COS20019 - Cloud Computing Architecture

Week 1: ACF Lab 3: Introduction to EC2

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Due Date: 17/09/2023

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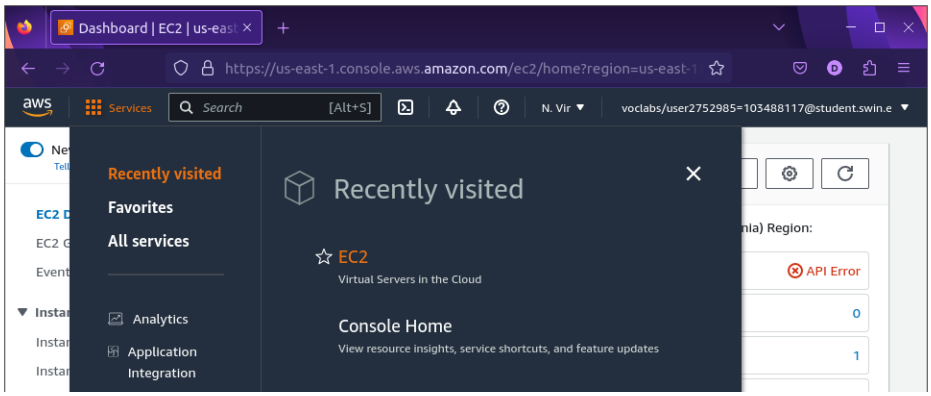
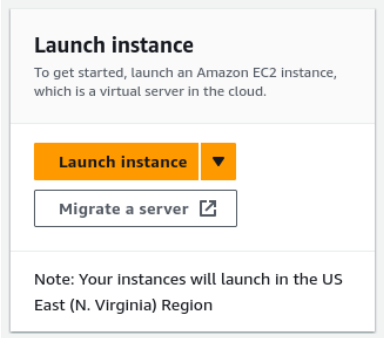
Task 1: Launch Your Amazon EC2 Instance

5. In the AWS Management Console choose Services, choose Compute and then choose EC2.

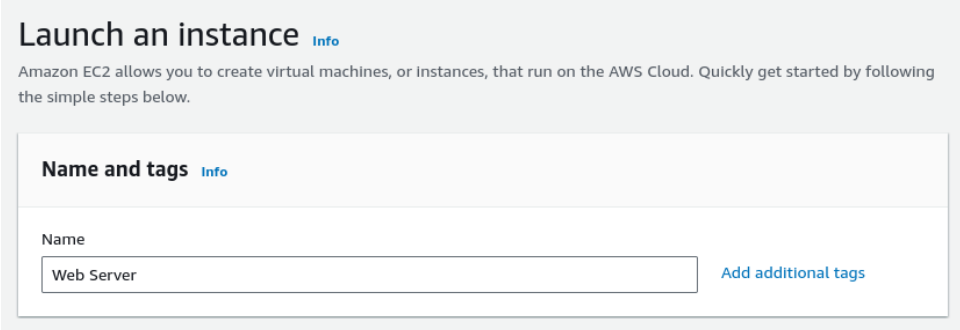


6. Choose the Launch instance menu and select Launch instance.



Step 1: Name and tags

7. Give the instance the name Web Server.



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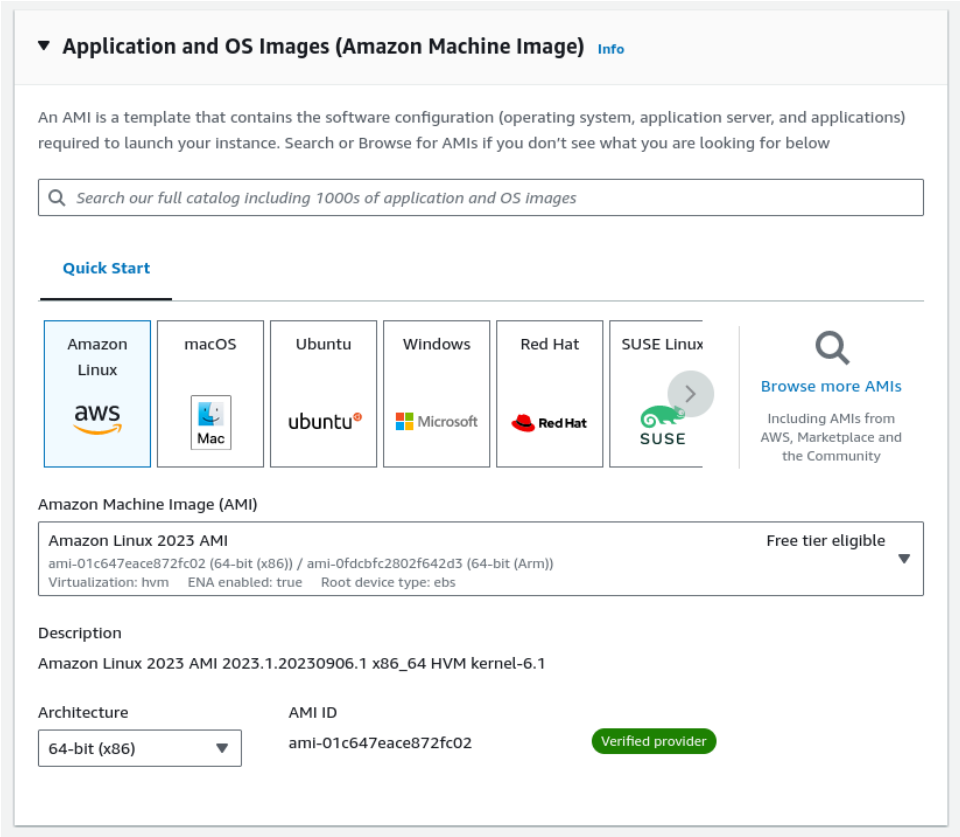
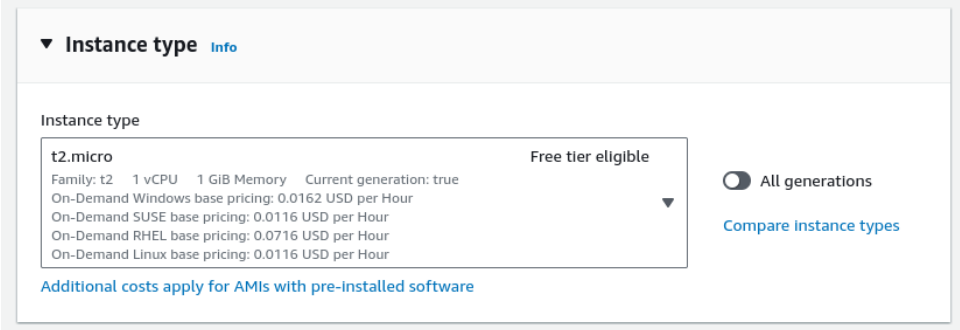
Step 2: Application and OS Images (Amazon Machine Image)

8. In the list of available Quick Start AMIs, keep the default Amazon Linux AMI selected.
9. Also keep the default Amazon Linux 2023 AMI selected.



