



# Creating Virtual Private Cloud (VPC)



## Step 1: Create VPC

1. Login to AWS Console. Now you need to search for VPC. Choose this service accordingly.

The screenshot shows the AWS VPC dashboard. At the top, there's a purple header bar with the VPC logo and a star icon. Below it, the title "Isolated Cloud Resources" is displayed. A section titled "Top features" lists "Your VPCs", "Subnet", "Route table", "Internet gateway", and "Egress-only internet gateways".

2. This is how your VPC dashboard would look like.
3. Now you need to click on Create VPC.

The screenshot shows the "Create VPC" page. On the left, a sidebar lists various VPC-related services: Your VPCs, Subnets, Route tables, Internet gateways, Egress-only internet gateways, DHCP option sets, Elastic IPs, Managed prefix lists, Endpoints, Endpoint services, NAT gateways, Peering connections, Security, Network ACLs, and Security groups. The main area has a heading "Create VPC" with a note: "Note: Your Instances will launch in the Asia Pacific region." Below this, there's a "Resources by Region" section with cards for VPCs, NAT Gateways, Subnets, VPC Peering Connections, Route Tables, Network ACLs, Internet Gateways, Security Groups, Egress-only Internet Gateways, Customer Gateways, and DHCP option sets. To the right, there are sections for "Service Health", "Settings" (with links to Zones and Console Experiments), "Additional Information" (with links to VPC Documentation, All VPC Resources, Forums, and Report an Issue), and "AWS Network Manager" (with a link to Get started with Network Manager). At the bottom, there's a "Site-to-Site VPN Connections" section and copyright information: "© 2024, Amazon Web Services, Inc. or its affiliates." followed by links to Privacy, Terms, and Cookie preferences.

4. So, on the VPC creation page you need to select VPC only.
5. Then you need to give it a name of your choice.
6. Now you need to select IPv4 CIDR manual input and put your CIDR in place.
7. In this the IPv4 CIDR is 10.0.0.0/16
8. There is no need to select IPv5 CIDR block because you don't need it right now.
9. Then just click on Create VPC.

## 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.

app-vpc

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

10. Here your VPC is created.

vpc-0592817f98a3df74e / app-vpc				<a href="#">Actions</a>
Details <a href="#">Info</a>				
VPC ID <a href="#">vpc-0592817f98a3df74e</a>	State <span style="color: green;">Available</span>	DNS hostnames Disabled	DNS resolution Enabled	
Tenancy Default	DHCP option set <a href="#">dopt-0689daf4ca5f7be79</a>	Main route table <a href="#">rtb-0ce108f50578e7bc5</a>	Main network ACL <a href="#">acl-08379bcd82e10d0b7</a>	
Default VPC No	IPv4 CIDR 10.0.0.0/16	IPv6 pool -	IPv6 CIDR (Network border group) -	
Network Address Usage metrics Disabled	Route 53 Resolver DNS Firewall rule groups -	Owner ID <a href="#">878893308172</a>		

11. Now if you go back, you will see that the unnamed VPC with CIDR block is your account default VPC.

Your VPCs (2) <a href="#">Info</a>							<a href="#">Actions</a>	<a href="#">Create VPC</a>
	Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHC		
<input type="checkbox"/>	-	<a href="#">vpc-00e852ef26c39581b</a>	<span style="color: green;">Available</span>	172.31.0.0/16	-	<a href="#">dop</a>		
<input type="checkbox"/>	app-vpc	<a href="#">vpc-0592817f98a3df74e</a>	<span style="color: green;">Available</span>	10.0.0.0/16	-	<a href="#">dop</a>		



Step 2: Naming Route table

- Now go to route tables, you will see that two route tables have already been there. These route table belongs to your VPC. One table belongs to your default route table and one belongs to your newly created VPC.

Route tables (2) <a href="#">Info</a>						
<input type="checkbox"/>	Name	Route table ID	Explicit subnet associati...	Edge associations	Main	VPC
<input type="checkbox"/>	-	<a href="#">rtb-0ce108f50578e7bc5</a>	-	-	Yes	<a href="#">vpc-0592817f98a3df7</a>
<input type="checkbox"/>	-	<a href="#">rtb-0dd95fab2ddaaee74</a>	-	-	Yes	<a href="#">vpc-00e852ef26c3958</a>

- Now if you will scroll route table pane to the right you will see that which one from your route table belongs to VPC that you created.

