Experiment 02

Aim:

Create and deploy virtual servers on AWS

Theory:

This simulation provides you with a basic overview of launching, resizing, managing, and monitoring an Amazon Elastic Compute Cloud (Amazon EC2) instance.

Amazon EC2 is a web service that provides resizable compute capacity in the cloud.

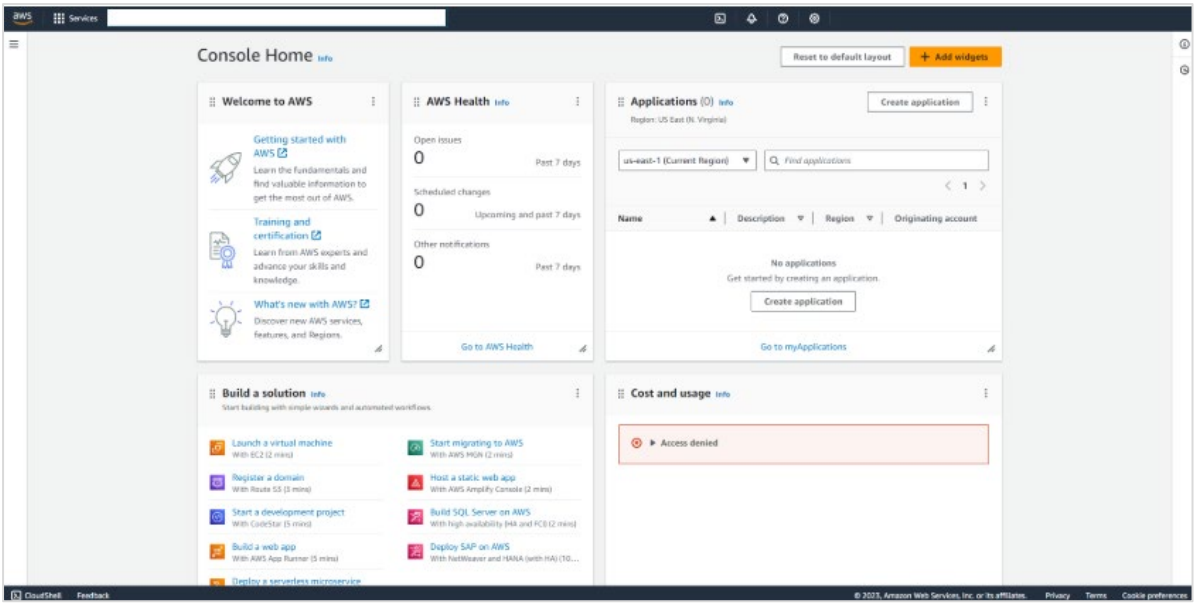
It's designed to make web-scale cloud computing intuitive and straight forward to use.

Amazon EC2 gives you fast access to new server instances, and you can quickly scale capacity both up and down as your computing requirements change.

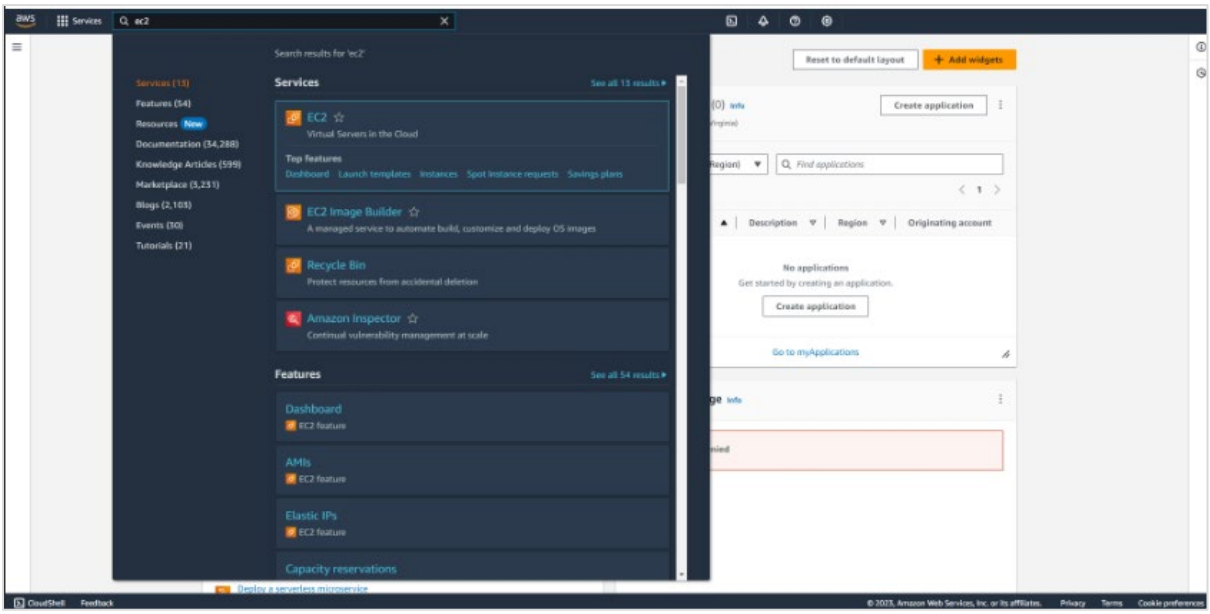
Task 1: Launching your EC2 instance

In this task, you launch an EC2 instance with termination protection. Termination protection prevents you from accidentally terminating an EC2 instance. You also deploy your instance with a user data script to deploy a simple web server.

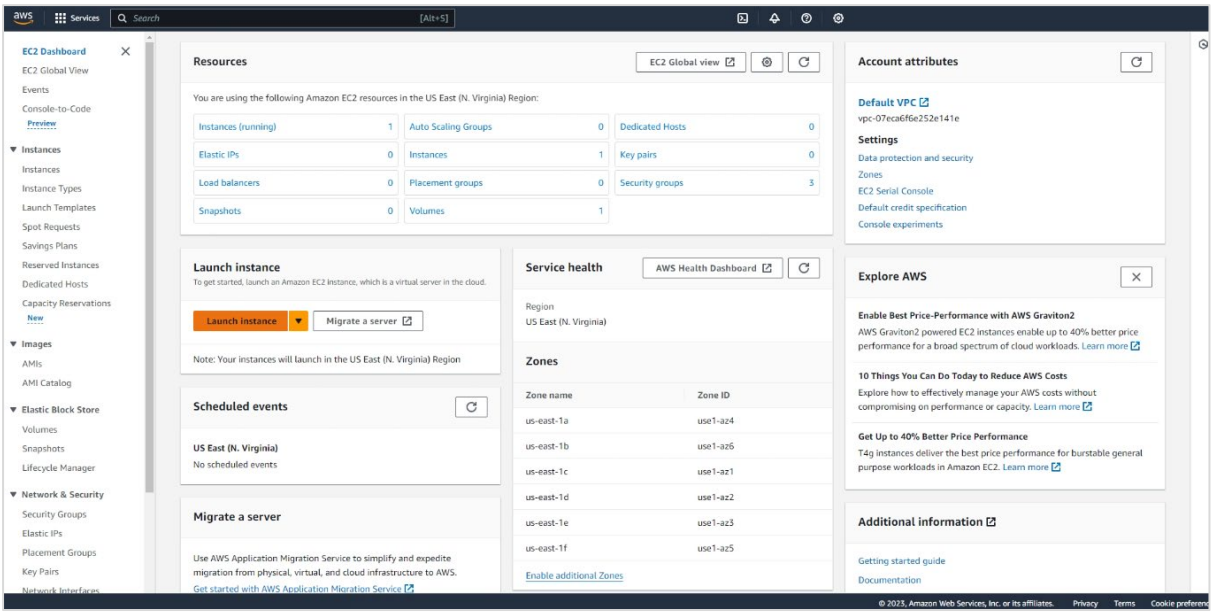
1. In the AWS Management Console in the **Search**, enter **EC2** and choose **Enter**.



2. From the search results, choose **EC2**.



3. In the **Launch instance** section, choose **Launch instance**.



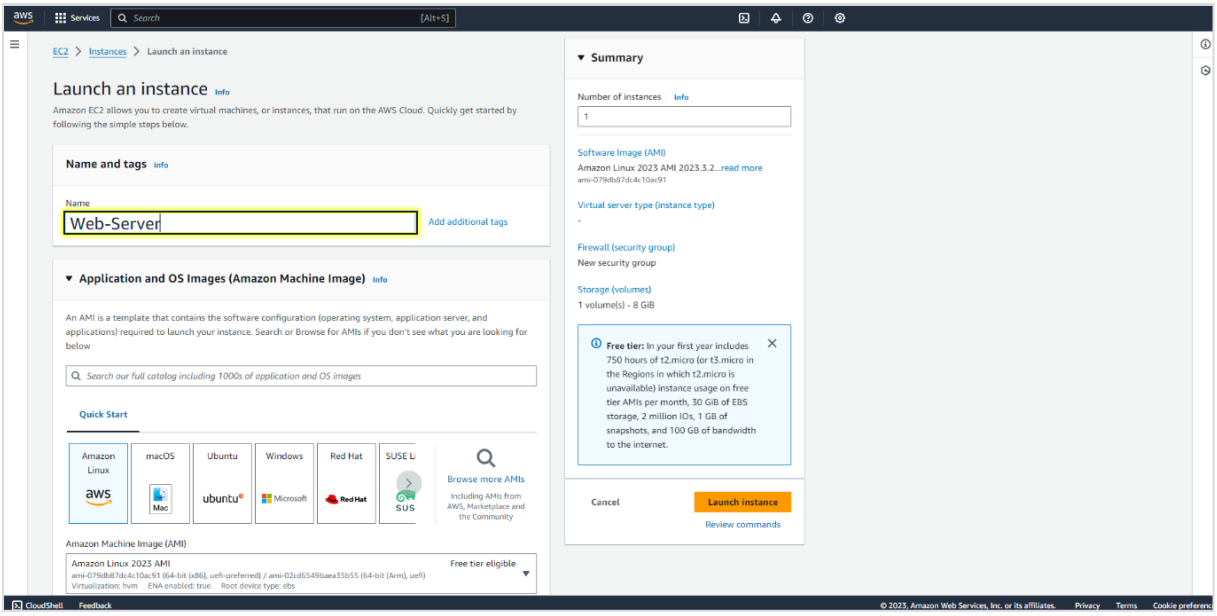
STEP 1: NAME YOUR EC2 INSTANCE

Using tags, you can categorize your AWS resources in different ways (for example, by purpose, owner, or environment). This categorization is useful when you have many resources of the same type. You can quickly identify a specific resource based on the tags that you have assigned to it. Each tag consists of a key and a value, both of which you define.

When you name your instance, AWS creates a key-value pair. The key for this pair is **Name**, and the value is the name that you enter for your EC2 instance.

4. In the **Name and tags** pane, in the **Name** text box, enter Web-Server then choose **Enter**.

5. Choose the **Add additional tags** link.
6. From the **Resource types** dropdown list, **Instances** is selected by default. Leave Instances selected and select **Volumes**.

