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Testing VPC Connectivity



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The screenshot shows a terminal window within the AWS CloudShell interface. The user has run the command `[ec2-user@ip-10-0-5-9 ~]$ curl https://learn.nextwork.org/projects/aws-host-a-website-on-s3`. The output of the command is displayed, which includes the HTML code for a website hosted on Amazon S3. The code contains various meta tags for OpenGraph and Twitter sharing, including titles, descriptions, and images. At the bottom of the terminal, it shows the IP addresses (PublicIPs: 44.220.81.199, PrivateIPs: 10.0.5.9) and the URL `i-Off1ae1dc2dd257f (NextWork Public Server)`.

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Introducing Today's Project!

What is Amazon VPC?

Amazon VPC is a separate space within the AWS bubble and it is useful because it provides a structured space for people to store private data without it being accessible to just anyone on the internet.

How I used Amazon VPC in this project

In today's project, I used Amazon VPC to create a public and private subnets, route tables, NACLs, and security groups, then connect them with public and private servers and test the connection between my two servers and the connection between my public server and the internet.

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

One thing I didn't expect in this project was how confusing it can get juggling between multiple subnets, NACLs , security groups and more if you don't keep yourself organized.



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This project took me...

This project took me about 40 minutes

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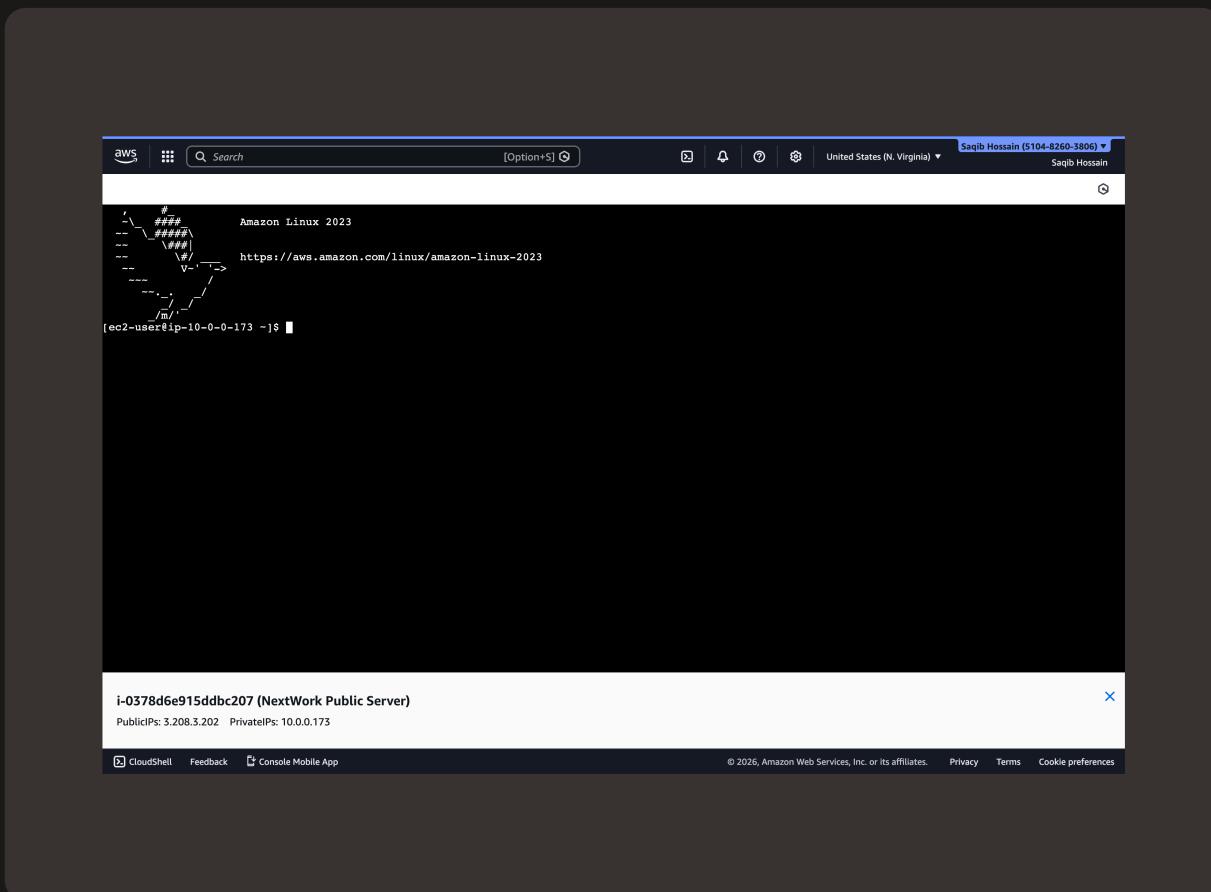
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Connecting to an EC2 Instance

Connectivity is used to describe how well resources in my network talk to each other and to external networks.

