



Build a Virtual Private Cloud (VPC)

J

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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.

IPv4 CIDR block Info
 IPv4 CIDR manual input IPAM-allocated IPv4 CIDR block

IPv4 CIDR

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

VPC encryption control (\$) Info
Monitor mode provides visibility into encryption status without blocking traffic. Enforce mode prevents unencrypted traffic. Additional charges apply [?]

None Monitor mode
See which resources in your VPC are unencrypted but allow the creation of

Enforce mode
Requires all resources, except exclusions, in your VPC to be encryption-capable and blocks



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Introducing Today's Project!

In this project, I will demonstrate my skills in VPC creation. I'm doing this project to learn different ways of creating VPCs in AWS depending on Usecases.

What is Amazon VPC?

Amazon VPC is an isolated section of the AWS cloud and it is useful because it enables to Organize resources and their workflow in and out of AWS cloud.

In today's project, I used Amazon VPC to create my own portion of the AWS Cloud to manage my resources.

Personal reflection

This project took me an Hour

placeholder

One thing I didn't expect in this project was how detailed it was. A region can be seen as a COUNTRY with a VPC being its PRIVATE NETWORK. The CITIES of the country are AZ with SUBNETS being NEIGHBOURHOODS in each of these cities.

Virtual Private Clouds (VPCs)

What I did in this step

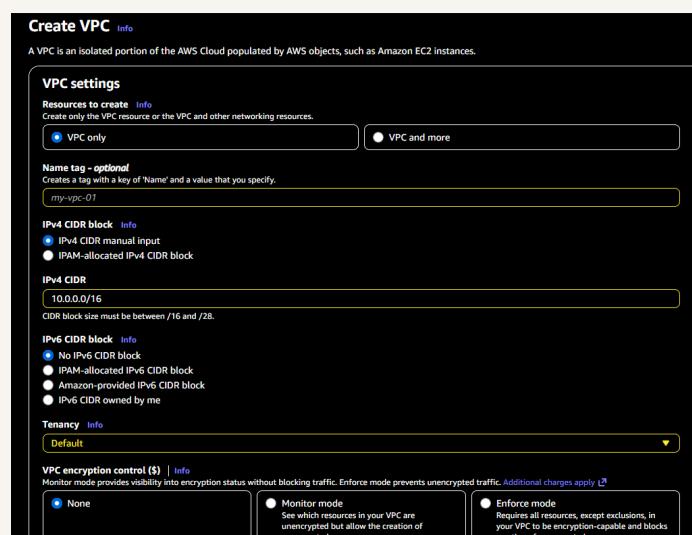
In this step, I will create my first Amazon VPC and its components in order to master the steps for its creation in a console.

How VPCs work

VPCs are a private sections of the cloud for managing resources publicly and privately.

Why there is a default VPC in AWS accounts

There was already a default VPC in my account ever since my AWS account was created. This is because some resources in AWS like EC2 and RDS need a VPC to be launched or run. If there was no default VPC, one would have been obliged to learn how to create it before using these services.



Defining IPv4 CIDR blocks

To set up my VPC, I had to define an IPv4 CIDR block, which is the range or number of different IPv4 addresses i can assign to my resources in my VPC.



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Subnets

What I did in this step

In this step, I will create a public subnet because i want to organize my resources and group them differently depending on their tasks, access rules and restrictions.

Creating and configuring subnets

Subnets are subdivisions of a VPC with similar resources (similar in access, and task). There are already subnets existing in my account, one for every AZ in my Region.

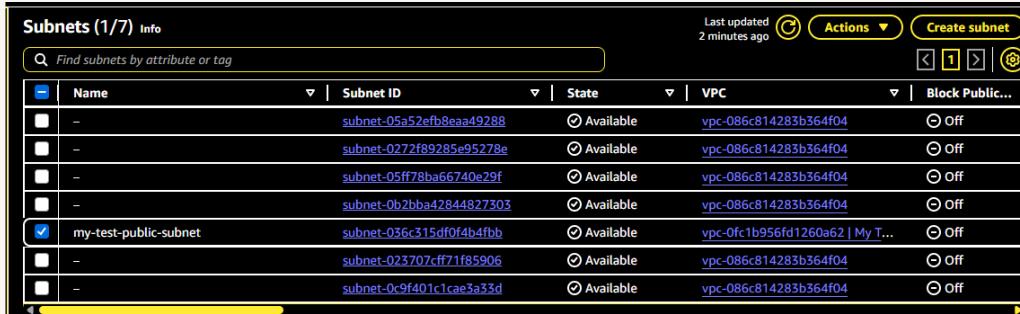
Public vs private subnets

The difference between public and private subnets is: For a subnet to be considered public, it has to be attached to an Internet Gateway, if not it is private.

