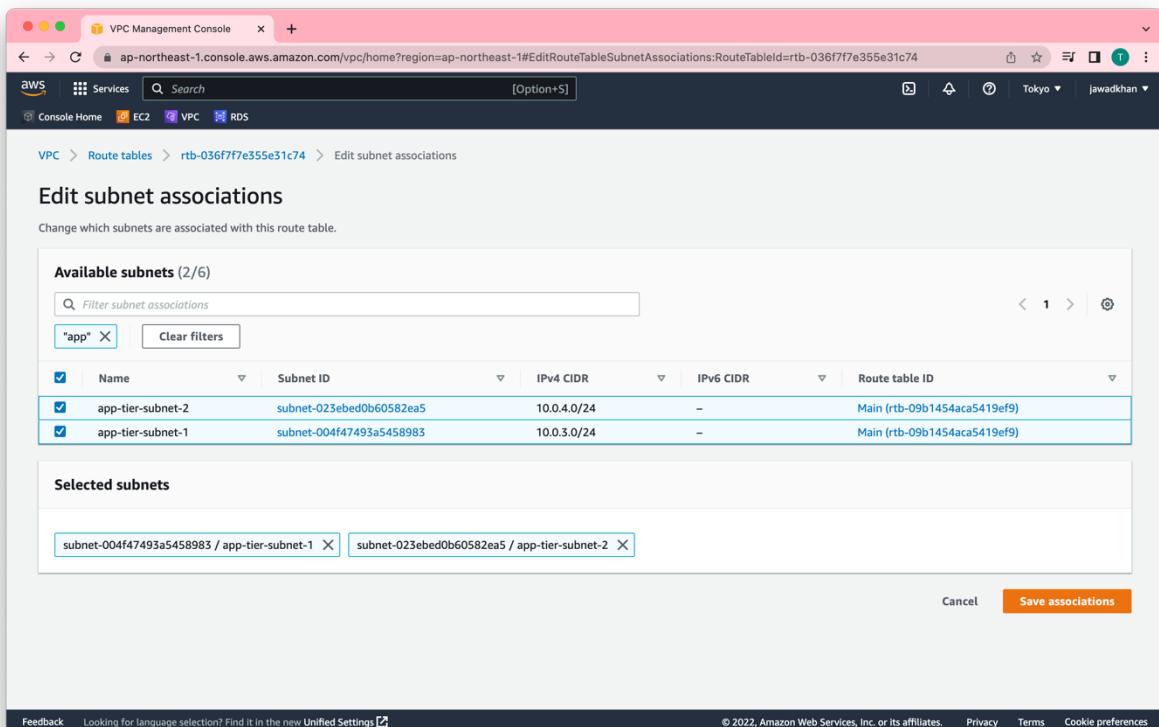
**Selected subnets**

subnet-004f47493a5458983 / app-tier-subnet-1 X subnet-023ebed0b60582ea5 / app-tier-subnet-2 X

Cancel Save associations

Feedback Looking for language selection? Find it in the new Unified Settings [?](#)

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The screenshot shows the AWS VPC Management Console with the URL [ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#EditRoutes:RouteTableId=rtb-036f7f7e355e31c74](https://ap-northeast-1.console.aws.amazon.com/vpc/home?region=ap-northeast-1#EditRoutes:RouteTableId=rtb-036f7f7e355e31c74). The page title is "Edit routes". The navigation path is "VPC > Route tables > rtb-036f7f7e355e31c74 > Edit routes". The main content area displays a table of routes:

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
0.0.0.0/0	nat-08d8b1296a026619c	-	No

Buttons at the bottom include "Add route", "Cancel", "Preview", and "Save changes".