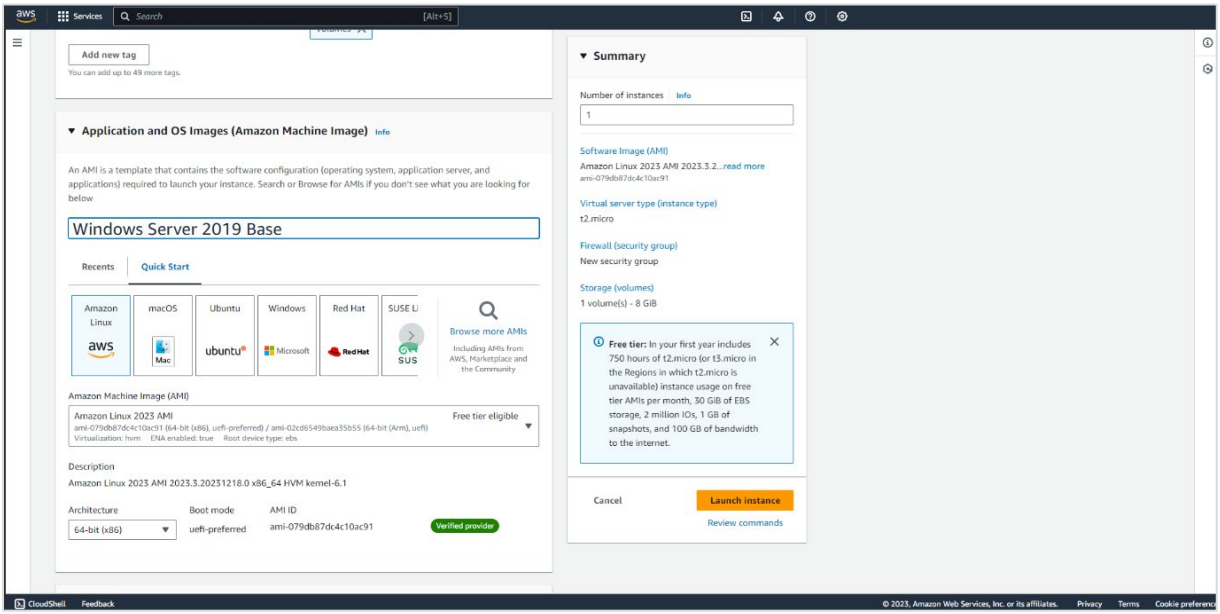


STEP 2: CHOOSE AN AMI

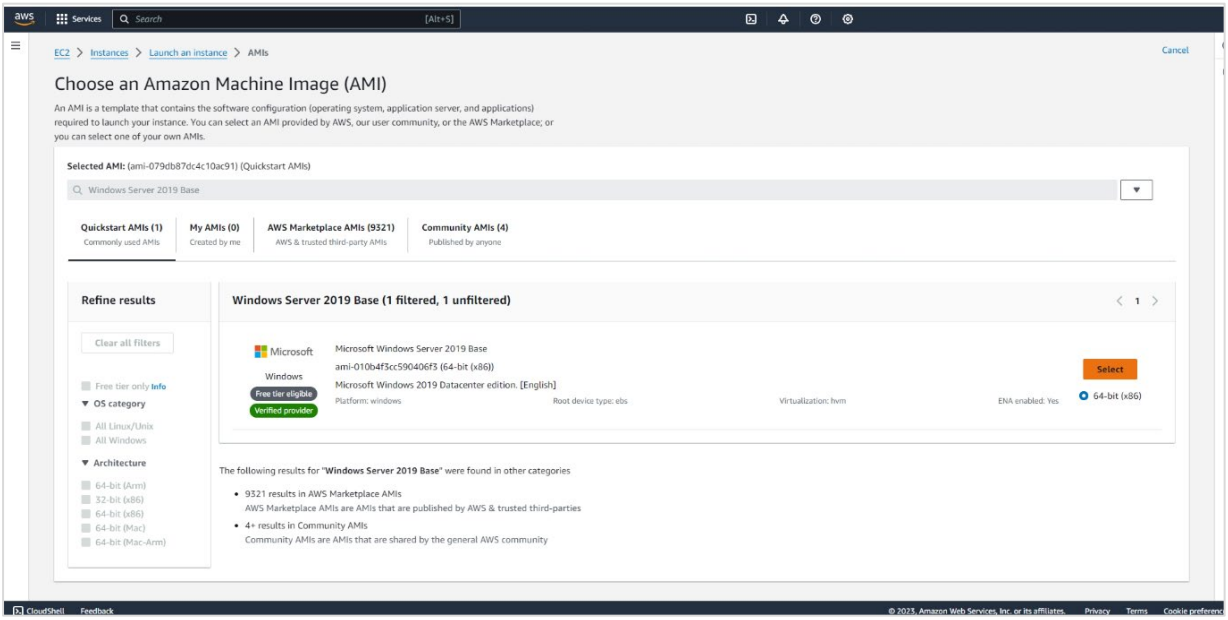
An Amazon Machine Image (AMI) provides the information required to launch an instance, which is a virtual server in the cloud. An AMI includes the following:

- Launch permissions that control which AWS accounts can use the AMI to launch instances

7. Locate the **Application and OS Images (Amazon Machine Image)** section. It's below the **Name and tags** section. In the search box, enter Windows Server 2019 Base and choose **Enter**.



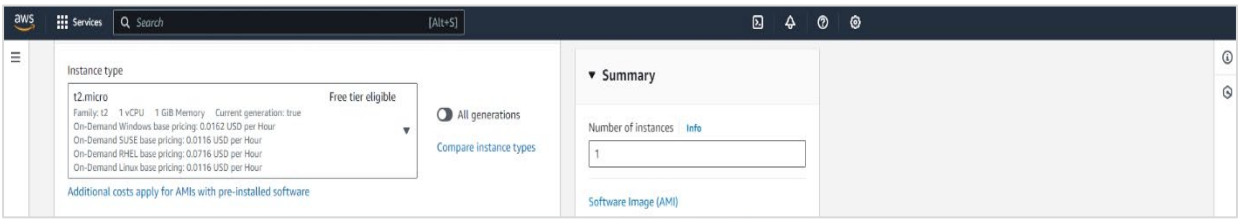
7. Next to **Microsoft** Windows Server 2019 Base, choose **Select**.



STEP 3: CHOOSE AN INSTANCE TYPE

In this step, you choose a **t2.micro** instance. This instance type has one virtual CPU and 1 GiB of memory.

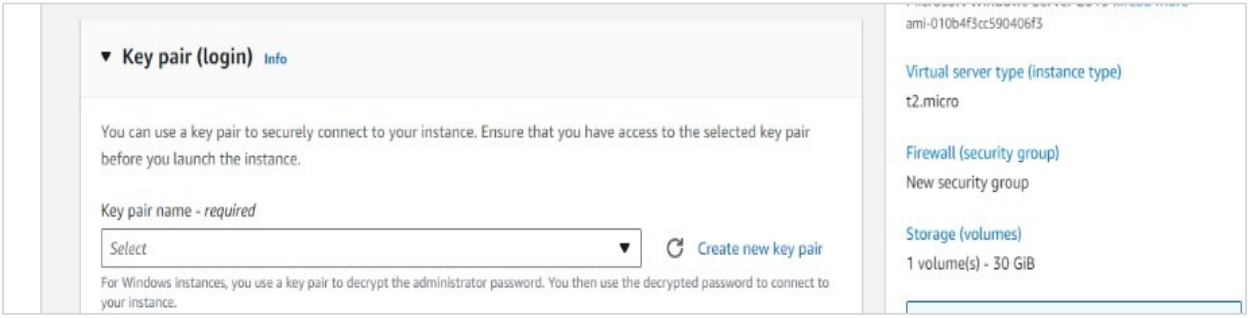
9. In the **Instance type** section, keep the default instance type, **t2.micro**.



STEP 4: CONFIGURE A KEY PAIR

In this simulation, you don't connect to your instance using an SSH key, so you don't need to configure a key pair.

10. In the **Key pair (login)** section, from the **Key pair name - required** dropdown list, choose **Proceed without a key pair (not recommended).**

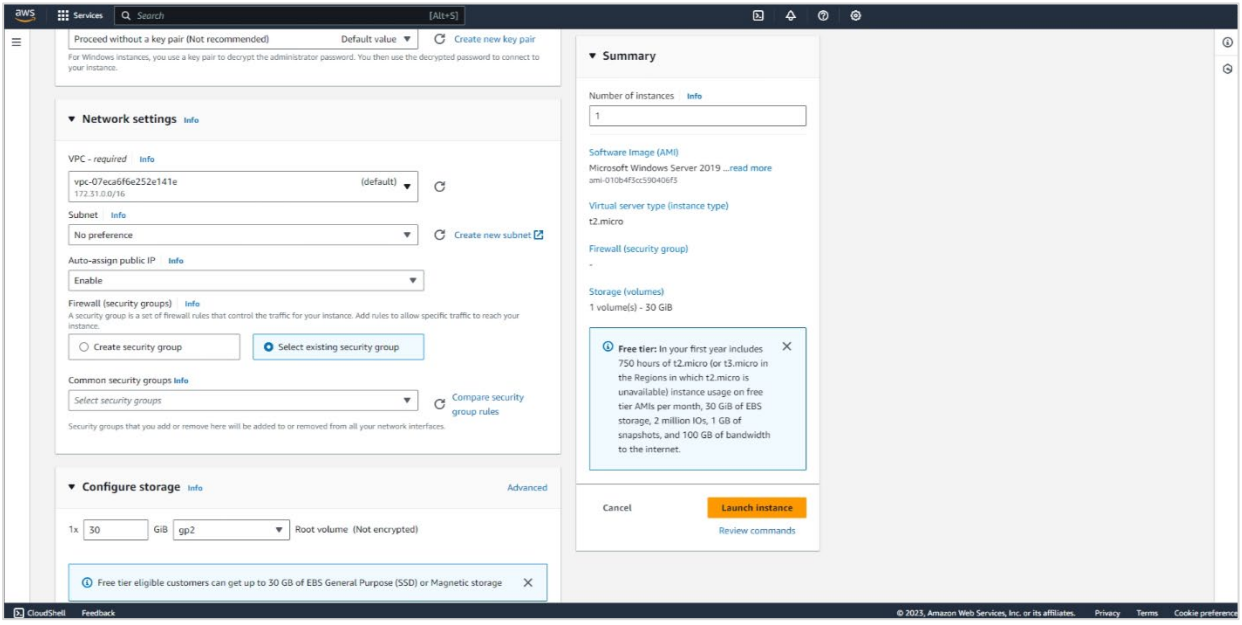


STEP 5: CONFIGURE THE NETWORK SETTINGS

You use this pane to configure networking settings.

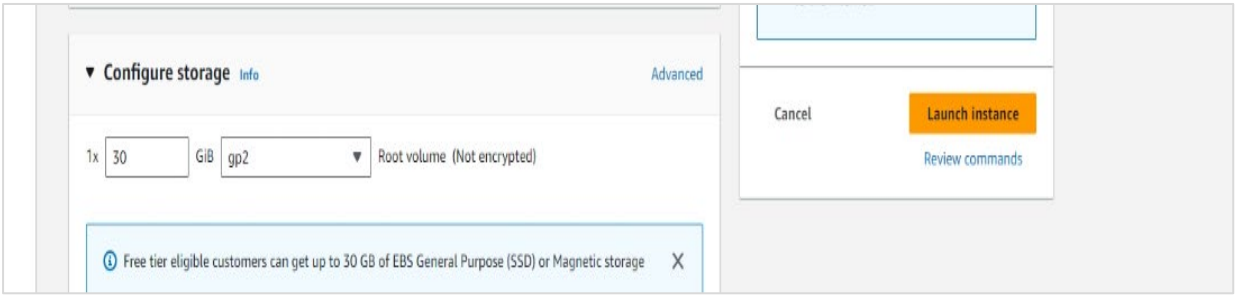
The virtual private cloud (VPC) indicates which VPC you want to launch the instance into. You can have multiple VPCs, including different ones for development, testing, and production.

