

Experiment 10

Aim:

To create and work with a virtual machine on cloud (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.

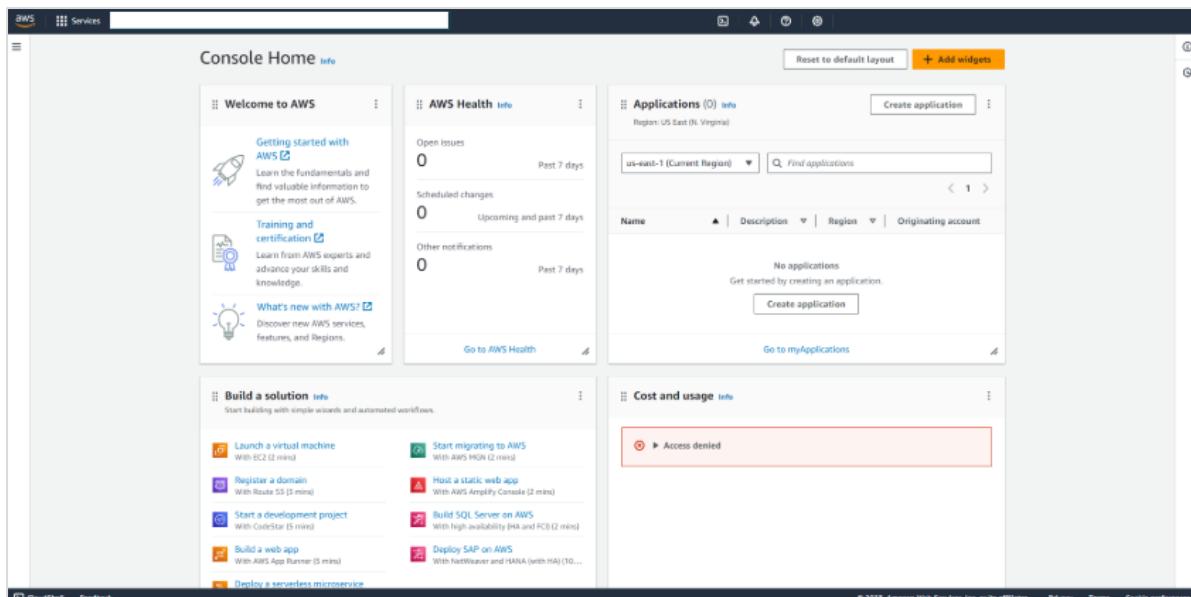
It's designed to make web-scale cloud computing intuitive and straight forward to use.

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.

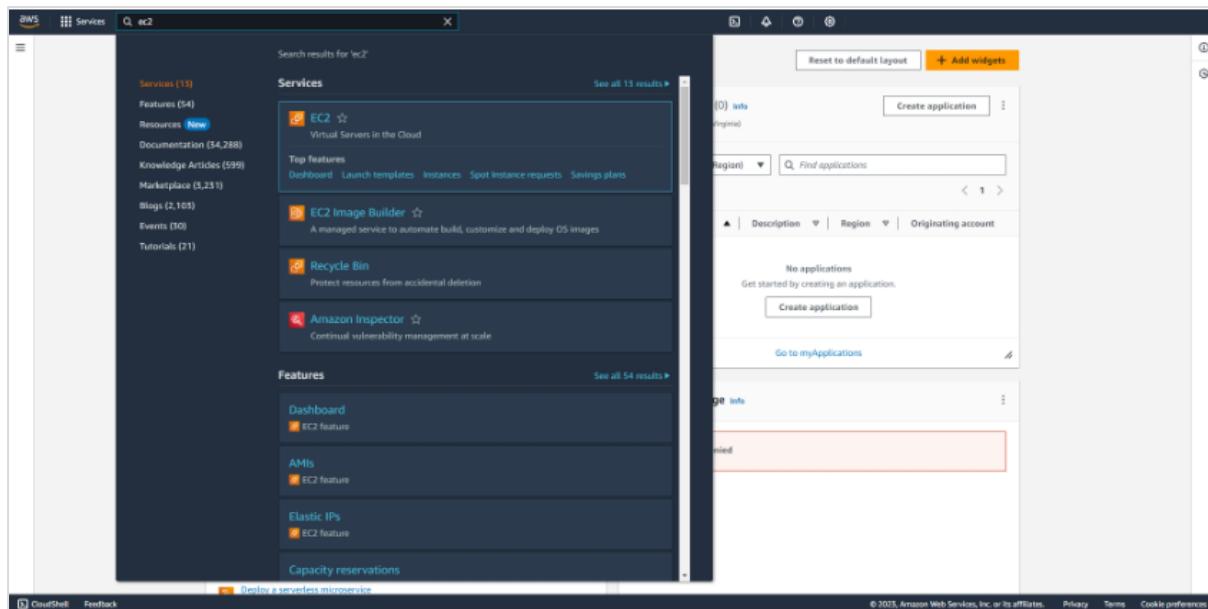
Task 1: Launching your EC2 instance

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.