## Launch an EC2 instances

**Launch an instance | EC2 Manager**

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

Services Search [Option+S]

Console Home EC2 VPC RDS

### 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  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.

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

**Quick Start**

Amazon Linux macOS Ubuntu Windows Red Hat S Amazon Machine Image (AMI)

MacOS

ubuntu® Microsoft Red Hat

Browse more AMIs Including AMIs from AWS, Marketplace and the Community

**Summary**

Number of instances Info 1

Software Image (AMI)  
Amazon Linux 2 Kernel 5.10 AMI...read more  
ami-072fb8ae2c884cc4

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 8 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, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Launch instance

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**Launch an instance | EC2 Manager**

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

Services Search [Option+S]

Console Home EC2 VPC RDS

### 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

vpc-03cae8bfcc18775e (3-tier-application) 10.0.0.0/16

Subnet Info  Create new subnet

subnet-0474aa472bba2eac3 VPC: vpc-03cae8bfcc18775e Owner: 255966850935 Availability Zone: ap-northeast-1a IP addresses available: 250 CIDR: 10.0.1.0/24

Auto-assign public IP Info

Enable

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

Security group name - required

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces and \_/-/!/@!+=~<^>`{}`\$`

**Summary**

Number of instances Info 1

Software Image (AMI)  
Amazon Linux 2 Kernel 5.10 AMI...read more  
ami-072fb8ae2c884cc4

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 8 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, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Launch instance

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Launch an instance | EC2 Manager

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

Services Search [Option+S]

Console Home EC2 VPC RDS

Security group name - required  
web-sg

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_./@#=;&#\$\*

Description - required Info  
Allows SSH and HTTP access

Inbound security groups rules

▼ Security group rule 1 (TCP, 22, 0.0.0.0/0)

Type Info Protocol Info Port range Info  
ssh TCP 22

Source type Info Source Info Description - optional Info  
Anywhere  e.g. SSH for admin desktop

▼ Security group rule 2 (TCP, 80, 0.0.0.0/0)

Type Info Protocol Info Port range Info  
HTTP TCP 80

Source type Info Source Info Description - optional Info  
Anywhere  e.g. SSH for admin desktop

Summary

Number of instances Info  
1

Software Image (AMI)  
Amazon Linux 2 Kernel 5.10 AMI...read more  
ami-072fb8ae2c884cc4

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 8 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, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Launch instance

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Launch an instance | EC2 Manager

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

Services Search [Option+S]

Console Home EC2 VPC RDS

Select

Metadata version Info  
Select

Metadata response hop limit Info  
Select

Allow tags in metadata Info  
Select

User data Info  

```
#!/bin/bash
yum update -y
amazon-linux-extras install -y lamp-mariadb10.2-php7.2 php7.2
yum install -y httpd mariadb-server
systemctl start httpd
systemctl enable httpd
usermod -a -G apache ec2-user
chown -R ec2-user:apache /var/www
chmod 2775 /var/www
find /var/www -type d -exec chmod 2775 {} ;
find /var/www -type f -exec chmod 0664 {} ;
echo "<?php phpinfo(); ?>" > /var/www/html/phpinfo.php
```

User data has already been base64 encoded

Summary

Number of instances Info  
1

Software Image (AMI)  
Amazon Linux 2 Kernel 5.10 AMI...read more  
ami-072fb8ae2c884cc4

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 8 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, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Launch instance

Feedback Looking for language selection? Find it in the new Unified Settings [?](#)

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**EC2 Management Console**

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

Services Search [Option+S]

Console Home EC2 VPC RDS

### 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  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.

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

**Quick Start**

Amazon Linux macOS Ubuntu Windows Red Hat S Browse more AMIs Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

**Summary**

Number of instances Info 1

Software Image (AMI) Amazon Linux 2 Kernel 5.10 AMI...read more ami-072fb8ae2c884cc4

Virtual server type (instance type) t2.micro

Firewall (security group) web-sg

Storage (volumes) 1 volume(s) - 8 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, 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GiB of bandwidth to the internet.

Cancel Launch instance

Feedback Looking for language selection? Find it in the new Unified Settings

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**EC2 Management Console**

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

Services Search [Option+S]

Console Home EC2 VPC RDS

### 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 - Info  10.0.0.0/16

Subnet Info  web-tier-subnet-2

Auto-assign public IP Info

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.