Step 3: Instance type

10. In the Instance type panel, keep the default t2.micro selected.



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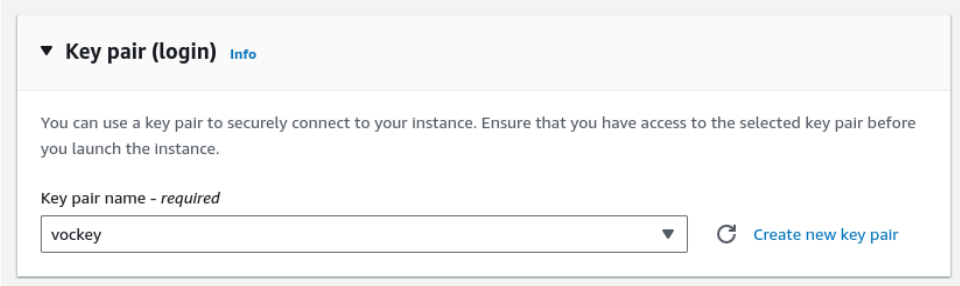
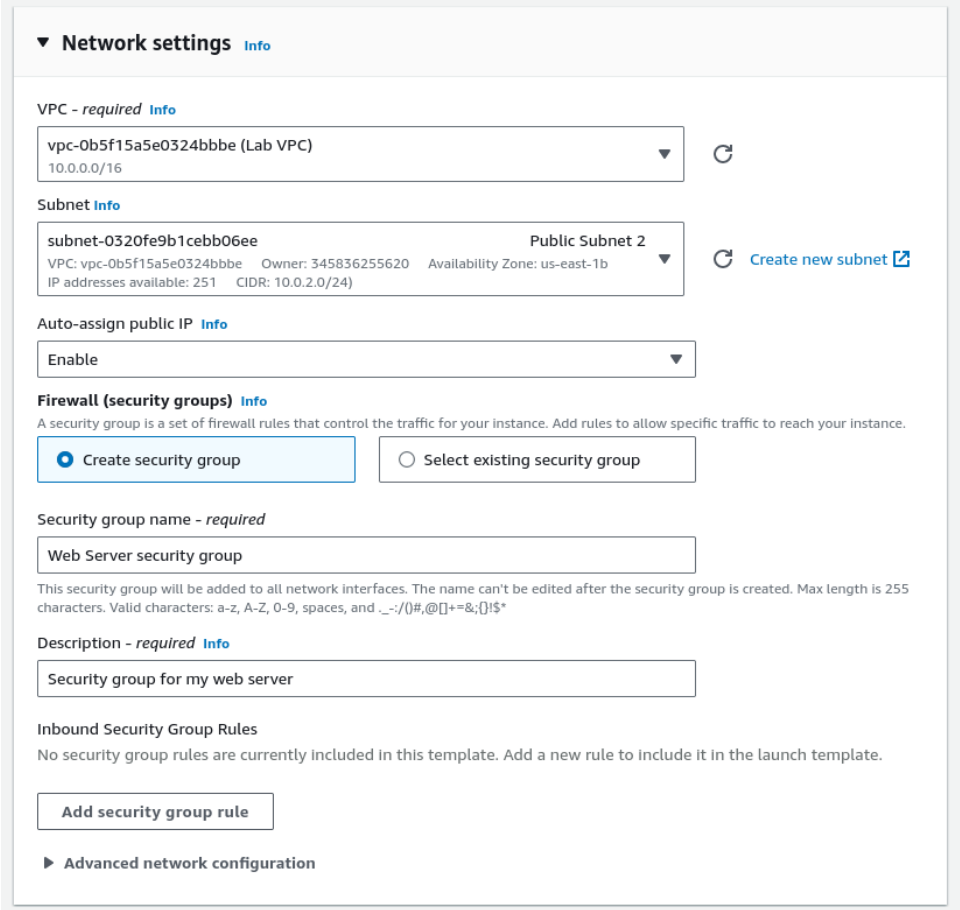
Step 4: Key pair (login)

11. For Key pair name - required, choose vockey.



Step 5: Network settings

12. Next to Network settings, choose Edit.
13. For VPC, select Lab VPC.
14. Under Firewall (security groups), choose Create security group and configure:
    - Security group name: Web Server security group
    - Description: Security group for my web server



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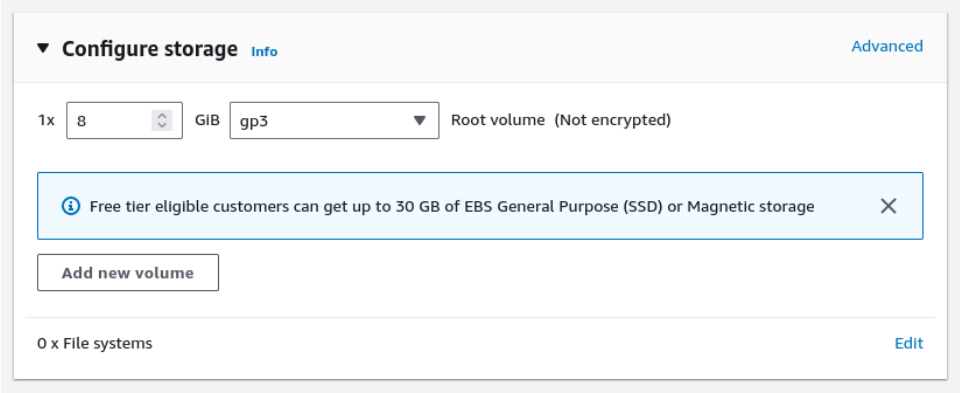
Step 6: Configure storage

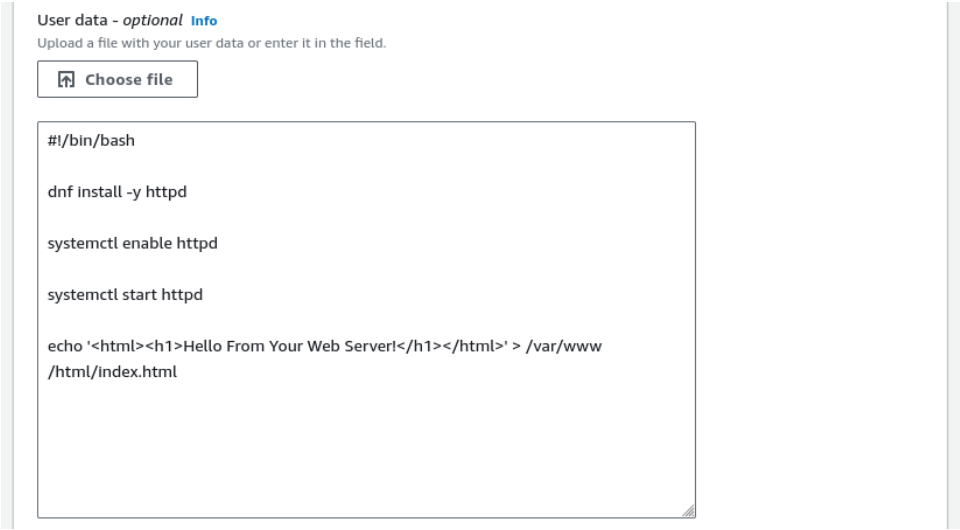
15. In the Configure storage section, keep the default settings.



Step 7: Advanced details

16. Expand Advanced details.
17. For Termination protection, select Enable.

18. Scroll to the bottom of the page and then copy and paste the code shown below into the User data box:



Step 8: Launch the instance

19. At the bottom of the Summary panel on the right side of the screen choose Launch instance You will see a Success message.

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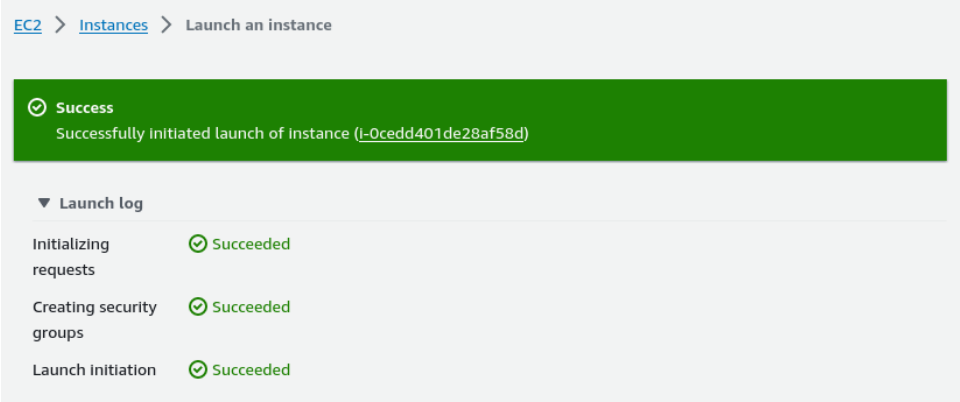
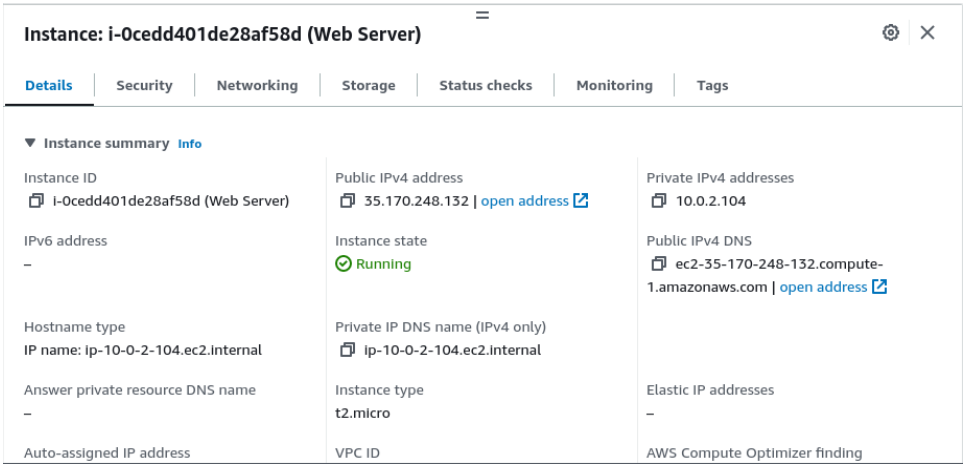
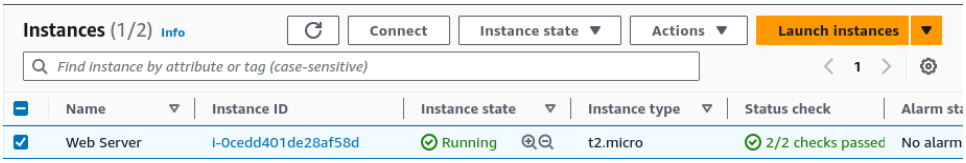