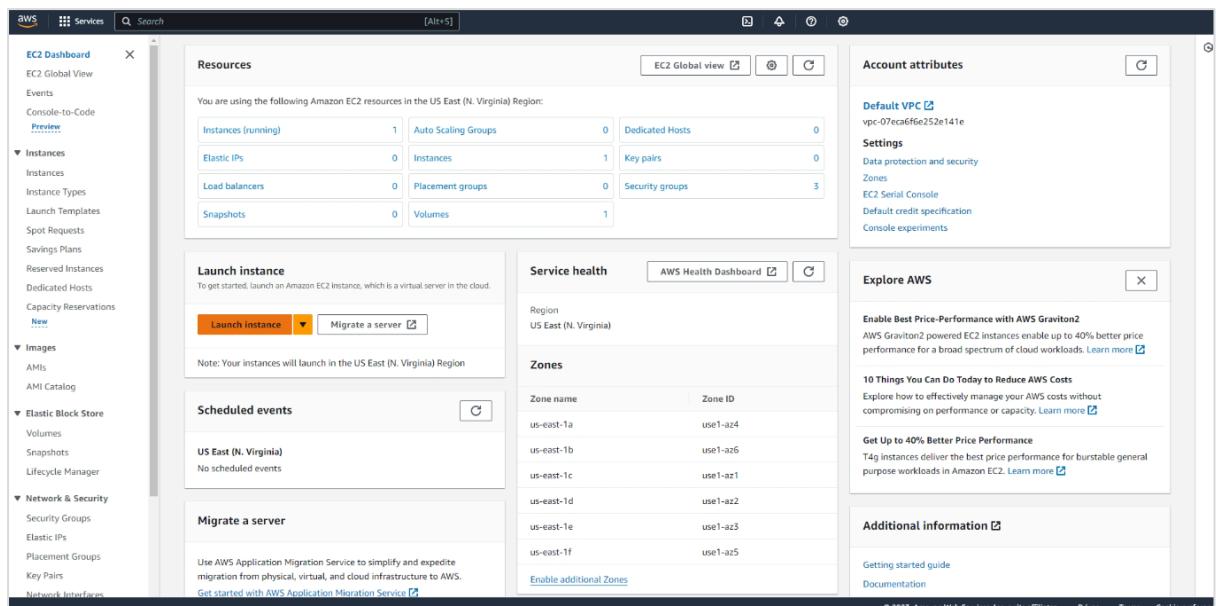
1. In the AWS Management Console in the **Search**, enter **EC2** and choose **Enter**.



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



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



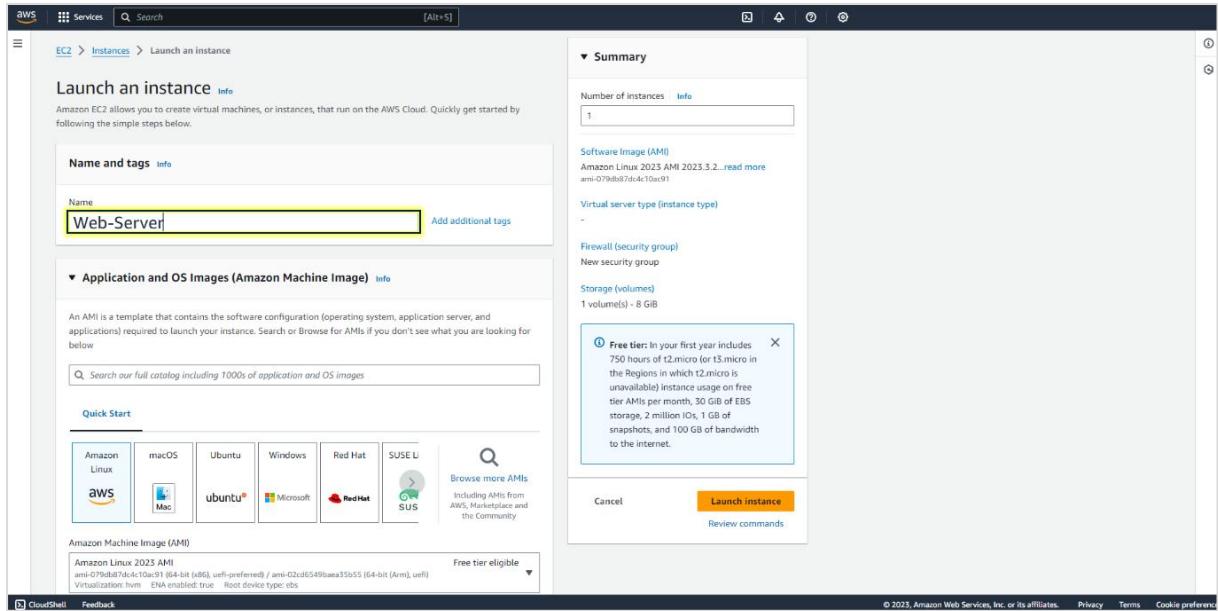
STEP 1: NAME YOUR EC2 INSTANCE

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**.

