

Experiments on AWS EC2

University of Crete > CS 590.45 > Tutorial 2025

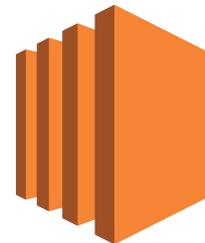
Elastic Compute Cloud (EC2)

❑ What is EC2 ?

- ❑ It's a **Virtual Machine** (VM) in the cloud
- ❑ Provides on-demand computing power
- ❑ Scales up or down as needed

❑ Features

- ❑ **Pay-as-you-go Model** (pay for the hours a server runs)
- ❑ Integrates with AWS services (e.g., connecting EC2 with S3 for storage or RDS for databases)
- ❑ Various instance types (e.g. compute-optimized for AI training)



Login



aws academy

Student Login

(For students enrolled in a class)

学生の方はこちらからログインしてください。

已注册课程的学生请在这里登录

Educator Login

(For educators who have access to the AWS Academy Portal)

講師の方（AWS Academyメンバーポータルアカウントをお持ちの方）はこちらからログインしてください。

教师请在这里登录（您需使用AWS Academy Portal账户登录）

Username / Password

aws academy

Username

csdXXXX@csd.uoc.gr

Password

●●●●●●●●●●●●●●●●

Stay signed in

[Forgot Password?](#)

Log In

[Help](#) [Privacy Policy](#) [Cookie Notice](#) [Acceptable Use Policy](#)

[Facebook](#) [X.com](#)

INSTRUCTURE

Meet the Instructure Learning Platform:

[Canvas LMS](#) [Mastery Connect](#) [Elevate Analytics](#) [Impact](#)

Select the course

The screenshot displays the AWS Academy dashboard interface. On the left is a dark blue sidebar with navigation options: Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main content area is titled 'Dashboard' and contains two course cards. The first card has a blue header and the text 'HY452 2024' and 'ALLv2EN-US-LTI13-88952'. The second card has a teal header and the text 'HY590.45 2025' and 'ALLv2EN-US-LTI13-108269'. This second card is highlighted with a red border, and a hand cursor is positioned over it, indicating it is the selected course.

aws academy

Account

Dashboard

Courses

Calendar

Inbox

History

Help

Dashboard

HY452 2024
ALLv2EN-US-LTI13-88952

HY590.45 2025
ALLv2EN-US-LTI13-108269

Launching Academy Learner Lab

The screenshot displays the AWS Academy Learner Lab interface. On the left is a dark blue sidebar with navigation options: Home, Modules (highlighted with a red box and a hand icon and the number 1), Discussions, Grades, Lucid (Whiteboard), Courses, Calendar, Inbox, History, and Help. The main content area shows a list of course items:

- Course Welcome and Overview
- Pre-Course Survey
- AWS Academy Learner Lab Student Guide
- AWS Academy Learner Lab Compliance and Security
 - Learn how to effectively use the AWS Academy Learner Lab
 - Module Knowledge Check (100 pts, Score at least 70.0)
- AWS Academy Learner Lab
 - Launch AWS Academy Learner Lab (highlighted with a red box and a hand icon and the number 2)

Environment Overview

Warning: Do not click this!
Clicking it will delete
everything you've done.

The screenshot displays the AWS Academy Learner Lab interface. On the left is a dark sidebar with navigation icons for Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main header shows the breadcrumb path: ALLv2EN-US-LTI13-108269 > Modules > AWS Academy Learner Lab > Launch AWS Academy Learner Lab. Below the header, a row of control buttons is visible: Start Lab, End Lab, AWS Details, Readme, and Reset. The 'End Lab' button is highlighted with a red box and a black arrow pointing to a warning text block. The 'Reset' button is also highlighted with a red box and a black arrow pointing to another warning text block. The main content area features a terminal window with the prompt 'eee_lti_4341393@runweb167947:~\$' and a 'Learner Lab' sidebar on the right containing various links and instructions.