20. Choose View all instances
    - In the Instances list, select Web Server.
    - Review the information displayed in the Details tab. It includes information about the instance type, security settings and network settings.



21. Wait for your instance to display the following:
    - Instance State: Running
    - Status Checks: 2/2 checks passed



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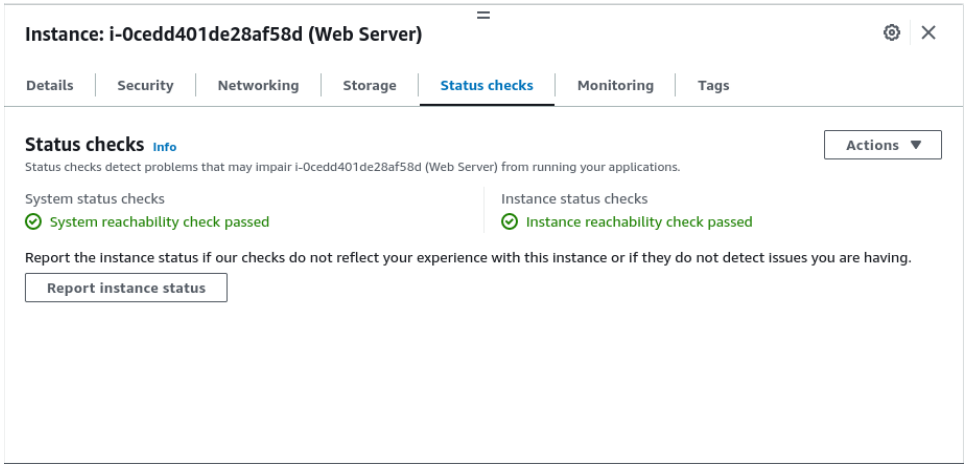
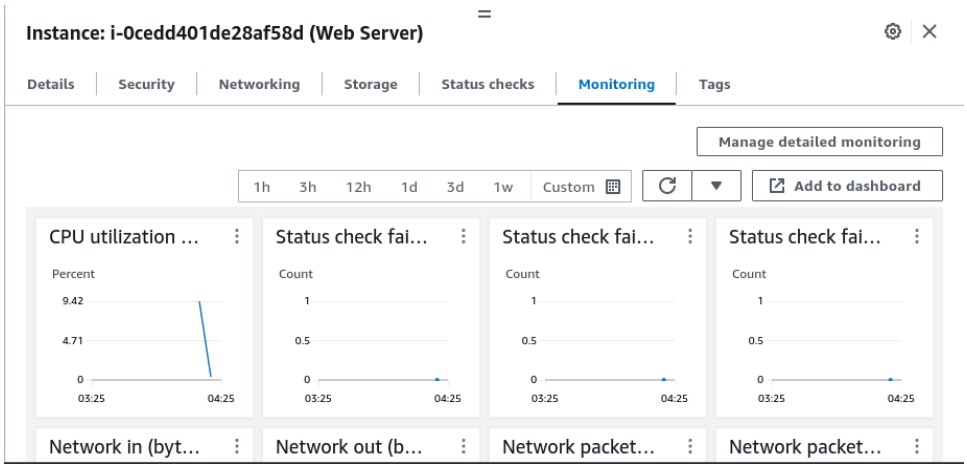
Task 2: Monitor Your Instance

22. Choose the Status checks tab.



23. Choose the Monitoring tab.



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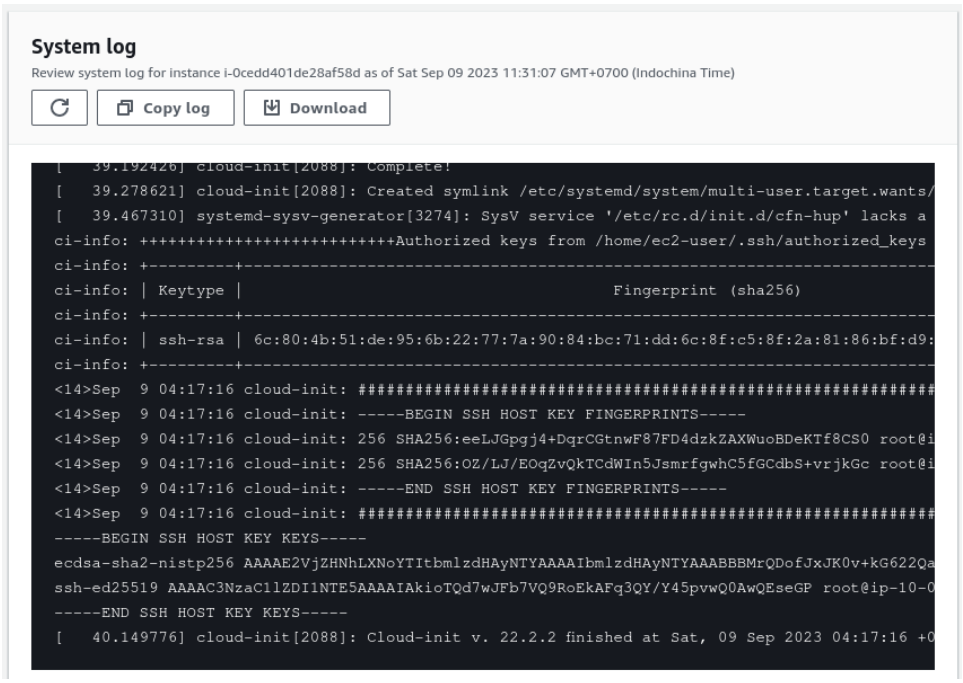
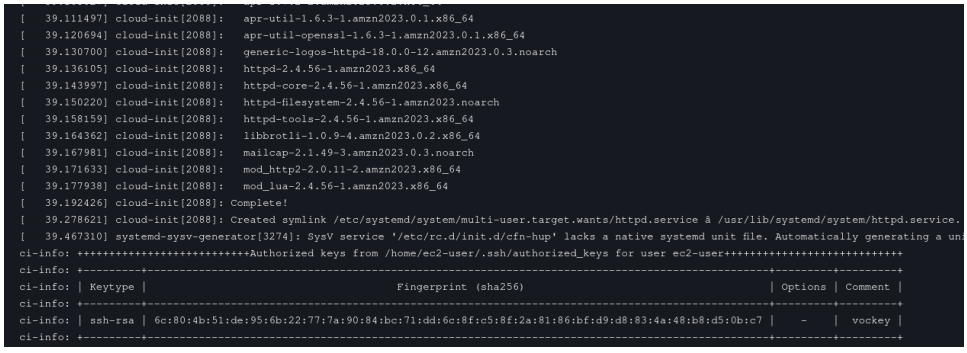
24. In the Actions menu towards the top of the console, select Monitor and troubleshoot Get system log.



