

# Week 2 – ACF Lab 3

## Introduction to EC2

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The screenshot shows a browser-based interface for starting an AWS CloudFormation lab. At the top, there are buttons for 'Details ▾', 'AWS', 'Start Lab' (which is highlighted), 'End Lab', '--', 'Instructions', and 'Actions ▾'. Below these are links for 'Files' (unchecked), 'README' (checked), 'Terminal' (checked), and 'Source' (unchecked). A dropdown menu shows 'EN\_US'. On the right, there's a terminal window titled 'bash' with the command 'ddd\_v1\_w\_uII\_1008362@runweb82300:~\$'. The main content area contains instructions:

**Accessing the AWS Management Console**

- At the top of these instructions, choose Start Lab to launch your lab.  
A Start Lab panel opens displaying the lab status.
- Wait until you see the message "**Lab status: ready**", then choose the X to close the Start Lab panel.
- At the top of these instructions, choose AWS  
This will open the AWS Management Console in a new browser tab. The system will automatically log you in.

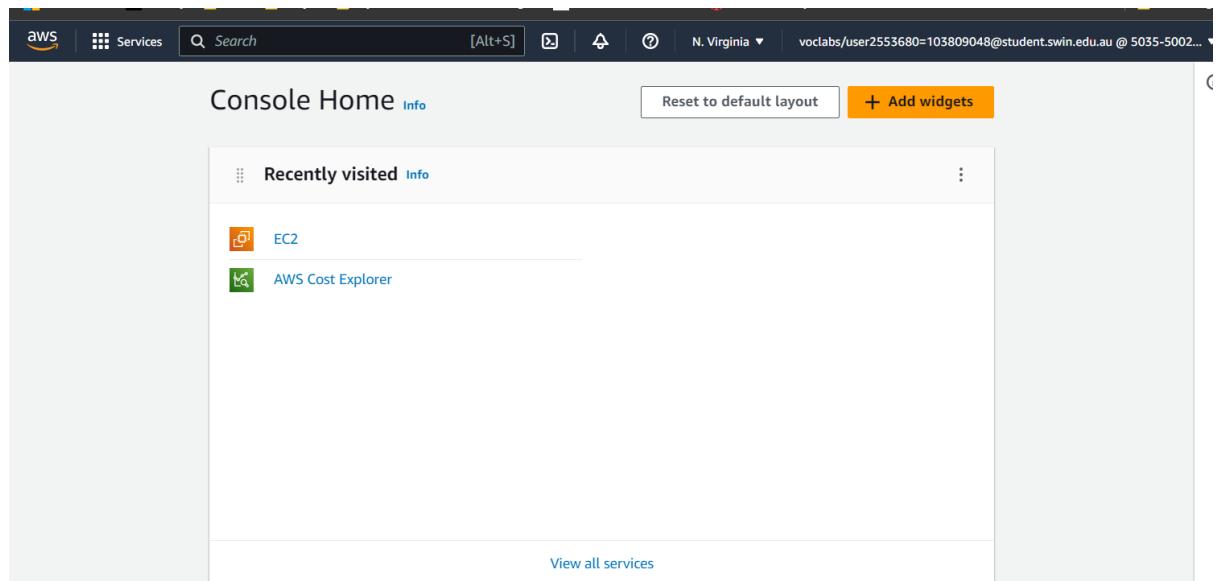
1. **Start Lab**

Region: us-east-1  
Lab ID: arn:aws:cloudformation:us-east-1:503550024490:stack/c83325a177516814131351t1w503550024490/b8a7ebd0-f607-11ed-b261-1283b6787eef  
Creation Time: 2023-05-18T22:40:54-0700

Start session at: 2023-05-18T22:40:55-0700  
Remaining session time: 02:00:00 (120 minutes)

Lab status: ready

2.



3.  
4.

### Task 1:

The screenshot shows the AWS EC2 Dashboard. The left sidebar includes links for 'EC2 Dashboard', 'Instances', 'Images', and 'Elastic Block Store'. The main content area displays 'Resources' in the US East (N. Virginia) Region. It shows the following counts:

Resource Type	Count	Status
Instances (running)	1	API Error
Dedicated Hosts	0	
Instances	1	
Load balancers	0	API Error
Security groups	4	
Volumes	1	
Auto Scaling Groups	0	
Elastic IPs	0	
Key pairs	1	
Placement groups	0	
Snapshots	0	

A callout box highlights an 'API Error' for Auto Scaling Groups and Load balancers. Below the resources, there is a 'Launch instance' button and a 'Service health' section. The right sidebar shows 'Account attributes' like 'Supported platforms' (VPC), 'Default VPC' (vpc-047a7119acdad505e), and 'Explore AWS' sections for GuardDuty Malware Protection and 10 Things You Can Do Today.