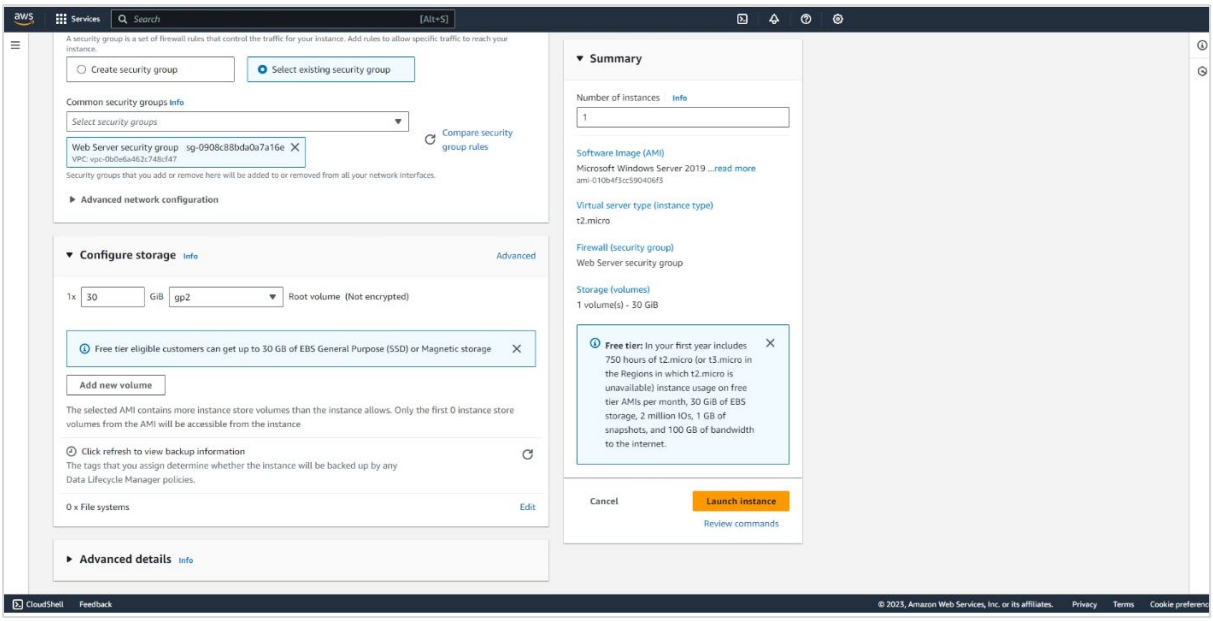
11. In the **Network settings** section, choose **Edit**.
12. From the **VPC - required** dropdown list, choose **Lab VPC**.
13. For **Firewall** (**security groups**), choose **Select existing security group**.
14. From **Common security groups**, choose **Web Server security group**.



STEP 6: ADD STORAGE

Amazon EC2 stores data on a network-attached virtual disk called Amazon Elastic Block Store (Amazon EBS). You launch the EC2 instance using a default 30 GiB disk volume. This is your root volume (also known as a boot volume).



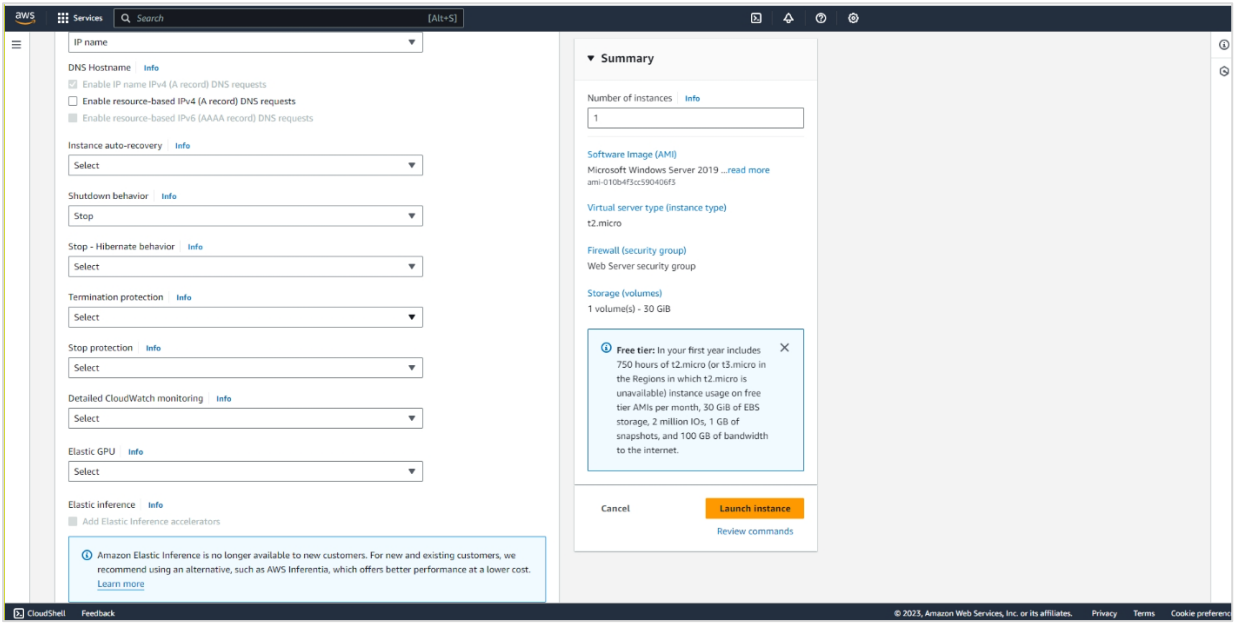


STEP 7: CONFIGURE ADVANCED DETAILS

15. Expand the **Advanced details** section.

16. For **IAM instance profile**, choose the role that begins with **LabStack** in the name.

17. From the **Termination protection** dropdown list, choose **Enable**.

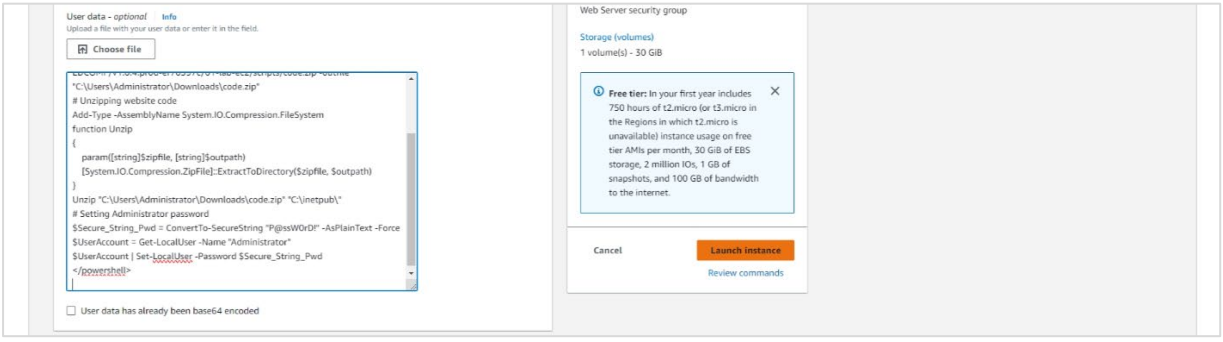


18. Copy the following commands, and choose the User data text box. Then, choose Paste.

```
<powershell>
# Installing web server
Install-WindowsFeature -name Web-Server -IncludeManagementTools
```

```
# Getting website code
wget https://us-east-1-tcprod.s3.amazonaws.com/courses/CUR-TF-100-
EDCOMP/v1.0.4.prod-ef70397c/01-Lab-ec2/scripts/code.zip -outfile
"C:\Users\Administrator\Downloads\code.zip"
# Unzipping website code
Add-Type -AssemblyName System.IO.Compression.FileSystem
function Unzip
{
    param([string]$zipfile, [string]$outpath)

[System.IO.Compression.ZipFile]::ExtractToDirectory($zipfile, $outpath)
}
Unzip "C:\Users\Administrator\Downloads\code.zip" "C:\inetpub\"
# Setting Administrator password
$Secure_String_Pwd = ConvertTo-SecureString "P@ssW0rD!" -AsPlainText -Force
$UserAccount = Get-LocalUser -Name "Administrator"
$UserAccount | Set-LocalUser -Password $Secure_String_Pwd
</powershell>
```

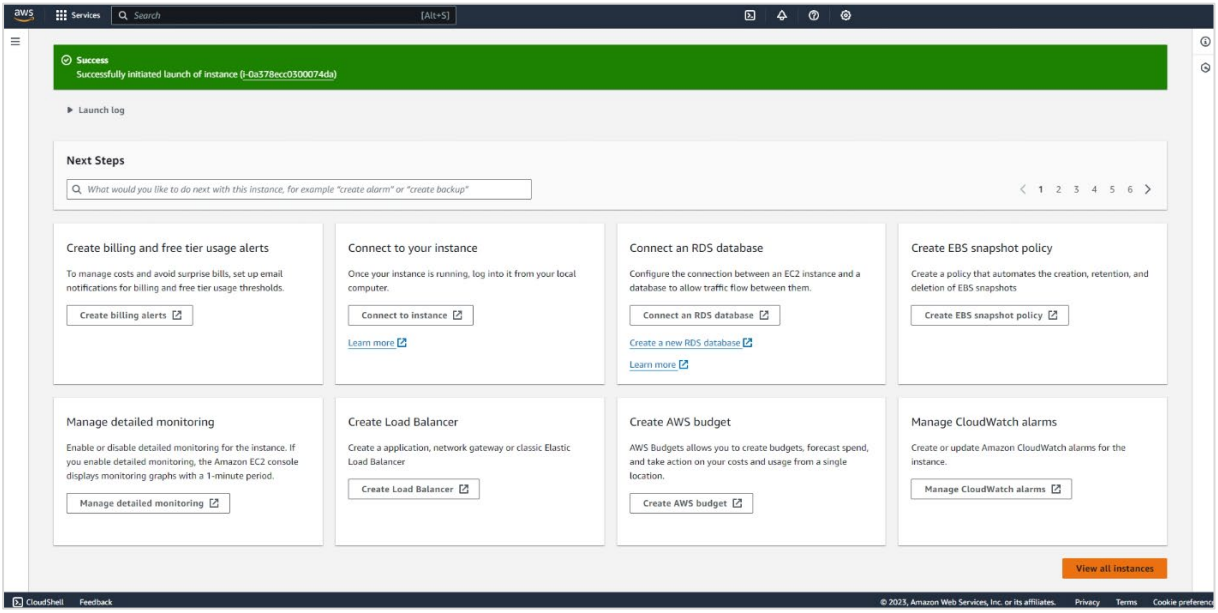


STEP 8: LAUNCH AN EC2 INSTANCE

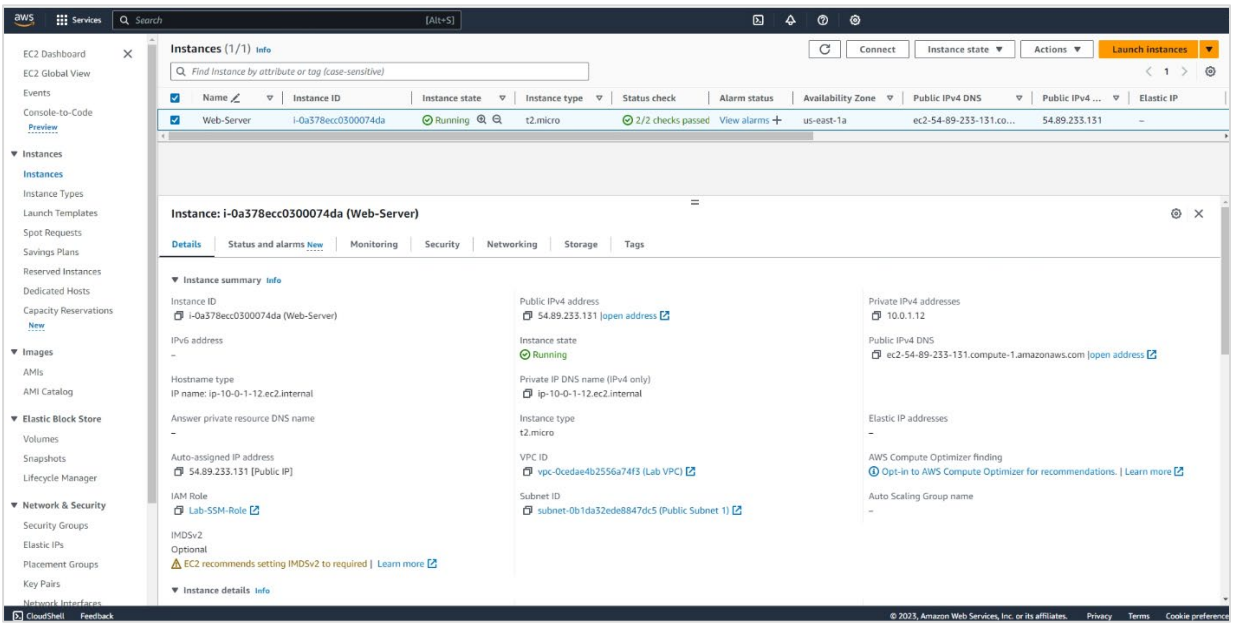
Now that you configured your EC2 instance settings, it's time to launch your instance.