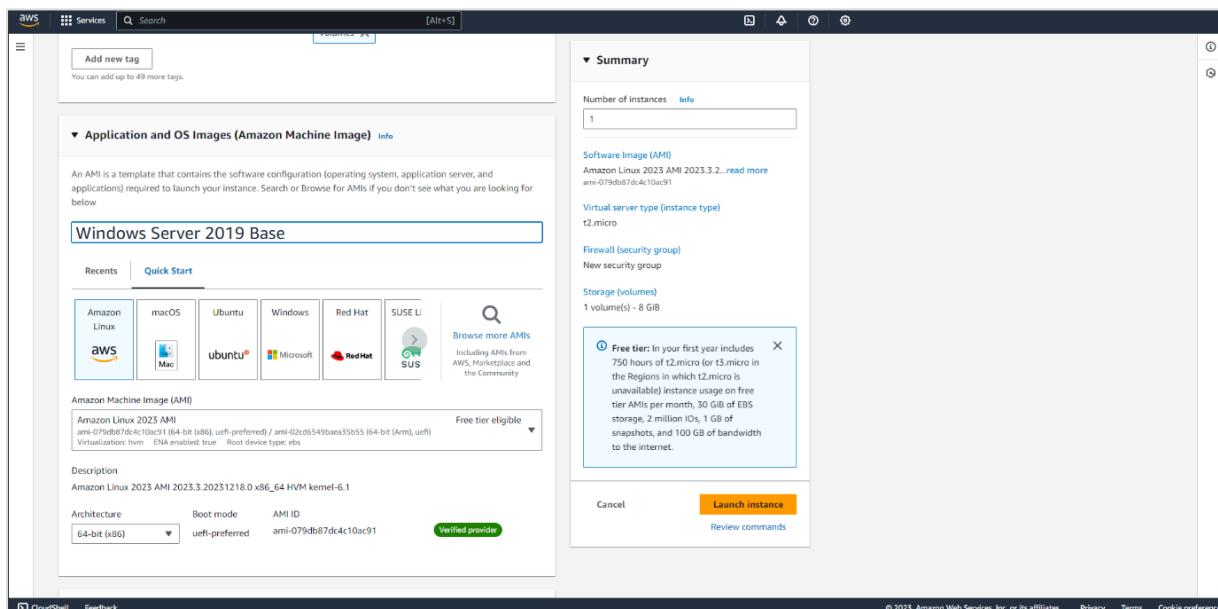
5. Choose the **Add additional tags** link.
6. From the **Resource types** dropdown list, **Instances** is selected by default. Leave Instances selected and select **Volumes**.



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.

The screenshot shows the AWS EC2 Instances Launch an Instance AMIs page. The search bar at the top contains "Windows Server 2019 Base". Below the search bar, there are four tabs: "Selected AMIs (1) Commonly used AMIs", "My AMIs (0) Created by me", "AWS Marketplace AMIs (9321) AWS & trusted third-party AMIs", and "Community AMIs (4) Published by anyone". The "Selected AMIs" tab is selected, showing one result: "Windows Server 2019 Base (1 filtered, 1 unfiltered)". This result is from Microsoft, is Windows-based, and is marked as "Free tier eligible" and "Verified provider". It has the identifier "ami-010b4f3cc590406f3 (64-bit (x86))". The "Select" button is highlighted in orange on the right. On the left, there are filters for "Free tier only", "OS category" (All Linux/Unix, All Windows), and "Architecture" (64-bit (Arm), 32-bit (x86), 64-bit (x86), 64-bit (Mac), 64-bit (Mac-Arm)). At the bottom, it says "The following results for 'Windows Server 2019 Base' were found in other categories" with links to "AWS Marketplace AMIs", "Community AMIs", and "Verified providers".

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**.**

The screenshot shows the AWS EC2 Instances Launch an Instance Instance type page. The "t2.micro" instance type is selected in the dropdown. The details shown include: Family: t2, 1 vCPU, 1 GiB Memory, Current generation: true. Pricing: On-Demand Windows base pricing: 0.0162 USD per Hour, On-Demand SUSE base pricing: 0.0116 USD per Hour, On-Demand RHEL base pricing: 0.0716 USD per Hour, On-Demand Linux base pricing: 0.0116 USD per Hour. A note states "Additional costs apply for AMIs with pre-installed software". To the right, there is a "Summary" section showing "Number of instances" set to 1. Other options like "All generations" and "Compare instance types" are also visible.