5.

## 6. Launch instance

The screenshot shows the AWS EC2 Instances page. At the top, there's a navigation bar with 'ch' and '[Alt+S]' on the left, and 'N. Virginia' and a user email on the right. Below the navigation is a summary table of resources:

Instances (running)	1	Auto Scaling Groups	0
Dedicated Hosts	0	Elastic IPs	0
Instances	1	Key pairs	1
Load balancers	0	Placement groups	0
Security groups	4	Snapshots	0
Volumes	1		

A callout box highlights the 'Launch instance' button in the 'Launch instance' section on the left. To the right, there's a 'Service health' panel showing 'Region: US East (N. Virginia)' and 'Status: This service is operating normally'. On the far right, there's a sidebar titled 'Explore AWS' with links like 'Amazon GuardDuty Malware Protection' and '10 Things You Can Do Today to Reduce AWS Costs'.

### Step 1: Name and tags

The screenshot shows the 'Launch an instance' step. The URL is 'EC2 > Instances > Launch an instance'. The main content area is titled 'Name and tags' with a 'Info' link. It has a 'Name' field containing 'Web Server' and a 'Add additional tags' link.

7.

## Step 2: Application and OS image (Amazon Machine Image)

The screenshot shows the AWS Lambda console interface. At the top, there's a navigation bar with tabs like 'Search' and '[Alt+S]'. Below it, a header bar shows 'N. Virginia' and a user email. A sidebar on the left has sections for 'Lambda Functions', 'AWS Lambda', 'AWS Step Functions', and 'AWS CloudWatch Metrics'. The main content area is titled 'Application and OS Images (Amazon Machine Image)'. It includes a search bar and tabs for 'Recent' and 'Quick Start'. Below these are icons for various operating systems: Amazon Linux, macOS, Ubuntu, Windows, Red Hat, and SUSE. To the right is a 'Browse more AMIs' section with a magnifying glass icon and a link. A detailed box highlights the 'Amazon Linux 2023 AMI' entry, which is 'Free tier eligible'. The entry details include: ami-0889a44b331db0194 (64-bit (x86)) / ami-08fc6fb8ad2e794bb (64-bit (Arm)), Virtualization: hvm, ENA enabled: true, Root device type: ebs. Below this, there's a 'Description' section with the text 'Amazon Linux 2023 AMI 2023.0.20230503.0 x86\_64 HVM kernel-6.1', an 'Architecture' dropdown set to '64-bit (x86)', an 'AMI ID' field containing 'ami-0889a44b331db0194', and a 'Verified provider' button.

- 8.
9. Keep Amazon Linux 2023 AMI selected

## Step 3: Instance type

The screenshot shows the AWS Lambda console interface, continuing from the previous step. The top navigation bar and sidebar are visible. The main content area is titled 'Instance type'. It shows a table with 'Architecture' (64-bit (x86)) and 'AMI ID' (ami-0889a44b331db0194), both with 'Verified provider' status. Below this is a section titled 'Instance type' with a dropdown menu. The 't2.micro' option is selected, showing its details: Family: t2, 1 vCPU, 1 GiB Memory, Current generation: true, On-Demand Windows pricing: 0.0162 USD per Hour, On-Demand SUSE pricing: 0.0116 USD per Hour, On-Demand RHEL pricing: 0.0716 USD per Hour, On-Demand Linux pricing: 0.0116 USD per Hour. There are also buttons for 'All generations' and 'Compare instance types'.

10. T2.micro instance type has 1 virtual CPU and 1 GB of memory

## Step 4: Key pair (login)

The screenshot shows the AWS Lambda Step 4: Key pair (login) configuration page. At the top, it displays the instance type selected as 't2.micro'. Below this, there is a note about using a key pair for secure connection. A dropdown menu for 'Key pair name - required' is open, showing the value 'vokey'. To the right of the dropdown is a button labeled 'Create new key pair'.

11.

## Step 5: Network settings

The screenshot shows the AWS Lambda Step 5: Network settings configuration page. It lists the VPC and subnet selected for the instance. Under 'Auto-assign public IP', the setting is set to 'Enable'. There is also a section for 'Firewall (security groups)' which is currently empty.

12.

The screenshot shows the AWS Lambda Step 5: Network settings configuration page. The 'VPC - required' field is set to 'vpc-042a2742c66a3d2fd (Lab VPC)'. Under 'Subnet Info', a specific subnet is selected. The 'Auto-assign public IP' setting is enabled. At the bottom, there is a section for 'Firewall (security groups)' with two options: 'Create security group' (selected) and 'Select existing security group'.