25. Scroll through the output and note that the HTTP package was installed from the user data that you added when you created the instance.
26. Choose Cancel.



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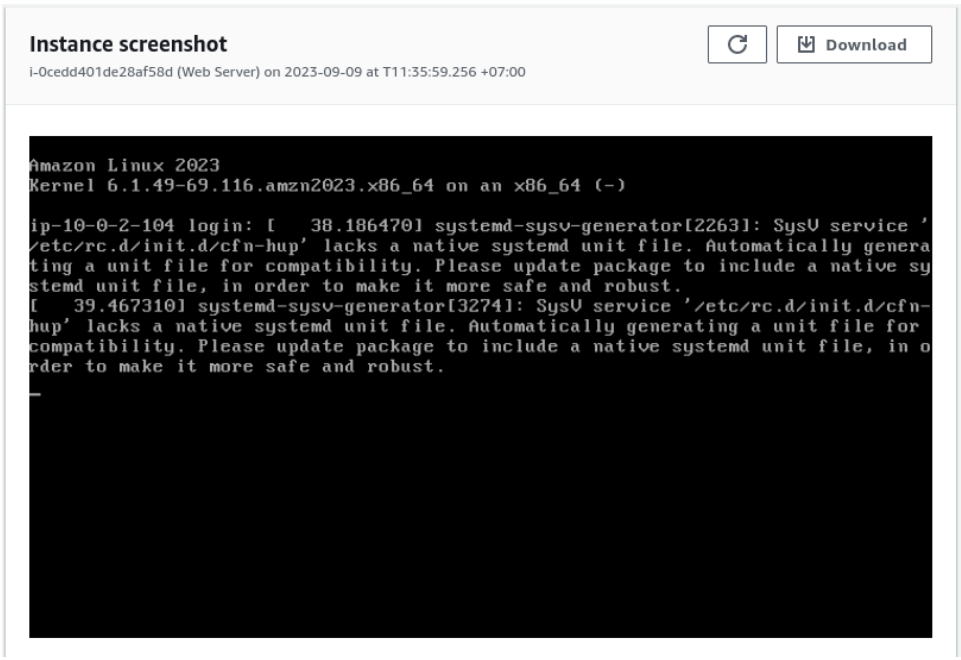
27. Ensure Web Server is still selected. Then, in the Actions menu, select Monitor and troubleshoot > Get instance screenshot.
28. Choose Cancel.



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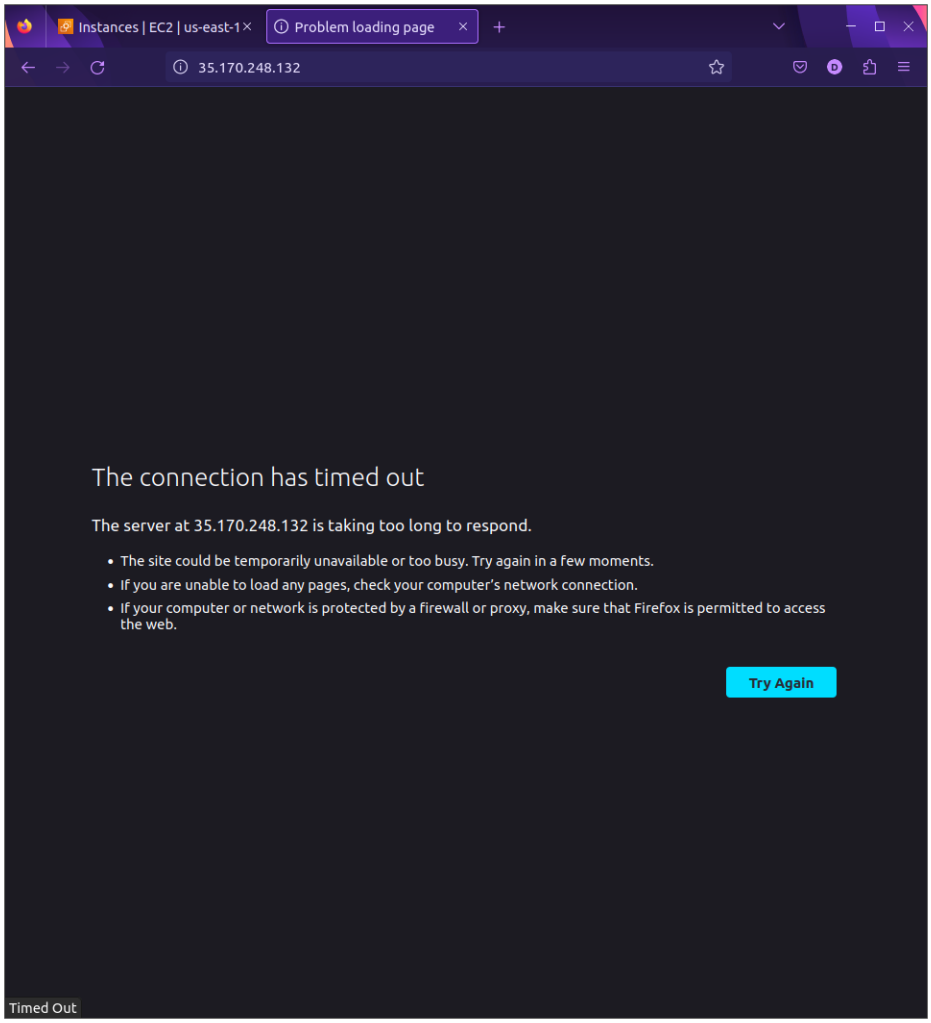
Task 3: Update Your Security Group and Access the Web Server

29. Ensure Web Server is still selected. Choose the Details tab.
30. Copy the Public IPv4 address of your instance to your clipboard.
31. Open a new tab in your web browser, paste the IP address you just copied, then press Enter.



Question: Are you able to access your web server? Why not?

You are not currently able to access your web server because the security group is not permitting inbound traffic on port 80, which is used for HTTP web requests. This is a demonstration of using a security group as a firewall to restrict the network traffic that is allowed in and out of an instance.

To correct this, you will now update the security group to permit web traffic on port 80.

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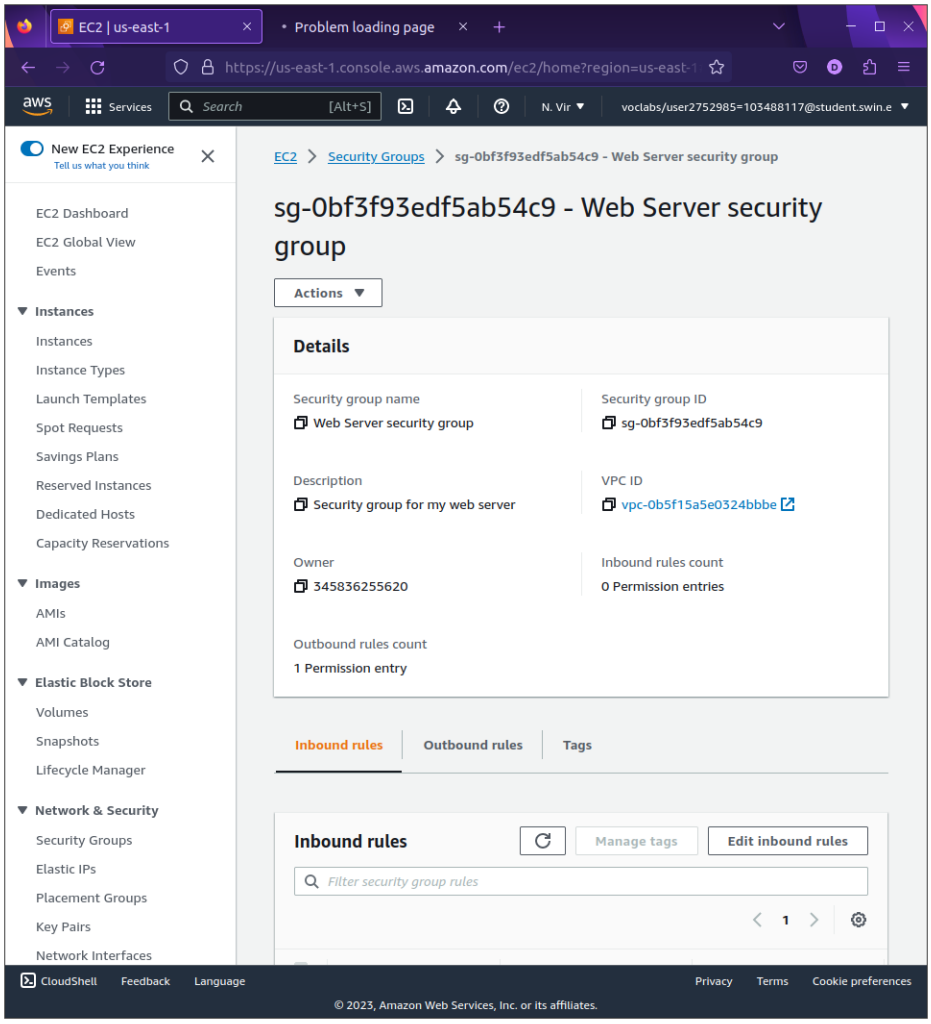
32. Keep the browser tab open, but return to the EC2 Console tab.
33. In the left navigation pane, choose Security Groups.
34. Select Web Server security group.
35. Choose the Inbound rules tab.