Home
Modules
Discussions
Grades
Lucid (Whiteboard)

Start Lab End Lab AWS Details Readme Reset

eee_lti_4341393@runweb167947:~\$

Warning: Don't forget to end the lab when you're finished, or you will continue to incur charges.

Warning: Do not click this!
Clicking it will delete everything you've done.

Learner Lab

- [Environment Overview](#)
- [Environment Navigation](#)
- [Access the AWS Management Console](#)
- [Region restriction](#)
- [Service usage and other restrictions](#)
- [Using the terminal in the browser](#)
- [Running AWS CLI commands](#)
- [Using the AWS SDK for Python](#)
- [Preserving your budget](#)
- [Accessing EC2 Instances](#)
- [SSH Access to EC2 Instances](#)
- [SSH Access from Windows](#)
- [SSH Access from a Mac](#)

Instructions last updated: 2025-02-03

Environment Overview

This Learner Lab provides a sandbox environment for ad-hoc exploration of AWS services.

This environment is long-lived. When the session timer runs to 0:00, the session will end, but any data and

Starting the Lab

The screenshot displays the AWS Academy Learner Lab interface. The top navigation bar shows the breadcrumb path: ALLv2EN-US-LTI13-108269 > Modules > AWS Academy Learner Lab > Launch AWS Academy Learner Lab. A red box highlights the 'AWS' logo in the top left, with a red arrow pointing to the central message. Another red box highlights the 'Start Lab' button in the top right, with a red '1' next to it and a hand cursor icon pointing to it. The central area contains the text: 'wait until it becomes green. It may take up to 3 minutes.' Below this text is a large blue 'V' shape with an orange arrow curving around its right side. The right sidebar features a dropdown menu with 'EN-US' selected, a 'Learner Lab' heading, and a list of links: Environment Overview, Environment Navigation, Access the AWS Management Console, Region restriction, Service usage and other restrictions, Using the terminal in the browser, Running AWS CLI commands, Using the AWS SDK for Python, Preserving your budget, Accessing EC2 Instances, SSH Access to EC2 Instances, SSH Access from Windows, and SSH Access from a Mac. At the bottom of the sidebar, it states 'Instructions last updated: 2025-02-03' and 'Environment Overview'. The main content area below the sidebar explains that the Learner Lab provides a sandbox environment for ad-hoc exploration of AWS services and notes that the environment is long-lived, ending at 0:00.

aws academy

Account

Dashboard

Courses

Calendar

Inbox

History

Help

Home

Modules

Discussions

Grades

Lucid (Whiteboard)

ALLv2EN-US-LTI13-108269 > Modules > AWS Academy Learner Lab > Launch AWS Academy Learner Lab

AWS

Start Lab

End Lab

AWS Details

Readme

Reset

EN-US

Learner Lab

[Environment Overview](#)

[Environment Navigation](#)

[Access the AWS Management Console](#)

[Region restriction](#)

[Service usage and other restrictions](#)

[Using the terminal in the browser](#)

[Running AWS CLI commands](#)

[Using the AWS SDK for Python](#)

[Preserving your budget](#)

[Accessing EC2 Instances](#)

[SSH Access to EC2 Instances](#)

[SSH Access from Windows](#)

[SSH Access from a Mac](#)

Instructions last updated: 2025-02-03

Environment Overview

This Learner Lab provides a sandbox environment for ad-hoc exploration of AWS services.

This environment is long-lived. When the session timer runs to 0:00, the session will end, but any data and

