

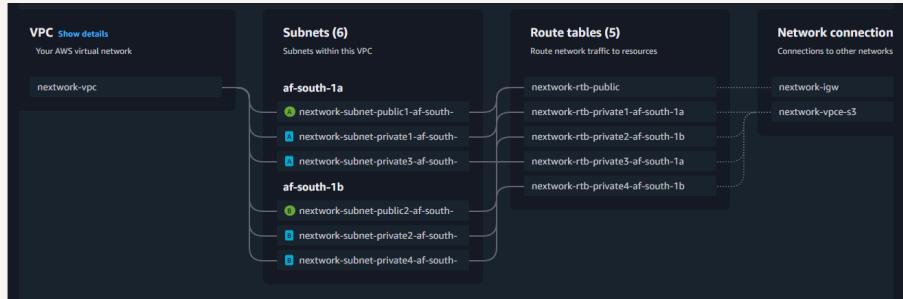


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# Launching VPC Resources



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# Introducing Today's Project!

## What is Amazon VPC?

Amazon VPC (Virtual Private Cloud) is an isolated virtual network within AWS where you launch resources. It provides security through subnets, security groups, and NACLs, enables hybrid connectivity.

## How I used Amazon VPC in this project

We used VPCS to connect to EC2 instances and top create public and private EC2 instances

## One thing I didn't expect in this project was...

I did not expect to use EC2 instances

## This project took me...

1 hour



# Setting Up Direct VM Access

Directly accessing a virtual machine means logging into and managing the operating system or software of the machine as if you were using it in front of you, but over the internet.

## SSH is a key method for directly accessing a VM

SSH traffic is encrypted network communication using Secure Shell protocol (port 22). Creates secure tunnel for remote server access, file transfers, and admin tasks.

## To enable direct access, I set up key pairs

AWS key pairs are cryptographic credentials consisting of a public key (stored by AWS) and private key (kept by user). Used for secure SSH access to EC2 instances. Public key encrypts data, private key decrypts.

A private keys file format means it can be saved in a .pem file or other format. My private keys file format was a .pem file



# Launching a public server

I had to change my EC2 instances networking settings by connecting it to my VPC and Public Subnet

The screenshot shows the AWS CloudWatch Metrics interface for an EC2 instance named i-0710295cfaf953150. The 'Networking' tab is selected. Key details include:

- VPC ID:** vpc-01a5456b3e9a4fb61 (NextWork VPC)
- Subnet ID:** subnet-08025389952bb0475 (NextWork Public Subnet)
- Availability zone:** af-south-1a
- IP addresses:** Public IPv4 address: 17.244.142.161 | open address; Private IPv4 addresses: 10.0.0.98; Carrier IP addresses (ephemeral): -
- Hostname and DNS:** Public DNS: -; Private IP DNS name (IPv4 only): ip-10-0-0-98.af-south-1.compute.internal; IPv6-only - IP based name: AAAA record only: -; Dualstack - IP based name: A and AAAA record: -; Private hostname type: Use RBN as guest OS hostname; IPv4-only IP based name: A record only: -; Public hostname type: -; Answer RBN DNS hostname IPv4: Go to Settings to activate Windows.



# Launching a private server

Choosing the NextWork Public Security Group as the source means only resources that are part of the NextWork Public Security Group can communicate with your instance.

My private servers security groups source is SSH which means SSH traffic is encrypted network communication using Secure Shell protocol

The screenshot shows the configuration of a security group. The 'Create security group' button is highlighted. The security group name is 'NextWork Private Security Group'. An inbound rule for port 22 TCP is listed, with the source set to a custom security group with ID 'sg-045be39cf2c1efcccd'.