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)**.**

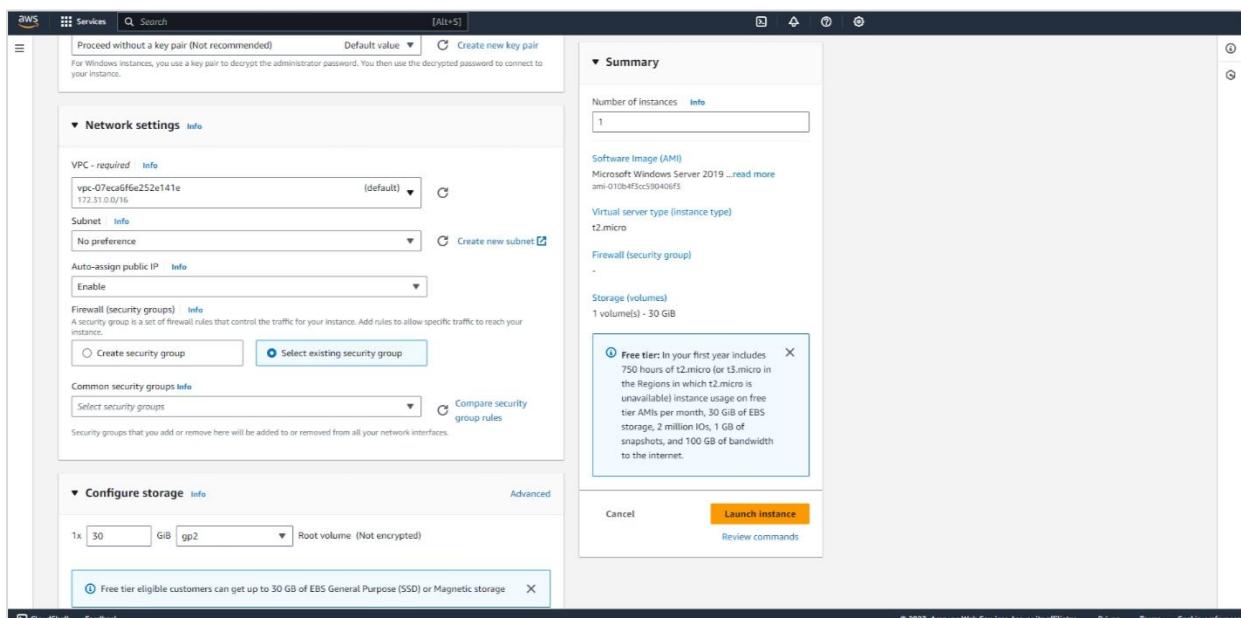
The screenshot shows the "Key pair (login)" configuration section. It asks if you can use a key pair to securely connect to your instance. Below is a dropdown for "Key pair name - required" with "Select" as the current value. A note says "For Windows instances, you use a key pair to decrypt the administrator password. You then use the decrypted password to connect to your instance." To the right, there are several configuration options: "Virtual server type (instance type)" set to "t2.micro", "Firewall (security group)" set to "New security group", "Storage (volumes)" showing "1 volume(s) - 30 GiB", and "ami-010b4f3cc590406f3" listed under "ami-010b4f3cc590406f3".

STEP 5: CONFIGURE THE NETWORK SETTINGS

You use this pane to configure networking settings.

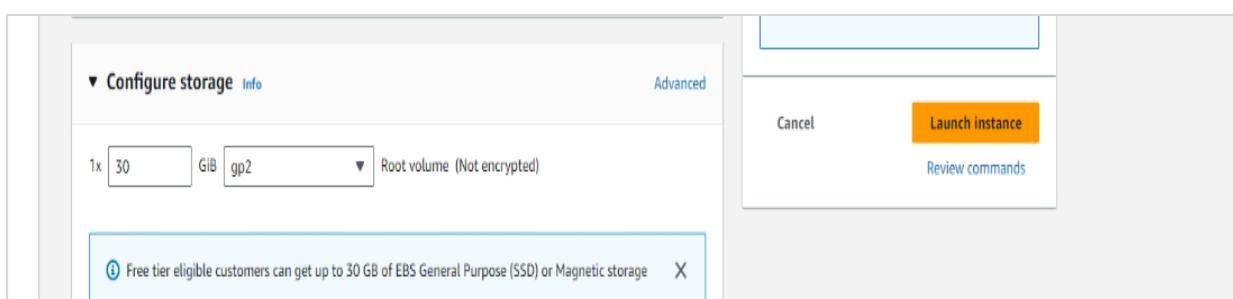
The virtual private cloud (VPC) indicates which VPC you want to launch the instance into. You can have multiple VPCs, including different ones for development, testing, and production.