13.

The instance will run by using that subnet and the instance will be assigned a public IP address.

This screenshot shows the 'Network & security' section of the AWS Launch Wizard. It includes fields for VPC selection (set to 'vpc-042a2742c66a3d2fd (Lab VPC)'), subnet selection (set to 'subnet-08b80c6377e8eee81'), and auto-assign public IP (set to 'Enable'). A 'Firewall (security groups)' section is present, showing a 'Create security group' button (which is highlighted in blue) and a 'Select existing security group' button. Below this, a 'Security group name' field is set to 'Web Server security group', with a note about character restrictions. A 'Description' field contains the text 'Security group for my web server'. An 'Inbound security groups rules' section notes that no rules are currently included. A 'Add security group rule' button is available, along with a link to 'Advanced network configuration'.

14. We can add rules for each security group. And also can modify it at any time.

## Step 6: configure storage.

This screenshot shows the 'Configure storage' section of the AWS Launch Wizard. It displays a summary of the root volume configuration: 1x 8 GiB gp3 Root volume (Not encrypted). A note indicates that free-tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. A 'Add new volume' button is available, and a 'File systems' section shows 0x File systems with an 'Edit' link.

15. EC2 store data on a network attached virtual disk called Elastic block store.  
EC2 using default 8 GB disk volume.

## Step 7: Advanced details

The screenshot shows the 'Advanced details' section of the AWS Lambda configuration interface. It includes fields for purchasing options, domain join, IAM instance profiles, hostname types, and DNS settings. A note at the bottom indicates how to enable termination protection.

Purchasing option [Info](#)  
 Request Spot Instances

Domain join directory [Info](#)  
Select [Create new directory](#)

IAM instance profile [Info](#)  
Select [Create new IAM profile](#)

Hostname type [Info](#)  
IP name

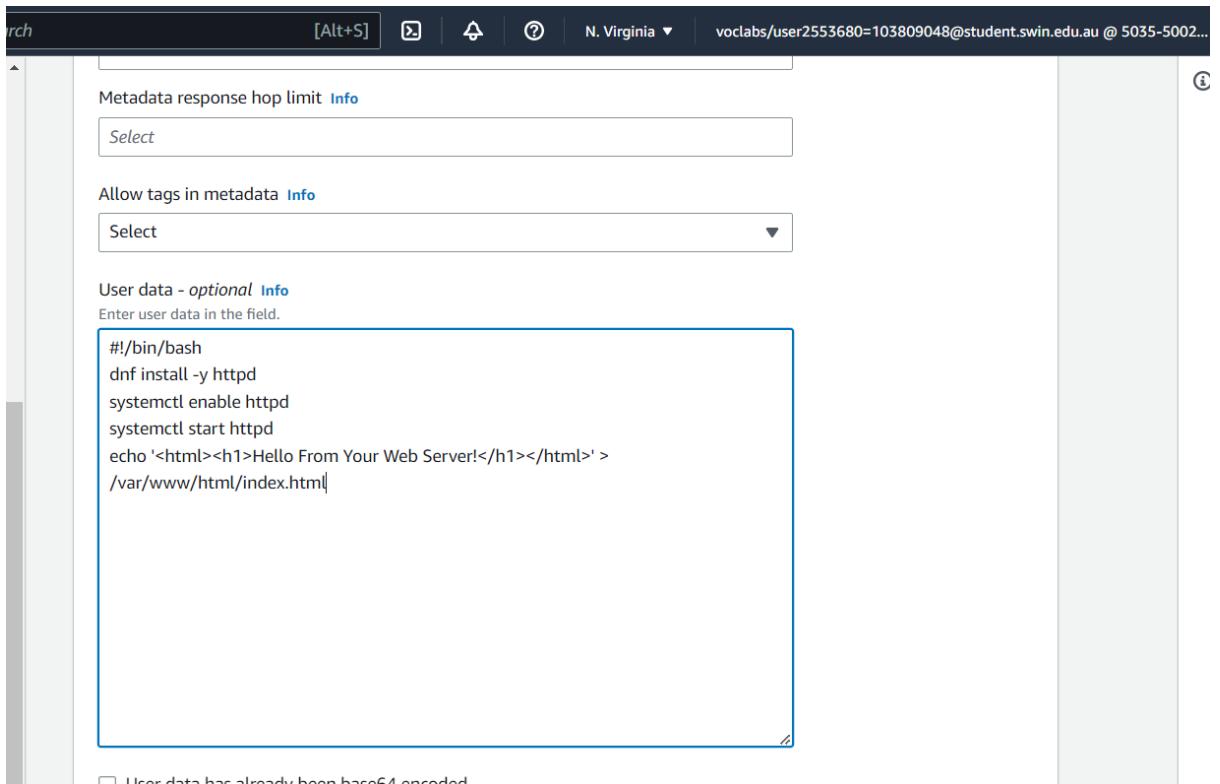
DNS Hostname [Info](#)  
 Enable IP name IPv4 (A record) DNS requests  
 Enable resource-based IPv4 (A record) DNS requests  
 Enable resource-based IPv6 (AAAA record) DNS requests