My first connectivity test was whether I could connect to my public server



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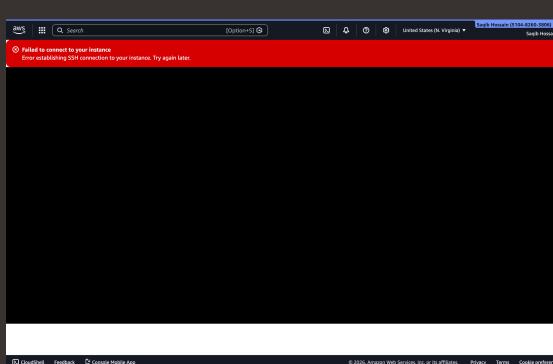
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EC2 Instance Connect

I connected to my EC2 instance using EC2 Instance Connect, which is a way to connect directly to my instance using SSH but without the need for key pairs since it's managed by AWS.

My first attempt at getting direct access to my public server resulted in an error, because the permissions in my public security group were set to allow all HTTP traffic but I was trying to access it via SSH, so I added the permission and it started working.

I fixed this error by adding the permission to my public security group to allow all SSH traffic.



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Connectivity Between Servers

Ping is a way of checking if a server is connected to another server, kind of like saying hi and waiting for a response. I used ping to test the connectivity between my public server and private server.

The ping command I ran was ping 10.0.0.141.9

The first ping returned was PING 10.0.141.9 (10.0.141.9) 56(84) bytes of data. This basically means that the ping was sent but without anymore lines coming back, that means the other server didn't respond.

A screenshot of an AWS CloudShell terminal window. The terminal shows a root prompt on Amazon Linux 2023. The user runs the command 'ping 10.0.141.9' and receives a response indicating no reply from the target IP address. The terminal also displays the user's last login information and the AWS region (United States (N. Virginia)).

```
# 
# Amazon Linux 2023
# https://aws.amazon.com/linux/amazon-linux-2023
>Last login: Thu Feb  5 01:54:44 2026 from 18.206.107.28
[ec2-user@ip-10-0-5-9 ~]$ ping 10.0.141.9
PING 10.0.141.9 (10.0.141.9) 56(84) bytes of data.
```

i-Off1ae1dd2dd257f (NextWork Public Server)
PublicIPs: 44.220.81.199 PrivateIPs: 10.0.5.9

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Troubleshooting Connectivity

I troubleshooted this by allowing the specific type of traffic I was sending the private server in my NACL and private security group settings.