19. In the **Summary** section, choose **Launch instance**.

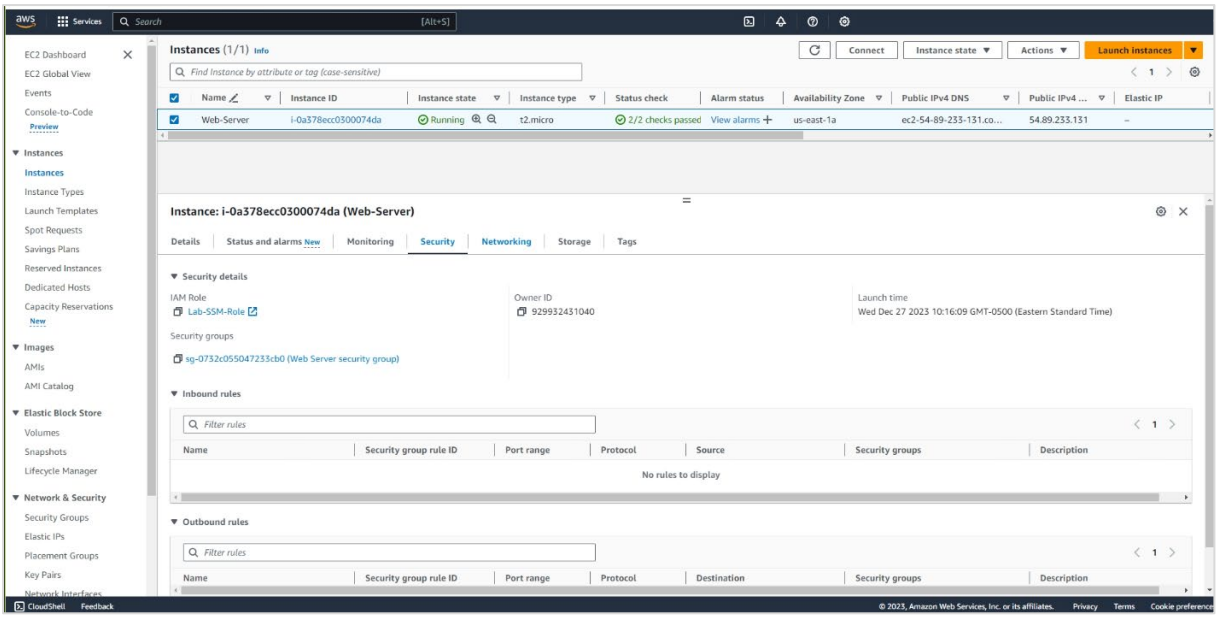
20. Choose **View all instances**.



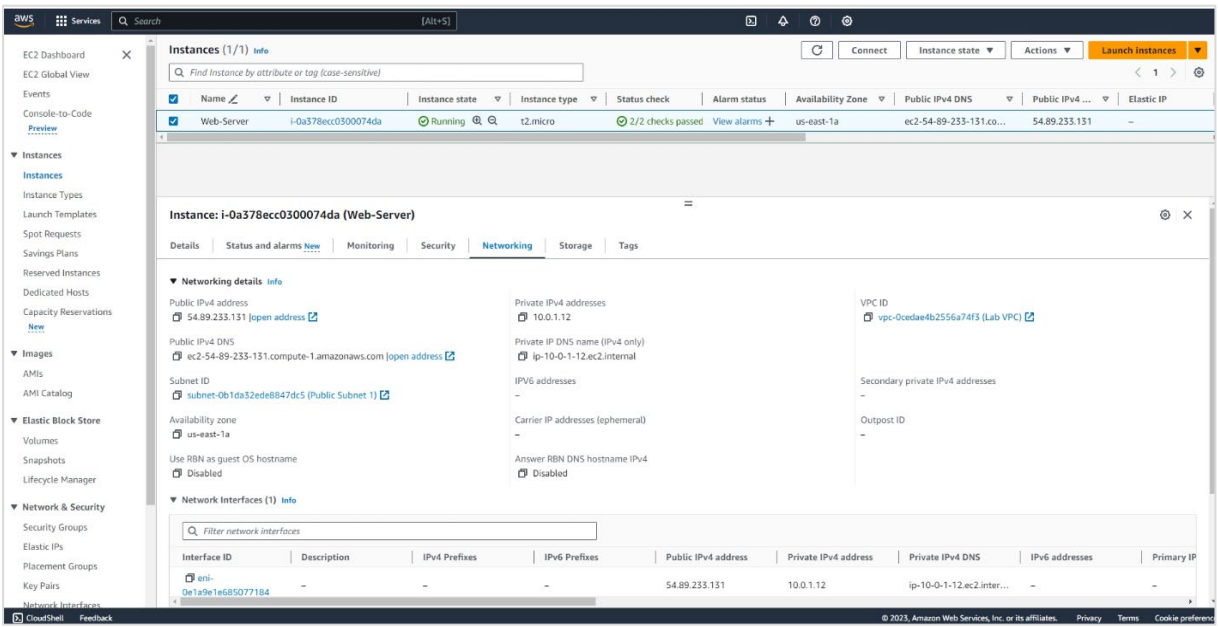
21. Next to your **Web-Server**, select the check box. This will show the **Details** tab. Review the **Details** tab which displays information about your instance.



22. Choose the **Security** tab and review the information that's available to you.



23. Choose the **Networking** tab and review the information that's available to you. Next, choose **Continue**.

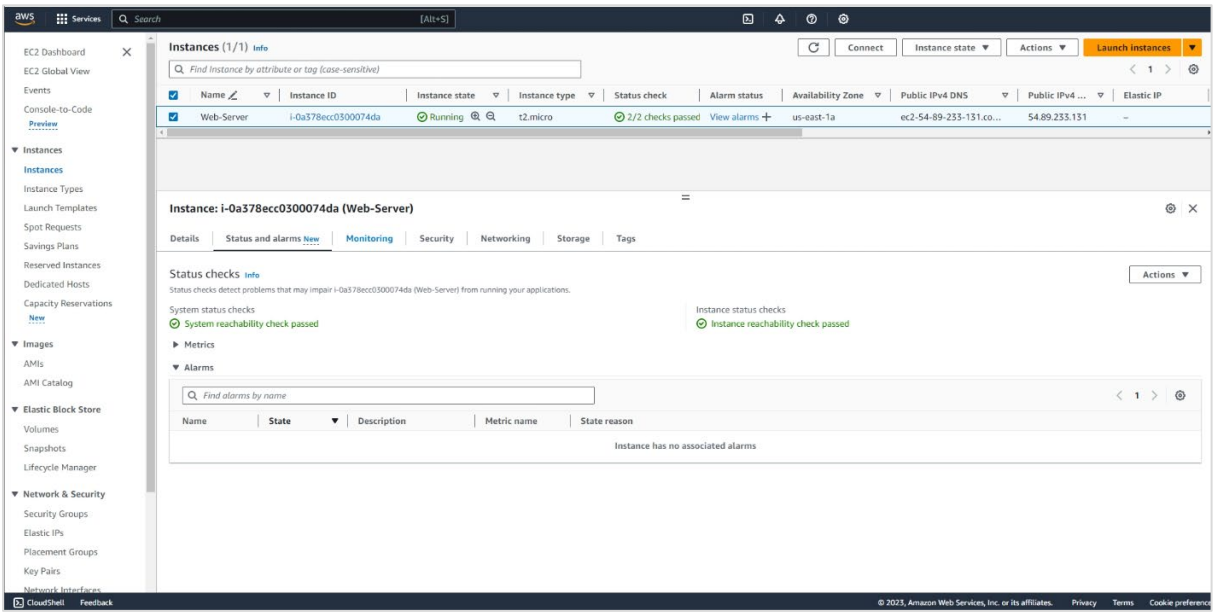


Your instance should display the following:

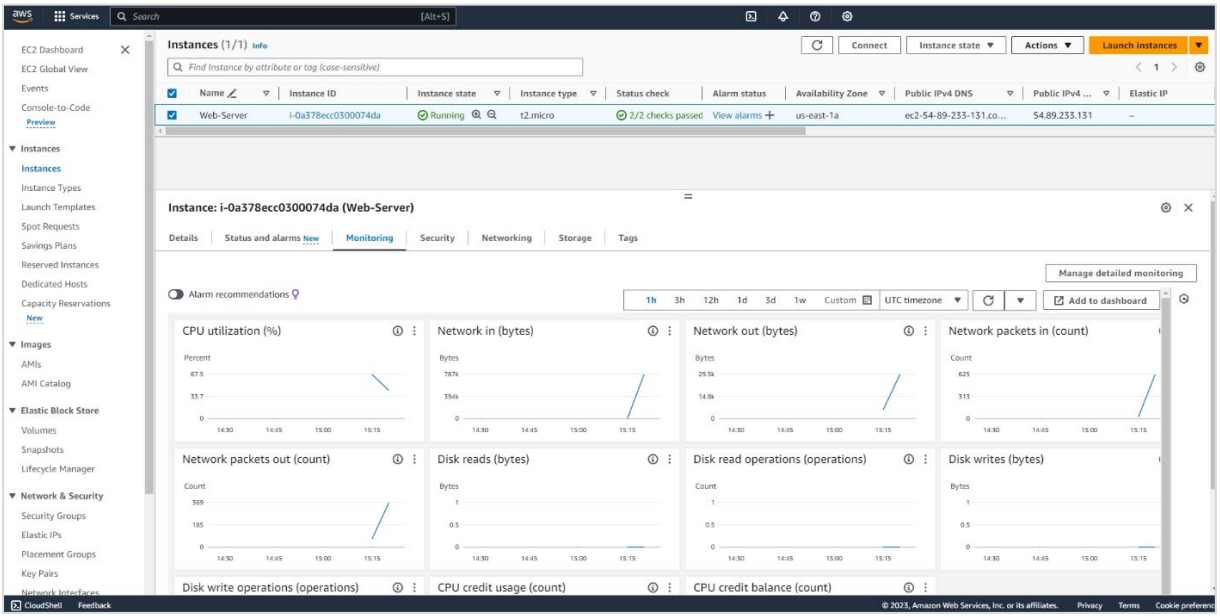
- **Instance State**: Running
- **Status Checks**: 2/2 checks passed

Task 2: Monitor your instance

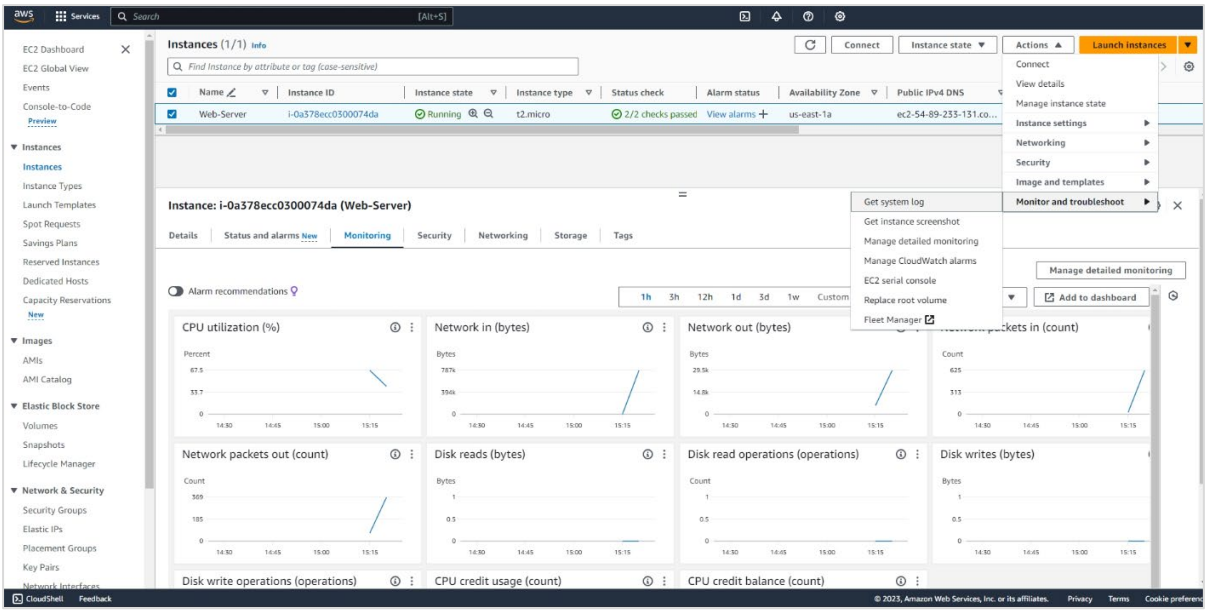
24. Choose the **Status and alarms** tab. Review the information that's available to you.