16. Enable termination protection to prevent the instance from being accidentally terminated.

17.

The screenshot shows the 'Termination protection' setting in the AWS Lambda configuration. The 'Enable' dropdown is set to 'Enable'.

Termination protection [Info](#)  
Enable



18. User data is the place that can be used to perform automated installation and configuration tasks after the instance starts.  
The script will:
- Install an Apache web server (httpd)
  - Configure the web server to automatically start on boot.
  - Run the web server once it has finished installing.
  - Create a simple webpage.

## Step 8: Launch the instance.

Success  
Successfully initiated launch of instance (i-0768a3fede9f9dbc7)

[Launch log](#)

**Next Steps**

What would you like to do next with this instance, for example "create a" < 1 2 3 4 5 6 7 >

- Create billing and free tier usage alerts
 

To manage costs and avoid surprise bills, set up email notifications for billing and free tier usage thresholds.

[Create billing alerts](#)
- Connect to your instance
 

Once your instance is running, log into it from your local computer.

[Connect to instance](#)

[Learn more](#)
- Connect an RDS database
 

Configure the connection between an EC2 instance and a database to allow traffic flow between them.

[Connect an RDS database](#)

19.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status
Bastion Host	i-03f05168c14b38e5f	Running	t2.micro	2/2 checks passed	No alarms
Web Server	i-0768a3fede9f9dbc7	Running	t2.micro	Initializing	No alarms

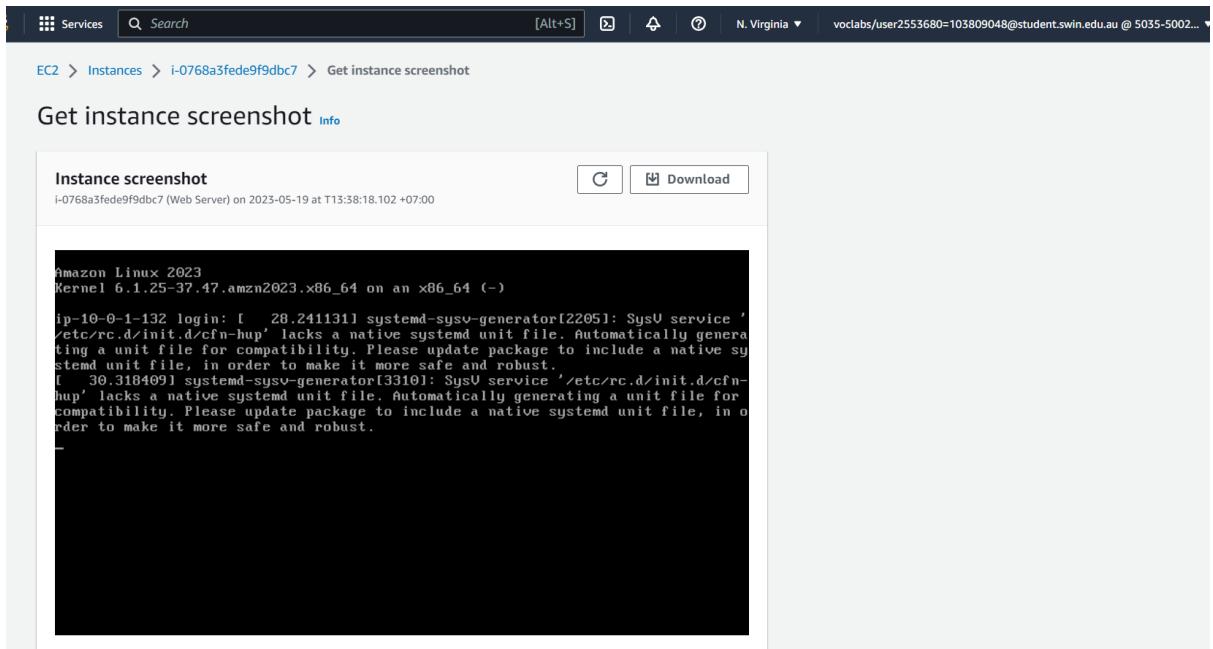
20.

