

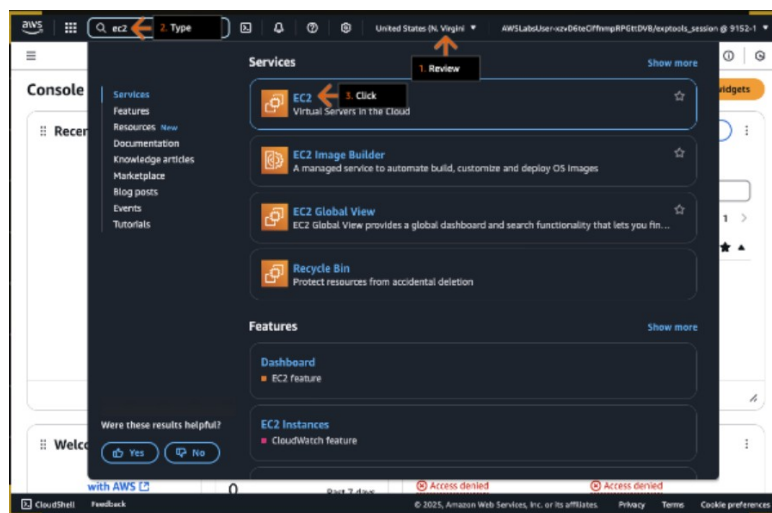
AMAZON EC2 INSTANCES: A PRACTICAL EXPLORATION

Objectives:

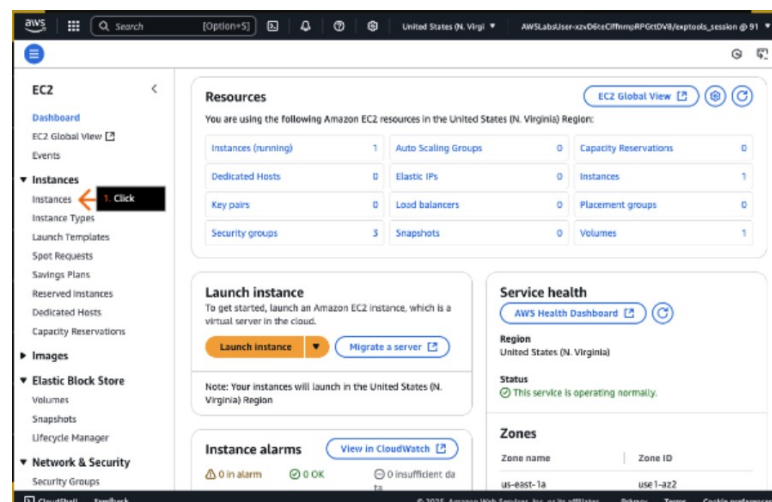
- Explore Amazon EC2 instance types.
- Filter EC2 instances based on their attributes.
- Connect to an EC2 instance by using EC2 Instance Connect.
- View EC2 instance metadata by using the instance public IP address.
- Start and stop an EC2 instance by using the Amazon EC2 console.
- Increase the size of an Amazon EC2 instance to provide better application performance.

Steps / Procedures / Instructions:

- On the top navigation bar, review the Region selector to confirm that the Region is set to United State (N. Virginia).
- In the Services search box, type:ec2
- In the search results, under Services, click EC2.



- In the left navigation pane, click Instances.



- In the Instances section, choose the check box to select the AWS Computing Solutions instance.
- On the Details tab, review the instance details.

The screenshot shows the AWS Management Console interface. In the left-hand navigation pane, the 'Instances' section is selected, and a red box labeled '1. Choose' highlights the 'Instances' link. The main content area displays the 'Instances (1/1)' page. A table lists the instance 'AWS Computing Solutions' with ID 'i-0917c26f0c109d205', which is in a 'Running' state. A red arrow points to the instance's name in the table. Below the table, the 'Details' tab is selected, and a red box labeled '2. Review' highlights the 'Details' tab. The instance details are shown, including the Instance ID, Public IPv4 address (54.196.232.247), Private IPv4 addresses (10.10.128.10), Instance state (Running), Hostname type (IP name: ip-10-10-128-10.ec2.internal), and Private IP DNS name (IPV4 only) (ip-10-10-128-10.ec2.internal).

- In the left navigation pane, click Instance Types.

The screenshot shows the AWS Management Console interface. In the left-hand navigation pane, the 'Instance Types' link is highlighted with a red box labeled '1. Click'. The main content area displays the 'Instance types (200+)' page. A table lists various instance types, including 'c3.xlarge', 'c3.large', 'c4.xlarge', 'c5ad.24xlarge', 'c5n.2xlarge', 'c6a.16xlarge', 'c6a.24xlarge', and 'c6gd.metal'. The table columns include Instance type, vCPUs, Architecture, Memory (GiB), Storage (GiB), and Storage type. Below the table, there is a section titled 'Select an instance type'.

- In the Instance types search box, type the following and press Enter after each:
 - o t3.large
 - o c5.large
 - o r5.large
- Choose the top check box to select all three of the filtered instance types.
- Below that, review the instance type details.
- Scroll down to review Compute, Networking, and Storage details (not shown).

The screenshot shows the AWS Management Console 'Instance types' page. The search bar at the top contains the filters 't3.large', 'c5.large', and 'r5.large'. Below the search bar, the 'Selected instance types' section displays the three instance types. The 'Details' section provides a comparison of the instance types across various attributes.

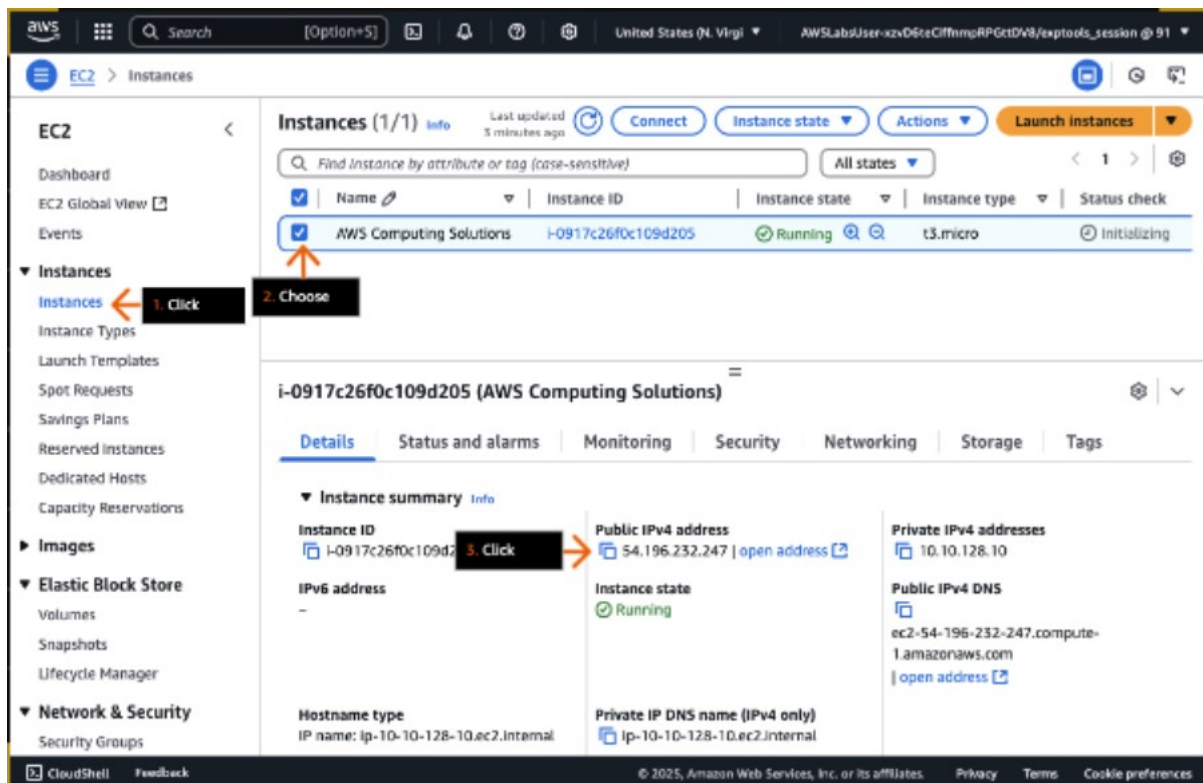
	r5.large	c5.large	t3.large
Instance family	r5	c5	t3
Instance size	large	large	large
Hypervisor	nitro	nitro	nitro

- Scroll down and review Pricing details.
 - o Prices vary based on vCPUs, memory, network performance, and other resources. Prices also vary based on operating systems and their license fees.

