



# Launching VPC Resources



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The screenshot shows the AWS VPC Create VPC wizard. On the left, there are configuration sections for Availability Zones, Subnets, Route Tables, NAT Gateways, and VPC Endpoints. On the right, a 'Preview' section shows a hierarchical network diagram.

**Number of Availability Zones (AZs)**: Choose the number of AZs in which to provision subnets. We recommend at least two AZs for high availability. (1 | 2 | 3) **Customize AZs**

**Number of public subnets**: The number of public subnets to add to your VPC. Use public subnets for web applications that need to be publicly accessible over the internet. (0 | 2) **Customize subnets CIDR blocks**

**Number of private subnets**: The number of private subnets to add to your VPC. Use private subnets to secure backend resources that don't need public access. (0 | 2 | 3) **Customize subnets CIDR blocks**

**NAT gateways (\$)**: Choose the number of Availability Zones (AZs) in which to create NAT gateways. Note that there is a charge for each NAT gateway. (None | In 1 AZ | 1 per AZ)

**VPC endpoints**: Endpoints can help reduce NAT gateway charges and improve security by restricting traffic from this VPC. By default, full access endpoint is used. You can choose to restrict traffic to specific services or accounts.

**Preview**

**Subnets (6)**: Subnets within this VPC

- eu-north-1a
  - (A) nextwork-subnet-public1-eu-north-
  - (A) nextwork-subnet-private1-eu-
  - (A) nextwork-subnet-private3-eu-
- eu-north-1b
  - (B) nextwork-subnet-public2-eu-north-
  - (B) nextwork-subnet-private2-eu-
  - (B) nextwork-subnet-private4-eu-

**Route tables (5)**: Route network traffic to resources

- nextwork-rtb-public
- nextwork-rtb-private1-eu-north-1a
- nextwork-rtb-private2-eu-north-1b
- nextwork-rtb-private3-eu-north-1a
- nextwork-rtb-private4-eu-north-1b

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# Introducing Today's Project!

## What is Amazon VPC?

Amazon VPC (Virtual Private Cloud) is a secure, customizable network environment in AWS that allows you to launch and manage resources with full control over networking, improving isolation, access control, and security

## How I used Amazon VPC in this project

I used Amzon VPC to add servers and services to my network. I Launched a public EC2 instance You launched an EC2 instance in your public subnet, set up the appropriate AMI and instance type, and configured key pairs for secure access. I Launched a private EC2 instance I launched an EC2 instance in your private subnet, created a security group within the same flow, and used the same key pair for access. I Launched your VPC setup in minutes: I explored a new way to create VPCs and used the VPC's resource map to visualize how different components like subnets and route tables are connected.

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

I didnt expect to see that the automated way pf creating a vpc with subnets other services were that easy and straight forward to do



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This project took me...

25 minutes

# Setting Up Direct VM Access

Directly accessing a virtual machine means connecting to it over the network (e.g., via SSH or RDP) without going through any intermediary services, such as load balancers or bastion hosts

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

SSH traffic means network communication that uses the Secure Shell (SSH) protocol to securely access and manage remote systems over an encrypted connection

