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Building a Virtual Private Cloud

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Introducing Amazon VPC!

What it does & how it’s useful

Amazon Virtual Private Cloud (VPC) allows you to launch AWS resources in an isolated virtual network. Developers and teams use Amazon VPC because the VPC closely resembles a traditional network like ones data center while using a scalable AWS system.

How I’m using it in today’s project

I’m using Amazon VPC in this project to demonstrate how I have used the knowledge and skills from my AWS Foundations 3: Networking course and AWS Skill Builder course Technical Essentials to set up an Amazon VPC using the Amazon Console.

This project took me...

It took approximately 10 minutes to finish.

It took me around 15 minutes to document this project thoroughly, ensuring that my process was recorded clearly and precisely, showcasing my knowledge and skill set.

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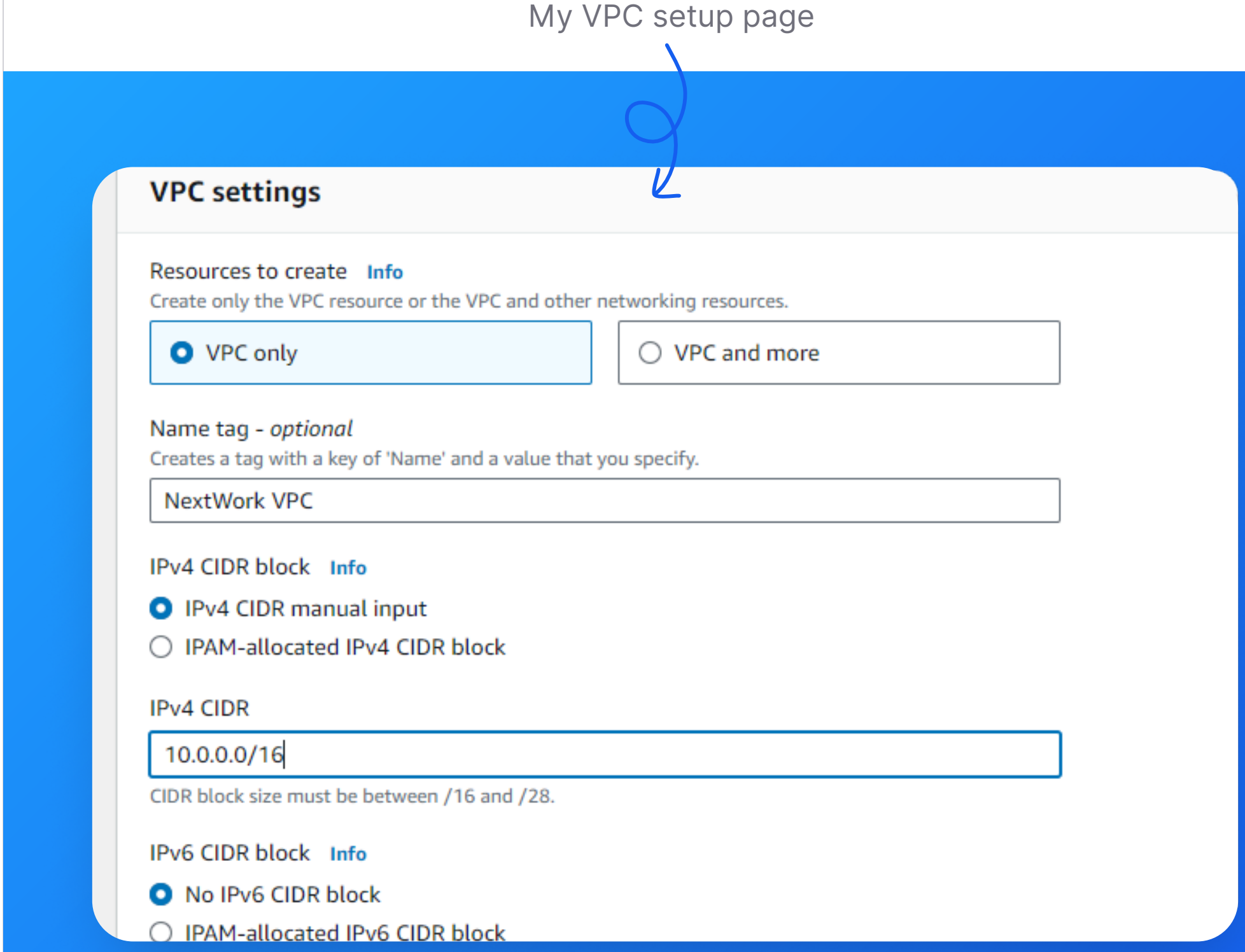
My first VPC

VPCs are virtual networks that resemble traditional networks one would operate in their own data center.

There was already a default VPC in my account ever since my AWS account was created. This is because AWS provides a default VPC to launch resources and test AWS services.

To set up my VPC, I had to define an IPv4 CIDR. This is a range of IP addresses that allocated the resources deployed into my VPC.