The screenshot shows the 'Pricing' section of the AWS Management Console 'Instance types' page. The 'Pricing' section displays the hourly cost for different operating systems for the three instance types.

	r5.large	c5.large	t3.large
On-Demand Linux pricing	0.126 USD per Hour	0.085 USD per Hour	0.0832 USD per Hour
On-Demand Windows pricing	0.218 USD per Hour	0.177 USD per Hour	0.1108 USD per Hour
On-Demand RHEL pricing	0.155 USD per Hour	0.114 USD per Hour	0.112 USD per Hour
On-Demand SUSE pricing	0.182 USD per Hour	0.141 USD per Hour	0.1395 USD per Hour
On-Demand Ubuntu Pro pricing	0.13 USD per Hour	0.089 USD per Hour	0.0867 USD per Hour

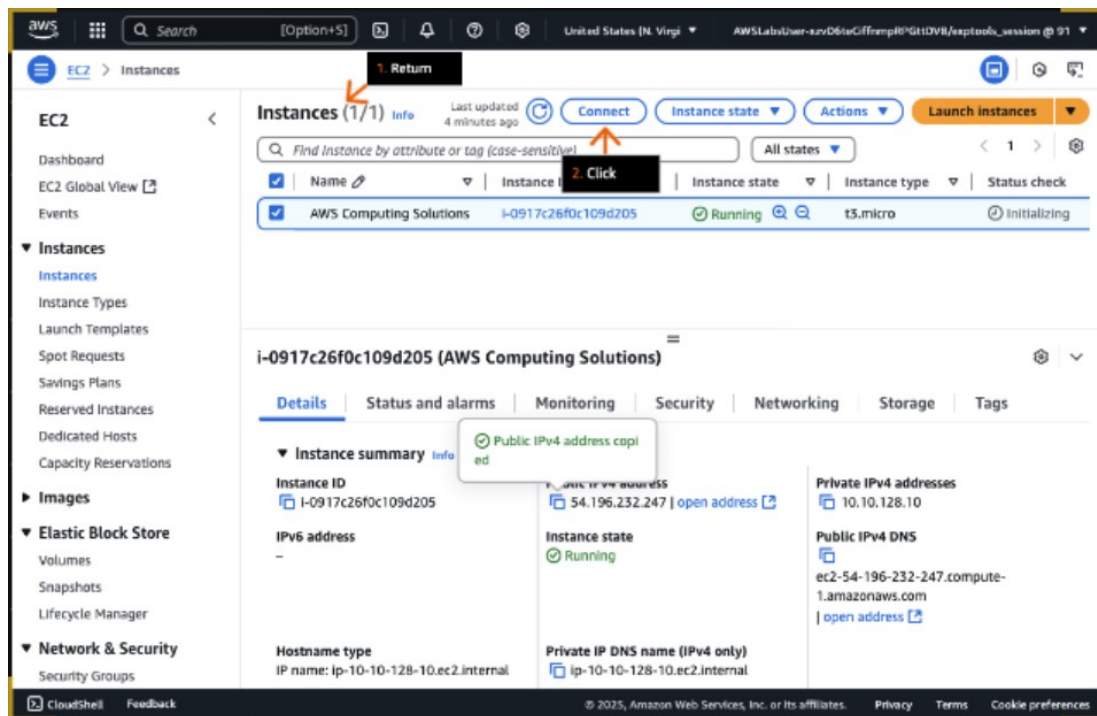
- In the left navigation bar, click Instances.
- In the Instances section, choose the check box to select the AWS Computing Solutions instance.
- On the Details tab, under Public IPv4 address, click the copy icon to copy the provided address.
 - Do not click the "open address" link.



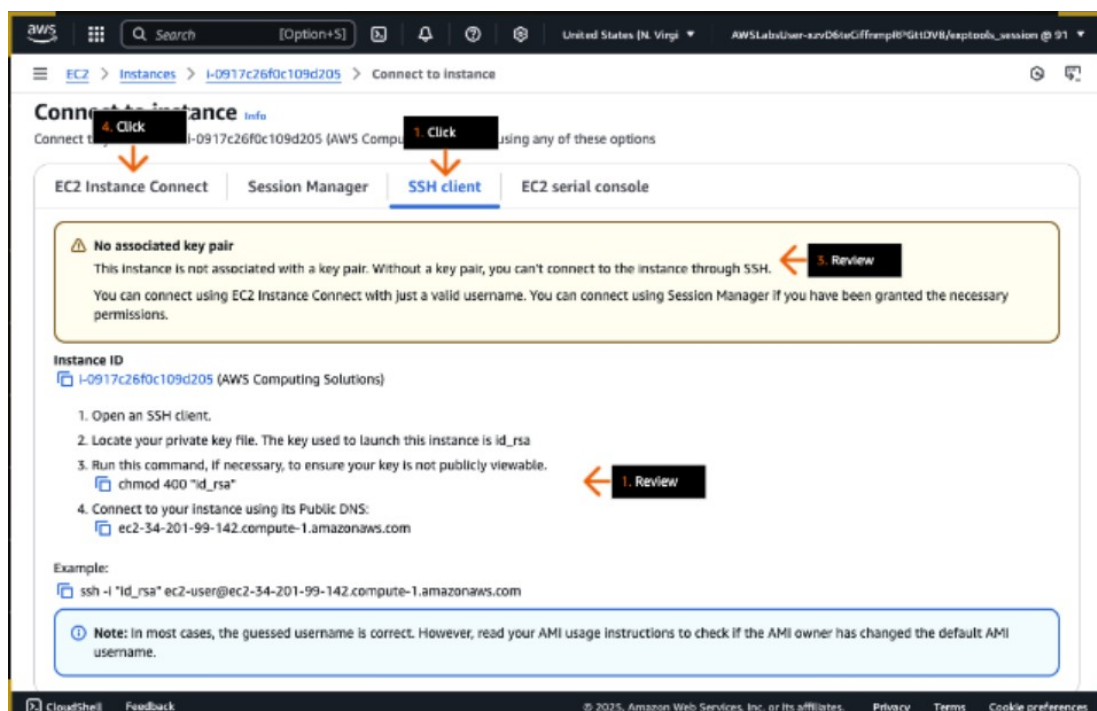
- In a new browser tab (or window) address bar, paste the IP address that you just copied and press Enter (not shown).
 - Make sure to use http://, not https://.
- Review the instance details.