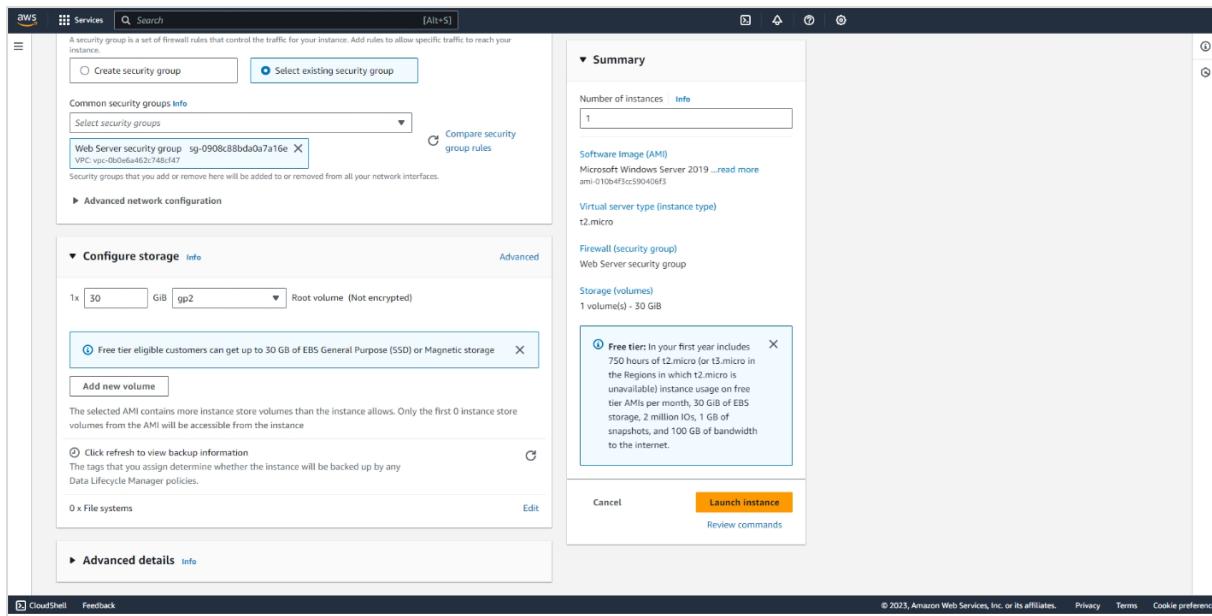
11. In the **Network settings** section, choose **Edit**.
12. From the **VPC - required** dropdown list, choose **Lab VPC**.
13. For **Firewall (security groups)**, choose **Select existing security group**.
14. From **Common security groups**, choose **Web Server security group**.



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).



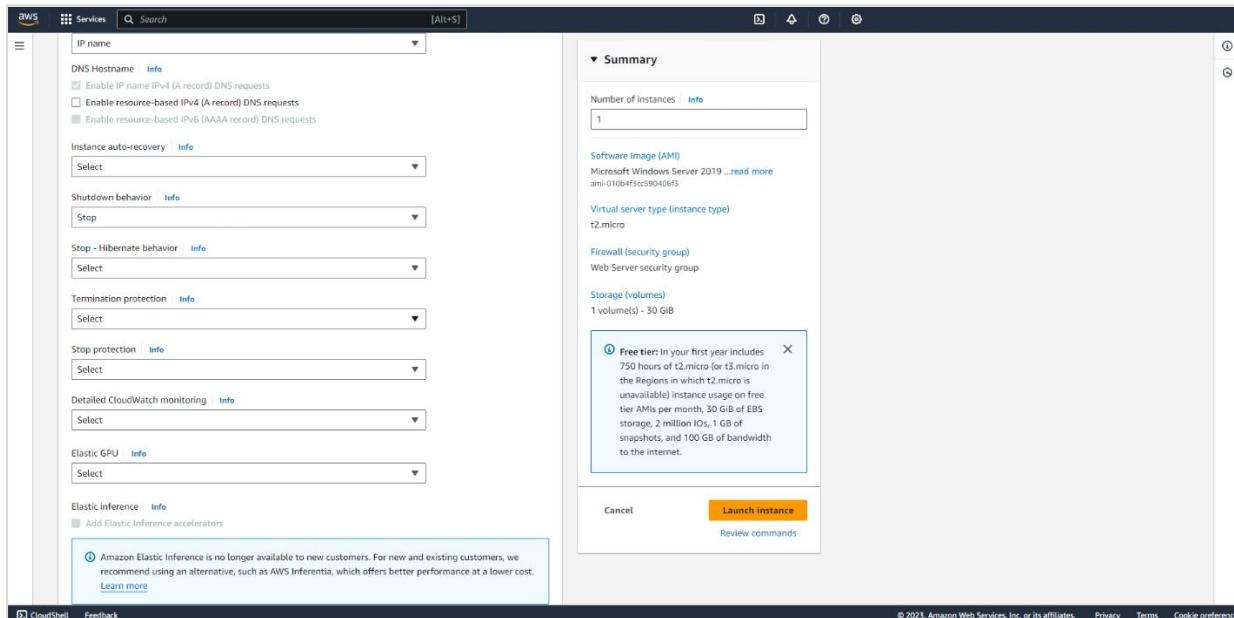


STEP 7: CONFIGURE ADVANCED DETAILS

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"

