

# 266-[NF]-Lab - Troubleshooting a Network Issue

## Troubleshooting a Network Issue

### Objectives

After completing this lab, you should be able to:

- Analyze the customer scenario
- Troubleshoot the issue

### Duration

This lab requires approximately **1 hour** to complete.

### Scenario

Your role is a cloud support engineer at Amazon Web Services (AWS). During your shift, a consulting company has a networking issue within their AWS infrastructure. The following is the email and an attachment of their architecture:

### Email from the customer

Hello, Cloud Support!

When I create an Apache server through the command line, I cannot ping it. I also get an error when I enter the IP address in the browser. Can you please help figure out what is blocking my connection?

Thanks!

Ana

Contractor

### Customer diagram

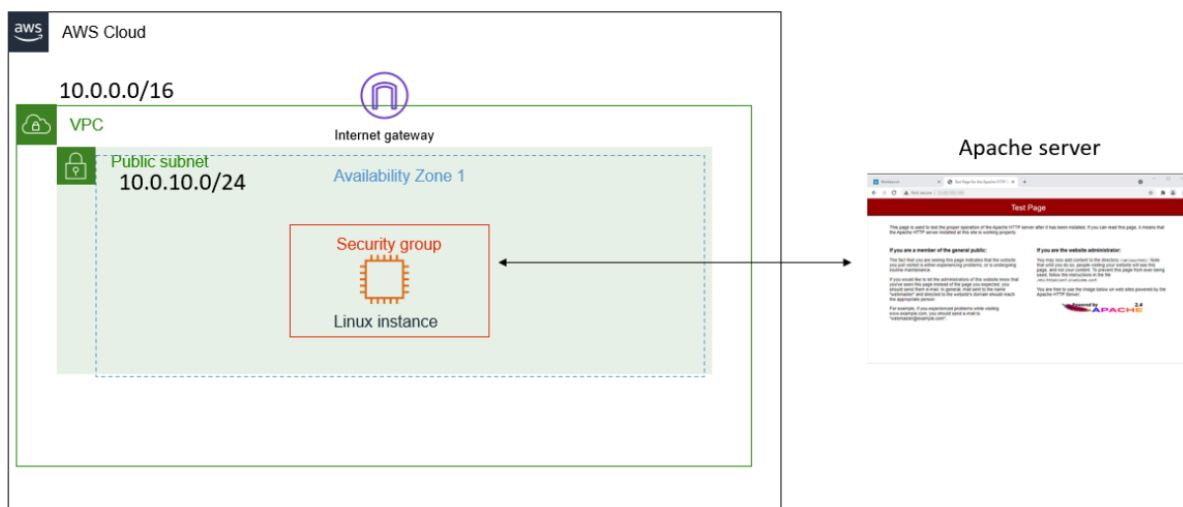


Figure: The customer's virtual private cloud (VPC) architecture.

## AWS service restrictions

In this lab environment, access to AWS services and service actions might be restricted to the ones that you need to complete the lab instructions. You might encounter errors if you attempt to access other services or perform actions beyond the ones that this lab describes.

## Accessing the AWS Management Console

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1. At the top of these instructions, choose **Start Lab** to launch your lab.

A **Start Lab** panel opens, and it displays the lab status.

**Tip:** If you need more time to complete the lab, choose the Start Lab button again to restart the timer for the environment.

2. Wait until you see the message *Lab status: ready*, then close the **Start Lab** panel by choosing the **X**.

3. At the top of these instructions, choose **AWS**.

This opens the AWS Management Console in a new browser tab. The system will automatically log you in.

**Tip:** If a new browser tab does not open, a banner or icon is usually at the top of your browser with a message that your browser is preventing the site from opening pop-up windows. Choose the banner or icon and then choose **Allow pop ups**.

4. Arrange the AWS Management Console tab so that it displays along side these instructions. Ideally, you will be able to see both browser tabs at the same time so that you can follow the lab steps more easily.

## Task 1: Use SSH to connect to an Amazon Linux EC2 instance

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In this task, you will connect to a Amazon Linux EC2 instance. You will use an SSH utility to perform all of these operations. The following instructions vary slightly depending on whether you are using Windows or Mac/Linux.

### Windows Users: Using SSH to Connect

● These instructions are specifically for Windows users. If you are using macOS or Linux, [skip to the next section](#).

5. Select the **Details** drop-down menu above these instructions you are currently reading, and then select **Show**. A Credentials window will be presented.
6. Select the **Download PPK** button and save the **labsuser.ppk** file.  
*Typically your browser will save it to the Downloads directory.*
7. Make a note of the **PublicIP** address.
8. Then exit the Details panel by selecting the **X**.
9. Download **PuTTY** to SSH into the Amazon EC2 instance. If you do not have PuTTY installed on your computer, [download it here](#).
10. Open **putty.exe**
11. Configure your PuTTY session by following the directions in the following link: [Connect to your Linux instance using PuTTY](#)
12. Windows Users: [Select here to skip ahead to the next task](#).