Common security groups Info  Compare security group rules

**Summary**

Number of instances Info 1

Software Image (AMI) Amazon Linux 2 Kernel 5.10 AMI...read more ami-072fb8ae2c884cc4

Virtual server type (instance type) t2.micro

Firewall (security group) web-sg

Storage (volumes) 1 volume(s) - 8 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, 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GiB of bandwidth to the internet.

Cancel Launch instance

Feedback Looking for language selection? Find it in the new Unified Settings

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**EC2 Management Console**

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

Services Search [Option+S]

Console Home EC2 VPC RDS

### 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.

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Name  Add additional tags

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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

Recent | Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat S  Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

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**Summary**

Number of instances Info

Software Image (AMI)  
Amazon Linux 2 Kernel 5.10 AMI... read more  
ami-072fb8ae2c884cc4

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

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

(i) 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, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

**EC2 Management Console**

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

Services Search [Option+S]

Console Home EC2 VPC RDS

### Instance type Info

Instance type  
**t2.micro** Free tier eligible

Family: t2 1 vCPU 1 GiB Memory  
On-Demand Linux pricing: 0.0152 USD per Hour  
On-Demand Windows pricing: 0.0198 USD per Hour

**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

**Network settings Info**

VPC - required Info  
**vpc-03cae8bfcc18775e (3-tier-application)** 10.0.0.0/16

Subnet Info  
**subnet-004f47493a545b983** Owner: 255966850935 Availability Zone: ap-northeast-1a IP addresses available: 251 CIDR: 10.0.3.0/24

Auto-assign public IP Info

Feedback Looking for language selection? Find it in the new Unified Settings ?

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**Summary**

Number of instances Info

Software Image (AMI)  
Amazon Linux 2 Kernel 5.10 AMI... read more  
ami-072fb8ae2c884cc4

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

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

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EC2 Management Console

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

VPC - required Info  
vpc-03cae8bfcc18775e (3-tier-application)  
10.0.0.0/16

Subnet Info  
subnet-004f47493a5458983  
VPC: vpc-03cae8bfcc18775e Owner: 25966850935 Availability Zone: ap-northeast-1a IP addresses available: 251 CIDR: 10.0.3.0/24

Create new subnet

Auto-assign public IP Info  
Disable

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

Security group name - required app-sg  
This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_:/@[]^=&:;`\$\*

Description - required Info Allow SSH access

Inbound security groups rules  
Security group rule 1 (TCP, 22, sg-0cd1f98e5fe46140c)

Type Info Protocol Info Port range Info

Feedback Looking for language selection? Find it in the new Unified Settings

Number of instances Info  
1

Software Image (AMI)  
Amazon Linux 2 Kernel 5.10 AMI...read more ami-072fb8ae2cb84cc4

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 8 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, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Launch instance

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EC2 Management Console

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

Name and tags Info  
Name app-server-2 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.

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

Recents Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat S > Browse more AMIs Including AMIs from AWS Marketplace and

Feedback Looking for language selection? Find it in the new Unified Settings

Number of instances Info  
1

Software Image (AMI)  
Amazon Linux 2 Kernel 5.10 AMI...read more ami-072fb8ae2cb84cc4

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
app-sg

Storage (volumes)  
1 volume(s) - 8 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, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Launch instance

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**EC2 Management Console**

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

Services Search [Option+S]

Console Home EC2 VPC RDS

**Instance type** Info

Instance type: t2.micro Free tier eligible

Family: t2 1 vCPU 1 GiB Memory  
On-Demand Linux pricing: 0.0152 USD per Hour  
On-Demand Windows pricing: 0.0198 USD per Hour

**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: keypair Create new key pair

**Network settings** Info

VPC - required Info

vpc-03caeb8bfcc18775e (3-tier-application) 10.0.0.0/16

Subnet Info

subnet-023ebcd0b60582ea5 app-tier-subnet-2 Create new subnet

VPC: vpc-03caeb8bfcc18775e Owner: 255966850935 Availability Zone: ap-northeast-1c IP Addresses available: 251 CIDR: 10.0.4.0/24

**Summary**

Number of instances Info: 1

Software Image (AMI): Amazon Linux 2 Kernel 5.10 AMI... read more ami-072fb8ae2cb84cc4

Virtual server type (instance type): t2.micro

Firewall (security group): app-sg

Storage (volumes): 1 volume(s) - 8 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, 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GB of bandwidth to the internet.