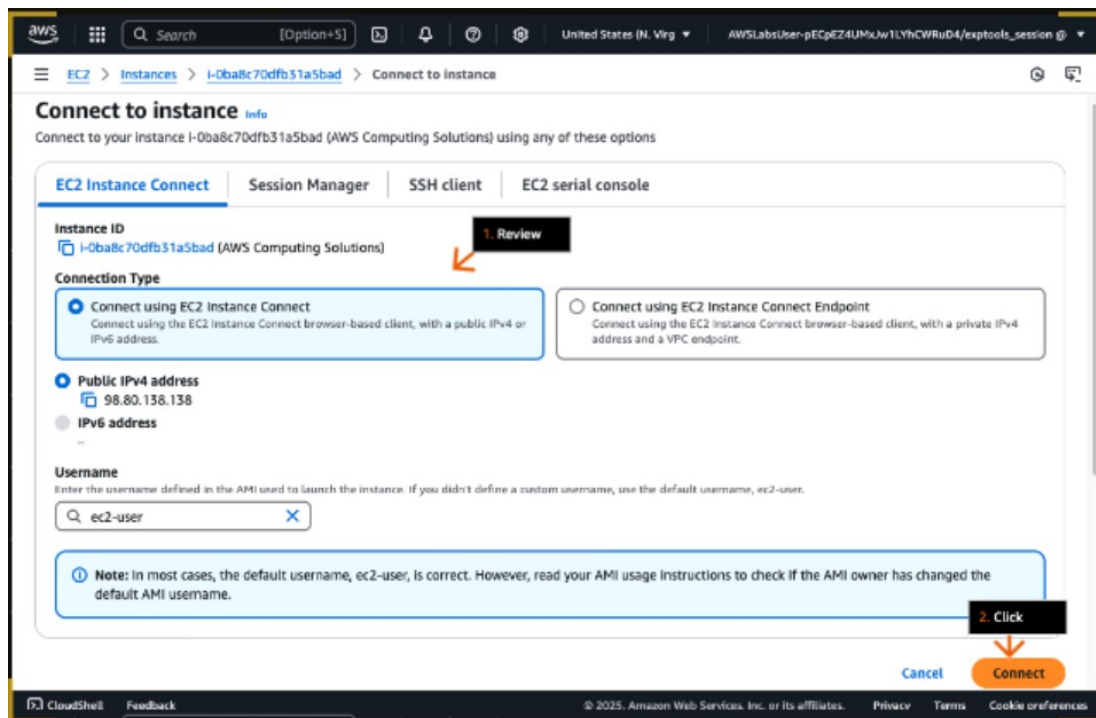
- Return to the Amazon EC2 console browser tab.
- In the Instances section, click Connect.



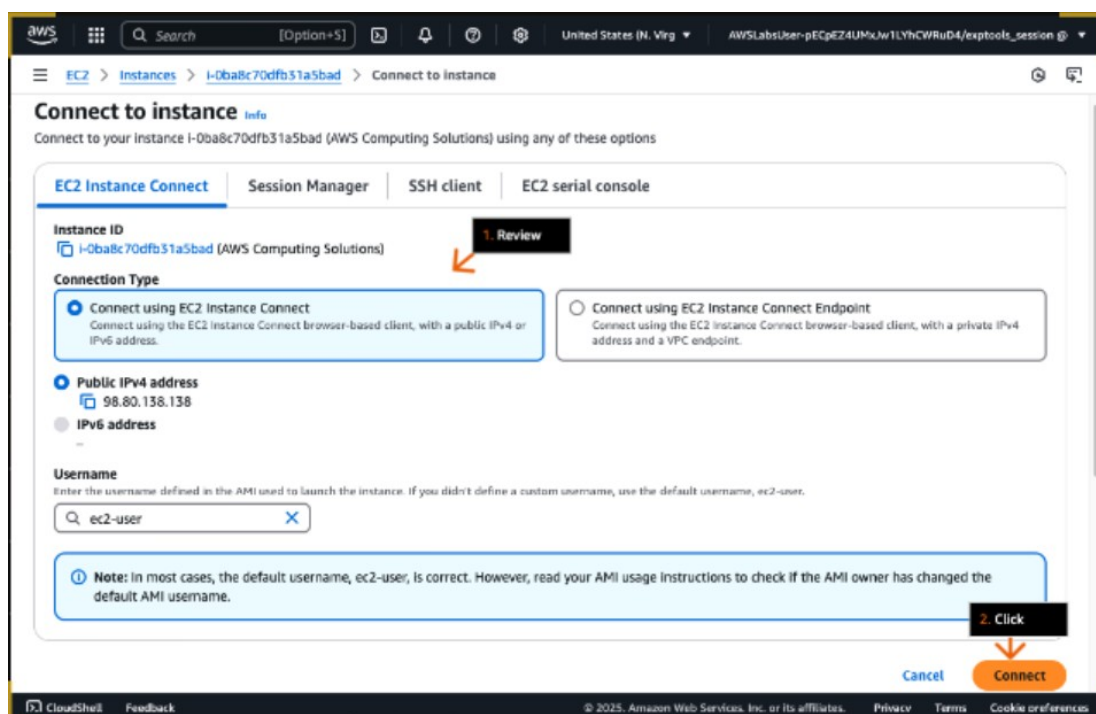
- Click on the SSH client tab.
- Review the requirements to connect through SSH.
- In the warning alert, review the key pair message.
 - Because no SSH key pair was created for this instance, connecting through SSH is not possible.
- Click the EC2 Instance Connect tab.



- Review the connection settings.
- Click Connect.
 - EC2 Instance Connect, containing the command-line shell, opens in a new browser tab (or window).



- Review the connection settings.
- Click Connect.
 - EC2 Instance Connect, containing the command-line shell, opens in a new browser tab (or window).



- To change to the application directory, run:
`cd sample_app`
 - A sample application resides on this instance.
- To view the files in the sample_app directory, run:
`ls`
- To check the instance log, run:
`tail -lf aws_compute_solutions.log`

```

Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023

[ec2-user@ip-10-10-128-10 ~]$ cd sample_app/
[ec2-user@ip-10-10-128-10 sample_app]$
[ec2-user@ip-10-10-128-10 sample_app]$
[ec2-user@ip-10-10-128-10 sample_app]$ ls
.pycache  app.py  aws_compute_solutions.log  requirements.txt  templates
[ec2-user@ip-10-10-128-10 sample_app]$
[ec2-user@ip-10-10-128-10 sample_app]$
[ec2-user@ip-10-10-128-10 sample_app]$ tail -lf aws_compute_solutions.log

```

i-0917c26f0c109d205 (AWS Computing Solutions)
PublicIPs: 54.196.232.247 PrivateIPs: 10.10.128.10

- Review the log details.
 - To quit, press Ctrl+C on your keyboard.
- Close this browser tab to return to the Instances page on the Amazon EC2 console.