My VPC setup page



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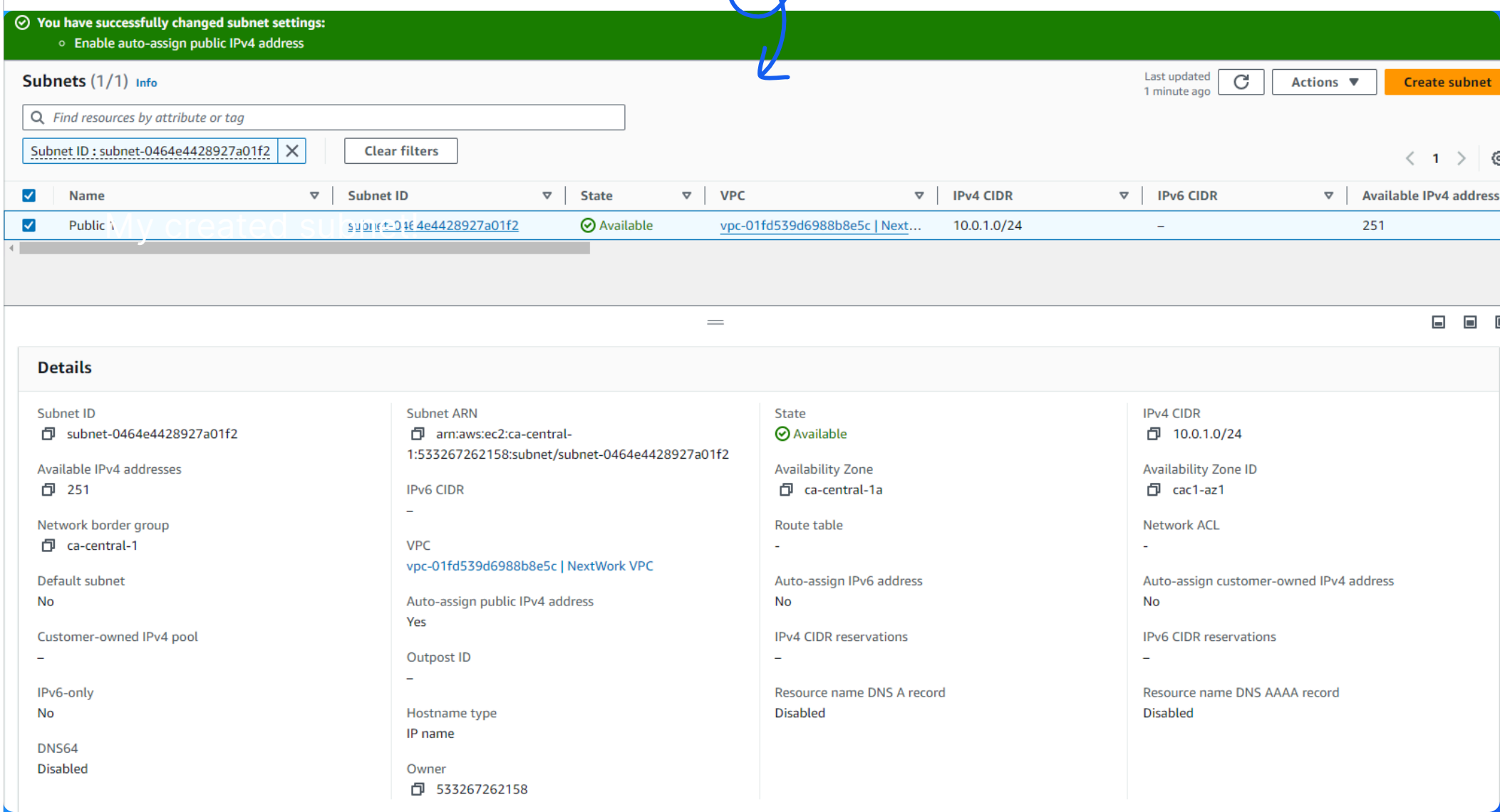
Subnets

Subnets serve as partitions within my Virtual Private Cloud (VPC) for deploying AWS resources. Within my account, pre-existing subnets correspond to each Availability Zone present in my Region.

In my primary Region, three Availability Zones are operational. Although I labeled a subnet as Public1, the designation alone does not grant it public status. To qualify as a public subnet, the subnet must establish a route to the internet gateway.