**Launch instance**

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**EC2 Management Console**

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#LaunchInstances:

Services Search [Option+S]

Console Home EC2 VPC RDS

**Network settings** Info

VPC - required Info

vpc-03caeb8bfcc18775e (3-tier-application) 10.0.0.0/16

Subnet Info

subnet-023ebcd0b60582ea5 app-tier-subnet-2 Create new subnet

VPC: vpc-03caeb8bfcc18775e Owner: 255966850935 Availability Zone: ap-northeast-1c IP Addresses available: 251 CIDR: 10.0.4.0/24

Auto-assign public IP Info

Disable

**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

Select security groups: app-sg sg-08a7dc6957e6ad2f9 X

VPC: vpc-03caeb8bfcc18775e

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

**Summary**

Number of instances Info: 1

Software Image (AMI): Amazon Linux 2 Kernel 5.10 AMI... read more ami-072fb8ae2cb84cc4

Virtual server type (instance type): t2.micro

Firewall (security group): app-sg

Storage (volumes): 1 volume(s) - 8 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, 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GB of bandwidth to the internet.

**Launch instance**

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The screenshot shows the AWS EC2 Management Console interface. On the left, there is a navigation sidebar with sections like EC2 Dashboard, Events, Tags, Limits, Instances (selected), Images, Elastic Block Store, and Lifecycle Manager. The main content area displays a table titled 'Instances (4) Info' with columns: Name, Instance ID, Instance state, Instance type, Status check, Alarm status, and Availability Zone. The table lists four instances: web-server-1, web-server-2, app-server-1, and app-server-2, all in the 'Running' state with 't2.micro' instance type. Below the table, a modal window titled 'Select an instance' is open, showing the same list of instances.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
web-server-1	i-0b804cd774c5818af	Running	t2.micro	2/2 checks passed	No alarms	ap-northeast-1a
web-server-2	i-0ab2880adfe46ed12	Running	t2.micro	2/2 checks passed	No alarms	ap-northeast-1c
app-server-1	i-0ec41f0a298e308ce	Running	t2.micro	Initializing	No alarms	ap-northeast-1a
app-server-2	i-0e14ea0fb533c582c	Running	t2.micro	-	No alarms	ap-northeast-1c

## Connecting with EC2 instance (web-server-1) through terminal



Assignments — ec2-user@ip-10-0-1-217:~ — ssh -i keypair.pem ec2-user...

```
(base) tayyubnaveed@192 Assignments % ssh -i "keypair.pem" ec2-user@18.183.77.78
The authenticity of host '18.183.77.78 (18.183.77.78)' can't be established.
ED25519 key fingerprint is SHA256:cSqIqSlvcti5FFdR1N7UtB5EwZgKNxM4nYfzayZEZ+Y.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '18.183.77.78' (ED25519) to the list of known hosts.

 _|_(_|_) /   Amazon Linux 2 AMI
 __|\__|__|
```

<https://aws.amazon.com/amazon-linux-2/>

```
-bash: warning: setlocale: LC_CTYPE: cannot change locale (UTF-8): No such file or directory
[ec2-user@ip-10-0-1-217 ~]$ _
```