Entering the lab

every 4 hours, the lab session ends. You don't lose any data

The screenshot shows the AWS Academy Learner Lab interface. The breadcrumb navigation at the top reads: ALLv2EN-US-LTI13-108269 > Modules > AWS Academy Learner Lab > Launch AWS Academy Learner Lab. The left sidebar contains navigation options: Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main content area has a top bar with 'AWS' (highlighted with a red box and a hand cursor), 'Used \$0 of \$50' (highlighted with a red box and an arrow), and a timer '03:55' (highlighted with a red box and an arrow). Below the top bar, there are buttons for 'Start Lab', 'End Lab', 'AWS Details', 'Readme', and 'Reset'. The main content area is divided into two sections: a large terminal window on the left and a 'Learner Lab' overview on the right. The terminal window shows a shell prompt 'eee_M_43413936@eb16787:~\$'. The 'Learner Lab' section includes a dropdown menu for 'EN-US', a title 'Learner Lab', and a list of links: Environment Overview, Environment Navigation, Access the AWS Management Console, Region restriction, Service usage and other restrictions, Using the terminal in the browser, Running AWS CLI commands, Using the AWS SDK for Python, Preserving your budget, Accessing EC2 Instances, SSH Access to EC2 Instances, SSH Access from Windows, and SSH Access from a Mac. Below the links, it states 'Instructions last updated: 2025-02-03'. The 'Environment Overview' section describes the lab as a sandbox environment for ad-hoc exploration of AWS services and notes that the environment is long-lived, meaning data is not lost when the session timer ends.

Warning: you a maximum of **50\$**. If you spent them all then you can't use **AWS** services. So keep track of it.

Welcome to AWS

Console Home [Info](#)

[Reset to default layout](#) [+ Add widgets](#)

Recently visited [Info](#)



No recently visited services

Explore one of these commonly visited AWS services.

[EC2](#) [S3](#) [Aurora and RDS](#) [Lambda](#)

[View all services](#)

Applications (0) [Info](#)

Region: US East (N. Virginia) [Create application](#)

us-east-1 (Current Region)

< 1 >

Name	Description	Region	Originati
No applications Get started by creating an application.			

[Create application](#)

[Go to myApplications](#)

Welcome to AWS

[Getting started with AWS](#)

Learn the fundamentals and find valuable information to get the most out of AWS.

[Training and certification](#)

Learn from AWS experts and advance your skills and knowledge.

AWS Health [Info](#)

Open issues: 0 (Past 7 days)

Scheduled changes: 0 (Upcoming and past 7 days)

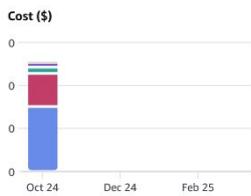
Other notifications: 0 (Past 7 days)

Cost and usage [Info](#)

Current month costs: **\$0.00**

Forecasted month end costs: -

Savings opportunities: [Access denied](#)



Month (Year)

Searching for the EC2 service

The screenshot displays the AWS console search results for 'EC2'. The search bar at the top contains 'EC2'. The results are organized into several sections:

- Services:** A list of services related to EC2, with 'EC2' (Virtual Servers in the Cloud) highlighted by a red box. Below it are 'EC2 Image Builder' and 'EC2 Global View'.
- Top features:** A sub-section under 'EC2' listing 'Dashboard', 'Launch templates', 'Instances', 'Spot Instance requests', and 'Savings plans'.
- Features:** A list of features associated with EC2, including 'Dashboard', 'AMIs', and 'EC2 Instances'.
- Resources:** A section for resource search, with a note: 'To search for resources, Resource Explorer must be active in at least one AWS Region and you must have permission to use the default view in the account. [Learn more](#)'.

At the bottom left, there is a feedback prompt: 'Were these results helpful?' with 'Yes' and 'No' buttons.

The right side of the screenshot shows the 'Applications' section, which is currently empty. It includes a 'Create application' button and a 'Go to myApplications' link. Below this is a 'Cost and usage' section with a bar chart showing 'Month costs' and 'Month end costs' for October 2024. The chart shows a significant cost for October 2024, with a small cost for December 2024 and February 2025.