Route tables (2) <a href="#">Info</a>						
<input type="checkbox"/>	Route table ID	Explicit subnet associati...	Edge associations	Main	VPC	Own...
<input type="checkbox"/>	<a href="#">rtb-0ce108f50578e7bc5</a>	-	-	Yes	<a href="#">vpc-0592817f98a3df74e   app-vpc</a>	878893...
<input type="checkbox"/>	<a href="#">rtb-0dd95fab2ddaaee74</a>	-	-	Yes	<a href="#">vpc-00e852ef26c39581b</a>	878893...

- Once you have identified that now you need to give name to that route table.

Route tables (1/2) <a href="#">Info</a>						
<input type="checkbox"/>	Name	Route table ID	Explicit subnet associati...	Edge associations	Main	VPC
<input checked="" type="checkbox"/>	appvc-main-route-table	<a href="#">rtb-0ce108f50578e7bc5</a>	-	-	Yes	<a href="#">vpc-0592817f98a3df7</a>
<input type="checkbox"/>	-	<a href="#">rtb-0dd95fab2ddaaee74</a>	-	-	Yes	<a href="#">vpc-00e852ef26c3958</a>

- Now if you go on to the routes, you will see there is a default route also in place. So, any traffic from any EC2 instance. Within the VPC. Can be directed onto the VPC itself. So, this rule or route allows traffic between the EC2 instances within a VPC.

rtb-0ce108f50578e7bc5 / appvc-main-route-table						
Details		Routes	Subnet associations	Edge associations	Route propagation	Tags
<b>Routes (1)</b>						
<a href="#">Edit routes</a>						
Destination	Target	Status	Propagated			
10.0.0.0/16	local	Active	No			

## Step 3: Creating Subnet

- Now if you will go to subnets. You will see three subnets in place. But they belong to the default VPC.
- Here you are going to create new subnets for your VPC. So, for that click on Create subnet.

Subnets (3) <a href="#">Info</a>					
<input type="checkbox"/>	Name	Subnet ID	State	VPC	IPv4 CIDR
<input type="checkbox"/>	-	<a href="#">subnet-090908b5b996470fc</a>	<span>Available</span>	<a href="#">vpc-00e852ef26c39581b</a>	172.31.16.0/20
<input type="checkbox"/>	-	<a href="#">subnet-01c162e279b989d09</a>	<span>Available</span>	<a href="#">vpc-00e852ef26c39581b</a>	172.31.32.0/20
<input type="checkbox"/>	-	<a href="#">subnet-05b1afa053579e078</a>	<span>Available</span>	<a href="#">vpc-00e852ef26c39581b</a>	172.31.0.0/20

3. While creating subnets you need to choose the VPC first so, that you define which VPC you want for your subnets.

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

### Create subnet [Info](#)

**VPC**

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

**Associated VPC CIDRs**

**IPv4 CIDRs**  
 10.0.0.0/16

4. Now after scrolling down a little, you have to give your subnet a name.
5. Then choose one of the availability zones, so, that you can define which zone you want for your subnet.
6. After that you need write the IPv4 subnet CIDR block for it.

## 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.



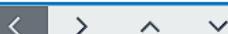
### IPv4 VPC CIDR block [Info](#)

Choose the IPv4 VPC CIDR block to create a subnet in.



### IPv4 subnet CIDR block

256 IPs



### ▼ Tags - optional

#### Key

#### Value - optional



[Remove](#)

7. Once, it is done now if you will scroll down a little again. You will see that you have an option to add new subnet. Click on it.

[Add new subnet](#)

8. Now you will see that you can again create a subnet.
9. Now give it a name, whatever suits you.
10. Then for it choose another availability zone.
11. Then give it another CIDR block address.
12. And create your subnets.

## Subnet 2 of 2

### 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 IPv4 VPC CIDR block to create a subnet in.



### IPv4 subnet CIDR block

256 IPs



### ▼ Tags - optional

#### Key

#### Value - optional

RemoveAdd new tag

You can add 49 more tags.