**Instance: i-0768a3fede9f9dbc7 (Web Server)**

Details	Security	Networking	Storage	Status checks	Monitoring	Tags
<b>Instance summary</b>						
Instance ID <a href="#">i-0768a3fede9f9dbc7 (Web Server)</a>	Public IPv4 address <a href="#">44.211.204.95   open address</a>	Private IPv4 addresses <a href="#">10.0.1.132</a>				
IPv6 address -	Instance state <a href="#">Running</a>	Public IPv4 DNS <a href="#">ec2-44-211-204-95.compute-1.amazonaws.com   open address</a>				
Hostname type IP name: ip-10-0-1-132.ec2.internal	Private IP DNS name (IPv4 only) <a href="#">ip-10-0-1-132.ec2.internal</a>	Elastic IP addresses -				
Answer private resource DNS name -	Instance type t2.micro	AWS Compute Optimizer finding <a href="#">Opt-in to AWS Compute Optimizer for recommendations.   Learn more</a>				
Auto-assigned IP address <a href="#">44.211.204.95 [Public IP]</a>	VPC ID <a href="#">vpc-042a2742c66a3d2fd (Lab VPC)</a>					







26.

If I can't reach instance via SSH or RDP, I can capture a screenshot of instance and view it as an image. This provides visibility as to the status of the instance and allows for quicker troubleshooting.

### Task 3: Update your security group and access the web server

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
Bastion Host	i-03f05168c14b38e5f	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a
Web Server	i-0768a3fede9f9dbc7	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a

**Instance: i-0768a3fede9f9dbc7 (Web Server)**

**Details** | Security | Networking | Storage | Status checks | Monitoring | Tags

**Instance summary**

Instance ID i-0768a3fede9f9dbc7 (Web Server)	Public IPv4 address 44.211.204.95 [open address]	Private IPv4 addresses 10.0.1.132
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-44-211-204-95.compute-1.amazonaws.com [open address]
Hostname type IP name: ip-10-0-1-132.ec2.internal	Private IP DNS name (IPv4 only) ip-10-0-1-132.ec2.internal	Elastic IP addresses -
Answer private resource DNS name -	Instance type t2.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations
Auto-assigned IP address 44.211.204.95 [Public IP]	VPC ID vpc-042a2742c66a3d2fd (Lab VPC)	

27.

[Alt+S] | | | N. Virginia | vclabs/user2553680=103809048@student.swin.edu.au @ 5035-5002... ▾

Connect Instance state Actions Launch instances ▾

ve) < 1 >

	Instance state	Instance type	Status check	Alarm status	Availability Zone
c5f	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a
c7	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a

**Server**

Storage Status checks Monitoring Tags

Public IPv4 address 44.211.204.95 | [open address](#)

Private IPv4 addresses 10.0.1.132

Instance state Running

Public IPv4 DNS ec2-44-211-204-95.compute-1.amazonaws.com |

28.

← → × ⓘ 44.211.204.95

Canvas SUT Library Dev Major Cyber LinkedIn Learning... Course: 2023-HCM-... AWS Academy Clou...

**Không thể truy cập trang web này**  
44.211.204.95 mất quá nhiều thời gian để phản hồi.  
Hãy thử:

- Kiểm tra kết nối
- Kiểm tra proxy và tường lửa
- Chạy Chẩn đoán mạng của Windows

ERR\_CONNECTION\_TIMED\_OUT

Tải lại Chi tiết

29.

30..

31. No because it has not run on port 80 which is used for the HTTP web request.

Instances (1/2) Info

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
Bastion Host	i-03f05168c14b38e5f	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a
<b>Web Server</b>	<b>i-0768a3fede9f9dbc7</b>	<b>Running</b>	<b>t2.micro</b>	<b>2/2 checks passed</b>	<b>No alarms</b>	<b>us-east-1a</b>

**Instance: i-0768a3fede9f9dbc7 (Web Server)**

Details Security Networking Storage Status checks Monitoring Tags

Instance summary Info

Instance ID i-0768a3fede9f9dbc7 (Web Server)	Public IPv4 address 44.211.204.95   open address	Private IPv4 addresses 10.0.1.132
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-44-211-204-95.compute-1.amazonaws.com   open address
Hostname type IP name: ip-10-0-1-132.ec2.internal	Private IP DNS name (IPv4 only) ip-10-0-1-132.ec2.internal	Elastic IP addresses -
Answer private resource DNS name -	Instance type t2.micro	

32.