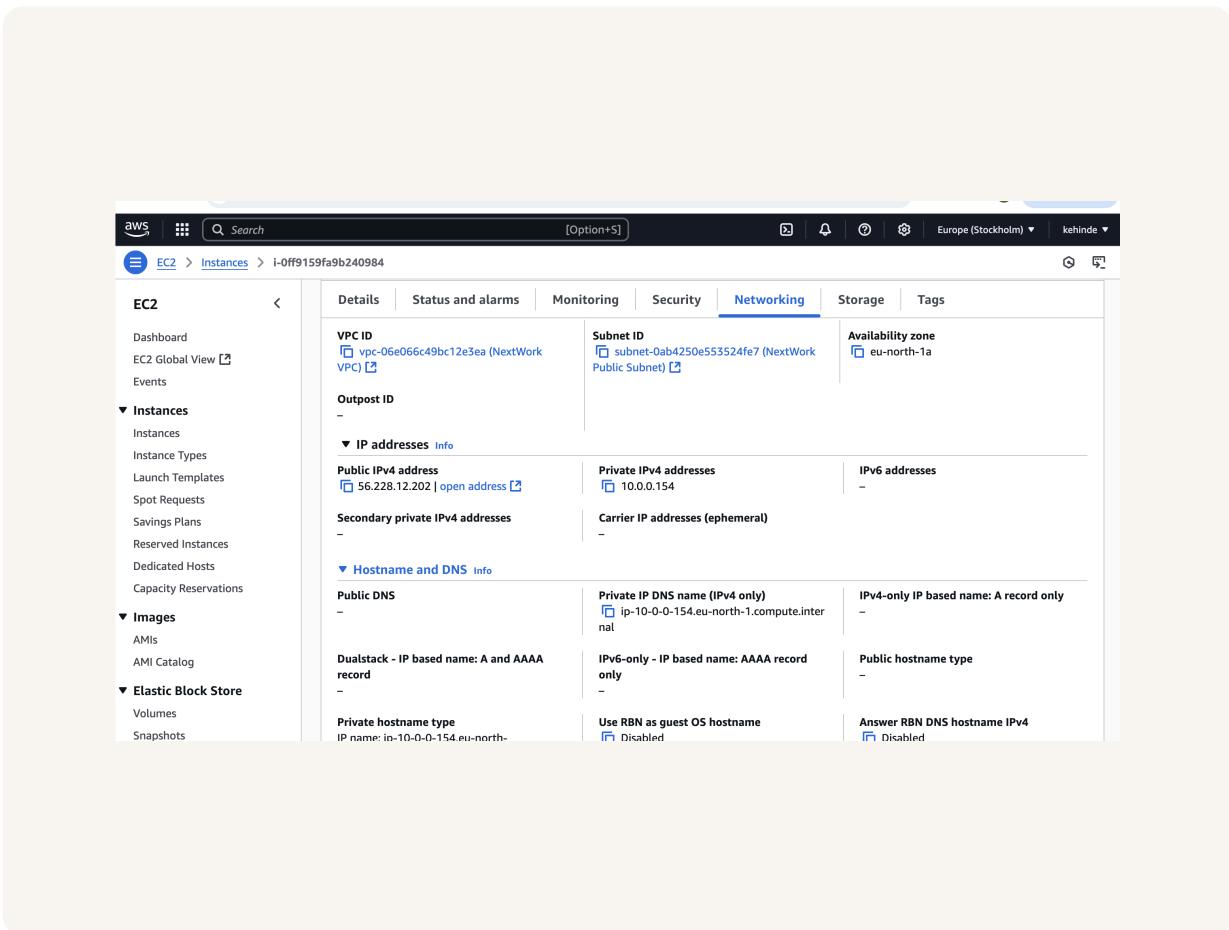
## To enable direct access, I set up key pairs

Key pairs are cryptographic credentials consisting of a public key and a private key used to securely connect to Amazon EC2 instances

A private key's file format means how the key is encoded and stored. My private key's file format was .pem