## 13. Now you will see that your subnets are created.

Find resources by attribute or tag						
Name	Subnet ID	State	VPC	IPv4 CIDR		
web-subnet	subnet-0eb211eab0433b62	Available	vpc-0592817f98a3df74e   app...	10.0.0.0/24		
db-subnet	subnet-0e92eea36802b1b92	Available	vpc-0592817f98a3df74e   app...	10.0.1.0/24		



## Step 4: Creating Internet Gateway (IGT)

An Internet Gateway (IGW) is a component of Amazon Web Services (AWS) that acts as a bridge between a Virtual Private Cloud (VPC) and the public internet. It allows for network traffic to travel between the two networks, enabling inbound and outbound connections from resources within the VPC.

1. To create Internet gateway, it is very simple. Just navigate to internet gateways.
2. You will see an internet gateway already there attached with your default VPC.
3. Now you need to click on Create internet gateway.

Internet gateways (1) <small>Info</small>						
Actions						
Search						
Name	Internet gateway ID	State	VPC ID	Owner		
-	igw-0ddb1d264233ccba	Attached	vpc-00e852ef26c39581b	878893308172		

4. You just need to give it a name and then click on 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"/> <span>X</span>	<input type="text" value="app-gateway"/> <span>X</span> <span>Remove</span>

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

Cancel Create internet gateway

5. You will see that your internet gateway is created but it is not attached to any of the VPC.
6. It is because you need to attach it with the VPC of your choice.
7. To attach your internet gateway, you need to click on Actions. Then click on attach VPC.

VPC > Internet gateways > igw-01ef7e607dde2ac2c

igw-01ef7e607dde2ac2c / app-gateway Actions ▾

**Details** Info

Internet gateway ID <input type="text" value="igw-01ef7e607dde2ac2c"/>	State <input type="radio"/> Detached	VPC ID -	Owner <input type="text" value="878893308172"/>
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**Tags**

Key	Value
Name	app-gateway

Manage tags < 1 > ②

8. Now you need to choose your VPC and click on Attach internet gateway.

## Attach to VPC (igw-01ef7e607dde2ac2c) [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](#)

9. Once you have attached your IGT, then it will show in attached state.

igw-01ef7e607dde2ac2c / app-gateway				<a href="#">Actions</a>
Details <a href="#">Info</a>				
Internet gateway ID <a href="#">igw-01ef7e607dde2ac2c</a>	State <a href="#">Attached</a>	VPC ID <a href="#">vpc-0592817f98a3df74e   app-vpc</a>	Owner <a href="#">878893308172</a>	
Tags				<a href="#">Manage tags</a>
<input type="text" value="Search tags"/>				<a href="#">&lt;</a> <a href="#">1</a> <a href="#">&gt;</a> <a href="#">@</a>
Key	Value			
Name	app-gateway			

10. If you go back, you will see that you have two IGT attached to two different VPCs.

Internet gateways (2) <a href="#">Info</a>						<a href="#">Actions</a>	<a href="#">Create internet gateway</a>
<input type="text" value="Search"/>						<a href="#">C</a>	
<input type="checkbox"/>	Name	Internet gateway ID	State	VPC ID	Owner		
<input type="checkbox"/>	-	<a href="#">igw-0dbb1d264233ccbaf</a>	<a href="#">Attached</a>	<a href="#">vpc-00e852ef26c39581b</a>	878893308172		
<input type="checkbox"/>	app-gateway	<a href="#">igw-01ef7e607dde2ac2c</a>	<a href="#">Attached</a>	<a href="#">vpc-0592817f98a3df74e   app-vpc</a>	878893308172		

11. Now you have your internet gateway attached onto the VPC, but your subnets have no knowledge on how to route traffic onto the Internet. That's something that you explicitly have to tell the subnets.

12. In this particular virtual private cloud network, you have a local router. This router ensures that traffic moves from a source machine onto the destination within the virtual private cloud itself.

13. Now, you should not be adding a route for the Internet or to this route table because if you do that, it would also be applicable onto your **DB subnet** because your **DB subnet** would also be attached onto this same default route table.

14. So, hence what you need to do is you need to create now a new route table.

15. Attach that route table onto your **Web subnet** that's going to behave as a **public subnet** and you will leave this main route table attached onto **DB subnet**. So, this will behave as a **private subnet**.