## Connecting with EC2 instance (app-server-1) from EC2 instance (web-server-1) through terminal

A screenshot of a terminal window titled "Assignments — ec2-user@ip-10-0-3-254:~ — ssh -i keypair.pem ec2-use...". The terminal shows the following command and its output:

```
[[ec2-user@ip-10-0-1-217 ~]$ chmod 400 keypair.pem
[[ec2-user@ip-10-0-1-217 ~]$ ssh -i "keypair.pem" ec2-user@10.0.3.254
The authenticity of host '10.0.3.254 (10.0.3.254)' can't be established.
ECDSA key fingerprint is SHA256:H8WxKE0b0s+WXv/t7TuBlPWnXbE8F298oAd9a30CFVQ.
ECDSA key fingerprint is MD5:3f:f9:32:e9:b7:c0:54:d7:20:4c:4d:ea:3e:6f:67:da.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.0.3.254' (ECDSA) to the list of known hosts.

_ _|_(_|_) /   Amazon Linux 2 AMI
__|_\_|__|_|
https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-10-0-3-254 ~]$ _
```

## Create an application load balancer (ALB)

Load balancers | EC2 Manager > EC2 Management Console

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 <a href="#">Info</a>	alb-sg
Name cannot be edited after creation.	
Description <a href="#">Info</a>	Application load balancer security group
VPC <a href="#">Info</a>	vpc-03caeb8bfcc18775e

### Inbound rules [Info](#)

Type <a href="#">Info</a>	Protocol <a href="#">Info</a>	Port range <a href="#">Info</a>	Source <a href="#">Info</a>	Description - optional <a href="#">Info</a>
Custom TCP	TCP	0	Anywhere	0.0.0.0/0
<input type="button" value="Add rule"/>				

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Load balancers | EC2 Manager > Target groups | EC2 Management Console

Create target group

Step 1 Specify group details

Your load balancer routes requests to the targets in a target group and performs health checks on the targets.

Step 2 Register targets

### Specify group details

#### Basic configuration

Settings in this section cannot be changed after the target group is created.

#### Choose a target type

- Instances
  - Supports load balancing to instances within a specific VPC.
  - Facilitates the use of [Amazon EC2 Auto Scaling](#) to manage and scale your EC2 capacity.
- IP addresses
  - Supports load balancing to VPC and on-premises resources.
  - Facilitates routing to multiple IP addresses and network interfaces on the same instance.
  - Offers flexibility with microservice based architectures, simplifying inter-application communication.
  - Supports IPv6 targets, enabling end-to-end IPv6 communication, and IPv4-to-IPv6 NAT.
- Lambda function
  - Facilitates routing to a single Lambda function.
  - Accessible to Application Load Balancers only.
- Application Load Balancer
  - Offers the flexibility for a Network Load Balancer to accept and route TCP requests within a specific VPC.
  - Facilitates using static IP addresses and PrivateLink with no Application Load Balancer.

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Load balancers | EC2 Manager | Target groups | EC2 Manager

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#CreateTargetGroup:protocol=HTTP;vpc=vpc-03cae8bfcc18775e

Services Search [Option+S]

Console Home EC2 VPC RDS

**Target group name**  
load-balancer-tg  
A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

**Protocol** HTTP **Port** 80

**VPC**  
Select the VPC with the instances that you want to include in the target group.  
3-tier-application  
vpc-03cae8bfcc18775e  
IPv4: 10.0.0.0/16

**Protocol version**

- HTTP1** Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2.
- HTTP2** Send requests to targets using HTTP/2. Supported when the request protocol is HTTP/2 or gRPC, but gRPC-specific features are not available.
- gRPC** Send requests to targets using gRPC. Supported when the request protocol is gRPC.

**Health checks**  
The associated load balancer periodically sends requests, per the settings below, to the registered targets to test their status.

**Health check protocol** HTTP

**Health check path** Use the default path of "/" to ping the root, or specify a custom path if preferred.

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Load balancers | EC2 Manager | Target groups | EC2 Manager

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#CreateTargetGroup:protocol=HTTP;vpc=vpc-03cae8bfcc18775e

Services Search [Option+S]

Console Home EC2 VPC RDS

EC2 > Target groups > Create target group

Step 1 Specify group details

Step 2 Register targets

**Register targets**

This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target group you must register your targets.