Scheduled Instances Capacity Reservations

Images AMIs AMI Catalog

Elastic Block Store Volumes Snapshots Lifecycle Manager

Network & Security Security Groups

Security Groups (5) Info

Name	Security group ID	Security group name	VPC ID	Description
-	sg-07819d3f1320ec470	default	vpc-0719526150cdebb9a	default VPC security gr...
-	sg-001032249f0cb51ba	default	vpc-042a2742c66a3d2fd	default VPC security gr...
-	sg-000a83d47a5083c9b	Web Server security gr...	vpc-042a2742c66a3d2fd	Security group for my ...
-	sg-07c99f9d2998d0b74	Ec2SecurityGroup	vpc-0719526150cdebb9a	VPC Security Group
-	sg-02ffb43b54101a590	default	vpc-047a7119accdad505e	default VPC security gr...

33.

34.

The screenshot shows the AWS VPC Security Groups list. A table displays five security groups: default, sg-001032249f0cb51ba, Web Server security group (selected), sg-07c99f9d2998d0b74, and sg-02ffb43b54101a590. The 'Web Server security group' has a checkmark next to it. Below the table, a modal window for the selected security group is open, showing its details: Name (Web Server security group), Security group ID (sg-000a83d47a5083c9b), Description (Security group for my web), and VPC ID (vpc-042a2742c66a3d2fd). A note says "You can now check network connectivity with Reachability Analyzer" with a "Run Reachability Analyzer" button.

Name	Security group ID	Security group name	VPC ID	Description
default	sg-07819d3f1320ec470	default	vpc-0719526150cdebb9a	default VPC security gr...
sg-001032249f0cb51ba	sg-001032249f0cb51ba	default	vpc-042a2742c66a3d2fd	default VPC security gr...
<b>Web Server security group</b>	sg-000a83d47a5083c9b	Web Server security gr...	vpc-042a2742c66a3d2fd	Security group for my ...
sg-07c99f9d2998d0b74	sg-07c99f9d2998d0b74	Ec2SecurityGroup	vpc-0719526150cdebb9a	VPC Security Group
sg-02ffb43b54101a590	sg-02ffb43b54101a590	default	vpc-047a7119acdad505e	default VPC security gr...

**sg-000a83d47a5083c9b - Web Server security group**

Details    Inbound rules    Outbound rules    Tags

You can now check network connectivity with Reachability Analyzer    Run Reachability Analyzer

35.

The screenshot shows the AWS VPC Security Groups list with the 'Web Server security group' selected. Below the table, a modal window for the selected security group is open, showing its details: Name (Web Server security group), Security group ID (sg-000a83d47a5083c9b), Description (Security group for my web), and VPC ID (vpc-042a2742c66a3d2fd). A note says "You can now check network connectivity with Reachability Analyzer" with a "Run Reachability Analyzer" button. The "Inbound rules" tab is active in the modal window.

Name	Security group rule...	IP version	Type	Protocol	Port range
No security group rules found					

Inbound rules

You can now check network connectivity with Reachability Analyzer    Run Reachability Analyzer



## Change the instance type.

The screenshot shows the 'Change instance type' dialog box. At the top, it displays the Instance ID as i-0768a3fede9f9dbc7 (Web Server). The 'Current instance type' is listed as t2.micro. In the 'Instance type' dropdown, t2.small is selected. A note below states: 'EBS-optimized is not supported for this instance type'. At the bottom right are 'Cancel' and 'Apply' buttons, with 'Apply' being orange.

42.

T2.small has twice as much memory as t2.micro instance.

## Resize the EBS volume.

The screenshot shows the 'Volume Details' page for volume vol-0032eb7844b520862. The volume is a gp3 type with 8 GiB of storage, 3000 IOPS, and 125 throughput. It was created on Fri May 19 2023 13:04:18 GMT+0700 (Giờ Đông Dương). The attached instance is i-0768a3fede9f9dbc7 (Web Server). The 'Actions' menu is open, showing options like 'Modify volume', 'Create snapshot', etc.

43.

This screenshot is identical to the one above, showing the 'Volume Details' page for volume vol-0032eb7844b520862. The 'Actions' menu is open, and the 'Modify volume' option is highlighted. The rest of the interface and volume details are the same as in the previous screenshot.

44.

EC2 > Volumes > vol-0032eb7844b520862 > Modify volume

### Modify volume Info

Modify the type, size, and performance of an EBS volume.

