AWS re:Start LAB

Public and Private IP addresses

WEEK 3

aws re/start

Overview

Customer scenario

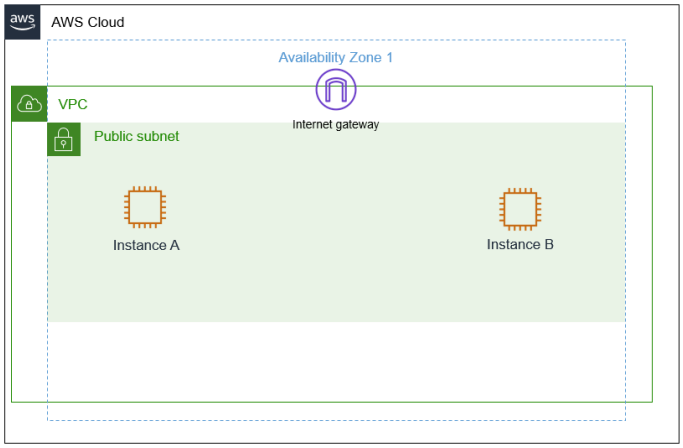
Your role is a cloud support engineer at Amazon Web Services (AWS). During your shift, a customer from a Fortune 500 company requests assistance regarding a networking issue within their AWS infrastructure. The following is the email and an attachment regarding their architecture.

Ticket from your customer

Hello, Cloud Support!

We currently have one virtual private cloud (VPC) with a CIDR range of 10.0.0.0/16. In this VPC, we have two Amazon Elastic Compute Cloud (Amazon EC2) instances: instance A and instance B. Even though both are in the same subnet and have the same configurations with AWS resources, instance A cannot reach the internet, and instance B can reach the internet. I think it has something to do with the EC2 instances, but I'm not sure. I also had a question about using a public range of IP address such as 12.0.0.0/16 for a VPC that I would like to launch. Would that cause any issues? Attached is our architecture for reference.

Thanks!
Jess
Cloud Admin



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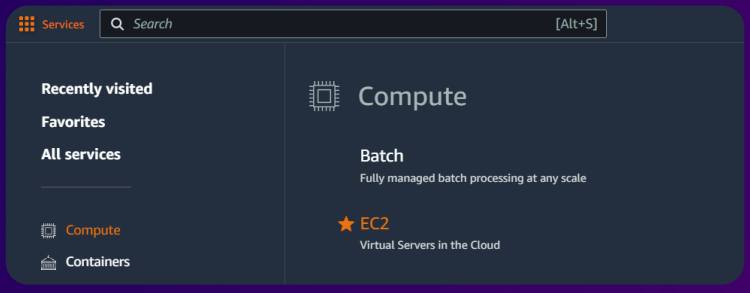
Task 1

Investigate the customer's environment

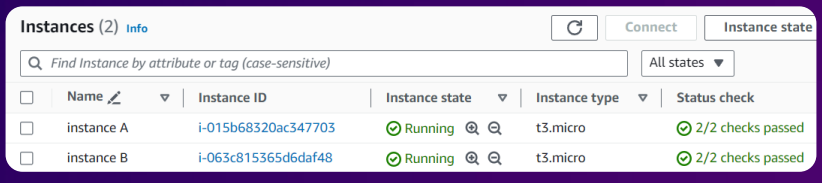
Step 1: Access the AWS Management Console

Open the AWS Management Console, and select EC2.



Step 2: List the EC2 instances

In the Amazon EC2 dashboard, navigate to Instances. You should see two EC2 instances listed.



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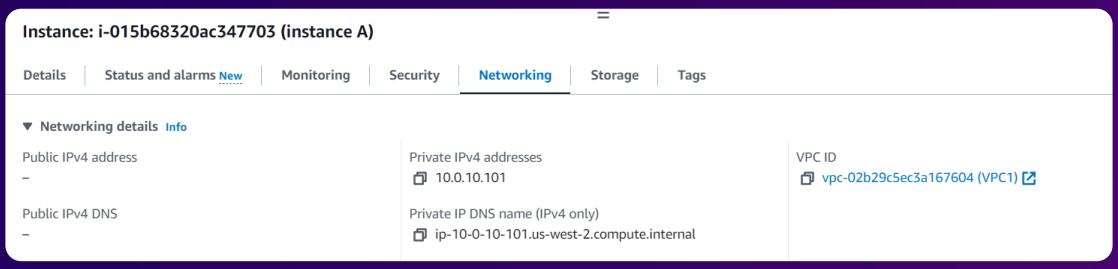
Task 1