# Launching a public server

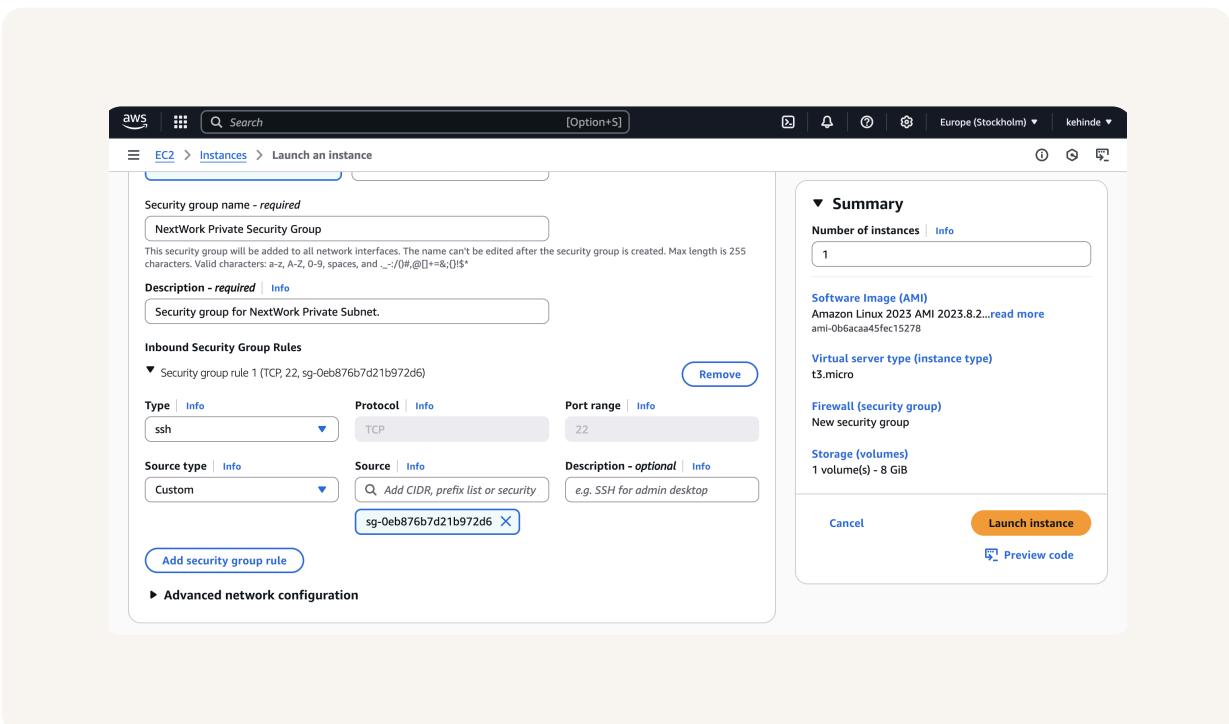
I had to change my EC2 instance's networking settings by editing the network settings panel during the setup of the EC2 instance to add it to my NextWork VPC and also add its security group and subnet



# Launching a private server

My private server has its own dedicated security group because because i dont want its resources to be generally available via the internet, rather i want it to only be available to other resources in my vpc only

My private server's security group's source is NextWork Public Security Group. Which means only resources that are part of the NextWork Public Security Group can communicate with my private ec2 instance

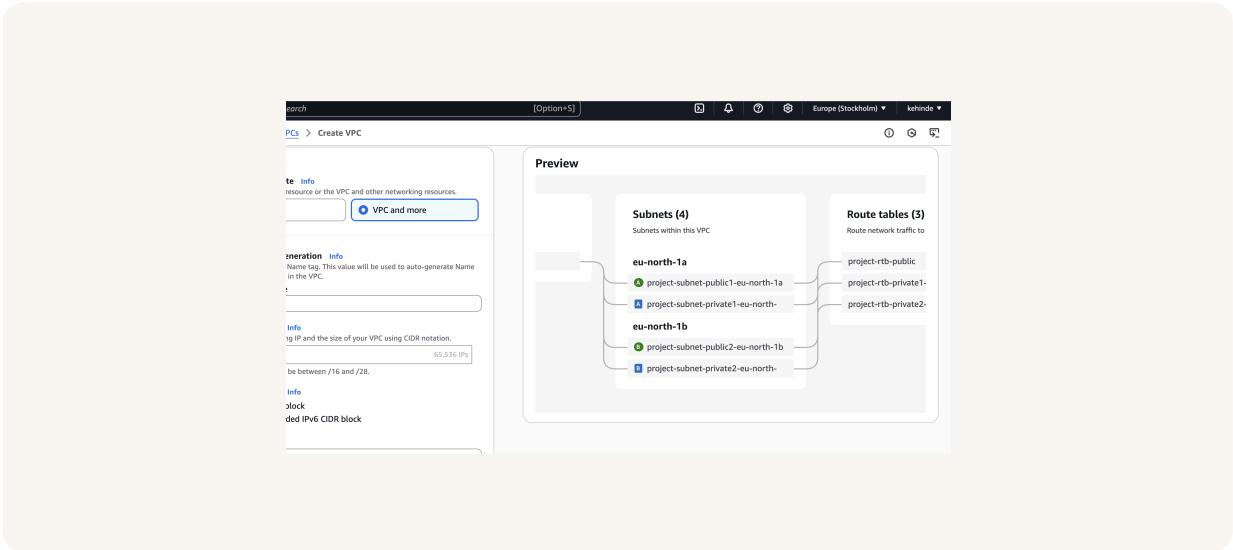


# Speeding up VPC creation

I used an alternative way to set up an Amazon VPC! This time, I used the vpc & more creating tool to setup my vps, its subnets, route tables and network connections all at once

