



Testing VPC Connectivity



Sanjana Tripathy

```
aws | [Alt+S] | Search

[no user@ip-10-0-69-1]$ curl https://learn.nextwork.org/projects/aws-networks-connectivity?track=high
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <title>NextWork - Testing VPC Connectivity</title>
    <meta content="Let's see our VPC in action!" name="description" />
    <meta content="NextWork - Testing VPC Connectivity" property="og:title" />
    <meta content="Let's see our VPC in action!" property="og:description" />
    <meta content="/static/og-project.png" property="og:image" />
    <meta content="NextWork - Testing VPC Connectivity" property="twitter:title" />
    <meta content="Let's see our VPC in action!" property="twitter:description" />
    <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="icon" href="/favicon.ico?v=2" size="32x32" />
    <link rel="icon" href="/static/favicon.svg?v=2" type="image/svg+xml" />
    <link rel="preconnect" href="https://fonts.googleapis.com" />
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin />
    <link href="https://fonts.googleapis.com/css2?family=Inter:wght@100..900&family=Just+Me+Again+Down+Here&display=swap" rel="stylesheet" />
    <script type="module" src="/static/assets/entry-8df318c1.js"></script>
    <link rel="stylesheet" href="/static/assets/index-ad9411ef.css" />
```

A circular profile picture of a young woman with dark hair, wearing a pink top and blue pants, sitting on a blue chair.

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Introducing Today's Project!

What is Amazon VPC?

Amazon VPC lets you create a secure, isolated network within AWS. It gives you full control over networking, including IP ranges, subnets, route tables, and gateway, enabling you to host resources in a customizable, private environment.

How I used Amazon VPC in this project

In today's project, I used Amazon VPC to connect my public EC2 instance, test connectivity between EC2 instances in different subnets, and verify internet access from the public subnet—ensuring proper VPC connectivity and routing.

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

One thing I didn't expect was to enjoy the troubleshooting process. While testing connectivity between two servers, resolving the issue took time—but it deepened my understanding and sharpened my networking concepts significantly.



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This project took me...

This project took me approximately 2.5 hours to complete, primarily due to the time spent troubleshooting connectivity issues—which ultimately enhanced my understanding of network configurations.

Connecting to an EC2 Instance

Connectivity refers to the ability of systems, devices, or applications to communicate and exchange data with each other over a network. It ensures smooth data flow and interaction, whether over the internet, local networks, or cloud environments.

My first connectivity test was to check if I could connect to my public EC2 instance using EC2 Instance Connect. Although the network setup seemed correct, I encountered an error: "failed to connect to your instance," which I'll resolve in the next step

The screenshot shows a terminal window with a dark background. At the top, there is a header bar with the AWS logo, a search icon, and the text "[Alt+S]". The main terminal area displays a command-line session:

```
'          #_'
~\ - #####_      Amazon Linux 2023
~~ \#####\
~~ \###|
~~ \|/ _-->
~~ V~' /-
~~ .-' /-
~/m/' [ec2-user@ip-10-0-0-69 ~]$
```

The session starts with a stylized logo consisting of various symbols like '#', '=', and 'V'. It then displays the text "Amazon Linux 2023". Below this, there is a URL: "https://aws.amazon.com/linux/amazon-linux-2023". The final prompt shows the user's name and IP address: "[ec2-user@ip-10-0-0-69 ~]\$".

EC2 Instance Connect

EC2 Instance Connect is a browser-based tool that lets you securely connect to your EC2 instance without needing a local SSH client or manually managing key pairs. It generates a temporary key and connects you directly from the AWS Management Console

My first attempt at getting direct access to my public server resulted in an error because the public security group allowed only HTTP traffic, but SSH (port 22) access was required for EC2 Instance Connect.

I fixed this error by updating the inbound rules of my public security group to allow SSH traffic (port 22) from my IP, enabling secure direct access to the EC2 instance.



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Connectivity Between Servers

Ping is a network tool that checks connectivity between devices. I used it to test the connection between my public and private EC2 instances by sending ICMP requests to the private instance's private IPv4 address.

The ping command I ran was ping <IP address> where ip address denotes the private IPv4 IP address of my private server(EC2).