**Available instances (2/4)**

Instance ID	Name	State	Security groups	Zone	Subnet ID
i-0e14ea0fb33c382c	app-server-2	running	app-sg	ap-northeast-1c	subnet-023ebcd0b60582ea5
i-0ab2880adfe46ed12	web-server-2	running	web-sg	ap-northeast-1c	subnet-0c5c9be411840a8a8
i-0ec41f0a298e308ce	app-server-1	running	app-sg	ap-northeast-1a	subnet-004f47493a5458983
i-0b804cd774c5818af	web-server-1	running	web-sg	ap-northeast-1a	subnet-0474a472bb2aeac3

2 selected

Ports for the selected instances  
Ports for routing traffic to the selected instances.  
80

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Load balancers | EC2 Manager

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#CreateALBWizard:

AWS Services Search [Option+S]

Console Home EC2 VPC RDS

EC2 > Load balancers > Create Application Load Balancer

## Create Application Load Balancer Info

The Application Load Balancer distributes incoming HTTP and HTTPS traffic across multiple targets such as Amazon EC2 instances, microservices, and containers, based on request attributes. When the load balancer receives a connection request, it evaluates the listener rules in priority order to determine which rule to apply, and if applicable, it selects a target from the target group for the rule action.

▶ How Elastic Load balancing works

### Basic configuration

**Load balancer name**  
Name must be unique within your AWS account and cannot be changed after the load balancer is created.  
 A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

**Scheme** Info  
Scheme cannot be changed after the load balancer is created.  
 Internet-facing An internet-facing load balancer routes requests from clients over the internet to targets. Requires a public subnet. [Learn more](#)  
 Internal An internal load balancer routes requests from clients to targets using private IP addresses.

**IP address type** Info  
Select the type of IP addresses that your subnets use.  
 IPv4 Recommended for internal load balancers.  
 Dualstack

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Load balancers | EC2 Manager

ap-northeast-1.console.aws.amazon.com/ec2/home?region=ap-northeast-1#CreateALBWizard:

AWS Services Search [Option+S]

Console Home EC2 VPC RDS

### Network mapping Info

The load balancer routes traffic to targets in the selected subnets, and in accordance with your IP address settings.

**VPC** Info  
Select the virtual private cloud (VPC) for your targets. Only VPCs with an internet gateway are enabled for selection. The selected VPC cannot be changed after the load balancer is created. To confirm the VPC for your targets, view your [target groups](#).  
 [C](#)  
vpc-03caeabbfffc18775e  
IPv4: 10.0.0.0/16

**Mappings** Info  
Select at least two Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load balancer or the VPC are not available for selection.

ap-northeast-1  
Subnet  web-tier-subnet-1 [▼](#)

**IPv4 settings**  
Assigned by AWS

ap-northeast-1c  
Subnet  web-tier-subnet-2 [▼](#)

**IPv4 settings**

Feedback Looking for language selection? Find it in the new Unified Settings [?](#)

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The screenshot shows the AWS EC2 Manager Load balancers wizard at step 3, titled "Listeners and routing".

**Security groups:** A security group is selected: `alb-sg sg-045de549df4252fa2` (VPC: `vpc-03cae8bfcc18775e`).

**Listeners and routing:** A listener is configured for port `HTTP:80`. The default action is set to forward traffic to a target group named `load-balancer-tg`, which targets instances or IPv4 addresses.

**Listener tags - optional:** An optional tag `Add listener tag` is present.

At the bottom, there are links for `Feedback`, `Looking for language selection? Find it in the new Unified Settings`, `© 2022, Amazon Web Services, Inc. or its affiliates.`, `Privacy`, `Terms`, and `Cookie preferences`.

## Launch RDS instances (db-1, db-2)

RDS Management Console > 3-tier-application-load-balanc > ap-northeast-1.console.aws.amazon.com/rds/home?region=ap-northeast-1#create-db-subnet-group:

Amazon RDS Services Search [Option+S]

Console Home EC2 VPC RDS

**Create DB subnet group**

To create a new subnet group, give it a name and a description, and choose an existing VPC. You will then be able to add subnets related to that VPC.