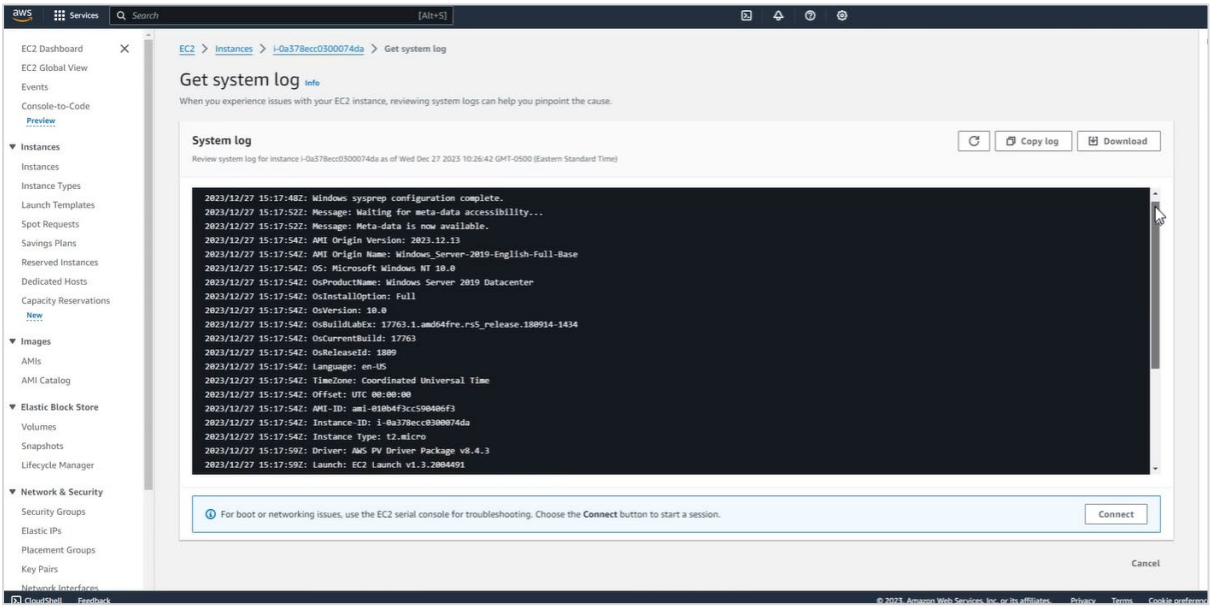
25. Choose the **Monitoring** tab.



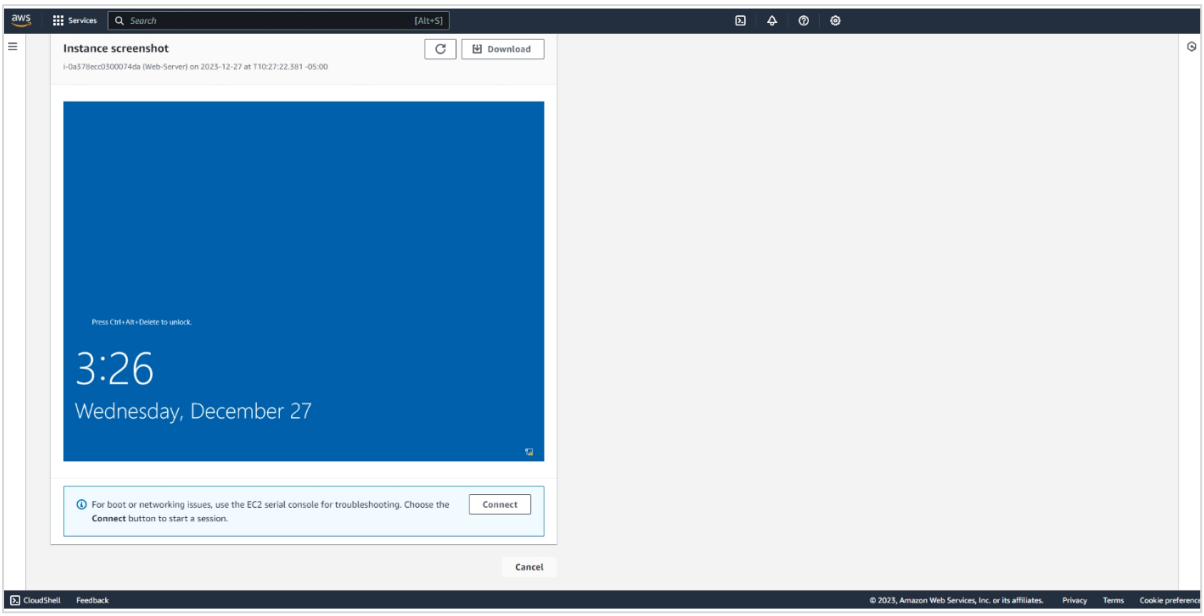
26. At the top of the page, choose the **Actions** dropdown list. Choose **Monitor and troubleshoot** < **Get system log**.



27. In the **System** log, **review** the messages in the output.



28. To return to the Amazon EC2 dashboard, choose **Cancel**.



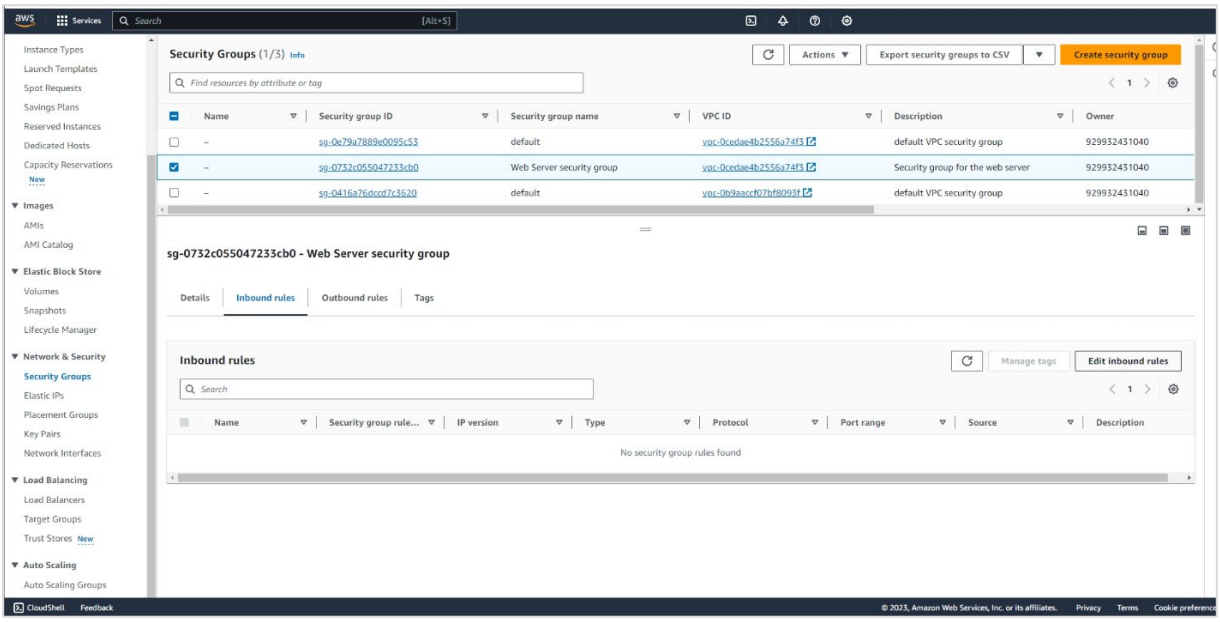
29. With your **Web-Server** selected, choose the **Actions** dropdown list, and choose **Monitor and troubleshoot** < **Get instance screenshot**.

30. At the bottom of the page, choose **Cancel**.

Task 3: Updating your security group and accessing the web server

31. In the left navigation pane, choose **Security Groups**.

32. Next to **Web Server security group**, select the check box.



33. Choose the **Inbound rules** tab.

The security group currently has no rules.

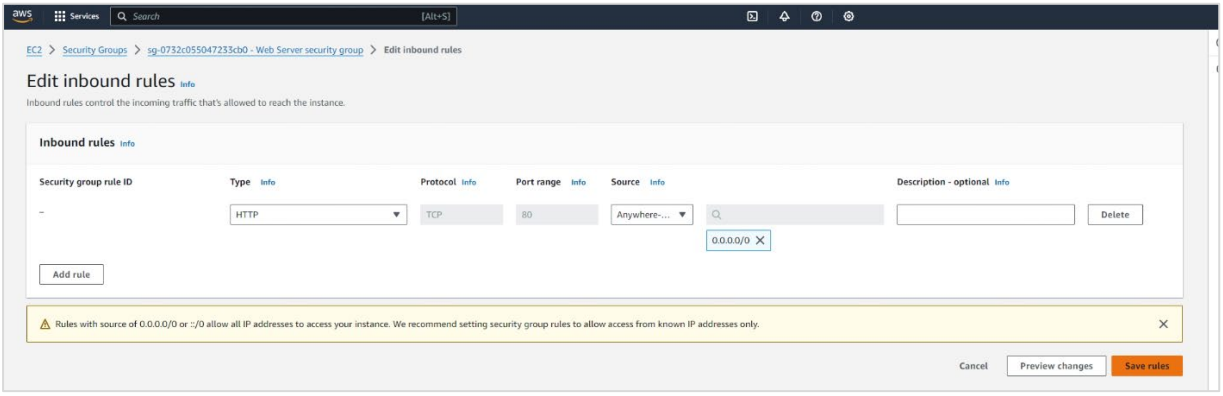
34. Choose **Edit inbound rules**, and then choose **Add rule**, and configure the following
options:

- Type: Choose **HTTP**.
- Source: Choose **Anywhere-IPv4**.

In this simulation, you can only add a new ingress rule. You cannot change a rule after it's created. Double check the configuration before choosing Save rules.

35. Choose **Save rules**.

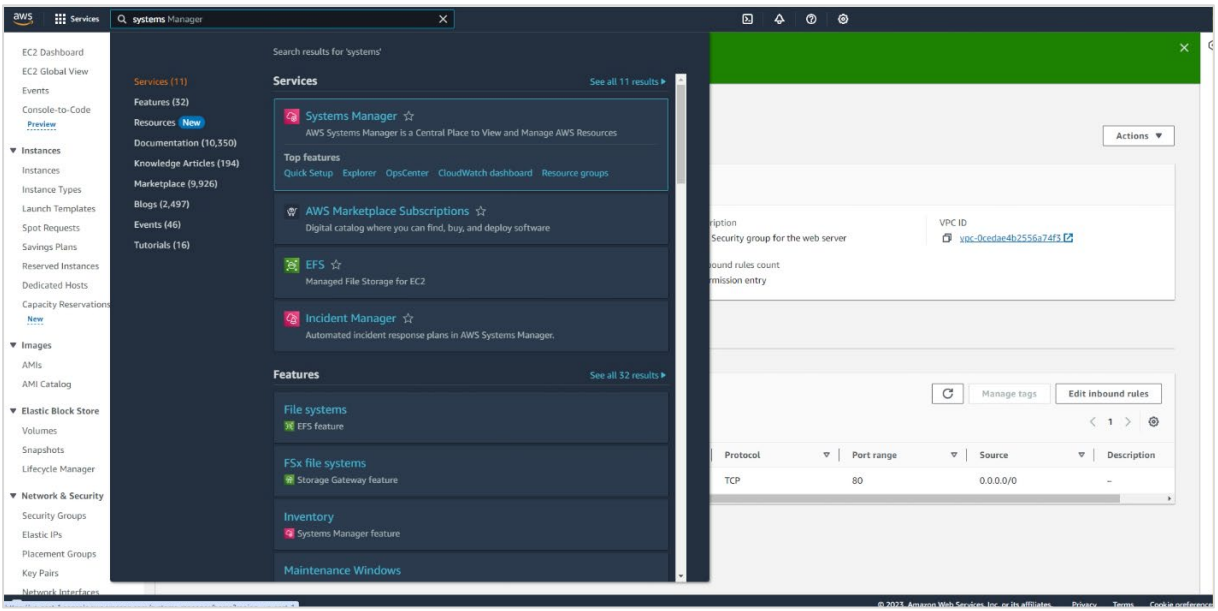
In a live environment, you would be able to copy the public IPv4 address and paste it into a browser to ensure that the SG and user data script deployed.