The security group currently has no inbound rules.



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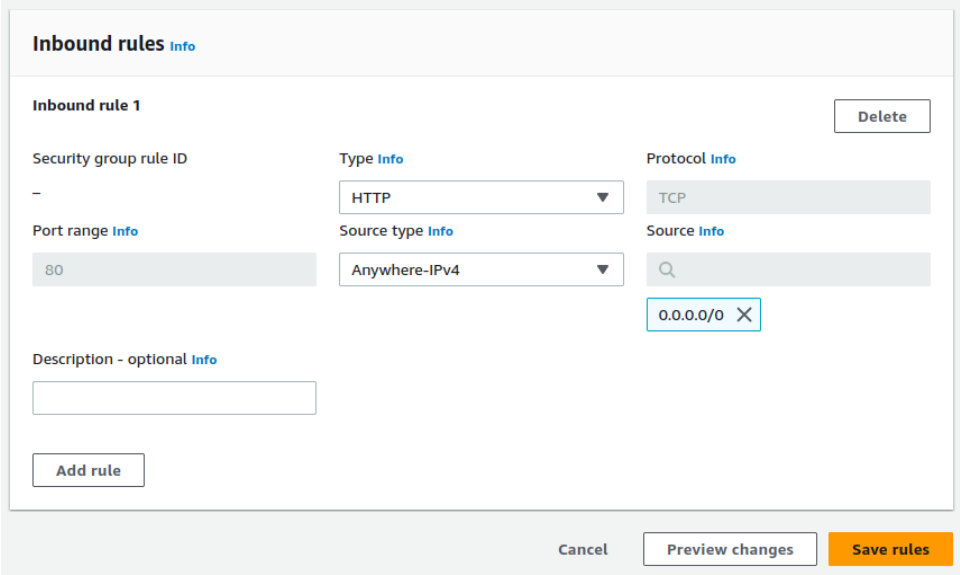
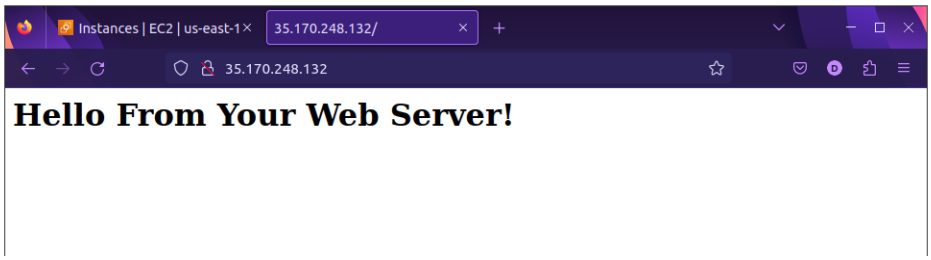
36. Choose Edit inbound rules, select Add rule and then configure:

- Type: HTTP
- Source: Anywhere-IPv4
- Choose Save rules



37. Return to the web server tab that you previously opened and refresh the page. You should see the message Hello From Your Web Server!



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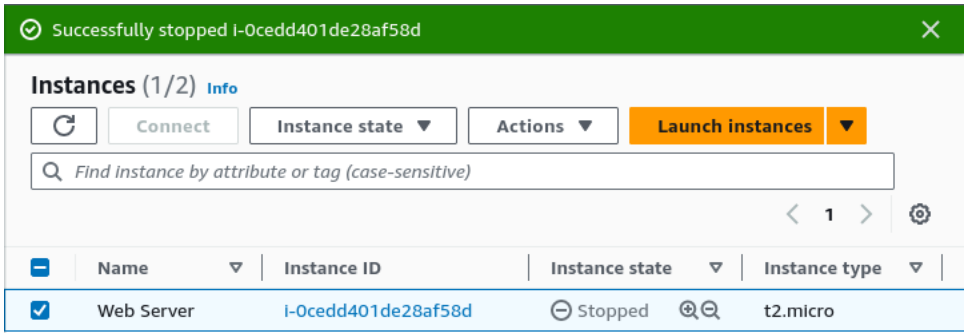
Task 4: Resize Your Instance: Instance Type and EBS Volume

Stop Your Instance

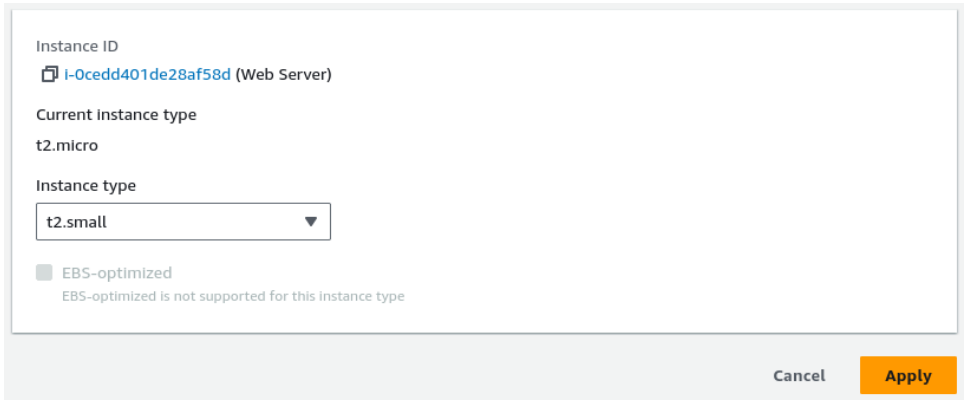
38. On the EC2 Management Console, in the left navigation pane, choose Instances.
Web Server should already be selected.
39. In the Instance State menu, select Stop instance.
40. Choose Stop
Your instance will perform a normal shutdown and then will stop running.
41. Wait for the Instance state to display: Stopped.



Change The Instance Type

In the Actions menu, select Instance settings Change instance type, then configure:

- Instance Type: t2.small
- Choose Apply



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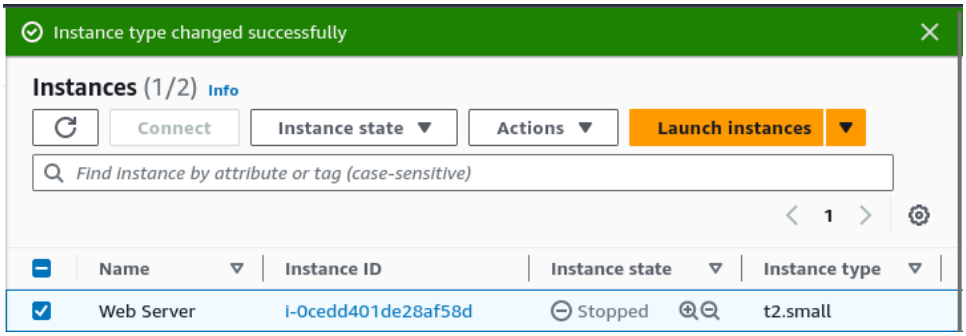
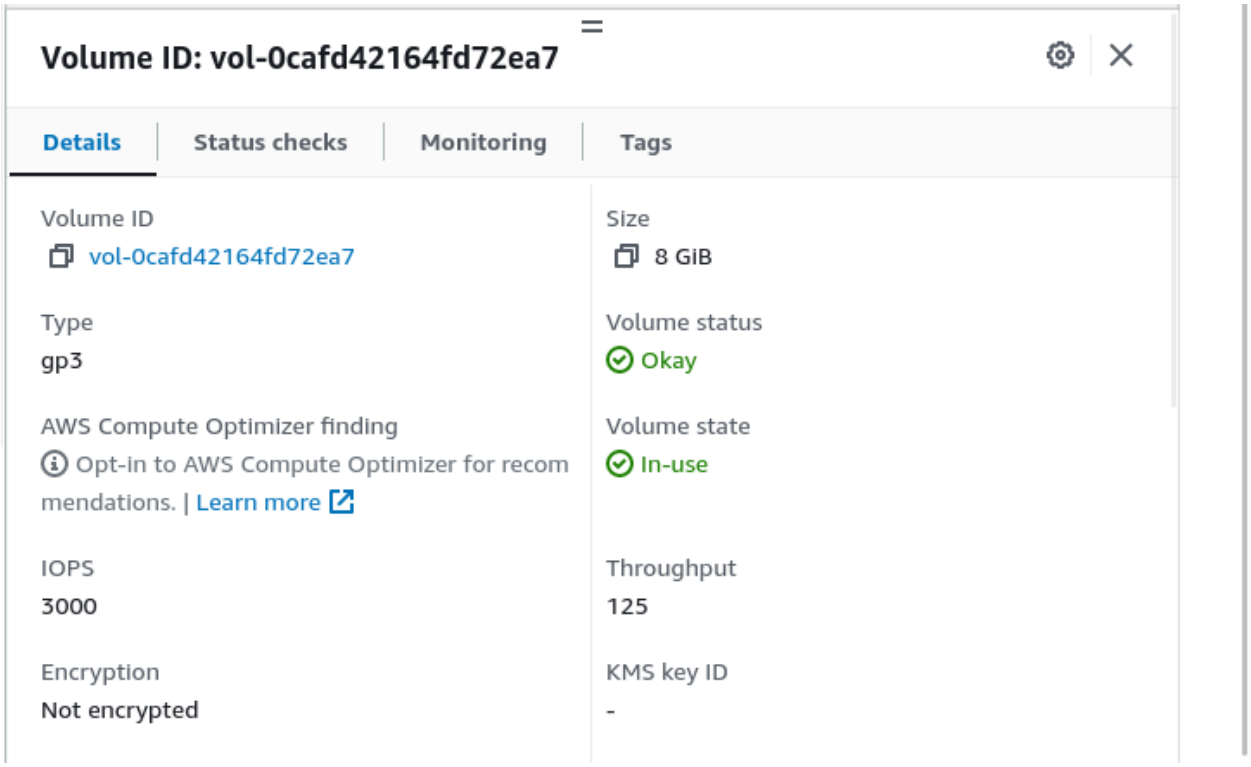


Resize the EBS Volume

43. With the Web Server instance still selected, choose the Storage tab, select the name of the Volume ID, then select the checkbox next to the volume that displays.



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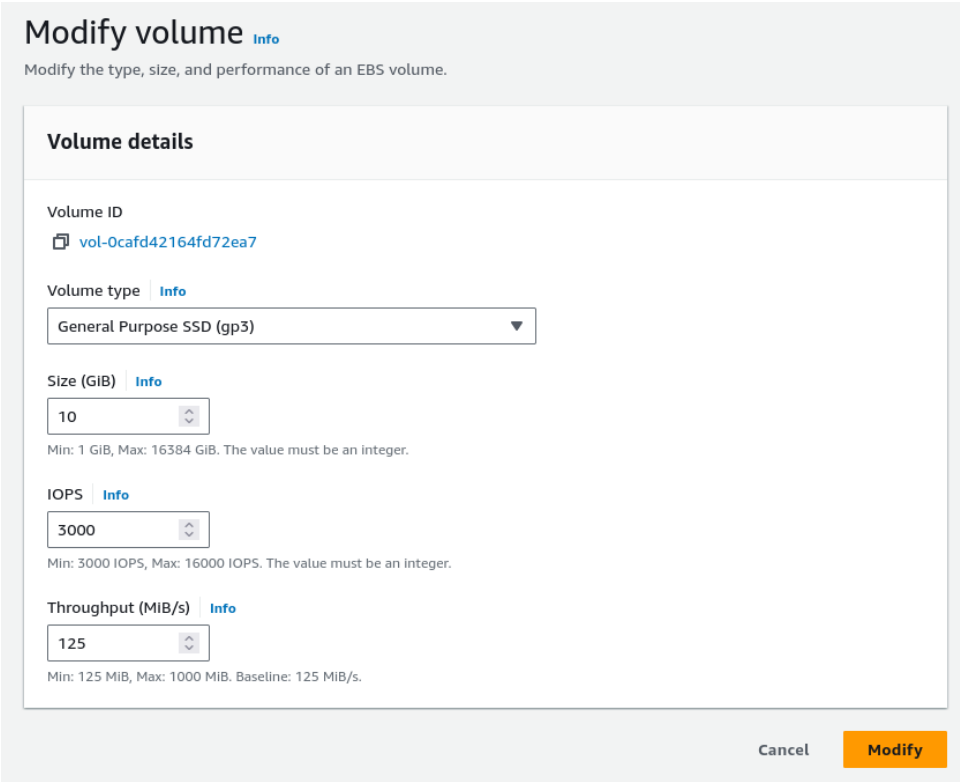
44. In the Actions menu, select Modify volume.
The disk volume currently has a size of 8 GiB. You will now increase the size of this disk.
45. Change the size to: 10 **NOTE**: You may be restricted from creating large Amazon EBS volumes in this lab.
46. Choose Modify



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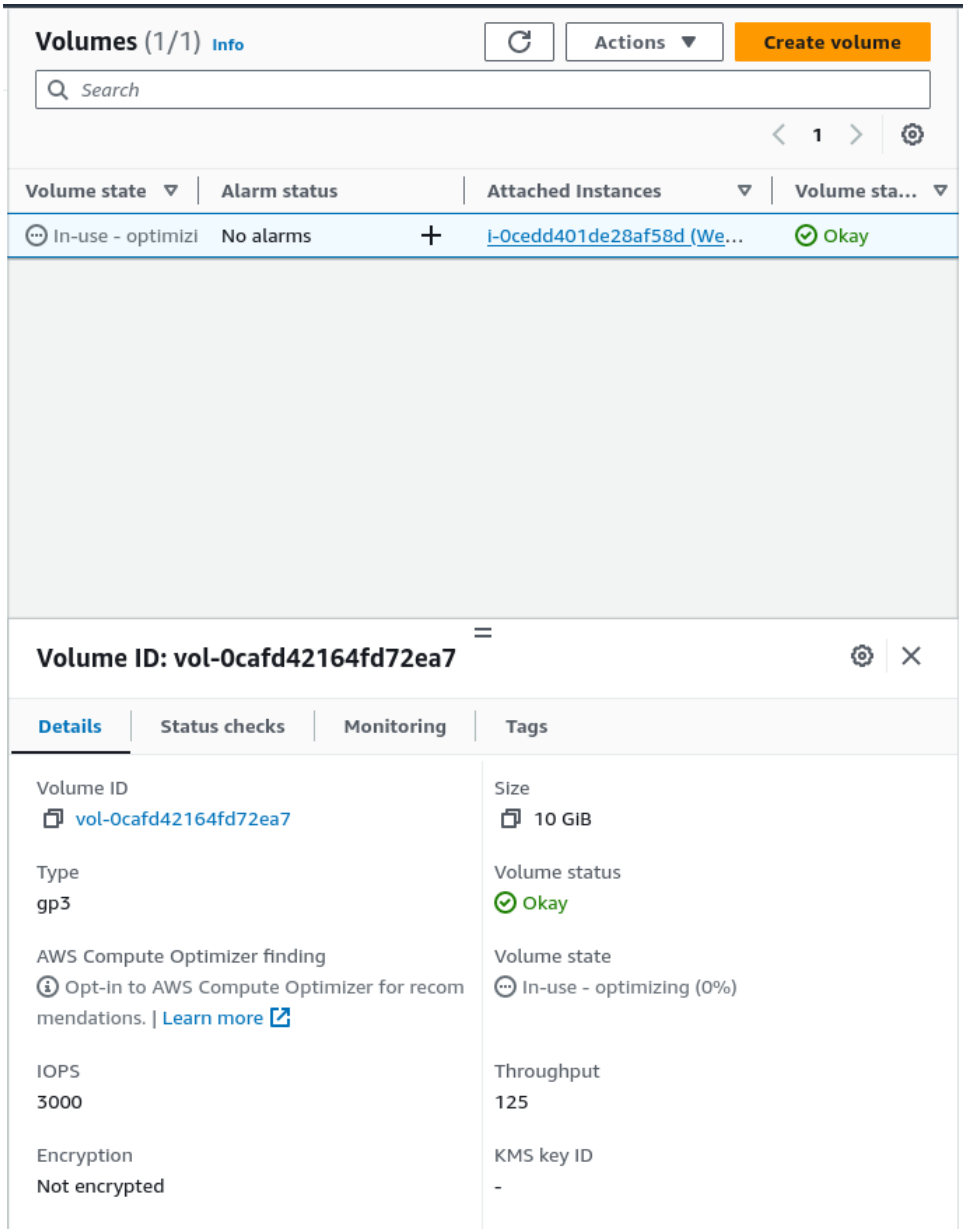
47. Choose Modify again to confirm and increase the size of the volume.