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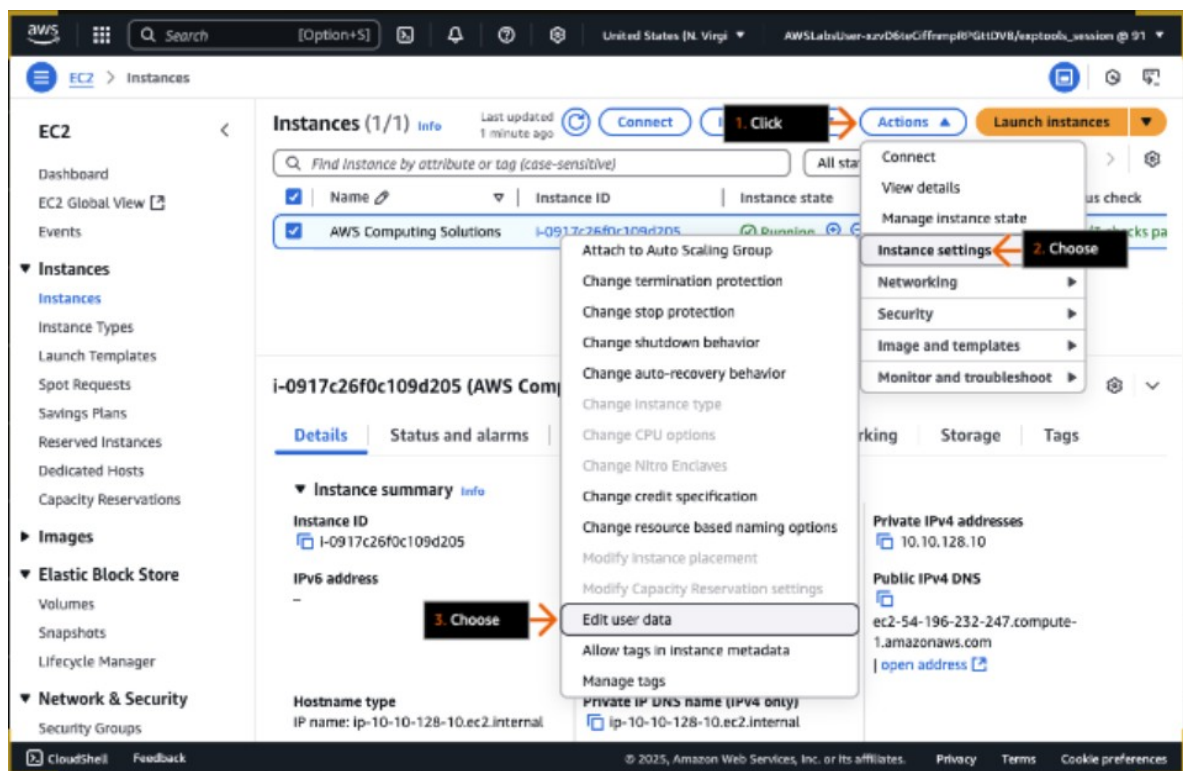
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023

[ec2-user@ip-10-10-128-10 ~]$ cd sample_app/
[ec2-user@ip-10-10-128-10 sample_app]$
[ec2-user@ip-10-10-128-10 sample_app]$
[ec2-user@ip-10-10-128-10 sample_app]$ ls
.pycache  app.py  aws_compute_solutions.log  requirements.txt  templates
[ec2-user@ip-10-10-128-10 sample_app]$
[ec2-user@ip-10-10-128-10 sample_app]$
[ec2-user@ip-10-10-128-10 sample_app]$ tail -lf aws_compute_solutions.log
* Running on all addresses (0.0.0.0)
* Running on http://127.0.0.1:80
* Running on http://10.10.128.10:80
INFO:werkzeug:Press CTRL+C to quit
INFO:root:Instance Family is t3
INFO:root:Instance Type is t3.micro
INFO:root:Instance Id is i-0917c26f0c109d205
INFO:root:Availability Zone is us-east-1b
INFO:werkzeug:172.56.216.92 - - [09/Apr/2025 02:13:39] "GET / HTTP/1.1" 200 -
INFO:werkzeug:172.56.216.92 - - [09/Apr/2025 02:13:40] "GET /favicon.ico HTTP/1.1" 404 -