**Subnet group details**

**Name**  
You won't be able to modify the name after your subnet group has been created.  
  
Must contain from 1 to 255 characters. Alphanumeric characters, spaces, hyphens, underscores, and periods are allowed.

**Description**

**VPC**  
Choose a VPC identifier that corresponds to the subnets you want to use for your DB subnet group. You won't be able to choose a different VPC identifier after your subnet group has been created.

**Add subnets**

**Availability Zones**  
Choose the Availability Zones that include the subnets you want to add.

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RDS Management Console > 3-tier-application-load-balanc > ap-northeast-1.console.aws.amazon.com/rds/home?region=ap-northeast-1#create-db-subnet-group:

Amazon RDS Services Search [Option+S]

Console Home EC2 VPC RDS

**Add subnets**

**Availability Zones**  
Choose the Availability Zones that include the subnets you want to add.

**Subnets**  
Choose the subnets that you want to add. The list includes the subnets in the selected Availability Zones.

**Subnets selected (2)**

Availability zone	Subnet ID	CIDR block
ap-northeast-1a	subnet-05e9131da23afc988	10.0.5.0/24
ap-northeast-1c	subnet-0fd46b5e2ff3a0c95	10.0.6.0/24

Cancel **Create**

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ap-northeast-1.console.aws.amazon.com/rds/home?region=ap-northeast-1#launch-dbinstance:gdb=false;isHermesCreate=true;s3-import=false

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### Create database

**Choose a database creation method** Info

- Standard create**  
You set all of the configuration options, including ones for availability, security, backups, and maintenance.
- Easy create**  
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

**Engine options** Info

**Engine type** MySQL

- Amazon Aurora
- MySQL
- MariaDB
- PostgreSQL
- Oracle
- Microsoft SQL Server

**Edition** MySQL Community

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**PostgreSQL**

PostgreSQL is a powerful, open-source object-relational database system with a strong reputation of reliability, stability, and correctness.

- High reliability and stability in a variety of workloads.
- Advanced features to perform in high-volume environments.
- Vibrant open-source community that releases new features multiple times per year.
- Supports multiple extensions that add even more functionality to the database.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- The most Oracle-compatible open-source database.

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### Templates

Choose a sample template to meet your use case.

- Production**  
Use defaults for high availability and fast, consistent performance.
- Dev/Test**  
This instance is intended for development use outside of a production environment.
- Free tier**  
Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. Info

**Availability and durability**

**Deployment options** Info

The deployment options below are limited to those supported by the engine you selected above.

- Multi-AZ DB Cluster - new**  
Creates a DB cluster with a primary DB instance and two readable standby DB instances, with each DB instance in a different Availability Zone (AZ). Provides high availability, data redundancy and increases capacity to serve read workloads.
- Multi-AZ DB instance (not supported for Multi-AZ DB cluster snapshot)**  
Creates a primary DB instance and a standby DB instance in a different AZ. Provides high availability and data redundancy, but the standby DB instance doesn't support connections for read workloads.
- Single DB instance (not supported for Multi-AZ DB cluster snapshot)**  
Creates a single DB instance with no standby DB instances.

**Settings**

**DB instance identifier** Info

Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

db-1

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### Settings

**DB instance identifier** [Info](#)  
Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.  
**db-1**

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

### Credentials Settings

**Master username** [Info](#)  
Type a login ID for the master user of your DB instance.  
**admin**

1 to 16 alphanumeric characters. First character must be a letter.

**Auto generate a password**  
Amazon RDS can generate a password for you, or you can specify your own password.

**Master password** [Info](#)  
**\*\*\*\*\***

Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), '(single quote)', "(double quote) and @ (at sign).