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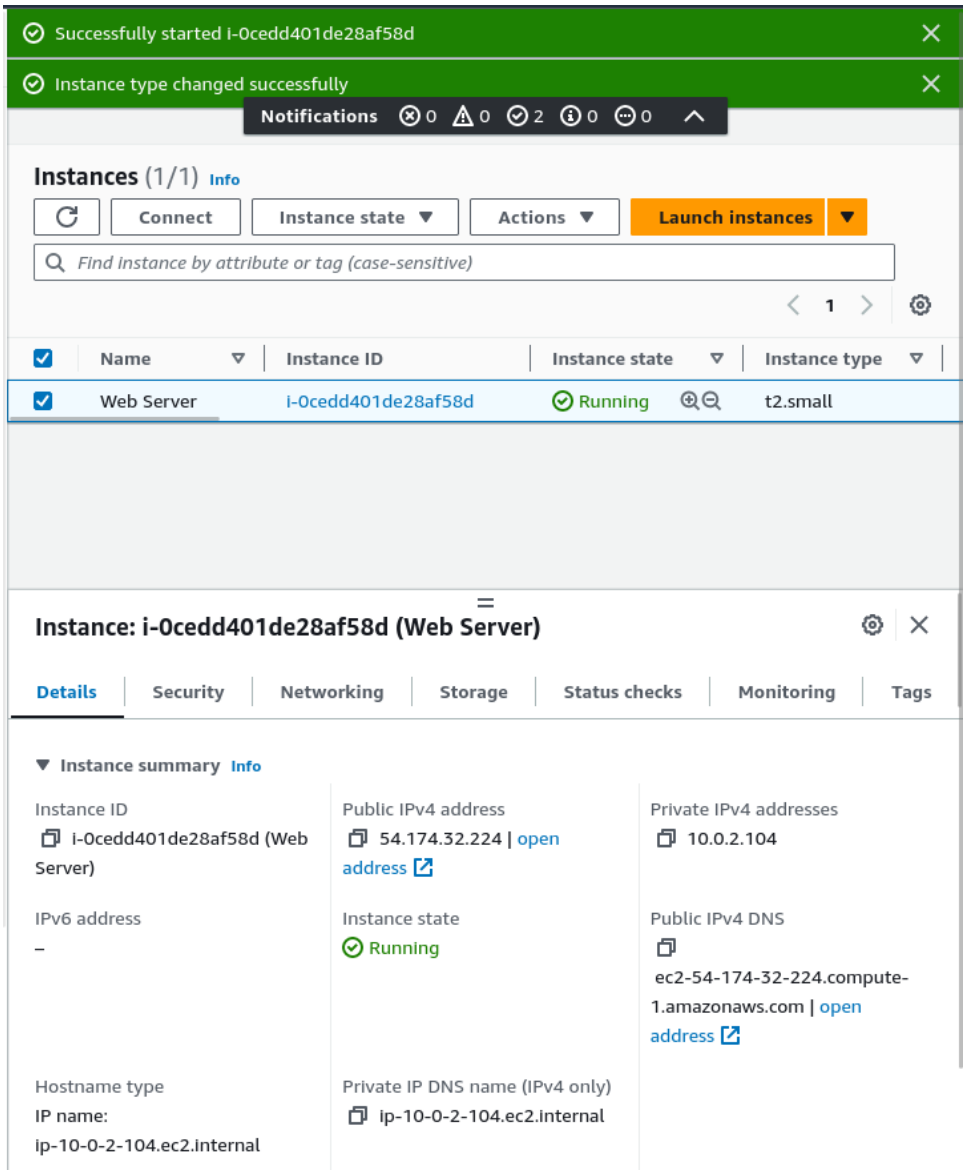
Start the Resized Instance

49. In left navigation pane, choose Instances.
50. Select the Web Server instance.
51. In the Instance state menu, select Start instance.



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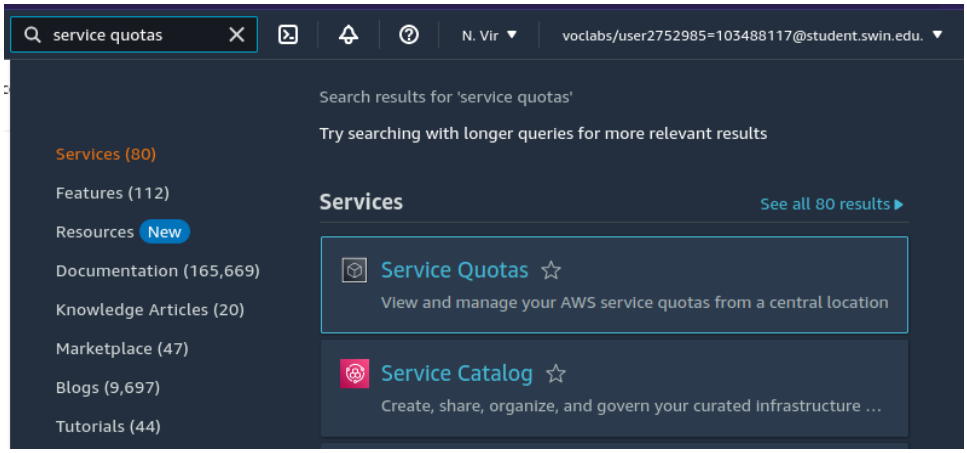
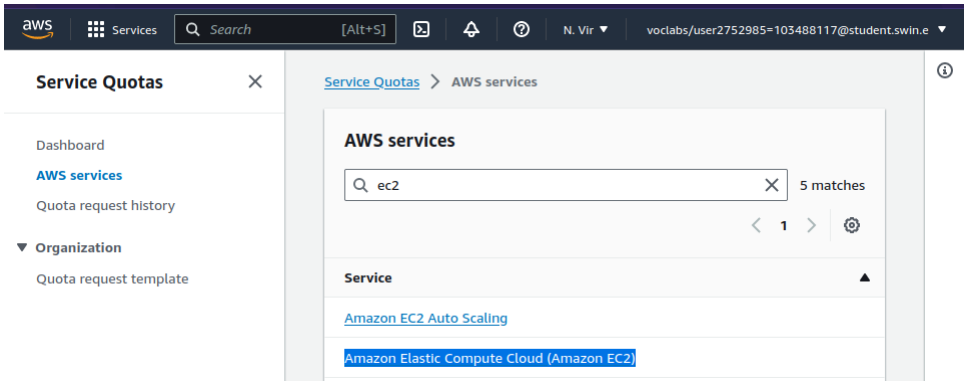
Task 5: Explore EC2 Limits

52. In the AWS Management Console, in the search box next to Services, search for and choose Service Quotas



53. Choose AWS services from the navigation menu and then in the AWS services Find services search bar, search for ec2 and choose Amazon Elastic Compute Cloud (Amazon EC2).