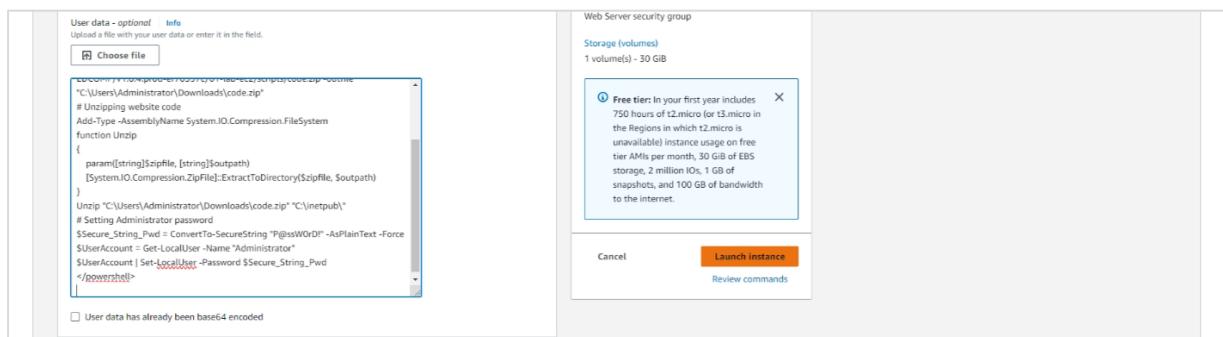
# Unzipping website code
Add-Type -AssemblyName System.IO.Compression.FileSystem
function Unzip
{
    param([string]$zipfile, [string]$outpath)

