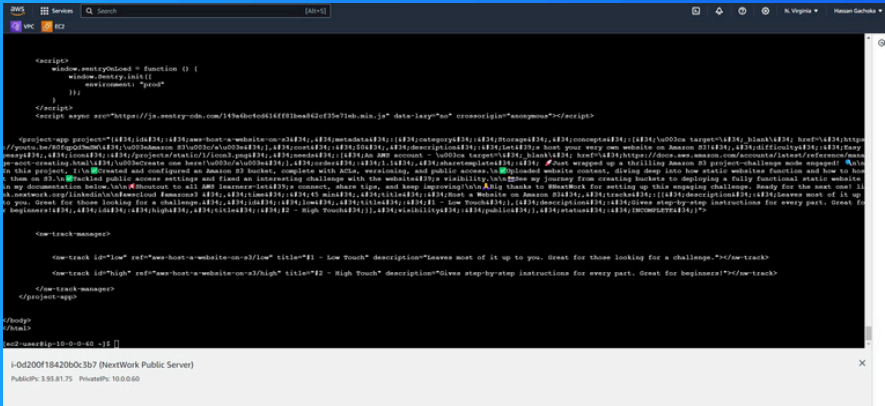




Testing VPC Connectivity





Hassan Gachoka

[linkedin.com/gachokahassan](https://www.linkedin.com/in/gachokahassan)

NextWork.org

Introducing Today's Project!

What is Amazon VPC?

Amazon VPC is a service that creates isolated virtual networks in the AWS cloud, offering customizable networking, robust security, and integration with other AWS services. It enables flexibility, cost efficiency, and enhanced control for scalability.

How I used Amazon VPC in this project

I used Amazon VPC to create isolated subnets for public and private servers, configure security groups and network ACLs, and manage routing to control traffic between them, ensuring secure communication and a well-structured network for the project.

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

I didn't expect troubleshooting network issues between the public and private subnets to take so much time, especially with configuring security groups and NACLs for proper ICMP traffic.

This project took me...

This project took me about 1 hour, mainly due to troubleshooting network connectivity issues between the subnets.