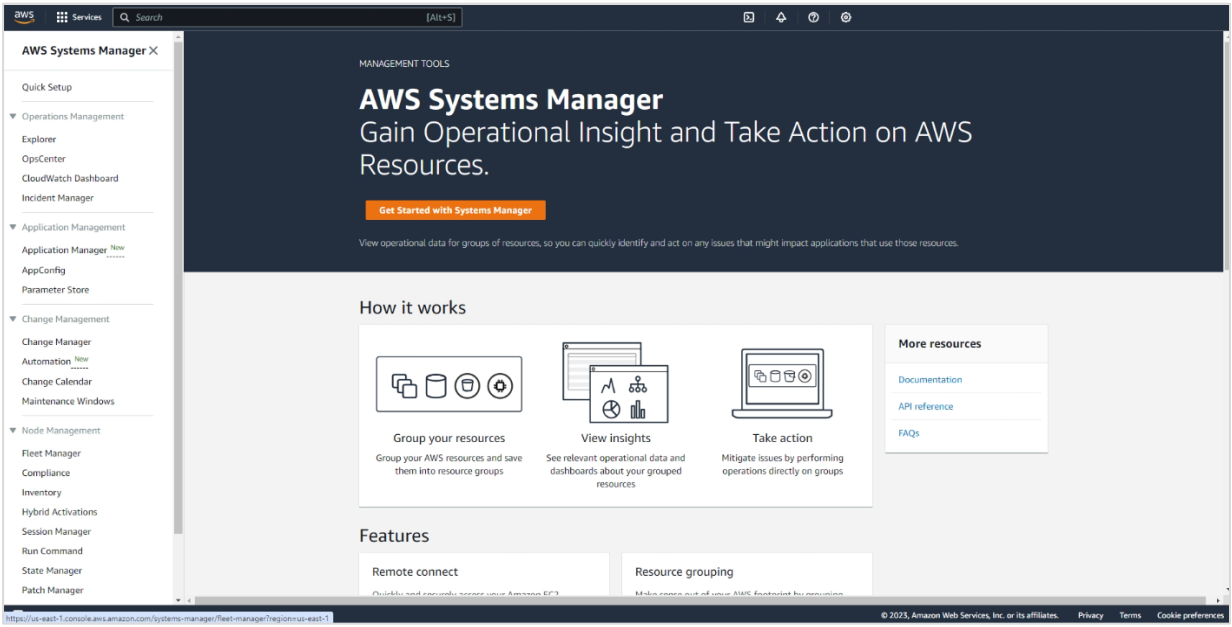
Task 4: Connecting to your instance using AWS Systems Manager Fleet Manager

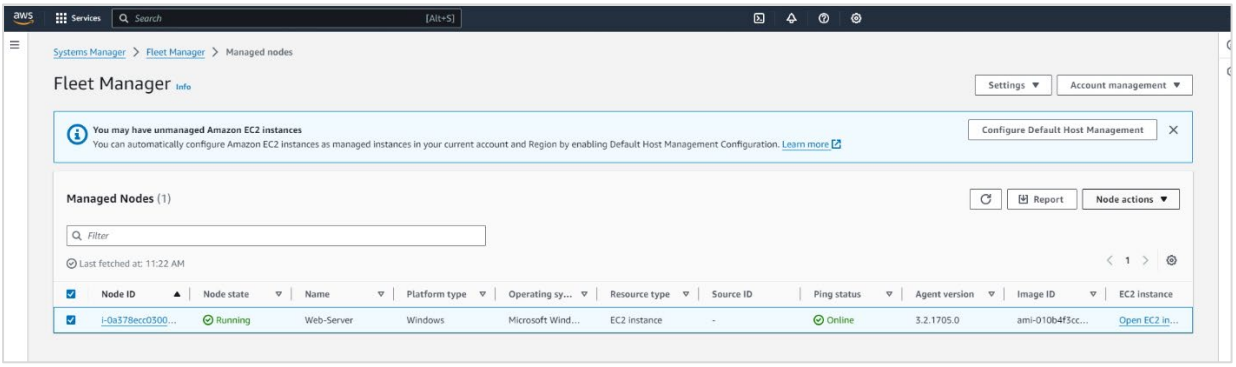
36. Search for **Systems Manager** and choose **Enter**.

37. Choose **Systems Manager**.



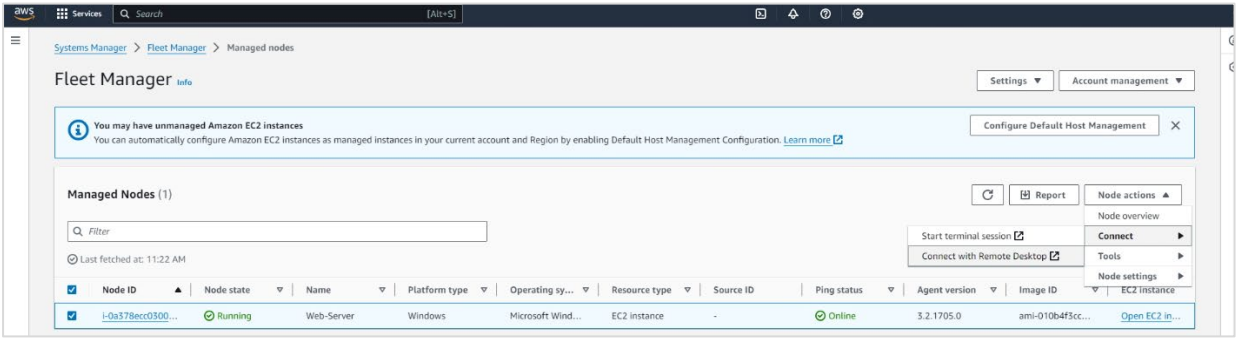
38. In the left navigation pane, choose **Fleet Manager**.





39. Under **Managed nodes**, select your **Web-Server** EC2 instance.

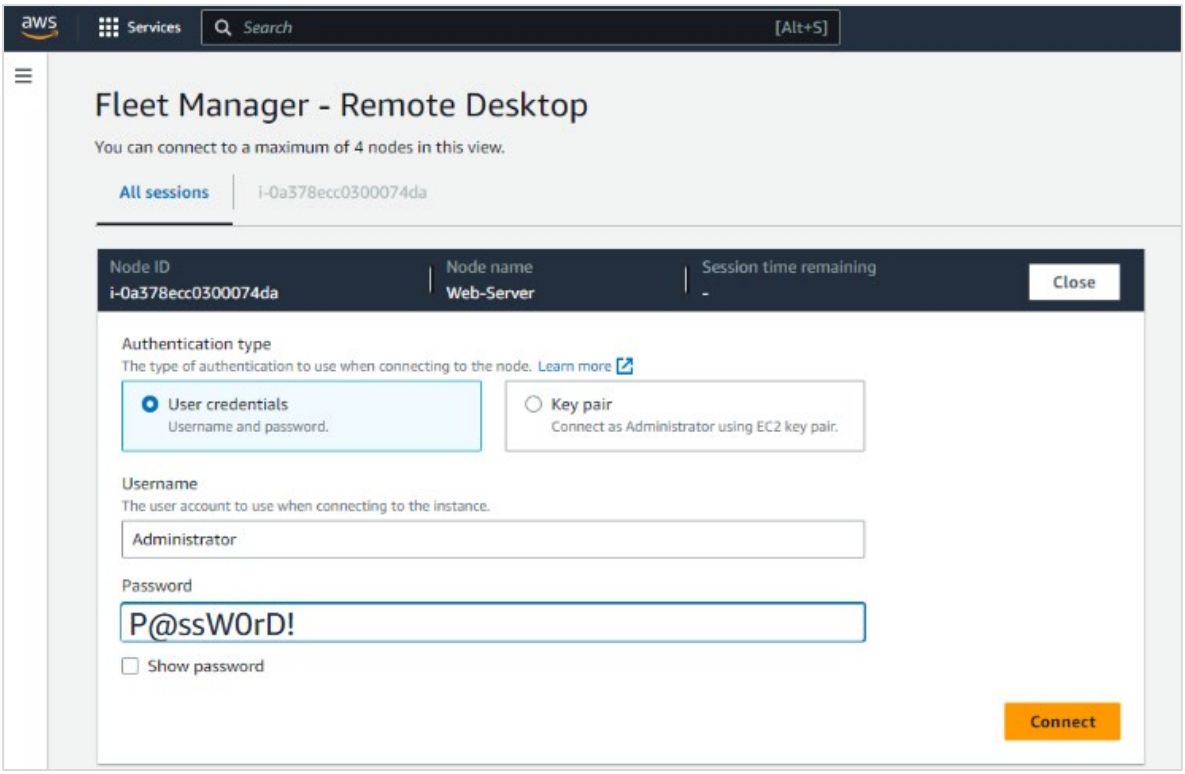
40. From the Node actions dropdown list, choose **Connect**, then **Connect with Remote Desktop.**