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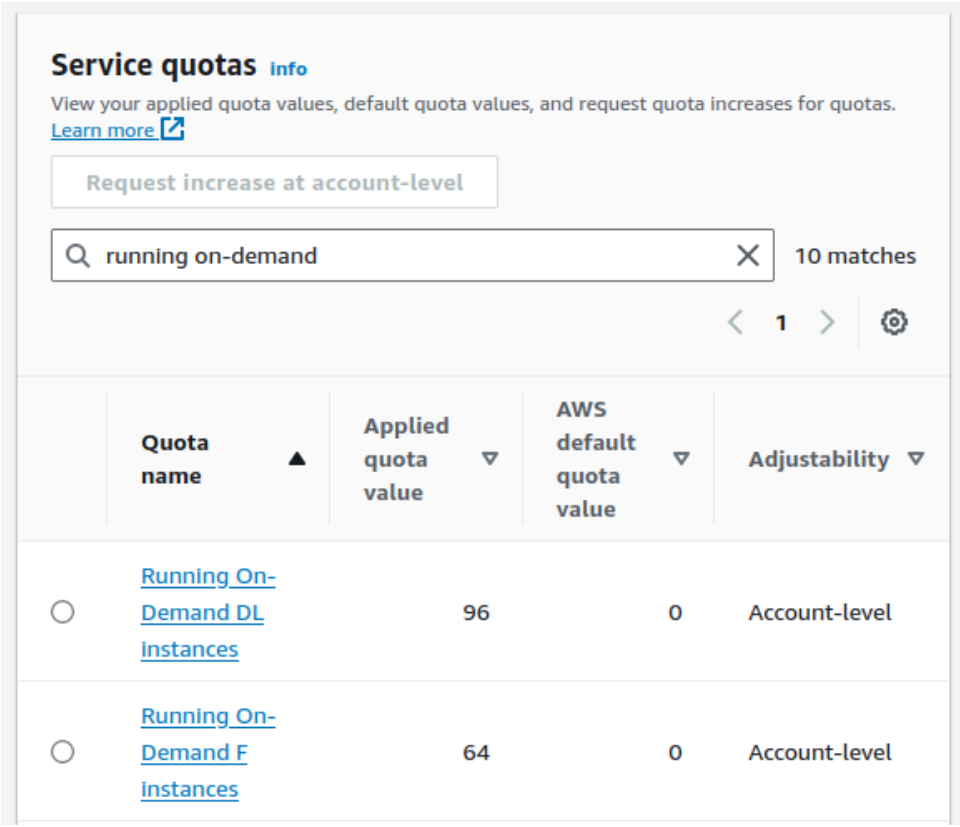
54. In the Find quotas search bar, search for running on-demand, but do not make a selection. Instead, observe the filtered list of service quotas that match the criteria.



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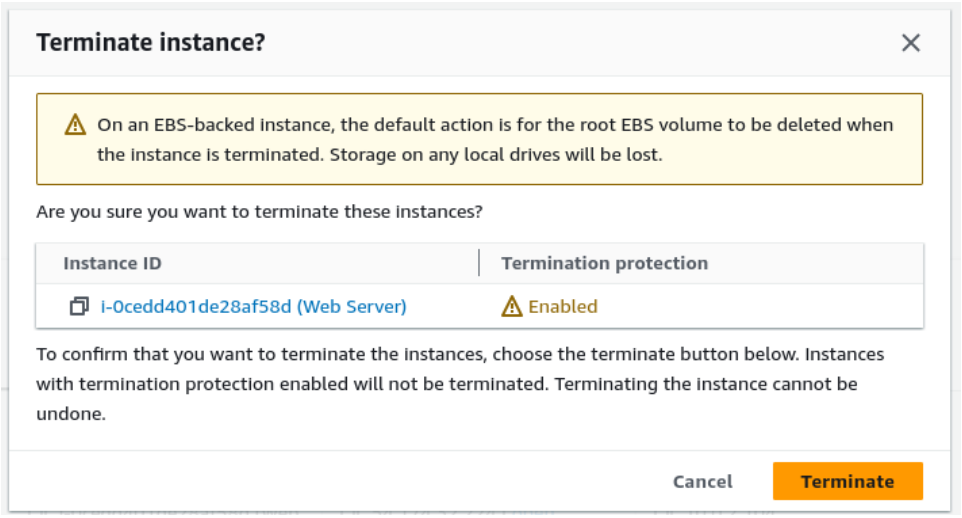
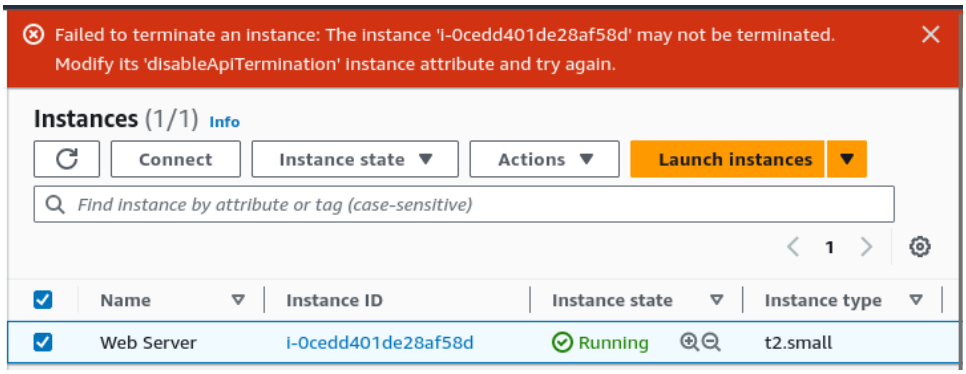
Task 6: Test Termination Protection

55. In the AWS Management Console, in the search box next to Services, search for and choose EC2 to return to the EC2 console.
56. In left navigation pane, choose Instances.
57. Select the Web Server instance and in the Instance state menu, select Terminate instance.
58. Then choose Terminate



Note that there is a message that says: Failed to terminate the instance i-1234567xxx. The instance 'i-1234567xxx' may not be terminated. Modify its 'disableApiTermination' instance attribute and try again.



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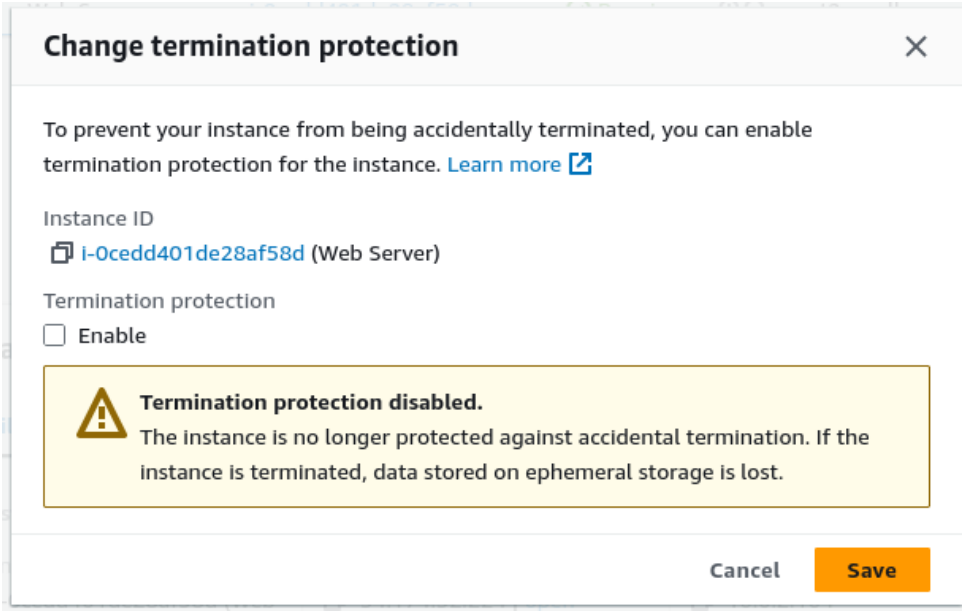
59. In the Actions menu, select Instance settings Change termination protection.
Remove the check next to Enable.
61. Choose Save
You can now terminate the instance.



62. Select the Web Server instance again and in the Instance state menu, select Terminate instance.
63. Choose Terminate