Hassan Gachoka

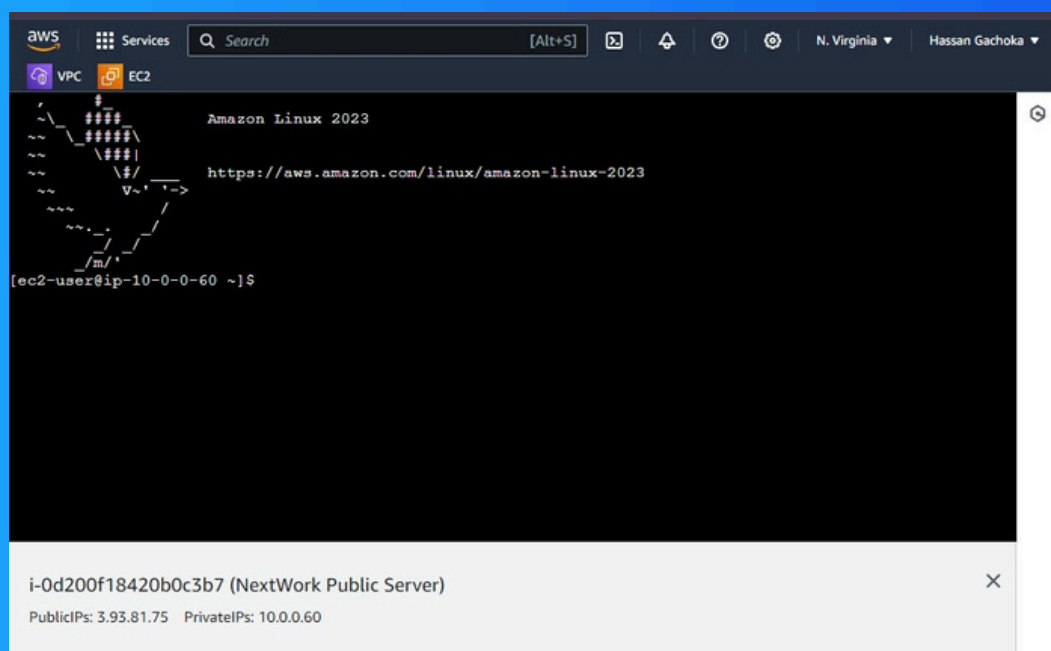
linkedin.com/gachokahassan

NextWork.org

Connecting to an EC2 Instance

Connectivity means how effectively different parts of your network communicate with each other and with external networks.

My first connectivity test was whether I could connect to the NextWork public server in the NextWork public subnet using EC2 Instance Connect (SSH).





Hassan Gachoka

linkedin.com/gachokahassan

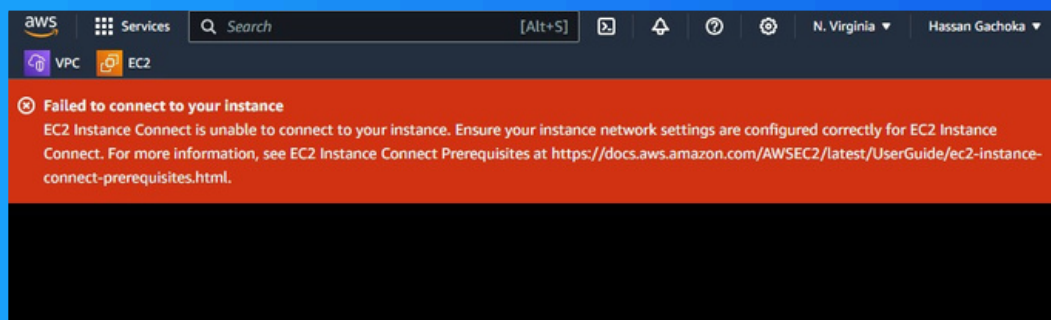
NextWork.org

EC2 Instance Connect

I connected to my EC2 instance using EC2 Instance Connect, which allows secure SSH access without needing a key pair. Unlike earlier configurations, I first added an inbound rule to allow SSH traffic on the NextWork Public Security Group.

My first attempt at getting direct access to my public server resulted in an error because the necessary inbound SSH rule was not configured in the NextWork Public Security Group, preventing the connection.

I fixed this error by adding an inbound rule to the NextWork Public Security Group to allow SSH traffic on port 22, enabling secure access to my EC2 instance.





Hassan Gachoka

linkedin.com/gachokahassan

NextWork.org

Connectivity Between Servers

Ping is a tool used to check network connectivity by sending a data packet to another device or server and measuring the response time; I used it to test the connectivity between the NextWork Public and Private Servers.

The ping command I ran was; ping 10.0.1.178, which sent packets to the private server to test connectivity between the two servers.

The first ping returned a single line. "PING 10.0.1.178 (10.0.1.178) 56(84) bytes of data." This meant that the Public Server successfully sent a ping request to the Private Server, but it doesn't confirm whether a response was received yet.

The screenshot shows an AWS Management Console terminal window for an Amazon Linux 2023 instance. The terminal displays the command `ping 10.0.1.178` and its output: `PING 10.0.1.178 (10.0.1.178) 56(84) bytes of data.` The terminal window is titled "i-Od200f18420b0c3b7 (NextWork Public Server)" and shows the public IP as 3.93.81.75 and the private IP as 10.0.0.60.

```
aws
Services
Search
[Alt+S]
N. Virginia
Hassan Gachoka
VPC
EC2
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023
[ec2-user@ip-10-0-0-60 ~]$ ping 10.0.1.178
PING 10.0.1.178 (10.0.1.178) 56(84) bytes of data.
```

i-Od200f18420b0c3b7 (NextWork Public Server)
PublicIPs: 3.93.81.75 PrivateIPs: 10.0.0.60