Volume details	
Volume ID	vol-0032eb7844b520862
Volume type <small>Info</small>	General Purpose SSD (gp3)
Size (GiB) <small>Info</small>	10
IOPS <small>Info</small>	3000
Throughput (MiB/s) <small>Info</small>	125

Min: 1 GiB, Max: 16384 GiB. The value must be an integer.  
Min: 3000 IOPS, Max: 16000 IOPS. The value must be an integer.  
Min: 125 MiB, Max: 1000 MiB. Baseline: 125 MiB/s.

45.

46. .

volumes > vol-0032eb7844b520862 > Modify volume

### Modify volume Info

Modify the type, size, and performance of an EBS volume.

Volume details	
Volume ID	vol-0032eb7844b520862
Volume type <small>Info</small>	General Purpose SSD (gp3)
Size (GiB) <small>Info</small>	10
IOPS <small>Info</small>	3000
Throughput (MiB/s) <small>Info</small>	125

If you are increasing the size of the volume, you must extend the file system to the new size of the volume. You can only do this when the volume enters the optimizing state. For more information see extending the file system for [Linux](#) and [Windows](#).

The modification might take a few minutes to complete.

You are charged for the new volume configuration after volume modification starts. For pricing information, see [Amazon EBS Pricing](#).

Are you sure that you want to modify vol-0032eb7844b520862?

47.

## Start the resized instance

New EC2 Experience Tell us what you think

Instance type changed successfully

### Instances (2) Info

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input type="checkbox"/>	Web Server	i-0768a3fede9f9dbc7	<input checked="" type="radio"/> Stopped	<input checked="" type="radio"/> t2.small	-	No alarms +	us-east-1a
<input type="checkbox"/>	Bastion Host	i-03f05168c14b38e5f	<input checked="" type="radio"/> Running	<input checked="" type="radio"/> t2.micro	<input checked="" type="radio"/> 2/2 checks passed	No alarms +	us-east-1a

48.

49.

50.

51.

## Task 5: Explore EC2 limits

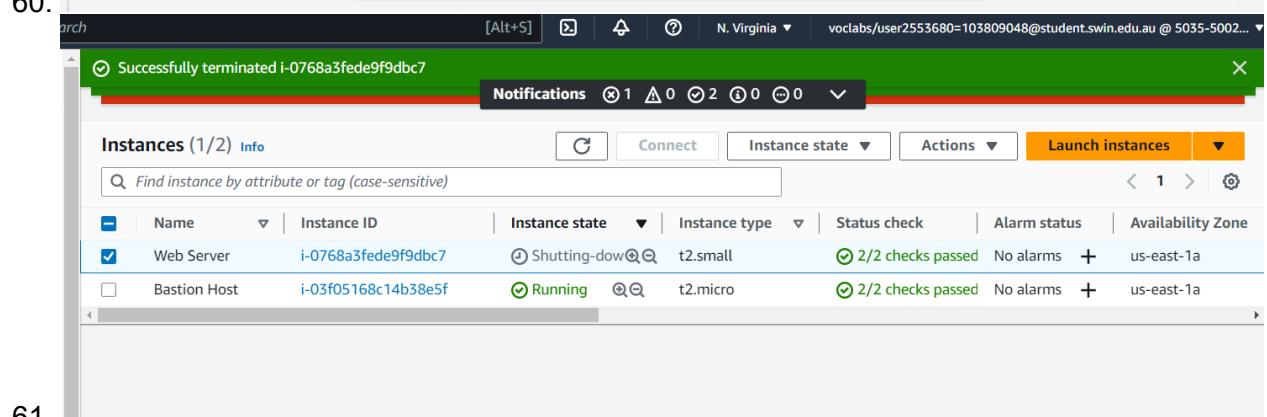
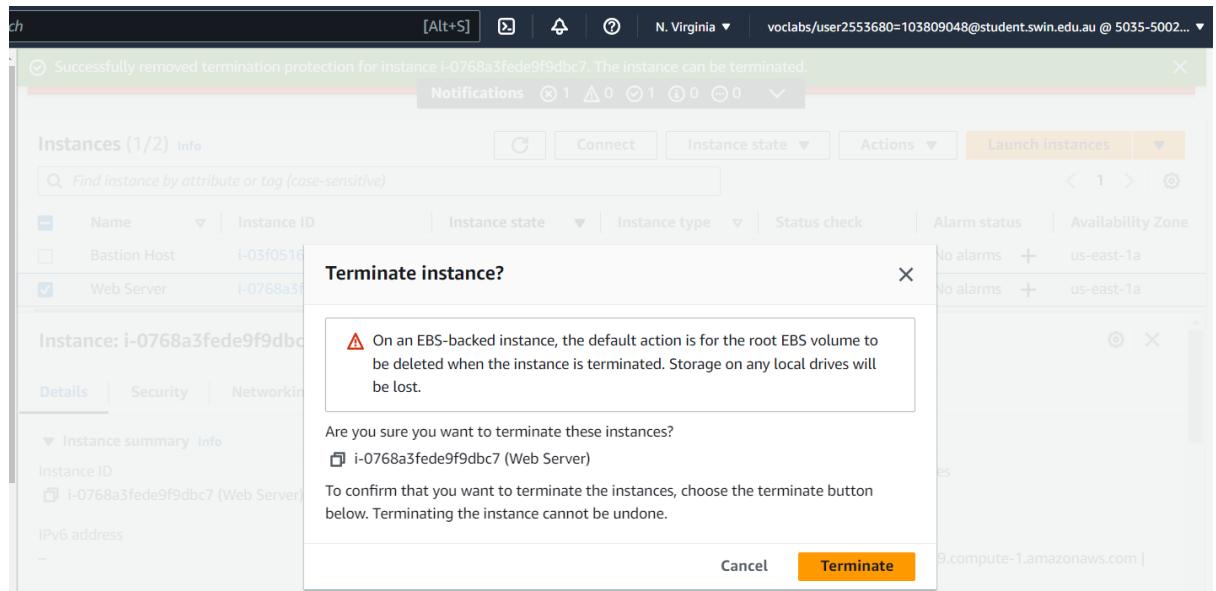
52.