## Task 2: Install httpd

For this task, you install httpd prior to checking the customer's resources.

In the scenario, Ana, the customer requesting assistance, cannot reach her Apache server or get it to successfully load on a webpage from her virtual private cloud (VPC).

You have an exact replica of the customer's VPC and its resources to troubleshoot the issue.

### Helpful hint

You may have to use **sudo** to complete this exercise if you are not root.

21. To check the status of the httpd service, enter the following **systemctl** command in the terminal window, and press Enter:

```
sudo systemctl status httpd.service
```

After you run this command, you should see a result similar to the following, which indicates that the service is inactive:

```
[ec2-user@ip-10-0-10-155 ~]$ sudo systemctl status httpd.service
• httpd.service - The Apache HTTP Server
  Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; vendor preset: disabled)
  Active: inactive (dead)
  Docs: man:httpd.service(8)
[ec2-user@ip-10-0-10-155 ~]$
```

Figure: The status shows that the httpd service is inactive because it has not been started yet. This output indicates that the httpd service is loaded (already installed) but is currently inactive.

22. To start the httpd service, enter the following command, and press Enter:

```
sudo systemctl start httpd.service
```

23. To check the status of the httpd service again, enter the following **systemctl** command, and press Enter:

```
sudo systemctl status httpd.service
```

After you run this command, you should see a result similar to the following, which indicates that the service is active:

```
[ec2-user@ip-10-0-10-155 ~]$ sudo systemctl start httpd.service
[ec2-user@ip-10-0-10-155 ~]$ sudo systemctl status httpd.service
• httpd.service - The Apache HTTP Server
  Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; vendor preset: disabled)
  Active: active (running) since Mon 2021-11-01 22:34:27 UTC; 12s ago
  Docs: man:httpd.service(8)
  Main PID: 2586 (httpd)
  Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Bytes served/sec: 0 B/sec"
  CGroup: /system.slice/httpd.service
          └─2586 /usr/sbin/httpd -DFOREGROUND
             └─2587 /usr/sbin/httpd -DFOREGROUND
                └─2589 /usr/sbin/httpd -DFOREGROUND
                   └─2594 /usr/sbin/httpd -DFOREGROUND
                      └─2596 /usr/sbin/httpd -DFOREGROUND
                         └─2601 /usr/sbin/httpd -DFOREGROUND

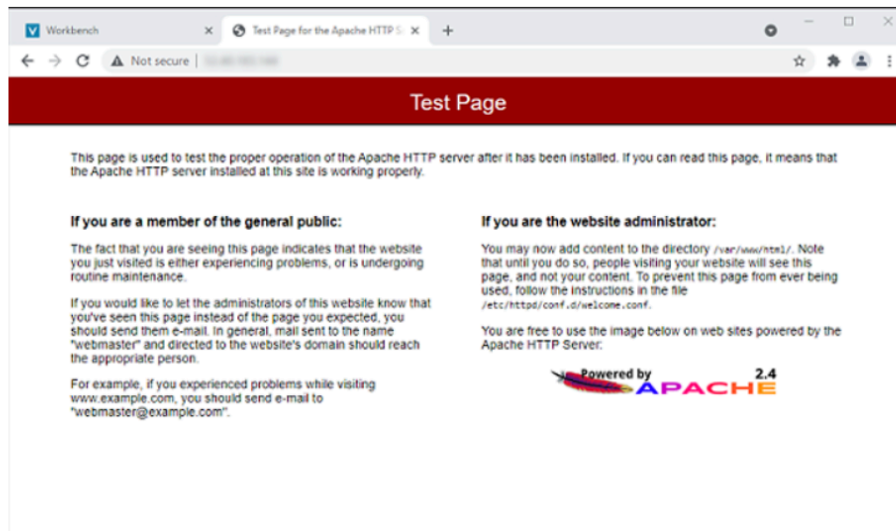
Nov 01 22:34:27 ip-10-0-10-155.us-west-2.compute.internal systemd[1]: Starting The Apache HTTP Server...
Nov 01 22:34:27 ip-10-0-10-155.us-west-2.compute.internal systemd[1]: Started The Apache HTTP Server.
[ec2-user@ip-10-0-10-155 ~]$
```

Figure: The Apache HTTP Server should be in the Active status.

24. The httpd service is now running. Now check if it's working. In the following URL, replace `<PUBLIC IP OF INSTANCE>` with the public IP of your instance located in the details button in the Vocareum environment. Open a new browser tab, and enter the public IP of your instance with the following format:

```
http://<PUBLIC IP OF INSTANCE>
```

The following image shows the expected output; however, the page will not load at this point in the lab:



### Task 3: Investigate the customer's VPC configuration

For this task, you will investigate the customer's VPC and their resources.


In the scenario, Ana, the customer requesting assistance, cannot reach her Apache server even though it is active. You have an exact replica of the customer's VPC and its resources. Keep the error that you received when trying to load Apache in the web browser in mind while troubleshooting this issue.