Troubleshooting Connectivity

I troubleshooted this by adding All ICMP - IPv4 rules to the NextWork NACL (in and out), allowing the Public Subnet as the source, and adding an ICMP - IPv4 inbound rule to the Private Security Group, allowing the Public Security Group as the source.

```
aws Services Search [Alt+S] N. Virginia Hassan Gachoka
VPC EC2
64 bytes from 10.0.1.178: icmp_seq=782 ttl=127 time=0.555 ms
64 bytes from 10.0.1.178: icmp_seq=783 ttl=127 time=1.42 ms
64 bytes from 10.0.1.178: icmp_seq=784 ttl=127 time=0.389 ms
64 bytes from 10.0.1.178: icmp_seq=785 ttl=127 time=1.57 ms
64 bytes from 10.0.1.178: icmp_seq=786 ttl=127 time=0.661 ms
64 bytes from 10.0.1.178: icmp_seq=787 ttl=127 time=0.564 ms
64 bytes from 10.0.1.178: icmp_seq=788 ttl=127 time=1.53 ms
64 bytes from 10.0.1.178: icmp_seq=789 ttl=127 time=0.400 ms
64 bytes from 10.0.1.178: icmp_seq=790 ttl=127 time=1.39 ms
64 bytes from 10.0.1.178: icmp_seq=791 ttl=127 time=1.37 ms
64 bytes from 10.0.1.178: icmp_seq=792 ttl=127 time=0.953 ms
64 bytes from 10.0.1.178: icmp_seq=793 ttl=127 time=1.26 ms
64 bytes from 10.0.1.178: icmp_seq=794 ttl=127 time=0.840 ms
64 bytes from 10.0.1.178: icmp_seq=795 ttl=127 time=1.16 ms
64 bytes from 10.0.1.178: icmp_seq=796 ttl=127 time=0.781 ms
64 bytes from 10.0.1.178: icmp_seq=797 ttl=127 time=1.61 ms
64 bytes from 10.0.1.178: icmp_seq=798 ttl=127 time=0.888 ms
64 bytes from 10.0.1.178: icmp_seq=799 ttl=127 time=1.58 ms
64 bytes from 10.0.1.178: icmp_seq=800 ttl=127 time=1.24 ms
64 bytes from 10.0.1.178: icmp_seq=801 ttl=127 time=1.72 ms
64 bytes from 10.0.1.178: icmp_seq=802 ttl=127 time=1.11 ms
64 bytes from 10.0.1.178: icmp_seq=803 ttl=127 time=0.880 ms
64 bytes from 10.0.1.178: icmp_seq=804 ttl=127 time=0.533 ms
64 bytes from 10.0.1.178: icmp_seq=805 ttl=127 time=1.65 ms

i-Od200f18420b0c3b7 (NextWork Public Server)
PublicIPs: 3.93.81.75 PrivateIPs: 10.0.0.60
```



Hassan Gachoka

[linkedin.com/gachokahassan](https://www.linkedin.com/in/gachokahassan)

NextWork.org

Connectivity to the Internet

Curl is a command-line tool that facilitates data transfer to and from servers, enabling you to send HTTP requests and receive responses. It's commonly used to test connectivity, retrieve website content, and upload files.

I used curl to test the connectivity between the NextWork Public Server and the NextWork website, allowing me to retrieve the HTML content of the page and verify that the server was responding correctly.

Ping vs Curl

Ping and curl are different because ping checks connectivity by sending ICMP echo requests between devices, while curl transfers data to or from servers, allowing you to retrieve or upload content using various protocols.



I ran the curl command; `curl https://learn.nextwork.org/projects/aws-host-a-website-on-s3`, which returned the HTML content of the NextWork first project on the web app, confirming that the server was responding correctly.

I ran the curl command; `curl https://learn.nextwork.org/projects/aws-host-a-website-on-s3`, which returned the HTML content of the NextWork first project on the web app, confirming that the server was responding correctly.