16. Now navigate to route table and click on create route table.

17. Here you need to give your route table an appropriate name.

18. Then select your VPC and click on 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.

appvc-public-route-table

VPC  
The VPC to use for this route table.

vpc-0592817f98a3df74e (app-vpc)

#### 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 - <i>optional</i>
Q Name	X appvc-public-route-table

Add new tag

You can add 49 more tags.

Cancel **Create route table**

19. Once your route table is created. Go to subnet association.

VPC > Route tables > rtb-0c2adeedc22a5af36

### rtb-0c2adeedc22a5af36 / appvc-public-route-table Actions ▾

Details <small>Info</small>	
Route table ID rtb-0c2adeedc22a5af36	Main No
VPC vpc-0592817f98a3df74e   app-vpc	Owner ID 878893308172
Explicit subnet associations -	
Edge associations -	

Routes **Subnet associations** Edge associations Route propagation Tags

20. In subnet associations click on edit subnet associations.

### Explicit subnet associations (0)

Find subnet association

Edit subnet associations

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
No subnet associations You do not have any subnet associations.			

21. Now here you need to select your web subnet and click on save associations.

Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (1/2)					
	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input checked="" type="checkbox"/>	db-subnet	subnet-0e92eea36802b1b92	10.0.1.0/24	-	Main (rtb-0ce108f50578e7bc5 / appvc...)
<input checked="" type="checkbox"/>	web-subnet	subnet-0eb211eabd0433b62	10.0.0.0/24	-	Main (rtb-0ce108f50578e7bc5 / appvc...)

Selected subnets

subnet-0eb211eabd0433b62 / web-subnet <span style="float: right;">X</span>
--

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

22. So now in this way, you have linked this new route table onto your Web subnet.

23. Now you need to go to routes.

rtb-0c2adeedc22a5af36 / appvc-public-route-table

Details [Routes](#) [Subnet associations](#) Edge associations Route propagation Tags

Explicit subnet associations (1)					
<a href="#">Edit subnet associations</a>					
<a href="#">Find subnet association</a>					
Name	Subnet ID	IPv4 CIDR	IPv6 CIDR		
web-subnet	subnet-0eb211eabd0433b62	10.0.0.0/24	-		

24. There click on edit routes.

rtb-0c2adeedc22a5af36 / appvc-public-route-table

Details [Routes](#) Subnet associations Edge associations Route propagation Tags

Routes (1)					
<a href="#">Edit routes</a>					
<a href="#">Both</a> <a href="#">Edit routes</a>					
<a href="#">Find routes</a>					
Destination	Target	Status	Propagated		
10.0.0.0/16	local	Active	No		

25. You'll choose to add a route in the route. You will put the destination as 0.0.0.0/0.

This is a representation of traffic for the internet.

26. You will choose the target as your internet gateway.

27. There are different types of services that you can choose as the target. You will choose the Internet Gateway. The gateway that you have.

28. And then you will click on Save Changes.

VPC > Route tables > rtb-0c2adeedc22a5af36 > Edit routes

Edit routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
<a href="#">Q 0.0.0.0</a>	Internet Gateway	-	No
<a href="#">Q 0.0.0.0</a>	<a href="#">Q igw-01ef7e607dde2ac2d</a>		<a href="#">Remove</a>

[Add route](#) [Cancel](#) [Preview](#) [Save changes](#)

29. Now if you will go back to subnets and select you web subnet you will see that it has been attached to IGT.

30. So now this is behaving as a public subnet because traffic can now reach the resources defined in the subnet just because of the route that has been added here.
31. So, now any traffic for the Internet will be routed via the Internet Gateway. And the Internet Gateway has the facility of pushing traffic from the EC2 instance onto the internet and also getting traffic from the Internet onto the EC2 instance.

subnet-0eb211eabd0433b62 / web-subnet

Details	Flow logs	Route table	Network ACL	CIDR reservations	Sharing	Tags
Route table: <a href="#">rtb-0c2adeedc22a5af36 / appvc-public-route-table</a>						<a href="#">Edit route table association</a>
<strong>Routes (2)</strong>						
<input type="text"/> Filter routes						
Destination	▼	Target	▼	▼	▼	▼
10.0.0.0/16		local				
0.0.0.0/0		<a href="#">igw-01ef7e607dde2ac2c</a>				