25. At the upper right of these instructions, choose **AWS**. The AWS Management Console opens in a new browser tab.
26. Once you are in the AWS console, in the **Recently visited services** section, you might see **VPC**. If you do, choose **VPC**. If you do not, navigate to the upper left, and choose the **Services** dropdown menu. Under the **Networking & Content Delivery** services, choose **VPC**.


# AWS Management Console


**AWS services**


▼ Recently visited services


 VPC


 EC2


 S3


 CloudFormation


 CodeCommit


 Cloud9


 CodeDeploy


 IAM

 AWS Cost Explorer

 Billing

 Route 53


 EC2 Image Builder

 Direct Connect

► All services

Figure: Recently visited services in the AWS console.

★ Favorites

 Resource Groups & Tag Editor

Recently visited

Console Home

VPC

EC2

S3

CloudFormation

CodeCommit

Cloud9

CodeDeploy

IAM

AWS Cost Explorer

Billing

Route 53

EC2 Image Builder

Direct Connect

All services

Server Migration Service

AWS Transfer Family

AWS Snow Family

DataSync

 Networking & Content Delivery

VPC

CloudFront

Route 53

API Gateway

Direct Connect

AWS App Mesh

AWS Cloud Map

Global Accelerator

Trusted Advisor

Control Tower

AWS License Manager

AWS Well-Architected Tool

Personal Health Dashboard 

AWS Chatbot

Launch Wizard

AWS Compute Optimizer

★ Resource Groups & Tag Editor

Amazon Grafana

Amazon Prometheus

AWS Proton

Incident Manager

 Media Services

Kinesis Video Streams

MediaConnect

MediaConvert

MediaLive

MediaPackage

MediaStore

MediaTailor

27. Use the left navigation pane and check each service within the VPC to confirm that each resource is configured correctly.

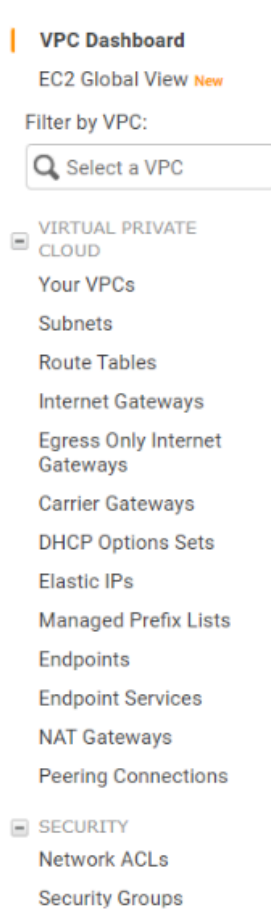


Figure: The left navigation pane of the VPC and its services.

- Subnets - Are the route tables associated to the correct subnets?
- Route Tables - Do the route tables have the correct routes?
- Internet Gateway - Is there an Internet Gateway and is it attached?
- Security Groups and network ACLs - Are the correct rules configured?

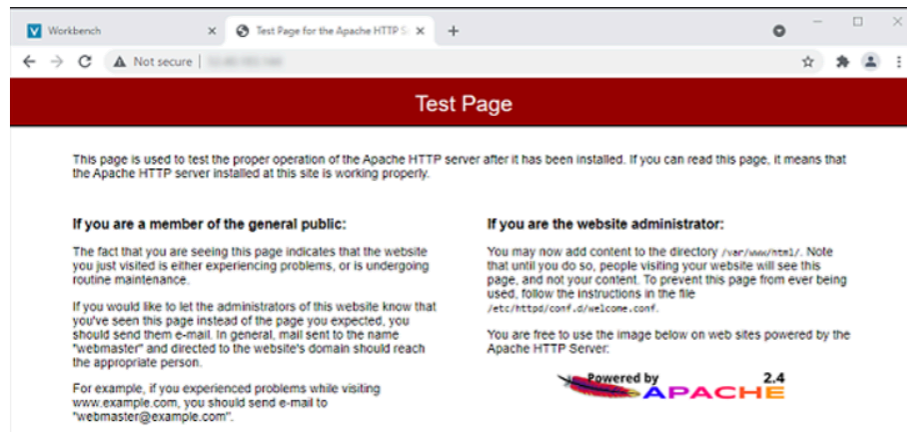
#### Hints

- Can you ping websites such as [www.amazon.com](http://www.amazon.com)? If so, you can get to the internet (the internet gateway and route table should work).
- Apache is a server that commonly uses HTTP/S as ports.

28. Once you have gone through each option in the previous step, such as routing, security, and resources. Confirm that the Apache HTTP server is working by testing the following URL into a browser by replacing `<PUBLIC IP OF INSTANCE>` with the public IP your your instance that can be found in the details drop down in Vocareum.

```
http://<PUBLIC IP OF INSTANCE>
```

If Apache is successfully installed, the following is the expected output:



*Figure: The test page of the Apache HTTP server when Apache is successfully installed.*