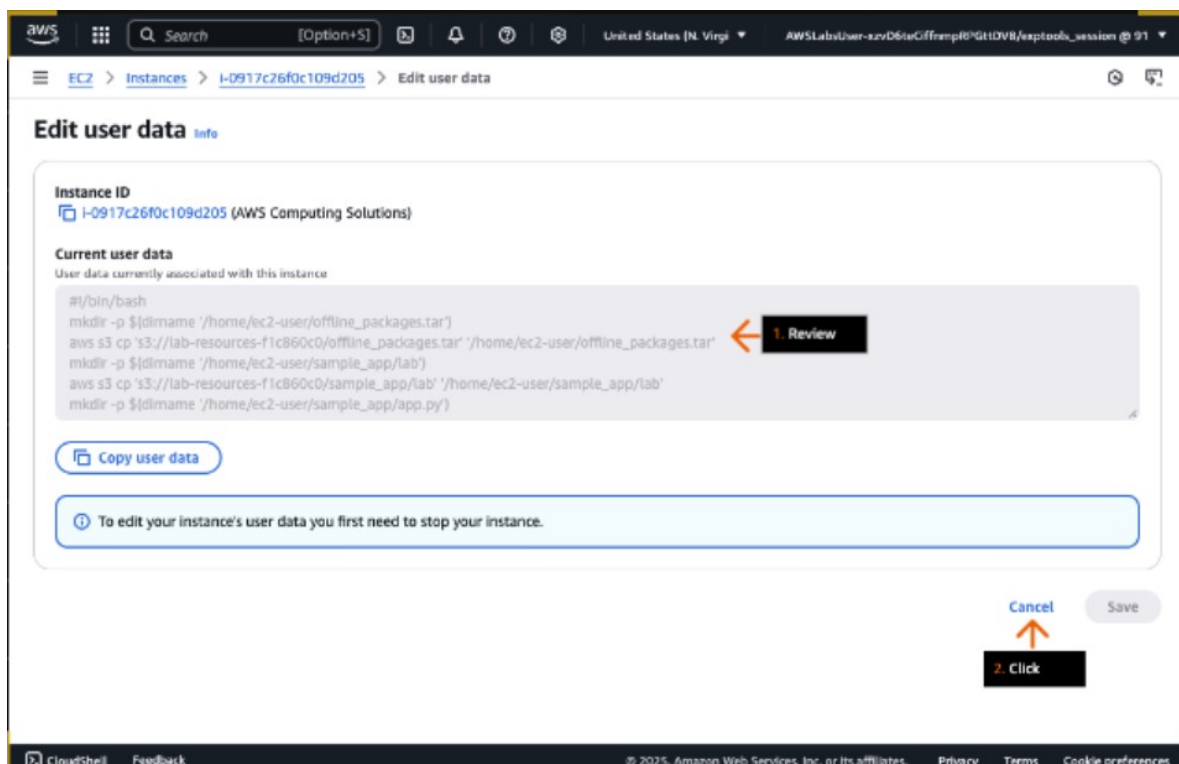
```

i-0917c26f0c109d205 (AWS Computing Solutions)
PublicIPs: 54.196.232.247 PrivateIPs: 10.10.128.10

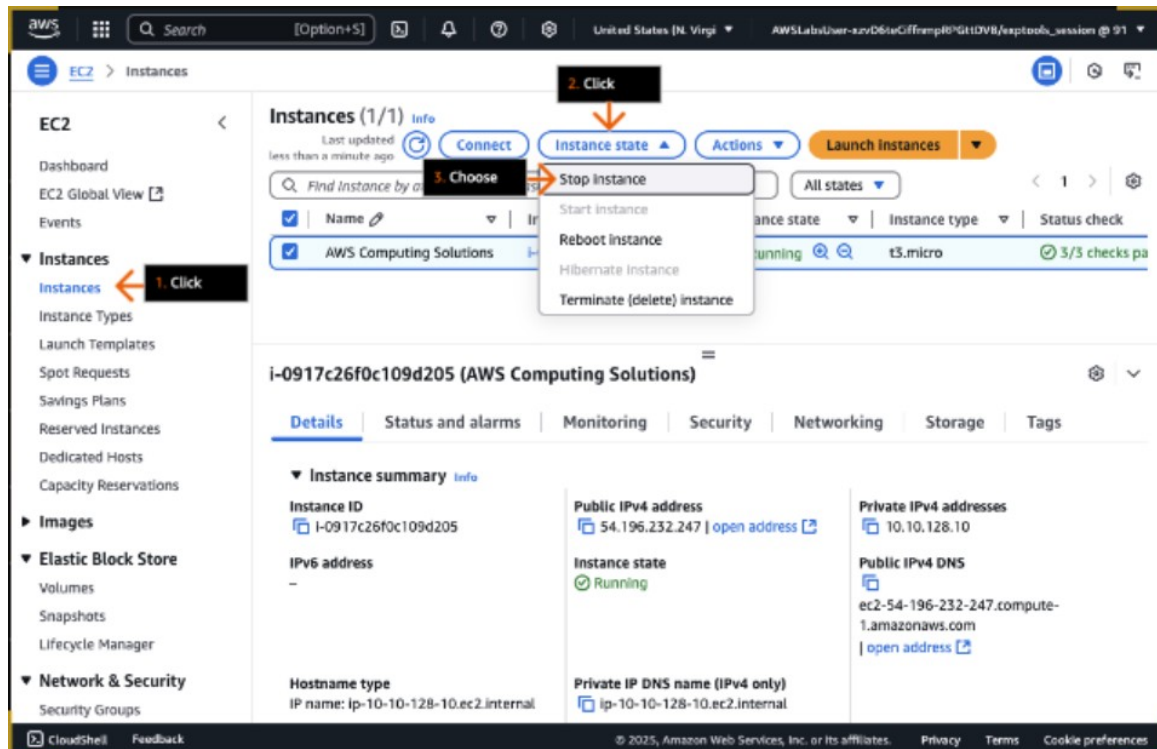
- Click Actions to expand the dropdown list.
- Choose Instance settings.
- Choose Edit user data.



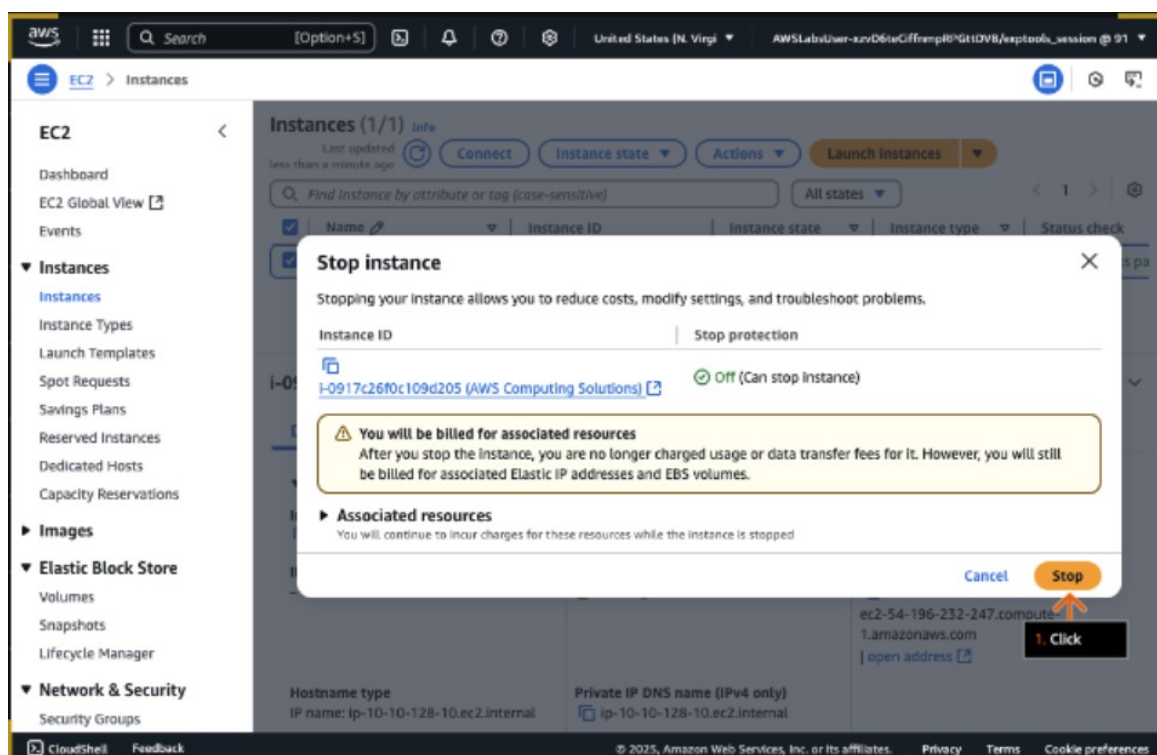
- Under Current user data, review the commands.
- Click Cancel.



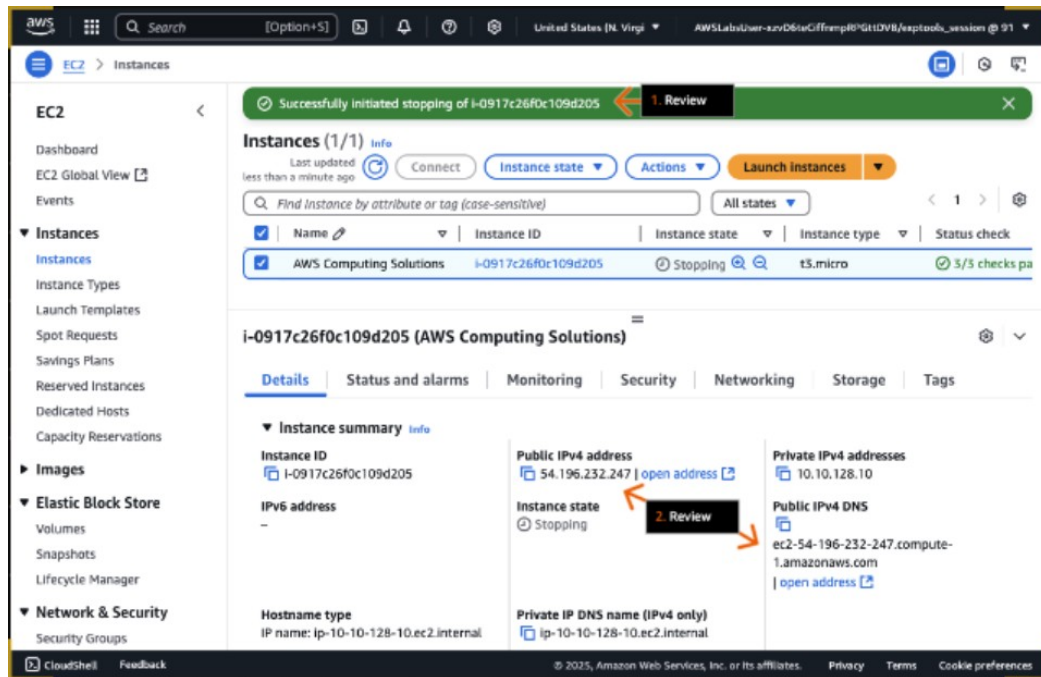
- In the left navigation pane, click Instances.
- In the Instances section, click Instance state to expand the dropdown list.
- Choose Stop instance.
 - If the Stop instance option is not available, make sure the AWS Computing Solutions instance is selected.



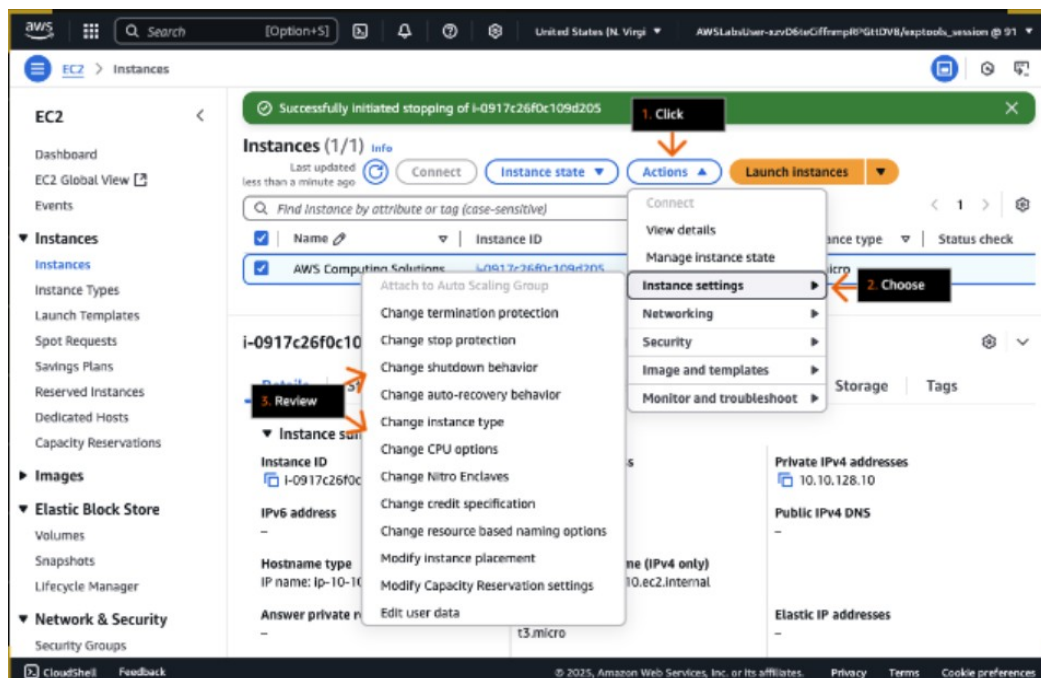
- In the pop-up box, click Stop.



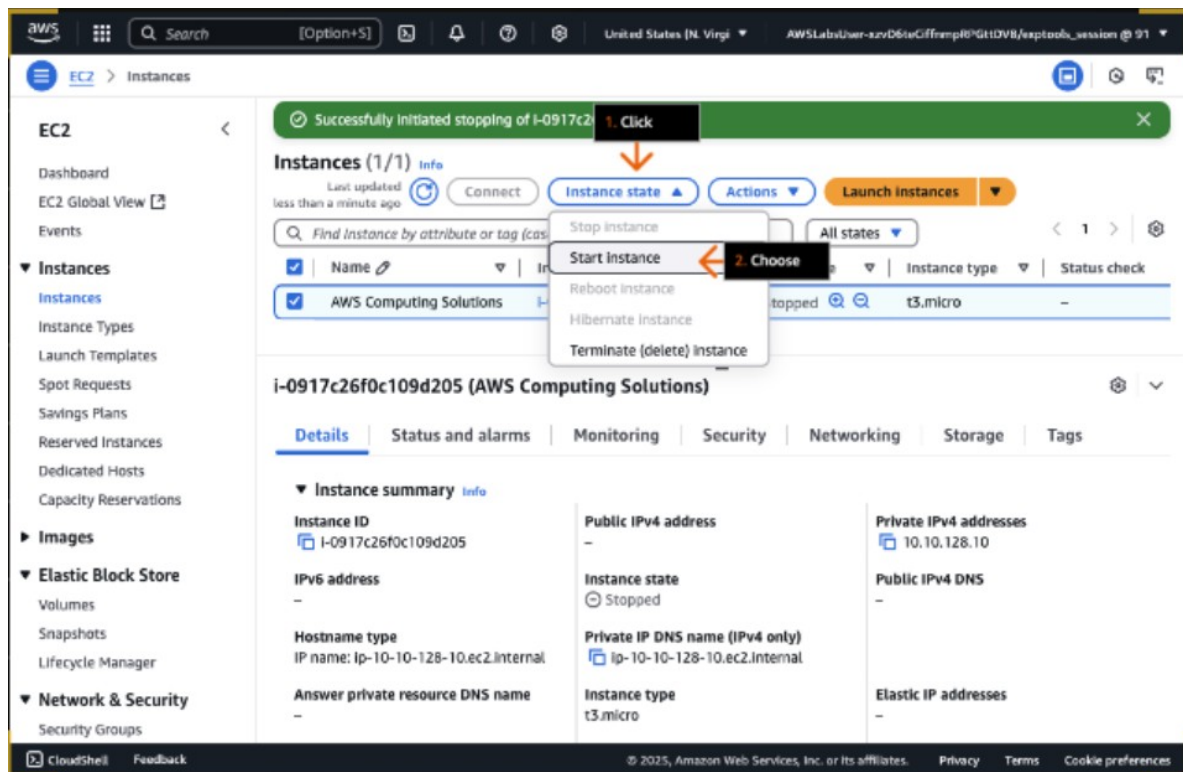
- In the success alert, review the message.
- After the instance state changes to Stopped, on the Details tab, review the Public IPv4 address and Public IPv4 DNS.
 - Both should be empty. You might need to wait 1–2 minutes and click the Instances section refresh icon.



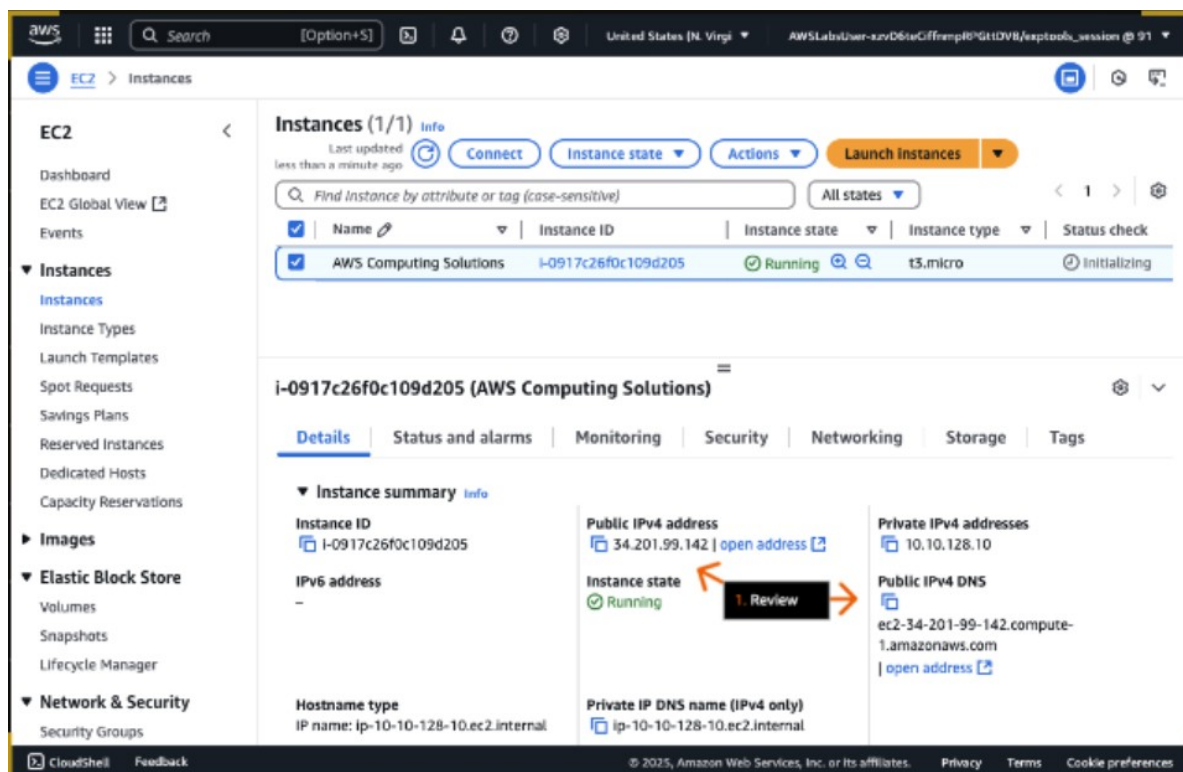
- Click Actions to expand the dropdown list.
- Choose Instance settings.
- Review the available options.
 - You can change your instance with different options, such as type, termination protection, and shutdown behavior.



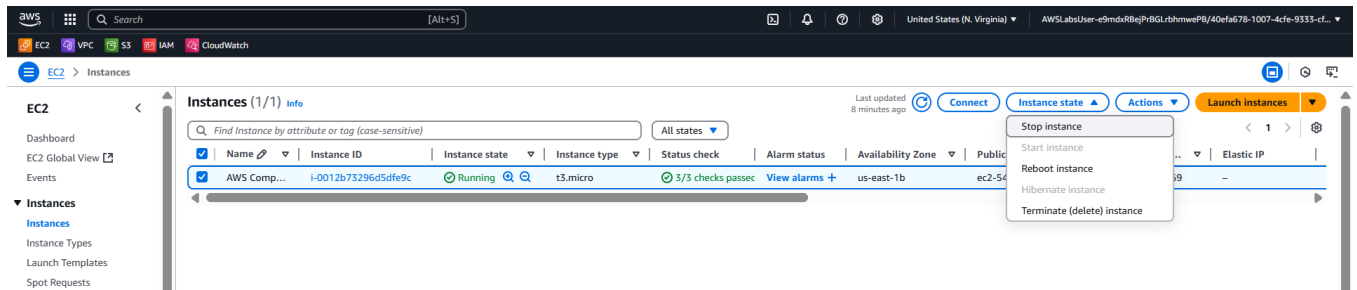
- Click Instance state to expand the dropdown list.
- Choose Start instance.