[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>

```

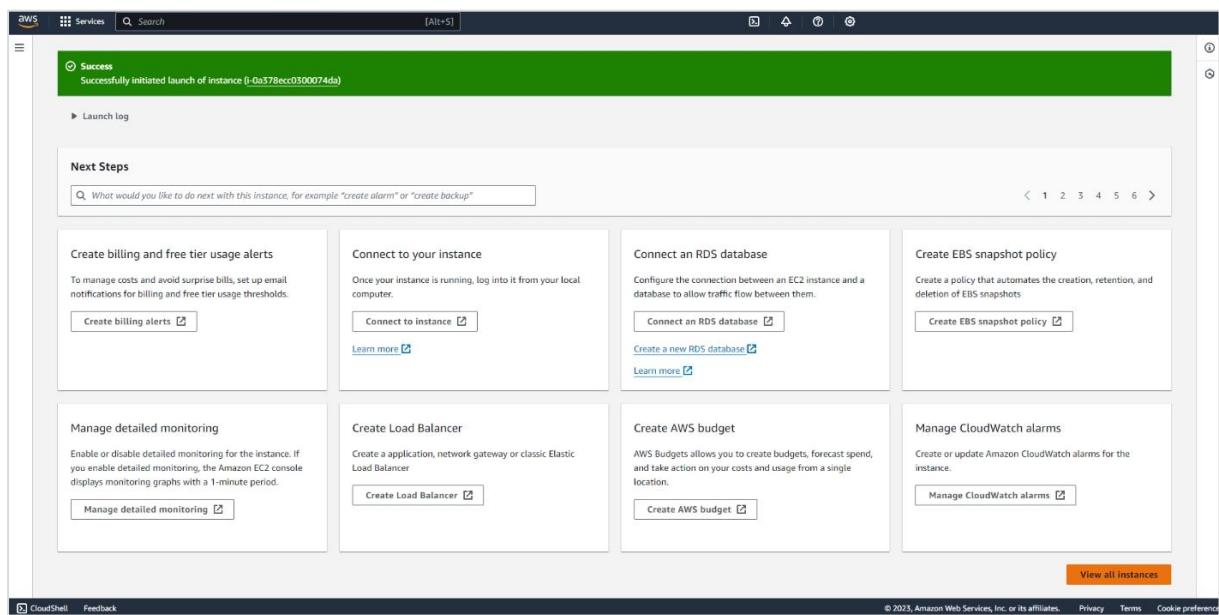


STEP 8: LAUNCH AN EC2 INSTANCE

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

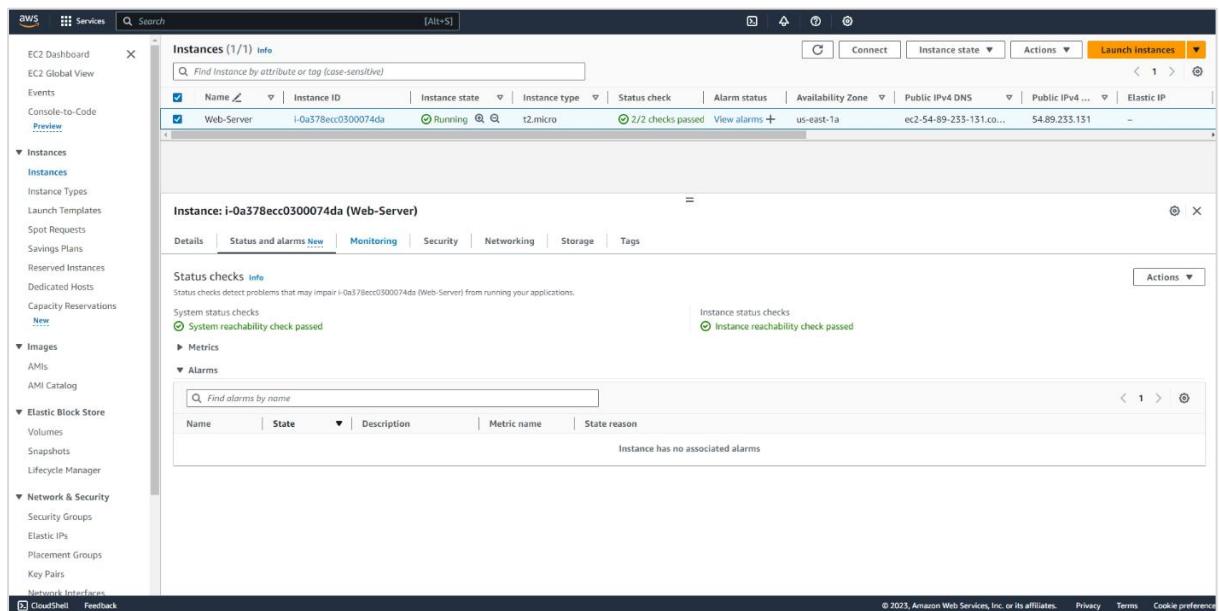
19. In the **Summary** section, choose **Launch instance**.

20. Choose **View all instances**.

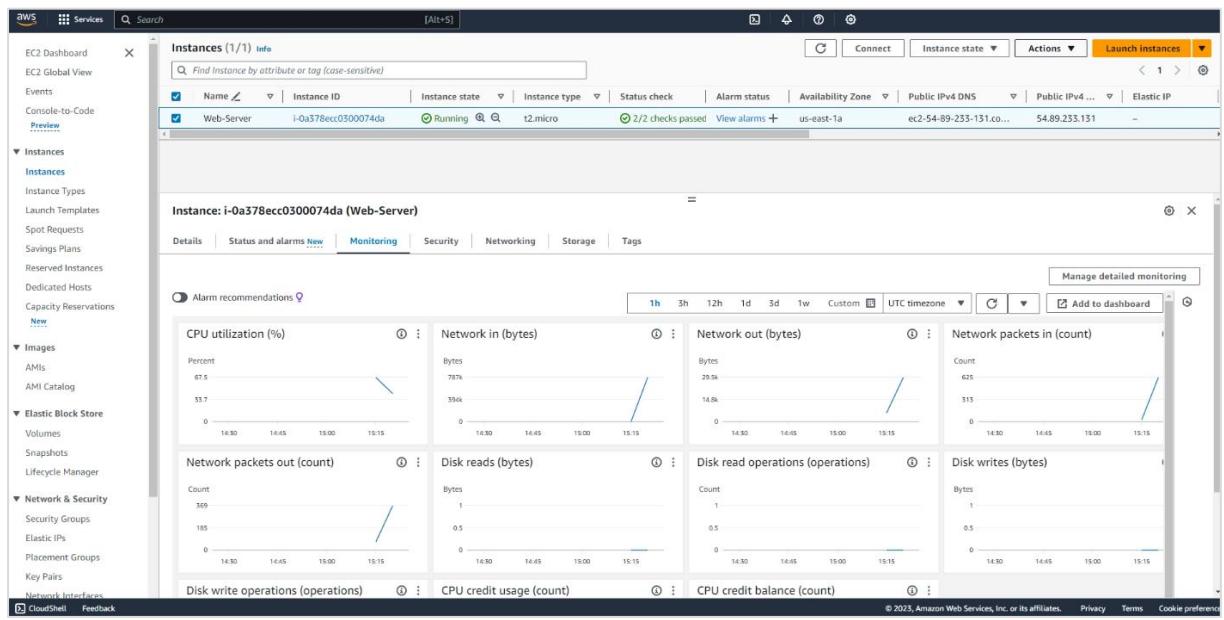


Task 2: Monitor your instance

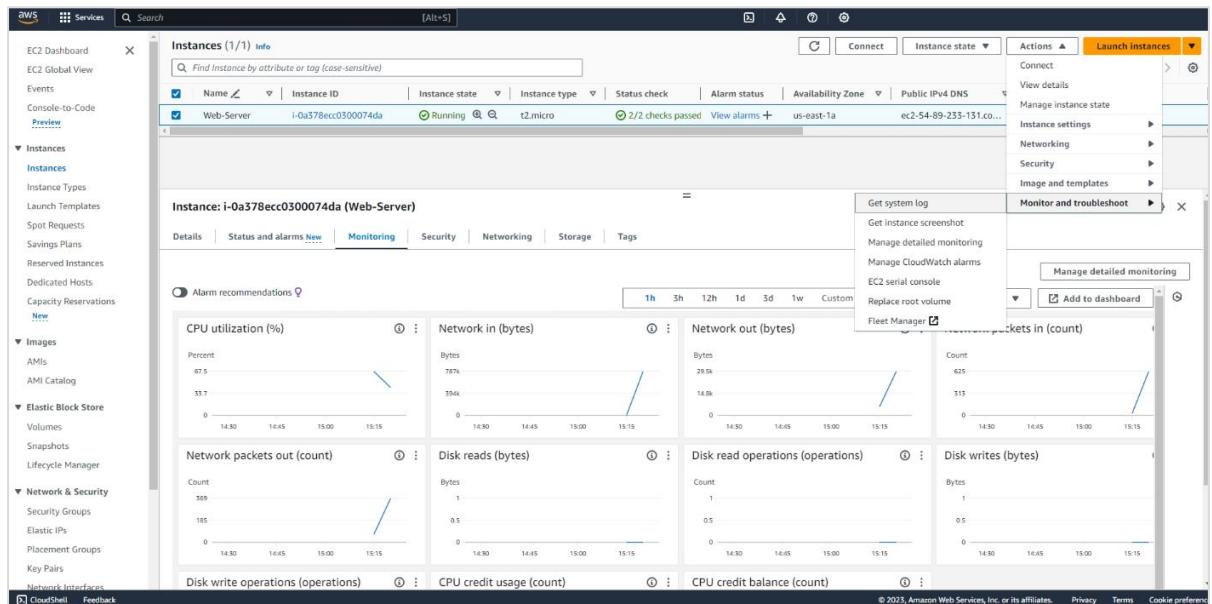
24. Choose the **Status and alarms** tab. Review the information that's available to you.



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.

Get system log Info

When you experience issues with your EC2 instance, reviewing system logs can help you pinpoint the cause.

System log

Review system log for instance i-0a378ecc0300074da as of Wed Dec 27 2023 10:26:42 GMT-0500 (Eastern Standard Time)