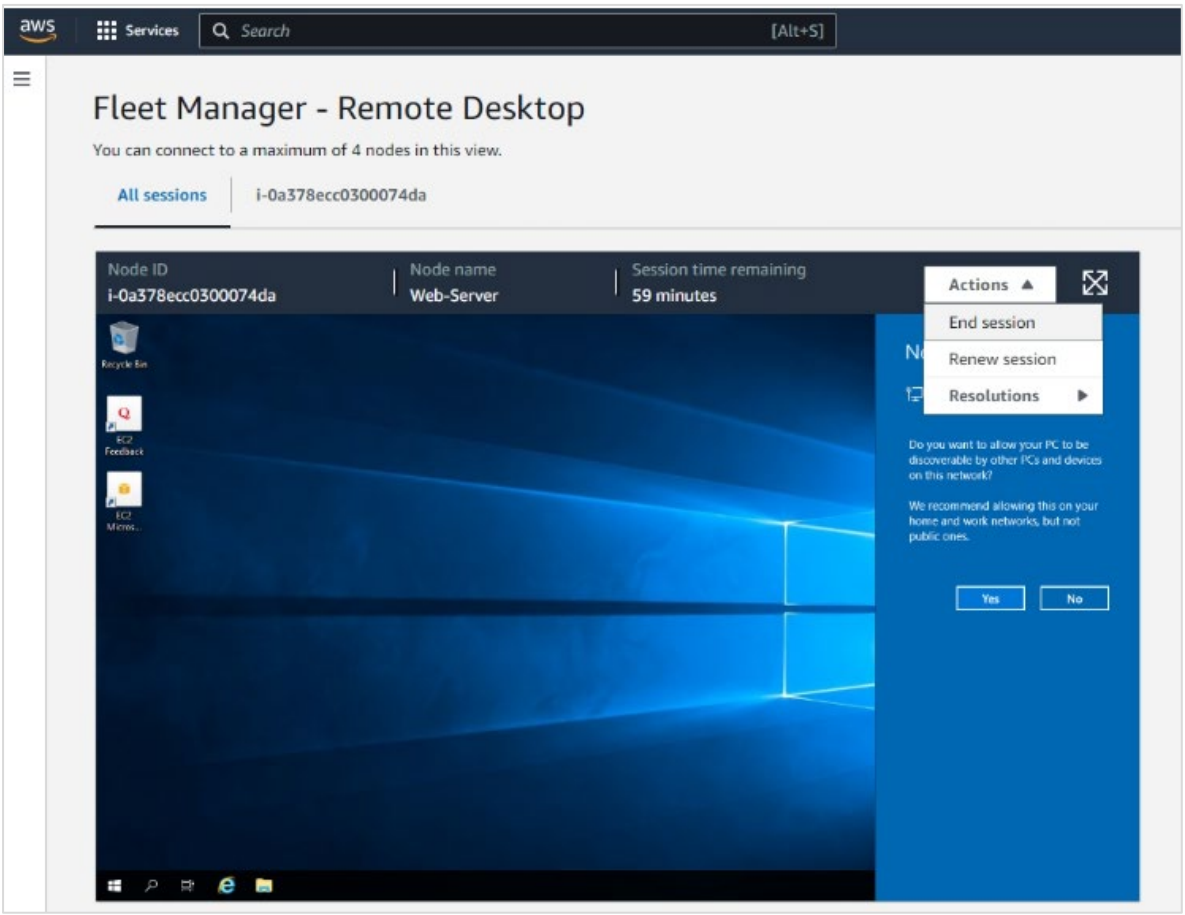


41. Enter the **Username**: Administrator

42. Enter the **Password**: P@ssW0rD!

43. Choose **Connect**.





44. To disconnect from your **Web-Server** instance, choose **Action** and then choose **End session.**

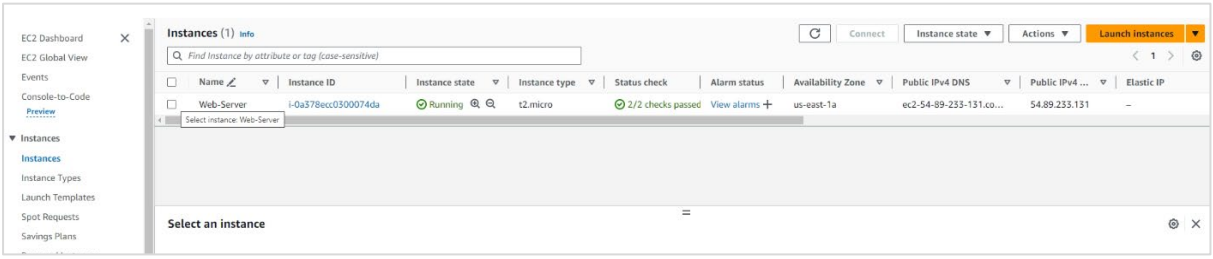
45. In the pop-up window, choose **End session** again.

Task 5: Resizing your instance

46. In the AWS Management Console, search for **EC2** and choose **Enter**. Then, choose **EC2**.

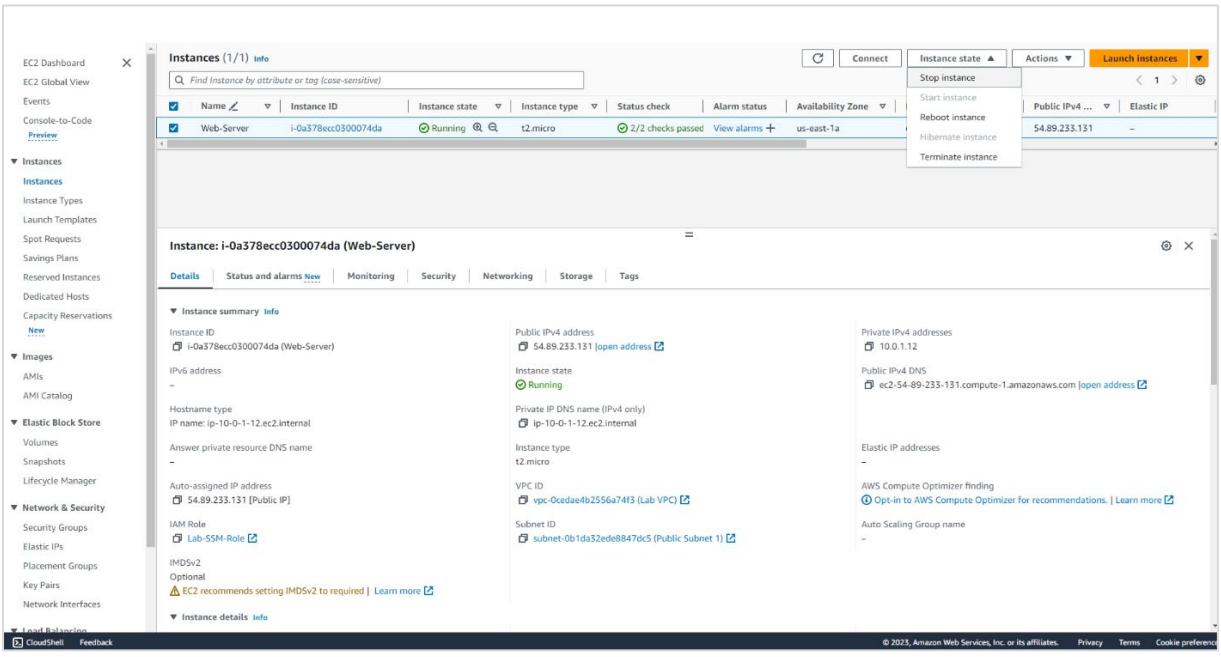
47. On the **EC2 Management Console**, in the left navigation pane, choose **Instances**.

48. Select the check box next to your **Web-Server** instance. At the top of the page, choose the **Instance state** dropdown list, and choose **Stop instance**.

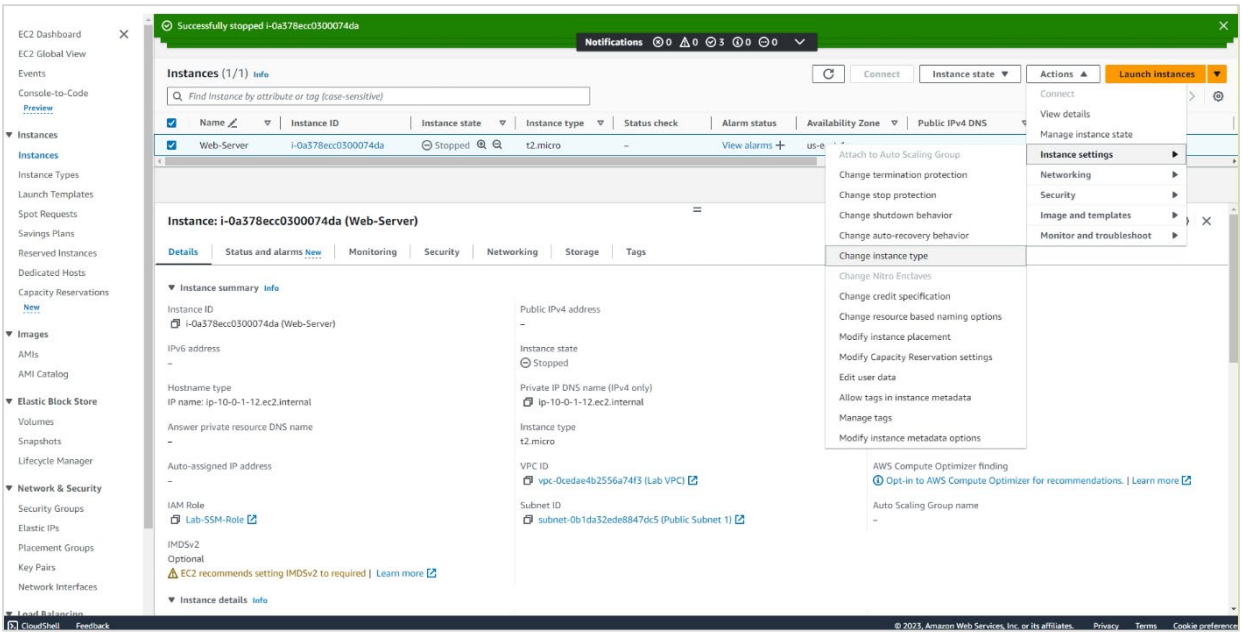


49. In the **Stop instance?** pop-up window, choose **Stop**.

Your instance performs a normal shutdown and then stops running.



50. Wait for the **Instance state** to display **Stopped**.

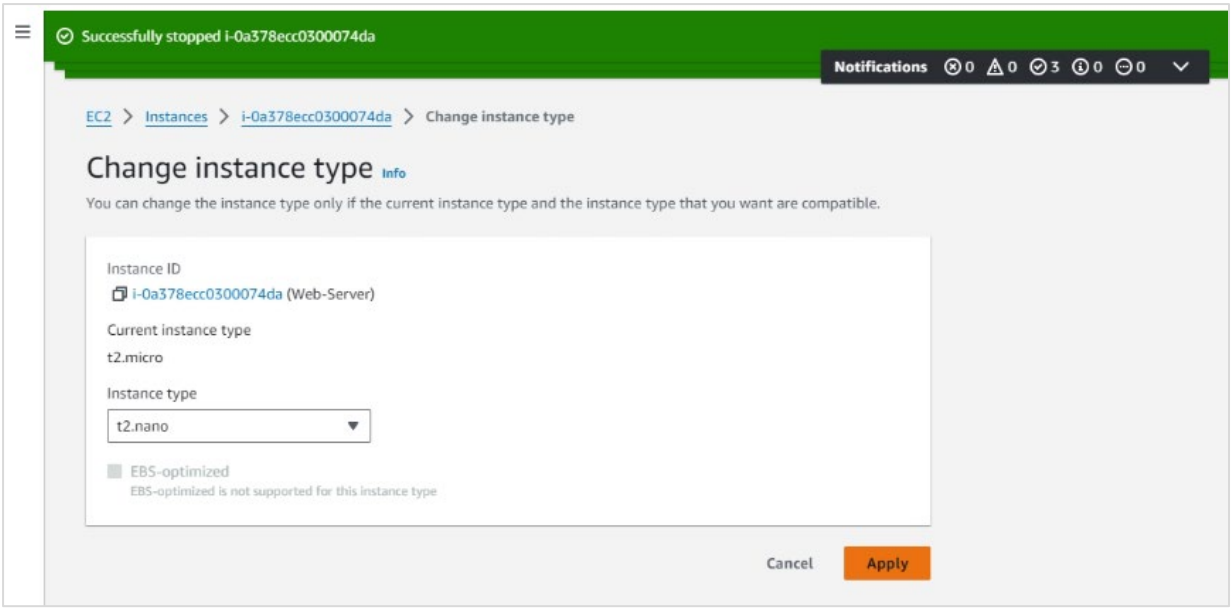


CHANGE THE INSTANCE TYPE

51. Select the check box next to your **Web-Server**. From the **Actions** dropdown list, select **Instance settings < Change instance type**, and then configure the following
option:

- **Instance** type: Select **t2.nano.**

52. Choose **Apply**.

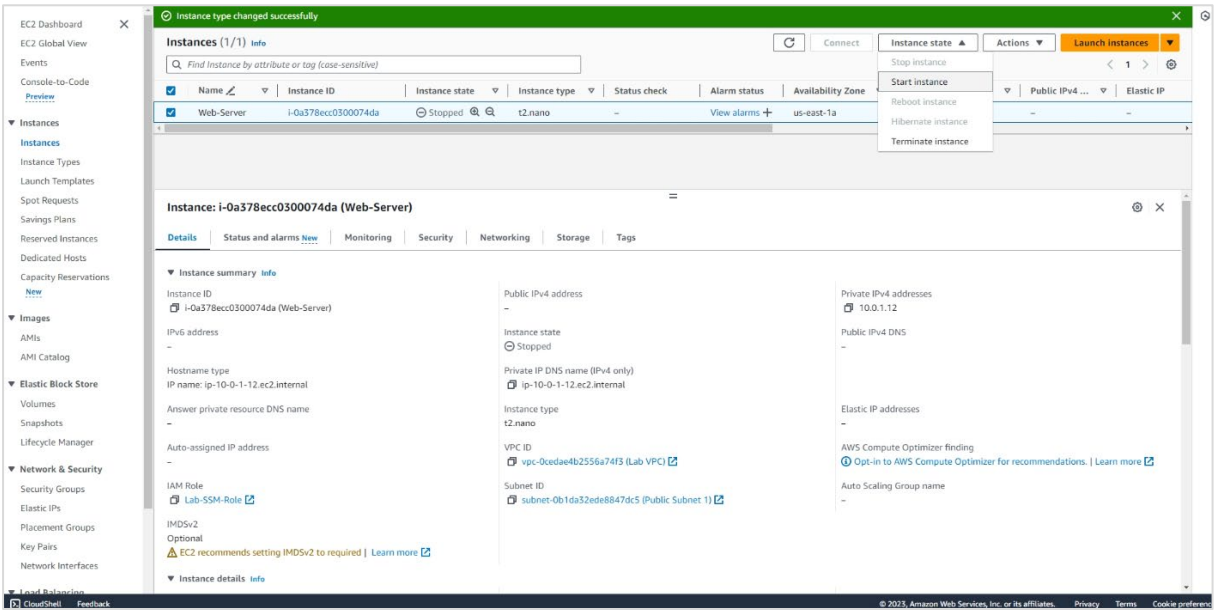


START THE RESIZED INSTANCE

When the instance is started again, it is a t2.nano instance. You now start the instance again, which has less memory but more disk space.