My Subnet page



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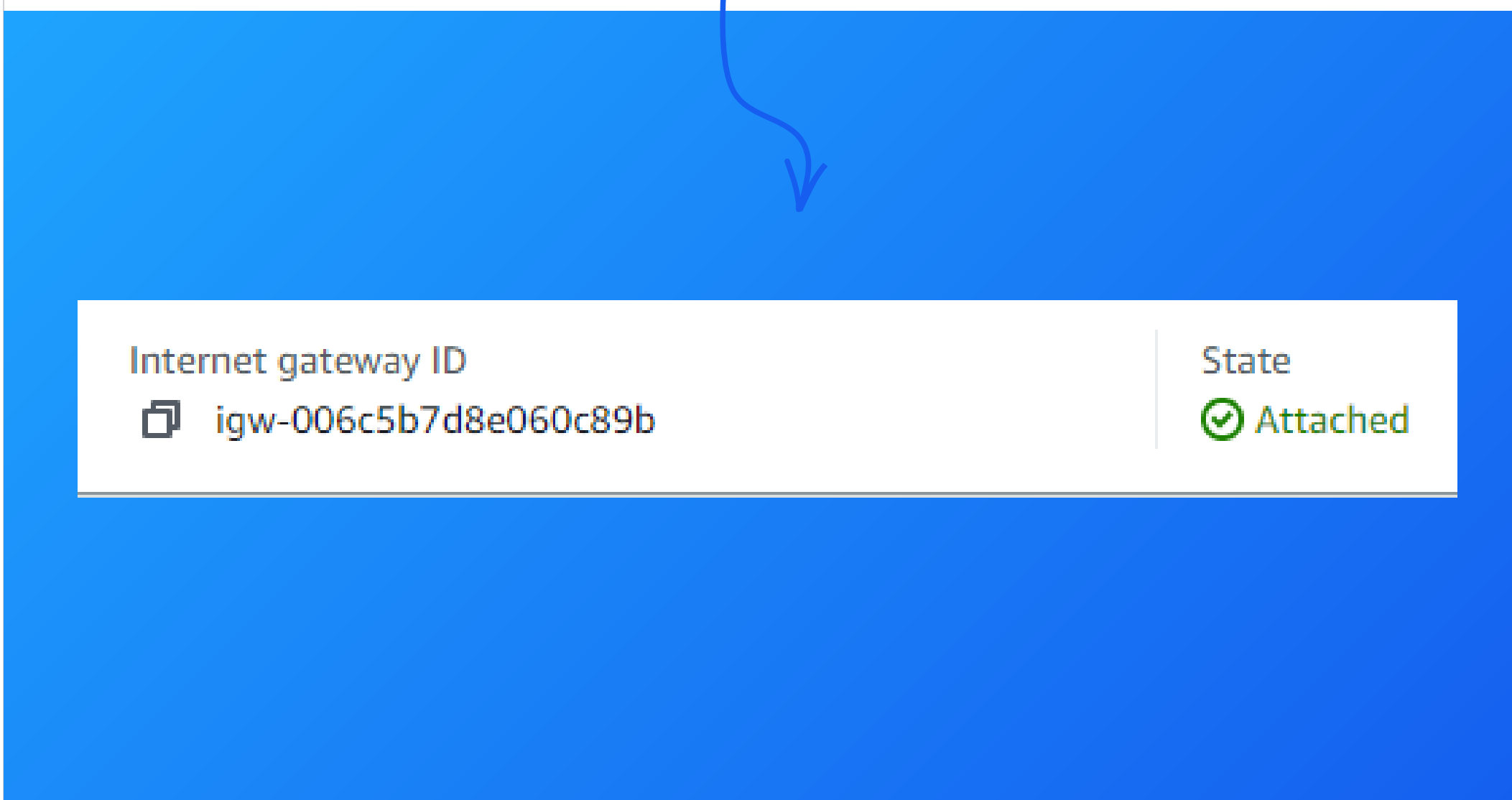
Internet gateways

- Within a VPC, internet gateways are crucial, scalable, and highly available components that facilitate communication between the VPC and the internet.
- Connecting an internet gateway to a VPC enables the VPC to access internet resources and allows EC2 instances with public IP addresses to be easily reached by users.
- Even after setting up an internet gateway and linking it to a VPC, the next step is configuring route tables. Route tables define rules for directing network traffic and can be implemented at either the subnet level or the VPC level.

My created internet gateway



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My key learnings

1. Without VPCs, AWS would have less granular and more challenging security management. Network isolation would be reduced, exposing resources to broader risks and complicating access and traffic control. Security configurations would likely depend more on traditional firewall setups rather than the flexible, policy-driven controls that VPCs offer.

2. A CIDR block gives administrators precise control over the size of their networks. It decouples the IP address ranges from the default subnet mask. In this example my CIDR Block was 10.1.0/24. For this example if this was my Classful Address, the 24 represents the number of IP addresses variations of this IP address I could create ,if needed.

3. The difference between a public and a private subnet is determined by accessibility. A public subset allows resources to be shared through the internet, for example, an Employee Directory application. A private subset would allow one to create different controls to keep resources such as a database or sensitive information from being shared publicly.

4. One thing I didn’t expect was how quickly I applied what I learned from my AWS courses: Computer Foundations-Network and AWS Skills Builder Course: Technical Essentials. By applying what I learned with hands-on experience, I was able to complete this project rapidly.