Investigate the customer's environment

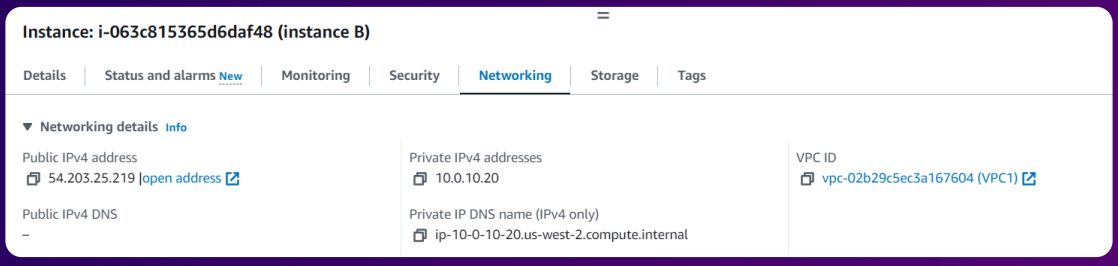
Step 3: Review instance A configuration

Access the networking details of instance A and note its Public and Private IPv4 addresses. Notice that instance A has been assigned only a private IP address.



Step 4: Review instance B configuration

Access the networking details of instance B and note its Public and Private IPv4 addresses. Notice that instance B has been assigned both a public and private IP addresses.



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Task 2

Use SSH to connect to an Amazon Linux EC2 instance

Connect to instance A

Establish an SSH connection to instance A using the private key and its public IPv4 address. Note that Instance A does not have a public IPv4 address assigned, so you will not be able to connect using its private IPv4 address.

```
support@HP-Pavilion-Laptop:~/Downloads$ ssh -i labsuser.pem ec2-user@10.0.10.101
```

Connect to instance B

Establish an SSH connection to instance B using the private key and its public IPv4 address.

```
support@HP-Pavilion-Laptop:~/Downloads$ ssh -i labsuser.pem ec2-user@54.203.25.219
The authenticity of host '54.203.25.219 (54.203.25.219)' can't be established.
ED25519 key fingerprint is SHA256:94260mYw4drg5HwmHuKVmbOGrDCPdhMQSWAX9OS4r3Q.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '54.203.25.219' (ED25519) to the list of known hosts.
   ,     #_
   ~\_  ####_        Amazon Linux 2
  ~~  \_#####\
  ~~     \###|       AL2 End of Life is 2025-06-30.
  ~~       \#/ ___
   ~~       V~' '->
    ~~~         /    A newer version of Amazon Linux is available!
      ~~._.   _/
         _/ _/       Amazon Linux 2023, GA and supported until 2028-03-15.
       _/m/'           https://aws.amazon.com/linux/amazon-linux-2023/

[ec2-user@ip-10-0-10-20 ~]$
```

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Task 3

Send the Response to the customer

Submit your findings

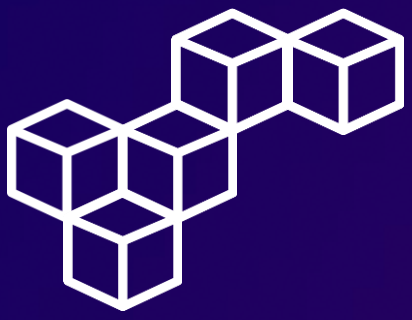
Dear Jess,

I've looked into the issues you mentioned and here's what I found:

About the instance A connection issues
If you were not able to connect to instance A, it was due to this instance being assigned only a private IP address. Private IP addresses cannot be accessed from outside the VPC. This is why you are only able to connect to instance B. Instance B has a public IP address assigned to it, allowing access from outside the VPC, which allows you to use SSH to connect to the instance.

About using a public CIDR for a new VPC
Using a public CIDR range such as 12.0.0.0/16 for a VPC can potentially cause issues as this range is publicly routable on the internet. It's recommended to assign private IP ranges such as 10.0.0.0/16, 172.16.0.0/12, or 192.168.0.0/16 to VPCs to ensure proper isolation from the internet and prevent conflicts. If internet access is required, instances can be assigned public IP addresses.

If you need further assistance, please let me know.
Cristhian
Cloud Support Engineer



Conclusions

Private IP addresses
Private IP addresses are reserved for internal use within a network, providing a way for devices to communicate with each other within a specific domain without being directly accessible from the internet.

Public IP addresses
Public IP addresses are globally unique addresses assigned to devices connected to the internet, enabling them to communicate and be accessed from anywhere on the internet.

CIDRs
CIDRs are used to represent IP address ranges, allowing for efficient allocation and management of IP addresses within networks, including both private and public address spaces.

VPCs
VPCs (Virtual Private Clouds) establish isolated virtual networks within cloud platforms, empowering users to launch and manage resources such as virtual machines, databases, and network configurations in a secure and controlled environment.

Troubleshooting connectivity issues
Troubleshooting connectivity issues involves diagnosing and resolving network problems, including IP assignments, routing, and security configurations within VPCs.

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Cristhian Becerra

cristhian-becerra-espinoza

+51 951 634 354

cristhianbecerra99@gmail.com

Lima, Peru