The first ping returned: "PING 10.0.1.118 (10.0.1.118) 56(84) bytes of data." Typically, a successful connection results in multiple response lines. This single line indicated that the connection attempt was unsuccessful.



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```
'      #
~\_\_ #####          Amazon Linux 2023
~~ \_\#####\
~~ \###|
~~ \#/   __ https://aws.amazon.com/linux/amazon-linux-2023
~~   V~' '-'>
~~~ /
~~ ._. /_/
~/m/ ' /'

Last login: Fri Jul 11 11:49:09 2025 from 13.233.177.4
[ec2-user@ip-10-0-0-69 ~]$ ping 10.0.1.118
PING 10.0.1.118 (10.0.1.118) 56(84) bytes of data.
```



Troubleshooting Connectivity

I troubleshooted this by updating my private NACL to allow inbound and outbound SSH traffic, which was previously denied. I also added an inbound ICMP rule in the private security group to allow ping requests.

```
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023

Last login: Fri Jul 11 17:18:23 2025 from 13.233.177.5
[ec2-user@ip-10-0-0-69 ~]$ ping 10.0.1.118
PING 10.0.1.118 (10.0.1.118) 56(84) bytes of data.
64 bytes from 10.0.1.118: icmp_seq=1 ttl=127 time=0.510 ms
64 bytes from 10.0.1.118: icmp_seq=2 ttl=127 time=0.453 ms
64 bytes from 10.0.1.118: icmp_seq=3 ttl=127 time=0.512 ms
64 bytes from 10.0.1.118: icmp_seq=4 ttl=127 time=0.574 ms
64 bytes from 10.0.1.118: icmp_seq=5 ttl=127 time=0.455 ms
64 bytes from 10.0.1.118: icmp_seq=6 ttl=127 time=0.476 ms
64 bytes from 10.0.1.118: icmp_seq=7 ttl=127 time=0.570 ms
64 bytes from 10.0.1.118: icmp_seq=8 ttl=127 time=0.614 ms
64 bytes from 10.0.1.118: icmp_seq=9 ttl=127 time=0.460 ms
64 bytes from 10.0.1.118: icmp_seq=10 ttl=127 time=0.608 ms
64 bytes from 10.0.1.118: icmp_seq=11 ttl=127 time=0.458 ms
64 bytes from 10.0.1.118: icmp_seq=12 ttl=127 time=0.420 ms
64 bytes from 10.0.1.118: icmp_seq=13 ttl=127 time=0.532 ms
64 bytes from 10.0.1.118: icmp_seq=14 ttl=127 time=0.466 ms
64 bytes from 10.0.1.118: icmp_seq=15 ttl=127 time=0.522 ms
^C
--- 10.0.1.118 ping statistics ---
15 packets transmitted, 15 received, 0% packet loss, time 14535ms
rtt min/avg/max/mdev = 0.420/0.508/0.614/0.058 ms
[ec2-user@ip-10-0-0-69 ~]$
```

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Connectivity to the Internet

curl is a command-line tool used to transfer data to or from a server using various protocols like HTTP, HTTPS, FTP, etc. It's commonly used to test endpoints, make API requests, or check web server responses directly from the terminal.

I used curl to test the connectivity between the resources inside the public subnet and the internet, verifying if the public subnet's route to the internet was working as expected.