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A screenshot of the AWS Subnets list interface. The title bar says "Subnets (1/7) Info". It shows a table with columns: Name, Subnet ID, State, VPC, and Block Public... . There are 8 rows in total, with the last row being "my-test-public-subnet" which has a checked checkbox in the first column. The "Actions" dropdown menu is open above the table, showing options like "Edit", "Delete", and "Create subnet".

	Name	Subnet ID	State	VPC	Block Public...
<input type="checkbox"/>	-	subnet-05a52efb8eaa49288	<input checked="" type="radio"/> Available	vpc-086c814283b364f04	<input checked="" type="radio"/> Off
<input type="checkbox"/>	-	subnet-0272f89285e95278e	<input checked="" type="radio"/> Available	vpc-086c814283b364f04	<input checked="" type="radio"/> Off
<input type="checkbox"/>	-	subnet-05ff78ba66740e29f	<input checked="" type="radio"/> Available	vpc-086c814283b364f04	<input checked="" type="radio"/> Off
<input type="checkbox"/>	-	subnet-0b2bba42844827303	<input checked="" type="radio"/> Available	vpc-086c814283b364f04	<input checked="" type="radio"/> Off
<input checked="" type="checkbox"/>	my-test-public-subnet	subnet-036c315df0f4b4fb	<input checked="" type="radio"/> Available	vpc-0fc1b956fd1260a62 My T...	<input checked="" type="radio"/> Off
<input type="checkbox"/>	-	subnet-023707cff71f85906	<input checked="" type="radio"/> Available	vpc-086c814283b364f04	<input checked="" type="radio"/> Off
<input type="checkbox"/>	-	subnet-0c9f401c1cae3a33d	<input checked="" type="radio"/> Available	vpc-086c814283b364f04	<input checked="" type="radio"/> Off

Auto-assigning public IPv4 addresses

Once I created my subnet, I enabled the auto-assign public IPv4 address. This setting makes sure that any resource created in that subnet is automatically assigned an IPv4 Address so that it can have access to the internet and be accessible from the Internet after being connected to an Internet Gateway.



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Internet gateways

What I did in this step

In this step, I will connect my VPC to an internet gateway because i want my resources in the VPC (public subnet) to be connected to the Internet and accessed from the internet.

Setting up internet gateways

Internet gateways is a bridge (or key) that allows resources from a subnet to be connected to and accessed from the Internet.

Attaching an internet gateway to a VPC means allowing the resources in the VPC to have access to and be accessed from the Internet. If I missed this step my resources won't have access to the Internet AND be accessed from the Internet.

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The screenshot shows a success message at the top: "Internet gateway igw-07c5fd923312603ae successfully attached to vpc-0fc1b956fd1260a62". Below it is a notifications bar with 2 new notifications. The main area is titled "Internet gateways (1/2) Info". It contains a search bar and a table with two rows. The first row has a checkbox and a minus sign, while the second row, "my-test-internet-gateway", has a checked checkbox and is highlighted with a yellow border. The table columns are Name, Internet gateway ID, State, and VPC ID.

	Name	Internet gateway ID	State	VPC ID
<input type="checkbox"/>	- ⚡	igw-0c47b1880d329339a	Attached	vpc-086c814283b364f04
<input checked="" type="checkbox"/>	my-test-internet-gateway	igw-07c5fd923312603ae	Attached	vpc-0fc1b956fd1260a62 My Test VPC

Using the AWS CLI

What I'm doing in this extension

In this project extension, I will create A VPC, Subnet and Internet gateway through the CLI because it is faster.

Debugging my setup

To set up a VPC or a subnet, you can use the command : << aws ec2 create-vpc --cidr-block 10.0.0.0/24 --query Vpc.VpcId --output text >> and this to name it << aws ec2 create-tags --resources=VPC-ID --tags Key=Name,Value="My Test VPC" >> OR << aws ec2 create-subnet --vpc-id VPC-ID >>. Make sure to avoid errors by including a subnet CIDR range greater than that of the VPC CIDR block range or the fixed bits in the Subnet CIDR block range to be different from that of the VPC CIDR block range.

- Creating an Internet Gateway :

```
aws ec2 create-internet-gateway
```

- Attach the Internet Gateway to the VPC :

```
aws ec2 attach-internet-gateway --internet-gateway-id=igw-00db9c9e6baf9fc7e --vpc-id=vpc-03acdb276aa0eac1b
```

Comparing CloudShell vs AWS Console

Compared to using the AWS Console, an advantage of using commands is that it is faster. An advantage of using the Console is precision. Overall, I preferred using commands.



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