**Confirm master password** [Info](#)  
**\*\*\*\*\***

### Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

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Console Home EC2 VPC RDS

### Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

**DB instance class** [Info](#)  
 **Burstable classes (includes t classes)**

**db.t3.micro**  
2 vCPUs 1 GiB RAM Network: 2,085 Mbps

**Include previous generation classes**

### Storage

**Storage type** [Info](#)  
**General Purpose SSD (gp2)**  
Baseline performance determined by volume size

**Allocated storage**  
**200** GiB

The minimum value is 20 GiB and the maximum value is 6,144 GiB

**Storage autoscaling** [Info](#)  
Provides dynamic scaling support for your database's storage based on your application's needs.

**Enable storage autoscaling**  
Enabling this feature will allow the storage to increase after the specified threshold is exceeded.

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Services Search [Option+S]

Console Home EC2 VPC RDS

**Connectivity Info**

**Compute resource**  
Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

**Don't connect to an EC2 compute resource**  
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

**Connect to an EC2 compute resource**  
Set up a connection to an EC2 compute resource for this database.

**Virtual private cloud (VPC) Info**  
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

3-tier-application (vpc-03cae8bfcc18775e)

Only VPCs with a corresponding DB subnet group are listed.

**After a database is created, you can't change its VPC.**

**DB Subnet group Info**  
Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.

db-subnet

**Public access Info**

**Yes**  
RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.

**No**  
RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.

**VPC security group (firewall) Info**

**PostgreSQL**

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Services Search [Option+S]

Console Home EC2 VPC RDS

**Create database**

**Choose a database creation method** Info

**Standard create**  
You set all of the configuration options, including ones for availability, security, backups, and maintenance.

**Easy create**  
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

**Engine options**

**Engine type** Info

Amazon Aurora 

MySQL 

MariaDB 

PostgreSQL 

Oracle 

Microsoft SQL Server 

**Edition**

MySQL Community

**MySQL**

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL Community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 5 Read Replicas per instance, within a single Region or cross-region.

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Services Search [Option+S]

Console Home EC2 VPC RDS

### Settings

**DB instance identifier** Info  
Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

**Credentials Settings**

**Master username** Info  
Type a login ID for the master user of your DB instance.  
  
1 to 16 alphanumeric characters. First character must be a letter.  
 **Auto generate a password**  
Amazon RDS can generate a password for you, or you can specify your own password.

**Master password** Info  
  
Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), ' (single quote), " (double quote) and @ (at sign).

**Confirm master password** Info

**Instance configuration**  
The DB instance configuration options below are limited to those supported by the engine that you selected above.

**DB instance class** Info

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**MySQL**

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Console Home EC2 VPC RDS

### Connectivity Info

**Compute resource**  
Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

**Don't connect to an EC2 compute resource**  
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

**Connect to an EC2 compute resource**  
Set up a connection to an EC2 compute resource for this database.

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Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

Only VPCs with a corresponding DB subnet group are listed.

**After a database is created, you can't change its VPC.**

**DB Subnet group** Info  
Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.

**Public access** Info

**Yes**  
RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.

**No**  
RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.

**VPC security group (firewall)** Info  
Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the

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AWS Services Search [Option+S]

Console Home EC2 VPC RDS

db-subnet

MySQL

**Public access** [Info](#)

Yes  
RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.

No  
RDS doesn't assign a public IP address to the database. Only Amazon EC2 Instances and other resources inside the VPC can connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.

**VPC security group (firewall)** [Info](#)  
Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the appropriate incoming traffic.

Choose existing  
Choose existing VPC security groups

Create new  
Create new VPC security group

**Existing VPC security groups**  
[Choose one or more options](#)

db-sg X

**Availability Zone** [Info](#)  
ap-northeast-1c

**RDS Proxy**  
RDS Proxy is a fully managed, highly available database proxy that improves application scalability, resiliency, and security.

Create an RDS Proxy [Info](#)  
RDS automatically creates an IAM role and a Secrets Manager secret for the proxy. RDS Proxy has additional costs. For more information, see [Amazon RDS Proxy pricing](#).

**Additional configuration**

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