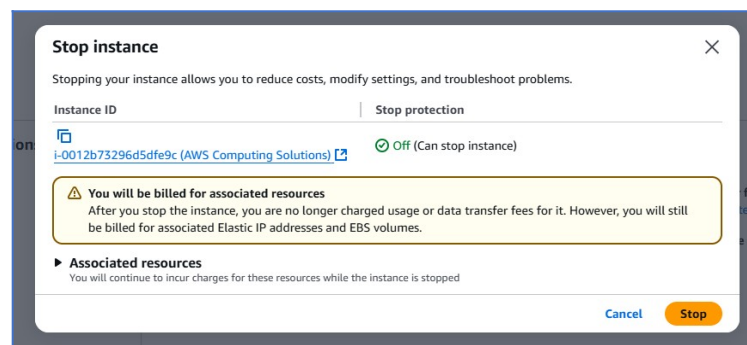
- After the instance state changes to Running, on the Details tab, review the instance details.
 - Note that the public IPv4 address and DNS are now populated.



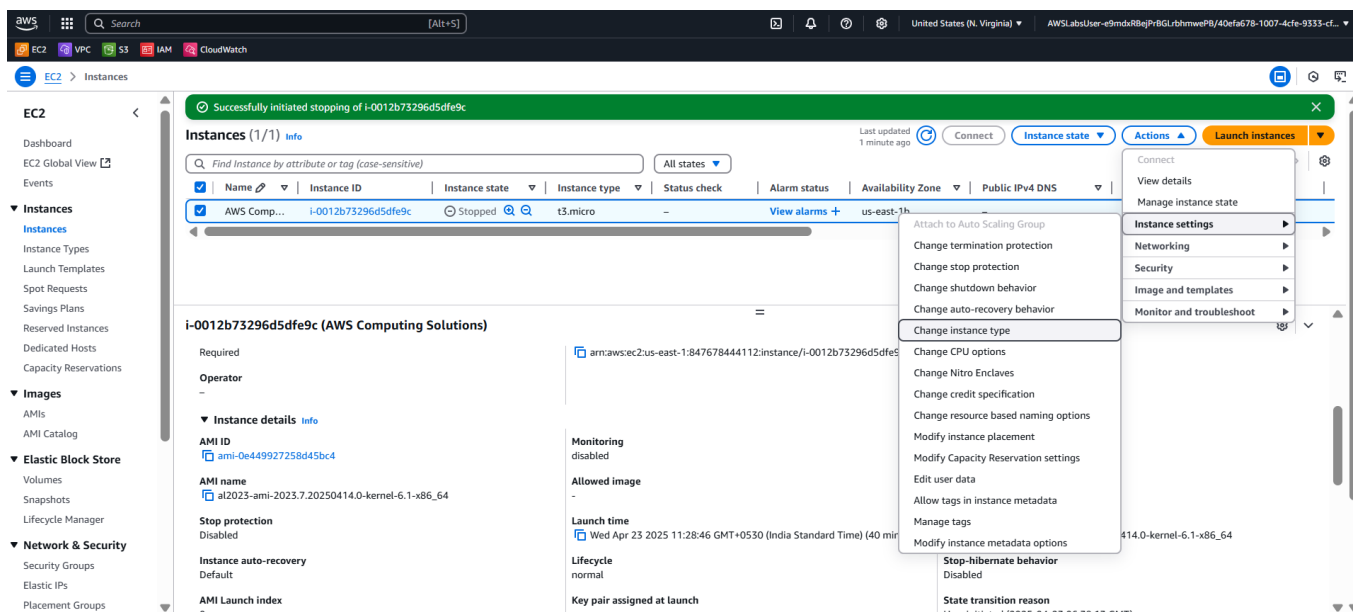
- In the left navigation pane, click Instances.
- In the Instances section, click Instance state to expand the dropdown list.
- Choose Stop instance.
 - If the Stop instance option is not available, make sure the AWS Computing Solutions instance is selected.



- In the pop-up box, click Stop.



- Now Click Actions to expand the dropdown list.
- Choose Instance settings.
- Select change instance type



Change instance type [Info](#) | [Get advice](#)

You can change the instance type only if the current instance type and the instance type that you want are compatible.

Instance ID
[i-0012b73296d5dfe9c](#) (AWS Computing Solutions)

Current instance type
t3.micro

New instance type

☒ EBS-optimized
EBS-optimized is enabled by default for this instance type

▼ **Instance type comparison**

Attribute	t3.micro
	Loading resources

[Compare more instance type attributes](#)

- Deselect **t3.micro**

Change instance type [Info](#) | [Get advice](#)

You can change the instance type only if the current instance type and the instance type that you want are compatible.

Instance ID
[i-0012b73296d5dfe9c](#) (AWS Computing Solutions)

Current instance type
t3.micro

New instance type

Instance type

a1.2xlarge	
a1.4xlarge	