The screenshot shows a terminal window titled "Amazon Linux 2023" running on an AWS Lambda function. The user has pasted a large block of network log output from a ping session between their local machine (18.206.107.27) and a private IP (10.0.141.9). The log details the sequence of ICMP packets sent and received, showing times and TTL values. At the bottom of the terminal, there is a message indicating the connection is to a "NextWork Public Server". The AWS CloudShell interface includes standard navigation buttons like back, forward, and search, along with links for CloudShell, Feedback, and Console Mobile App.

```
Last logline: Thu Feb  5 02:11:57 2026 from 18.206.107.27
[ec2-user@ip-10-0-5-9 ~]$ ping 10.0.141.9
PING 10.0.141.9 (10.0.141.9) 56(84) bytes of data.
64 bytes from 10.0.141.9: icmp_seq=1 ttl=127 time=0.236 ms
64 bytes from 10.0.141.9: icmp_seq=2 ttl=127 time=0.173 ms
64 bytes from 10.0.141.9: icmp_seq=3 ttl=127 time=0.173 ms
64 bytes from 10.0.141.9: icmp_seq=4 ttl=127 time=0.173 ms
64 bytes from 10.0.141.9: icmp_seq=5 ttl=127 time=0.173 ms
64 bytes from 10.0.141.9: icmp_seq=6 ttl=127 time=0.249 ms
64 bytes from 10.0.141.9: icmp_seq=7 ttl=127 time=0.346 ms
64 bytes from 10.0.141.9: icmp_seq=8 ttl=127 time=0.203 ms
64 bytes from 10.0.141.9: icmp_seq=9 ttl=127 time=0.120 ms
64 bytes from 10.0.141.9: icmp_seq=10 ttl=127 time=0.173 ms
64 bytes from 10.0.141.9: icmp_seq=11 ttl=127 time=0.253 ms
64 bytes from 10.0.141.9: icmp_seq=12 ttl=127 time=0.217 ms
64 bytes from 10.0.141.9: icmp_seq=13 ttl=127 time=0.195 ms
64 bytes from 10.0.141.9: icmp_seq=14 ttl=127 time=0.195 ms
64 bytes from 10.0.141.9: icmp_seq=15 ttl=127 time=0.178 ms
64 bytes from 10.0.141.9: icmp_seq=16 ttl=127 time=0.209 ms
64 bytes from 10.0.141.9: icmp_seq=17 ttl=127 time=0.179 ms
64 bytes from 10.0.141.9: icmp_seq=18 ttl=127 time=0.237 ms
64 bytes from 10.0.141.9: icmp_seq=19 ttl=127 time=0.237 ms
64 bytes from 10.0.141.9: icmp_seq=20 ttl=127 time=0.228 ms
64 bytes from 10.0.141.9: icmp_seq=21 ttl=127 time=0.186 ms
64 bytes from 10.0.141.9: icmp_seq=22 ttl=127 time=0.163 ms
64 bytes from 10.0.141.9: icmp_seq=23 ttl=127 time=0.168 ms
64 bytes from 10.0.141.9: icmp_seq=24 ttl=127 time=0.168 ms
64 bytes from 10.0.141.9: icmp_seq=25 ttl=127 time=0.177 ms
64 bytes from 10.0.141.9: icmp_seq=26 ttl=127 time=0.164 ms
64 bytes from 10.0.141.9: icmp_seq=27 ttl=127 time=0.185 ms

i-off1ae1ddcd2dd257f (NextWork Public Server)
PublicIPs: 44.220.81.199 PrivateIPs: 10.0.5.9
```

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Connectivity to the Internet

Curl is a request to a server to send the raw HTML from the site on that server.

I used curl to test the connectivity between my public server and the internet.

Ping vs Curl

Ping and curl are different because ping just tests whether two servers are connected or not and the speed at which packages are sent and received. Curl, on the other hand, also retrieves data from the other server, in this case the HTML associated with the server.

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Connectivity to the Internet

I ran the curl command `curl https://learn.nextwork.org/projects/aws-host-a-website-on-s3`, which returned the full HTML code from the website in my curl command.

The screenshot shows a terminal window within the AWS CloudShell interface. The user has run the command `curl https://learn.nextwork.org/projects/aws-host-a-website-on-s3`. The output displayed is the full HTML source code of the website, including meta tags for Open Graph and Twitter sharing, canonical links, and various `<meta>` and `<link>` elements. At the bottom of the terminal, there is a message indicating the session ID and IP addresses.

```
[ec2-user@ip-10-0-5-9 ~]$ curl https://learn.nextwork.org/projects/aws-host-a-website-on-s3
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8" />
    <title>NextWork - Host a Website on Amazon S3</title>
    <meta content="Let's host your very own website on Amazon S3!" name="description" />
    <meta content="NextWork - Host a Website on Amazon S3" property="og:title" />
    <meta content="Let's host your very own website on Amazon S3!" property="og:description" />
    <meta content="NextWork - Host a Website on Amazon S3" property="twitter:title" />
    <meta content="Let's host your very own website on Amazon S3!" property="twitter:description" />
    <meta content="/static/og-project.png" property="og:image" />
    <meta content="/static/og-project.png" property="twitter:image" />
    <meta property="og:type" content="website" />
    <meta content="summary_large_image" name="twitter:card" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />

    <link rel="canonical" href="https://learn.nextwork.org/projects/aws-host-a-website-on-s3?track=high" />
    <meta content="https://learn.nextwork.org/projects/aws-host-a-website-on-s3?track=high" property="og:url" />
    <meta content="NextWork" property="og:site_name" />
    <meta property="og:locale" content="en_US" />

i-0ff1ae1cd2d257f (NextWork Public Server)
Public IPs: 44.220.81.199 Private IPs: 10.0.5.9
```



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