```

2023/12/27 15:17:48Z: Windows sysprep configuration complete.
2023/12/27 15:17:52Z: Message: Waiting for meta-data accessibility...
2023/12/27 15:17:52Z: Message: Meta-data is now available.
2023/12/27 15:17:54Z: AWI Origin Version: 2023.12.13
2023/12/27 15:17:54Z: AWI Origin Name: Windows Server-2019-English-Full-Base
2023/12/27 15:17:54Z: OS: Microsoft Windows NT 10.0
2023/12/27 15:17:54Z: OsProductName: Windows Server 2019 Datacenter
2023/12/27 15:17:54Z: OsInstallOption: Full
2023/12/27 15:17:54Z: OsVersion: 10.0
2023/12/27 15:17:54Z: OsBuildLabEx: 17763.1.amd64fre.rs5_release.180914-1434
2023/12/27 15:17:54Z: OsCurrentBuild: 17763
2023/12/27 15:17:54Z: OsReleaseId: 1809
2023/12/27 15:17:54Z: Language: en-US
2023/12/27 15:17:54Z: TimeZone: Coordinated Universal Time
2023/12/27 15:17:54Z: Offset: UTC 00:00:00
2023/12/27 15:17:54Z: AWI-ID: ami-010bf3fc590406f3
2023/12/27 15:17:54Z: Instance-ID: i-0a378ecc0300074da
2023/12/27 15:17:54Z: Instance Type: t2.micro
2023/12/27 15:17:59Z: Driver: AWS PV Drive Package v8.4.3
2023/12/27 15:17:59Z: Launch: EC2 Launch v1.3.2004491

```

For boot or networking issues, use the EC2 serial console for troubleshooting. Choose the **Connect** button to start a session.

Connect

Cancel

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

Instance screenshot

i-0a378ecc0300074da (Web-Server) on 2023-12-27 at T10:27:22.381 -0500

Press Ctrl+Alt+Delete to unlock.

3:26

Wednesday, December 27

For boot or networking issues, use the EC2 serial console for troubleshooting. Choose the **Connect** button to start a session.

Connect

Cancel

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Conclusion- In conclusion, the objective of creating and working with a virtual machine on the AWS cloud platform has been successfully achieved. Through this process, the principles of cloud computing, virtualization, and on-demand resource provisioning were effectively demonstrated. The deployment of an AWS EC2 instance provided hands-on experience in configuring, managing, and utilizing scalable virtual environments.