a1.large	
a1.medium	
a1.metal	t3.micro
a1.xlarge	0.0104 USD per Hour
c1.medium	0.0196 USD per Hour
c1.xlarge	2 (1 core)
c3.2xlarge	1024
c3.4xlarge	
c3.8xlarge	-
c3.large	ebs
c3.xlarge	
c4.2xlarge	Up to 5 Gigabit

- Enter m4 . large into the search or type field.
- Choose m4 . large from the displayed options.
- Confirm the change by clicking the **Change** button at the bottom of the configuration section.

Change instance type [Info](#) [Get advice](#)

You can change the instance type only if the current instance type and the instance type that you want are compatible.

Instance ID
[i-0012b73296d5dfe9c](#) (AWS Computing Solutions)

Current instance type
t3.micro

New instance type

☒ EBS-optimized
EBS-optimized is enabled by default for this instance type

▼ Instance type comparison

Attribute	t3.micro	m4.large
On-Demand Linux pricing	0.0104 USD per Hour	0.1000 USD per Hour
On-Demand Windows pricing	0.0196 USD per Hour	0.1920 USD per Hour
vCPUs	2 (1 core)	2 (1 core)
Memory (MiB)	1024	8192
Storage (GB)	–	–
Supported root device types	ebs	ebs
Network performance	Up to 5 Gigabit	Moderate
Architecture	x86_64	x86_64
Burstable	true	false
Free-tier eligible	false	false
Current generation	true	false

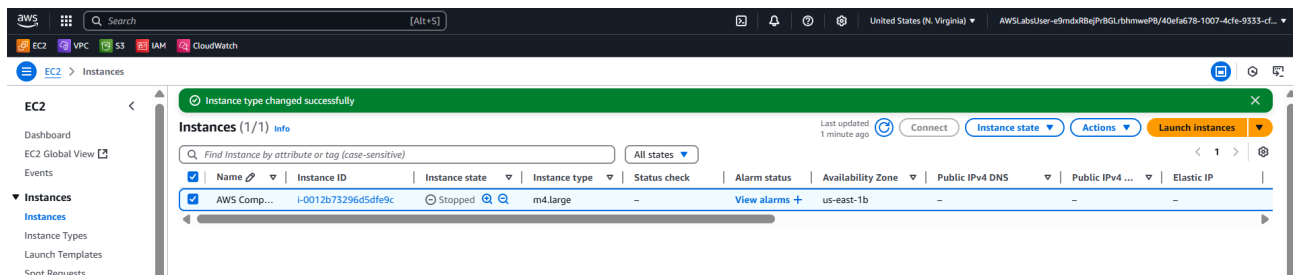
[Compare more instance type attributes](#)

Advanced details

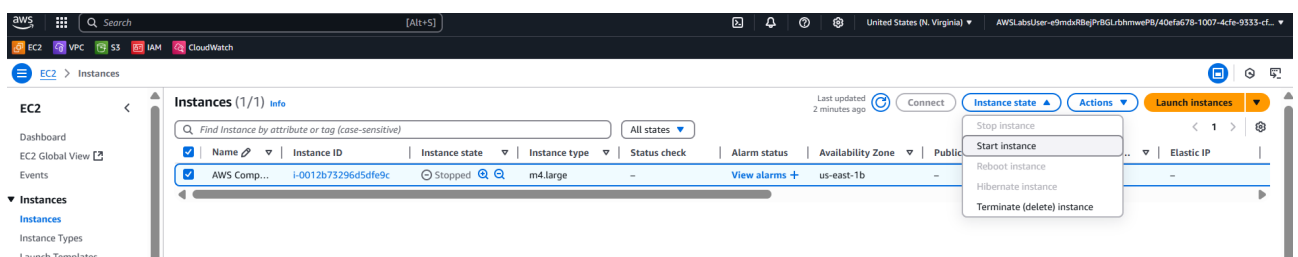
CPU options [Info](#)
☒ None
☐ Specify CPU options
Configure CPUs for your instance to optimize performance and save on licensing costs.