Type	Protocol	Port range
ssh	TCP	22

**Inbound Security Group Rules**

▼ Security group rule 1 (TCP, 22, sg-045be39cf2c1efcccd) Remove

Type	Protocol	Port range
ssh	TCP	22

**Source type**

Custom Add CIDR, prefix list or security group

**Description - optional**

e.g. SSH for admin desktop

sg-045be39cf2c1efcccd X

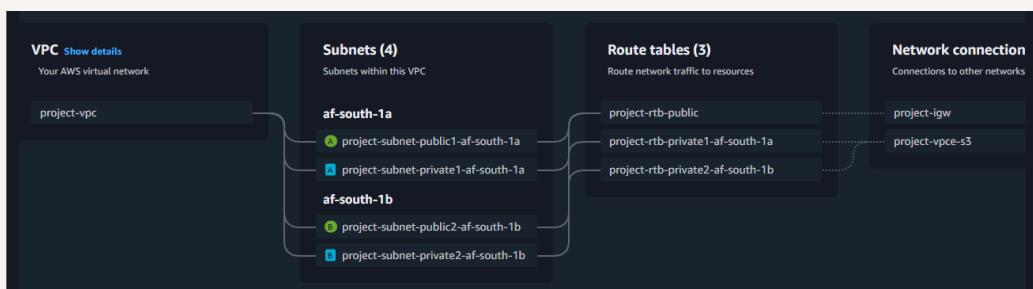


# Speeding up VPC creation

I used an alternative way to set up a Amazon VPC! This time, I created it using a resource map when you select VPC and more

A VPC resource map is a visual diagram showing AWS Virtual Private Cloud components and their relationships - subnets, route tables, internet gateways, NAT gateways, security groups, and EC2 instances. Helps visualize networks.

My new VPC has a CIDR block of 10.0.0.0/16 It is possible for my new VPC to have the same IPv4 CIDR block as my existing VPC because they are isolated from each other by default, so there won't be any IP conflicts.



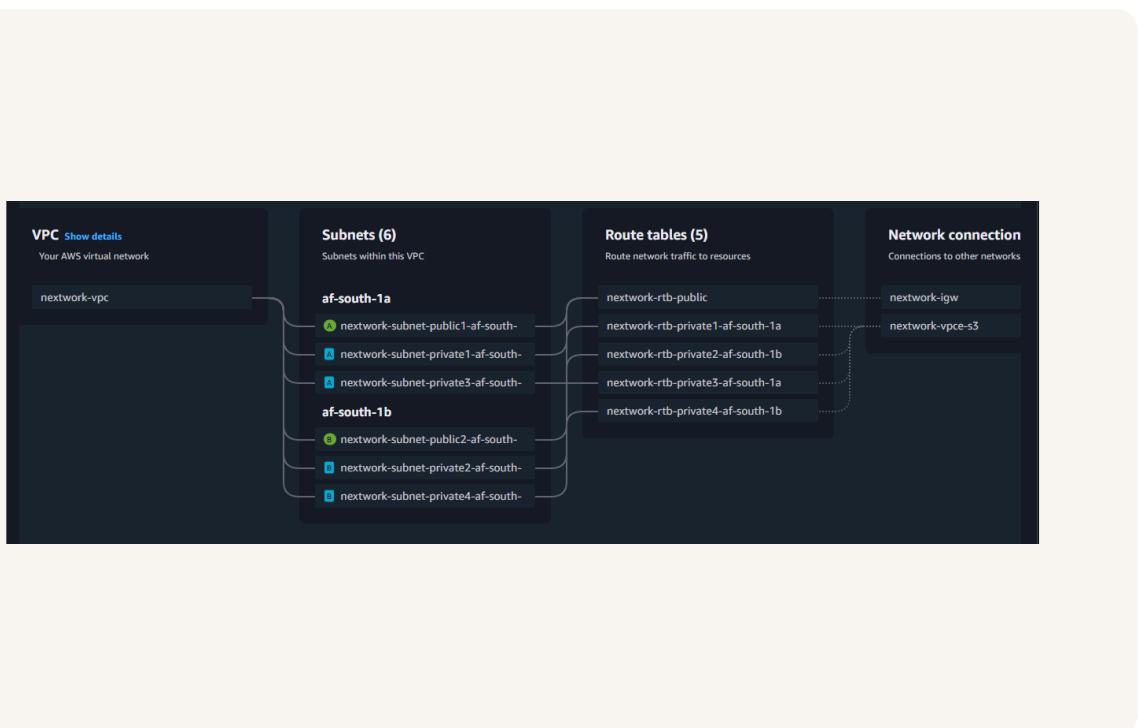


# Speeding up VPC creation

## Tips for using the VPC resource map

When determining the number of public subnets in my VPC, I only had two options because changing the number of availability zones updates the number of subnets and route tables to keep things balanced and reliable.

NAT gateways are AWS managed services that enable instances in private subnets to access the internet for outbound traffic (updates, downloads) while preventing inbound internet connections.





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