

Different Scenarios that we might face while managing a web application on AWS EC2 (Apache)

1. Website Not Accessible

Issue:

The web application is not loading in the browser.

Symptoms:

Users see a “Site can’t be reached” message or experience a connection timeout.

Root Cause:

The EC2 instance may be stopped, the Apache service may be down, or the public IP address may have changed after a restart.

Fix:

Start the EC2 instance, restart the Apache service, and use an Elastic IP to maintain a stable public address.

2. Apache Service Stopped

Issue:

The EC2 instance is running, but the application is not accessible.

Symptoms:

Port 80 does not respond, even though the server is up.

Root Cause:

Apache may have stopped due to configuration errors, system updates, or resource issues.

Fix:

Restart the Apache service and review Apache logs to identify and resolve the issue.

3. Apache Running but Port 80 Blocked by UFW

Issue:

Apache service is active but the website does not load.

Symptoms:

`systemctl status apache2` shows running, but the site is inaccessible.

Root Cause:

UFW is active but HTTP or Apache port 80 is not allowed.

Fix:

Allow Apache port 80 through UFW.

4. Disk Space Exhausted

Issue:

The web application stops responding unexpectedly.

Symptoms:

Apache fails to start and file operations fail on the server.

Root Cause:

Log files grow continuously or the root volume size is insufficient.

Fix:

Clean old log files or extend the EBS volume to increase disk space.

5. Security Group Blocking HTTP Traffic

Issue:

The website is unreachable from the internet.

Symptoms:

Apache is running, but the site does not load externally.

Root Cause:

Port 80 is not allowed in the EC2 security group or the source IP is incorrect.

Fix:

Update the security group to allow inbound HTTP traffic on port 80 from all required sources.

6. Application Changes Not Visible

Issue:

Recent updates to the web application do not appear in the browser.

Symptoms:

The old version of the page continues to display.

Root Cause:

Browser caching or files not placed in the Apache document root directory.

Fix:

Clear the browser cache and verify that files are deployed in `/var/www/html`.

7. EC2 Instance Restarted Automatically

Issue:

The application experiences unexpected downtime.

Symptoms:

The website goes down and the public IP address changes.

Root Cause:

System maintenance, instance failure, or manual reboot.

Fix:

Assign an Elastic IP and enable CloudWatch alarms to monitor instance health.

8. Website Not Reachable Due to Network Issue

Issue:

The web application is not reachable from the internet.

Symptoms:

The browser shows a connection timeout even though the EC2 instance is running.

Root Cause:

The instance is placed in a private subnet or does not have a public IP assigned.

Fix:

Ensure the instance is in a public subnet and has a public or Elastic IP associated.

9. Internet Gateway Not Attached

Issue:

The EC2 instance cannot communicate with the internet.

Symptoms:

Outbound traffic fails and the website is inaccessible externally.

Root Cause:

The VPC does not have an Internet Gateway attached or the route table is not configured correctly.

Fix:

Attach an Internet Gateway to the VPC and add a route to `0.0.0.0/0` in the route table.

10. Route Table Misconfiguration

Issue:

Network traffic does not reach the EC2 instance.

Symptoms:

Inbound and outbound connections fail despite correct security group rules.

Root Cause:

The subnet route table does not have a valid route to the Internet Gateway.

Fix:

Update the route table to route internet traffic through the Internet Gateway.

11. Security Group Allows Traffic but Network ACL Blocks It

Issue:

The website is still unreachable even though security group rules are correct.

Symptoms:

HTTP traffic fails intermittently or completely.

Root Cause:

Network ACL rules are blocking inbound or outbound traffic on required ports.

Fix:

Allow inbound and outbound traffic on ports 80, 443, and 22 in the Network ACL.

12. Incorrect Port Access Over Network

Issue:

The application is partially accessible.

Symptoms:

HTTP works but HTTPS or SSH fails.

Root Cause:

Required ports are not allowed at one or more network layers.

Fix:

Ensure ports are allowed in Security Groups, Network ACLs, and UFW consistently.

13. Public IP Changed After Restart

Issue:

Users cannot access the website after instance reboot.

Symptoms:

Old IP address no longer works.

Root Cause:

Public IP addresses change when an EC2 instance is stopped and started.

Fix:

Assign an Elastic IP to the instance for a fixed network address.

Conclusion

Even a basic EC2 and Apache web application can face multiple operational issues in real-world scenarios. Understanding the issue, identifying symptoms, finding the root cause, and applying the correct fix are essential skills for anyone starting in DevOps or cloud engineering.