[Cancel](#) [Change](#)

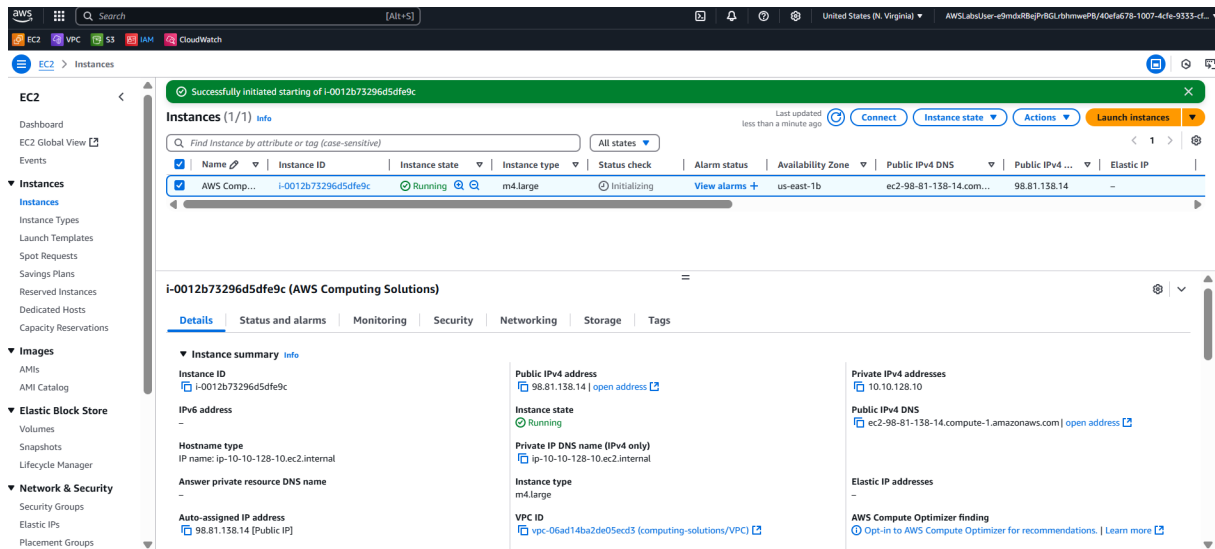
- A success message, such as "Instance type changed successfully," will be displayed



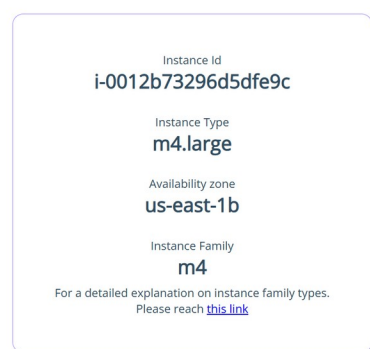
- In the list of your EC2 instances, select the instance you want to start by checking the box next to its name.
- Locate and click the **Instance state** button (or dropdown menu).
- From the available options under **Instance state**, choose **Start instance**.



- You will see a message indicating that the instance has been successfully initiated, typically displaying the instance ID.
- Allow a few minutes for the instance to start up.
- Monitor the instance state in the EC2 console; it will transition from pending to running.
- Verify that the instance is in the running state and displays the updated instance type as m4.large.



- From the EC2 console, copy the **Public IPv4 address** of your running instance.
- Open a new tab in your web browser.
- Paste the copied Public IPv4 address into the browser's address bar and press Enter.
- The web page hosted on your EC2 instance will load. Examine the content displayed on the webpage to see the instance details.
- Verify that the instance information presented on the webpage confirms the type has been successfully changed to m4.large.



Conclusion:

You have successfully achieved all the listed objectives, gaining practical experience in exploring, managing, and resizing Amazon EC2 instances.