A VPC resource map is a visual representation of all the networking components within a Virtual Private Cloud, such as subnets, route tables, gateways, and security groups, showing how they are connected and configured

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 VPCs are isolated networks within AWS, meaning they don't interact with each other unless you explicitly set up connectivity between them. On the other hand, subnets within a VPC are part of the same network and can directly communicate with each other. Overlapping CIDR blocks within a VPC would create IP address conflicts, making it impossible to route traffic correctly. So, subnets need unique CIDR blocks to ensure smooth internal networking

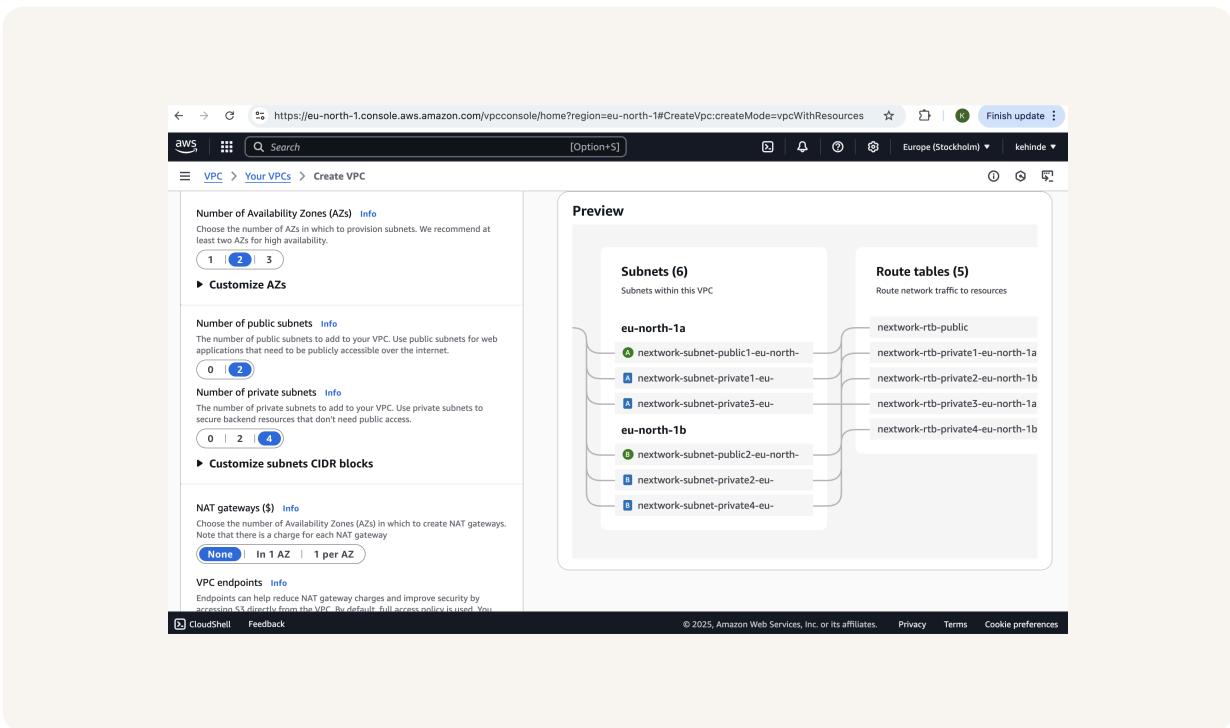


# Speeding up VPC creation

## Tips for using the VPC resource map

When determining the number of public subnets in my VPC, I only had two options: public and private... This was because subnet classification depends on routing: public subnets have a route to the internet via an internet gateway, while private ones do not, making "public" and "private" the two primary types

The set up page also offered to create NAT gateways, which are gateways that let instances in private subnets access the internet for updates and patches, while blocking inbound traffic





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