53. Next to your **Web-Server**, select the check box.

54. From the **Instance state** dropdown list, choose **Start instance**.

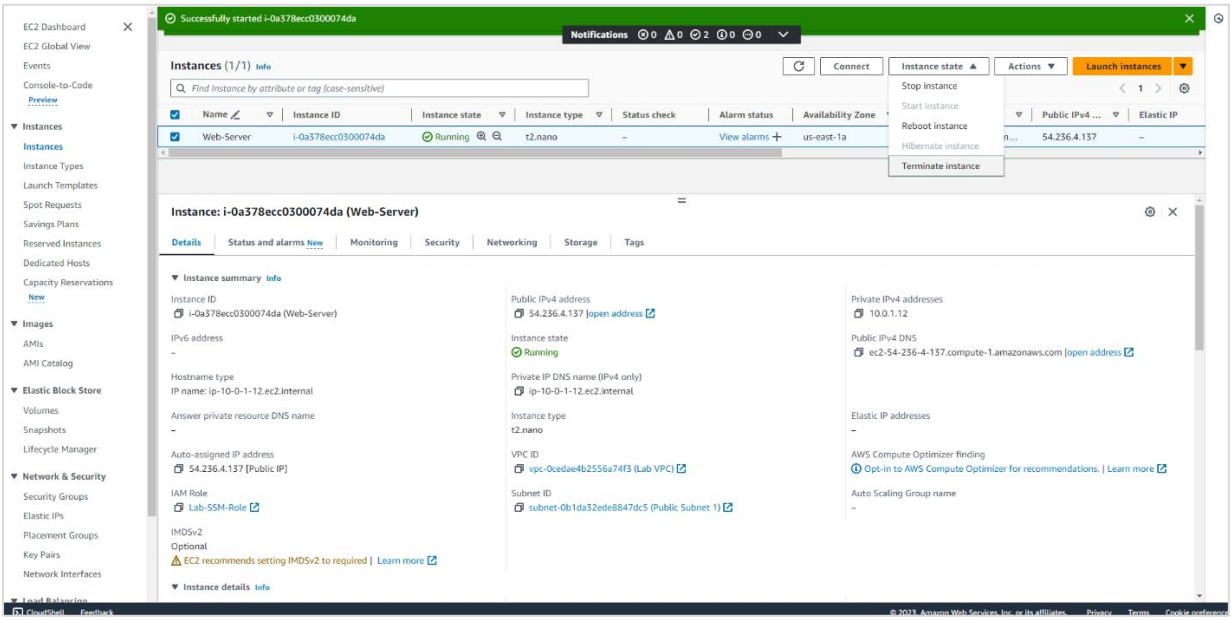


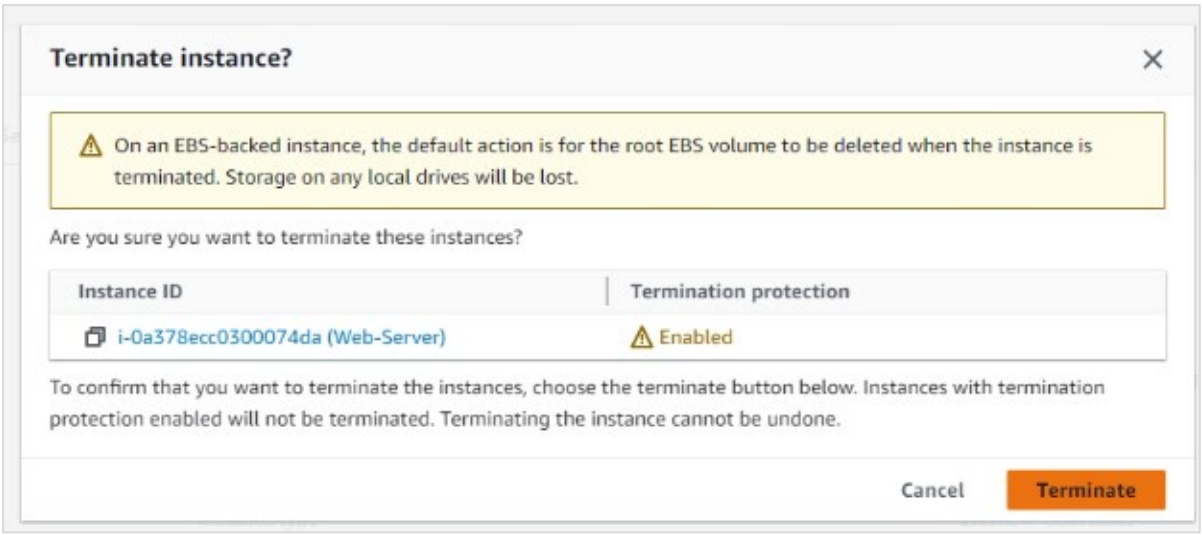
After the instance is restarted, the Instance state displays Running. Choose Continue.

Task 6: Testing termination protection

55. Select the check box next to your **Web-Server** instance. From the **Instance state** dropdown list, choose **Terminate instance**.

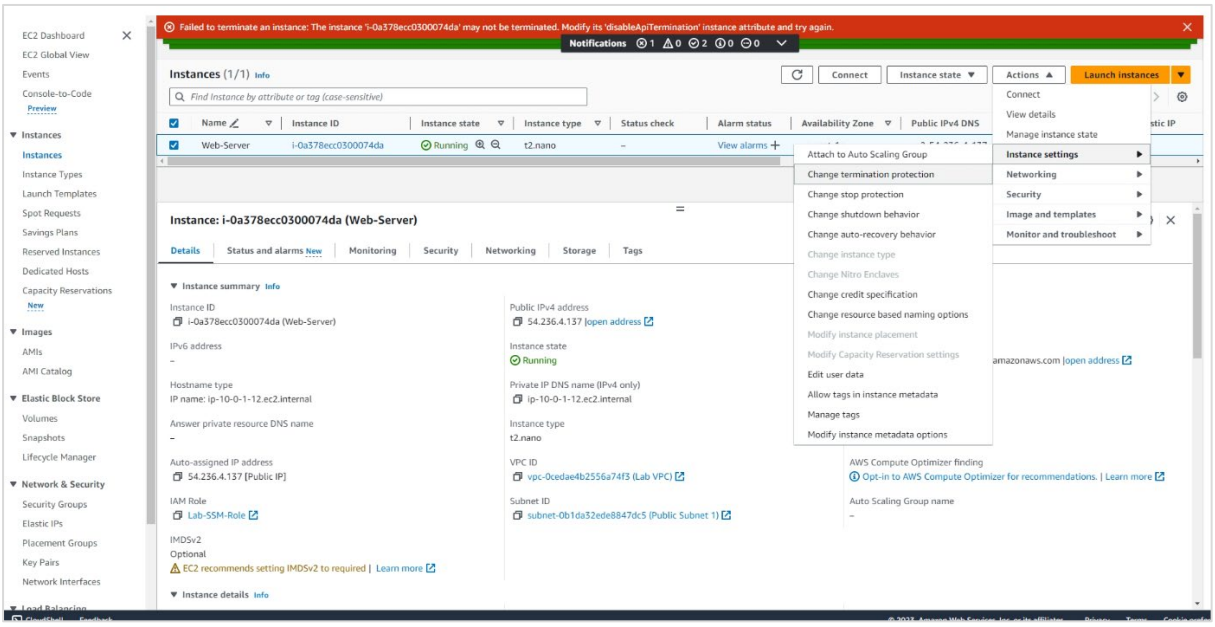
56. Choose **Terminate** to see what will happen if you try to terminate the instance.





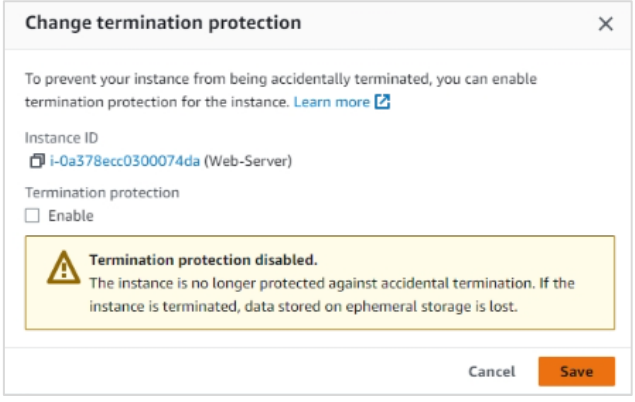
If you really want to terminate the instance, you need to turn off termination protection.

57. From the **Actions** dropdown list, choose **Instance settings**, and then choose **Change termination protection**.



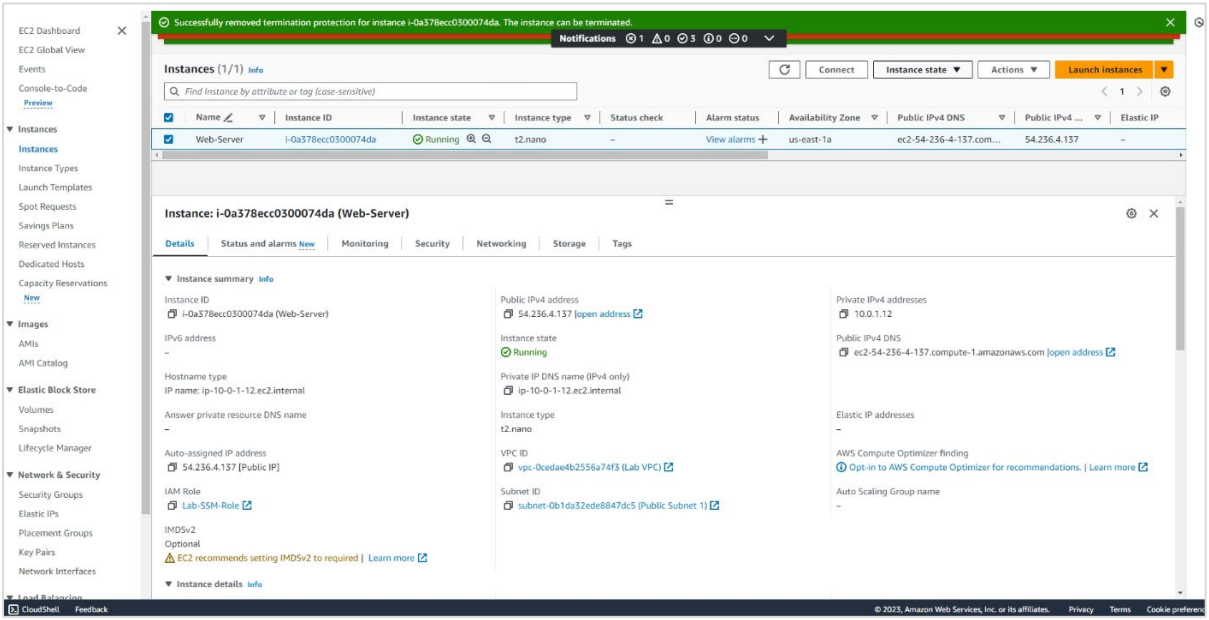
58. The check box for **Enable** will be selected. Clear the checkbox to disable.

59. Choose **Save**.



60. Now, try to terminate the instance again. From the **Instance state** dropdown list, choose **Terminate instance**.

61. The instance state will now successfully be terminated. Choose **Terminate**.



Conclusion- In this simulation, we created an EC2 instance and learned to manage instance properties such as the instance type. We modified security group settings to make the website reachable, and you learned how to use termination protection to prevent instance deletion. We learned how to stop, start, and terminate an EC2 instance. Finally, we learned how to find the EC2 limits for our AWS account.