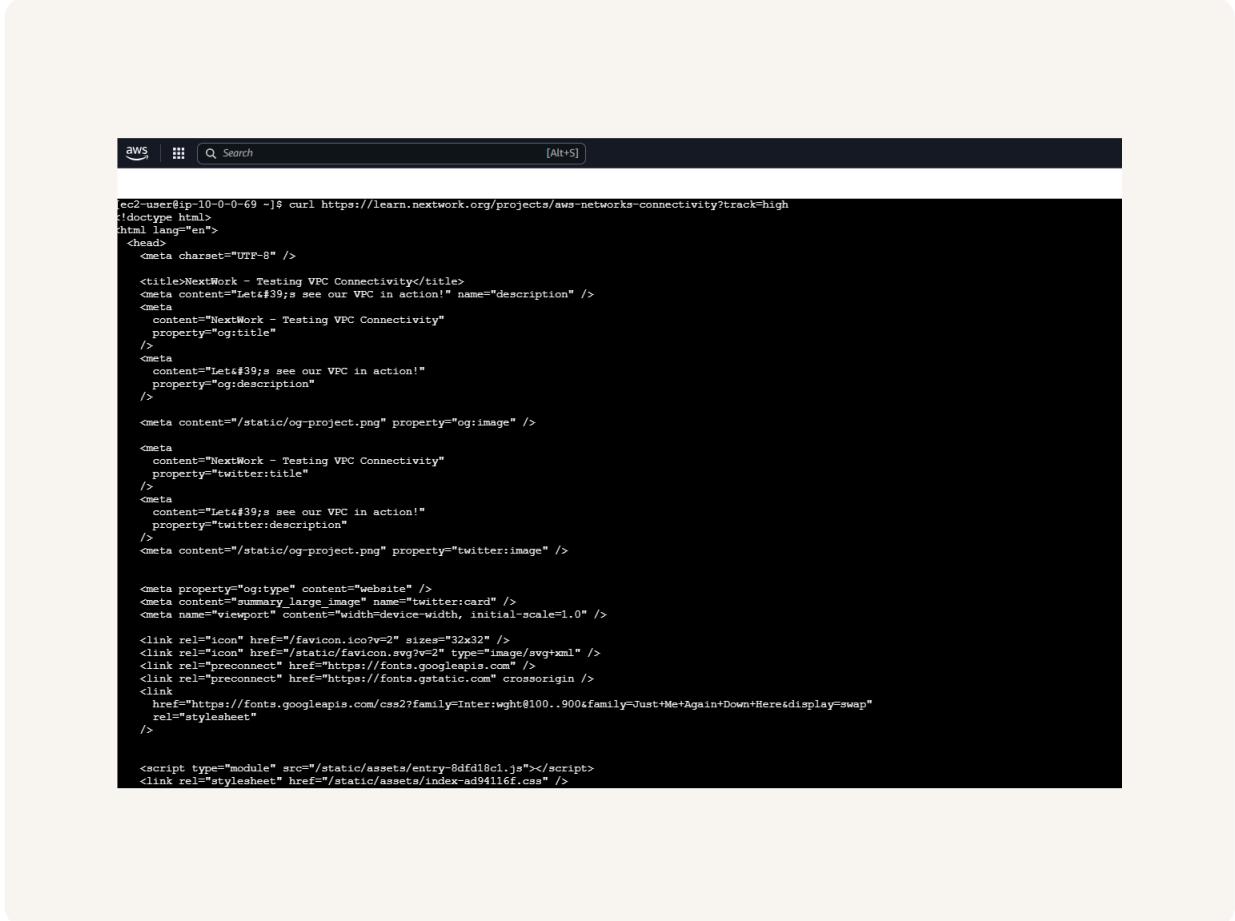
Ping vs Curl

Ping and curl are different because ping checks basic connectivity using ICMP, while curl tests application-level access using HTTP. Curl can also transfer data to and from servers, making it useful for interacting with APIs or web content.



Connectivity to the Internet

I ran the curl command `curl https://learn.nextwork.org/projects/aws-networks-connectivity?track=high`, which successfully returned the raw HTML content of the page—proving that my public subnet instance could access the internet.



```
aws | [Alt+5]
[Q Search]

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8" />

    <title>NextWork - Testing VPC Connectivity</title>
    <meta content="Let's see our VPC in action!" name="description" />
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    <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="icon" href="/favicon.ico?v=2" sizes="32x32" />
    <link rel="icon" href="/static/favicon.svg?v=2" type="image/svg+xml" />
    <link rel="preconnect" href="https://fonts.googleapis.com" />
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin />
    <link href="https://fonts.googleapis.com/css2?family=Inter:wght@100..900&family=Just+Me+Again+Down+Here&display=swap" rel="stylesheet" />

    <script type="module" src="/static/assets/entry-8df18c1.js"></script>
    <link rel="stylesheet" href="/static/assets/index-ad94116f.css" />
```



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