53..

## Task 6: Test Termination Protection

54.

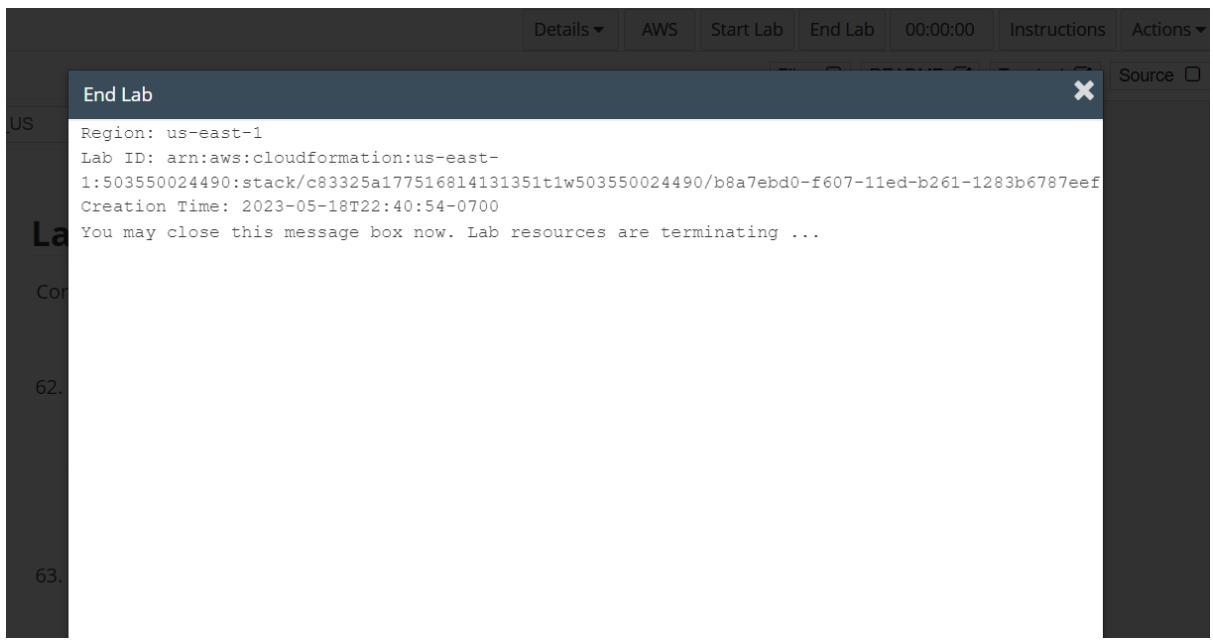




## Lab complete

The screenshot shows the AWS Cloud9 terminal interface. The terminal window displays the message "Lab Complete" and "Congratulations! You have completed the lab." There is a blue button labeled "Launch Terminal" in the bottom right corner. The top navigation bar includes buttons for Details, AWS, Start Lab, End Lab, 0:31, Instructions, Actions, Files, README, Terminal, and Source.

62. Choose End Lab at the top of this page and then choose Yes to



63.