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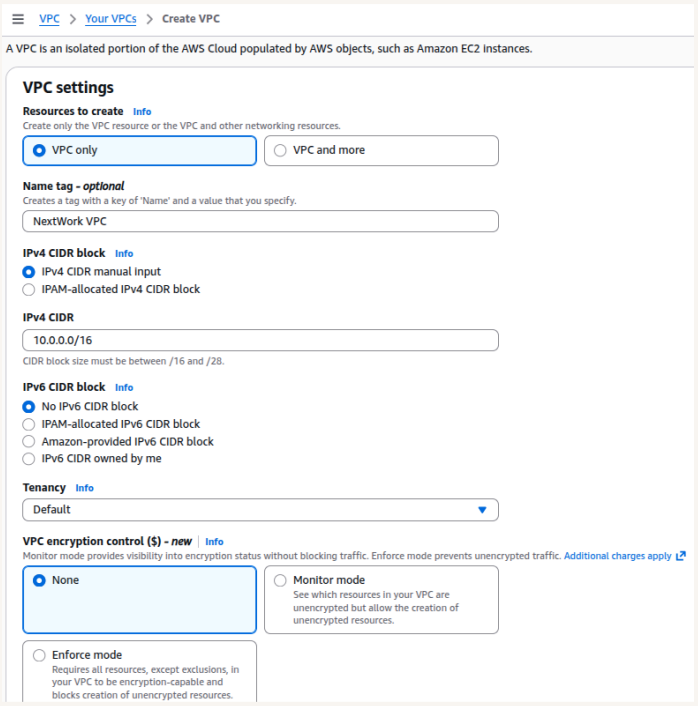
Build a Virtual Private Cloud (VPC)

Katleo Rantle



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Introducing Today's Project!

In this project, I will demonstrate building & configuring an AWS VPC from stratch: subnets route tables, internet gateways & security groups for secure, scalable networks . I'm doing this project to learn VPC isolation/connection for app deployments

What is Amazon VPC?

Amazon VPC is a logical network boudary and it is useful because it helps keep resources isolated and private on the cloud

In today's project, I used Amazon VPC to build private network with a subnet and allowed resources in the vpc to connect to external networks

Personal reflection

This project took me 2.5 hours

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One thing I didn't expect in this project was the amount of configuration on the resources to get things to work we have to expilcity turn things on. which i learnt is good for security

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Virtual Private Clouds (VPCs)

What I did in this step

In this step, I will be creating a VPC because it establishes the isolated network environment that we need in this project to securely connect and scale all our cloud resources

How VPCs work

VPCs are logical network boundaries that help keep resources isolated secure and private on the cloud ensuring protection from unauthorized access this is achieved by defining IP ranges, subnets and routing rules

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 many AWS services cannot run without a VPC although we can configure our own VPC on AWS it is more convenient the have it for beginners to AWS

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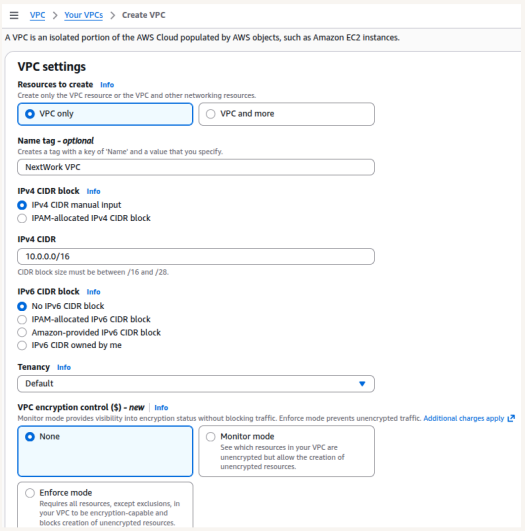

Defining IPv4 CIDR blocks

To set up my VPC, I had to define an IPv4 CIDR block, which is a way to define a portion of IP addresses for a network that cloud resources can use without overlappping others and preventing IP conflicts

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Subnets

What I did in this step

In this step I will create subnets because they divide the VPC's IP address range into logical segments i.e public ones for internet-facing resources and private onesfor secure interanl access enabling grained control & better organizarion & security

Creating and configuring subnets

Subnets are subdivisions of the VPC IP address range, where we can launch aws resources. There are already subnets existing in my account, one for every availability zone

Public vs private subnets

The difference between public and private subnets are internet access (public) to exteranl networks and no direct internet access (private) for internal resource communication. For a subnet to be considered public, it has to deliberately be attached to an Internet Gateway.

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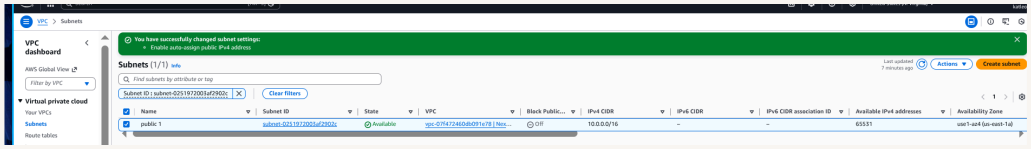

Auto-assigning public IPv4 addresses

Once I created my subnet, I enabled auto assign public IPv4 addresses This setting makes sure any Ec2 instance launched in this subnet will instantly receive a public ip address so that we dont have to create one manually

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Internet gateways

What I did in this step

In this step, I will be attaching an internet gateway and upataing the route table accociated with the subnet to inculde a route pointing to the internet gateway because it is the essential component that allows our VPC to communicate with the public internet

Setting up internet gateways

Internet gateways are a managed aws service or VPC component that serves as a bridge between VPC and public internet it enables two way communication so that resouceses inside the VPC such as Ec2 instances (inside public subnets) can reach the internet and devices on the internet can initiate connections with those devices

Attaching an internet gateway to a VPC means resources within the VPC can now access the internet If I missed this step resources like ec2 instances will not be able to initiate a connection to external networks such as the internet

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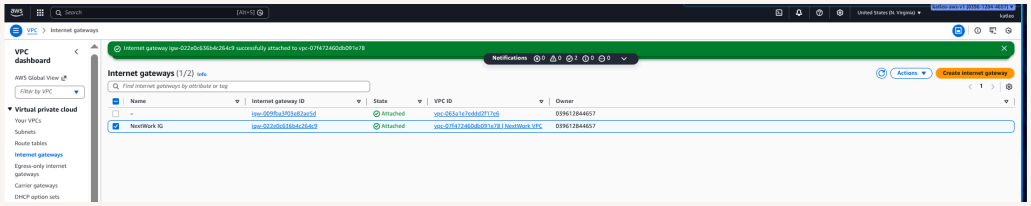

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Using the AWS CLI

What I'm doing in this extension

In this project extension, I will be using the AWS cli to launch VPC resources to determine if it will be faster and more efficiet than the aws console

Exploring CloudShell and CLI

VPC resources could also be created with CloudShell, which is a management console that provides space or termainl to run code CLI is utility software that allows us to execute commands such as create update and delete on aws resources

Debugging my setup

To set up a VPC or a subnet, you can use the command `--cidr-block` Make sure to avoid errors by including a subnet cidr block range that is within the VPC's cidr block

Comparing CloudShell vs AWS Console

Compared to using the AWS Console, an advantage of using commands is its much quicker and easier to check for errors An advantage of using the Console its visual and on syntax to remeber Overall, I preferred the cli as you could just run one command instead of clicking thoungh many pages and i found it less intimidating

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