Month (Year)	Cost (\$)
Oct 24	~100
Dec 24	~10
Feb 25	~10

EC2 > Dashboard > Launch Instance

The screenshot shows the AWS Management Console interface for the EC2 service. The top navigation bar includes the AWS logo, a search bar, and the current region (United States (N. Virginia)). The left sidebar contains a navigation menu with categories like EC2, Instances, Images, Elastic Block Store, Network & Security, and Load Balancing. The main content area is divided into several sections:

- Resources:** A summary table of EC2 resources in the current region.
- Launch instance:** A section with a prominent "Launch instance" button (highlighted with a red box and a hand cursor) and a "Migrate a server" button. A note indicates that instances will launch in the United States (N. Virginia) Region.
- Instance alarms:** A section showing 0 alarms and 0 OK status.
- Scheduled events:** A section showing no scheduled events for the current region.
- Service health:** A section showing the service is operating normally in the current region.
- Zones:** A table listing available zones and their IDs.
- Account attributes:** A section showing account details like the Default VPC and Settings.
- Explore AWS:** A section with links to performance and cost optimization resources.
- Additional information:** A section with links to get started guides and documentation.

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

Zone name	Zone ID
us-east-1a	use1-az6
us-east-1b	use1-az1
us-east-1c	use1-az2
us-east-1d	use1-az4
us-east-1e	use1-az3
us-east-1f	use1-az5

Give a name to you instance & select an OS image

Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

1 **Name and tags** [Info](#)

Name
my-first-ec2-instance [Add additional tags](#)

2 **Application and OS Images (Amazon Machine Image)** [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Quick Start

Amazon Linux macOS **Ubuntu** Windows Red Hat SUSE Linux Debian

aws Mac ubuntu Microsoft Red Hat SUSE debian

3 **Amazon Machine Image (AMI)**

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type Free tier eligible

ami-084568db4383264d4 (64-bit (x86)) / ami-0c4e709339fa8521a (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Ubuntu Server 24.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Canonical, Ubuntu, 24.04, amd64 noble image

Architecture **AMI ID** **Publish Date** **Username** [Info](#)

Summary

Number of instances [Info](#)

1

Software Image (AMI)
Canonical, Ubuntu, 24.04, amd64...[read more](#)
ami-084568db4383264d4

Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

[Cancel](#) [Launch instance](#) [Preview code](#)

select Architecture & instance type

aws [Search] [Alt+S] United States (N. Virginia) voclabs/user3968721-Test_Student @ 8896-6497-3370

EC2 > Instances > Launch an instance

aws Mac ubuntu Microsoft Red Hat SUSE debian

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type Free tier eligible
ami-084568db4383264d4 (64-bit (x86)) / ami-0c4e709339fa8521a (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Ubuntu Server 24.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Canonical, Ubuntu, 24.04, amd64 noble image

4 **Architecture** 64-bit (x86) **AMI ID** ami-084568db4383264d4 **Publish Date** 2025-03-05 **Username** ubuntu **Verified provider**

5 **Instance type** [Info](#) | [Get advice](#)

Instance type t2.micro Free tier eligible
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Windows base pricing: 0.0162 USD per Hour On-Demand Ubuntu Pro base pricing: 0.0134 USD per Hour
On-Demand SUSE base pricing: 0.0116 USD per Hour On-Demand RHEL base pricing: 0.026 USD per Hour
On-Demand Linux base pricing: 0.0116 USD per Hour

All generations [Compare instance types](#)

Additional costs apply for AMIs with pre-installed software

Key pair (login) [Info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required [Create new key pair](#)

Summary

Number of instances [Info](#)

Software Image (AMI)
Canonical, Ubuntu, 24.04, amd64...[read more](#)
ami-084568db4383264d4

Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

[Cancel](#) [Launch instance](#) [Preview code](#)

Different needs, different instance types

Choose an instance that meets your needs, and always check the **hourly pricing**.

t2.micro is affordable and a good option to start with

aws [Search] [Alt+S] United States (N. Virginia) vodlabs/user3968721=Test_Student @ 8896-6497-3370

EC2 > Instances > Launch an instance

Get advice on instance type selection...

- t2.nano**
Family: t2 1 vCPU 0.5 GiB Memory Current generation: true On-Demand Linux base pricing: 0.0058 USD per Hour
On-Demand SUSE base pricing: 0.0058 USD per Hour On-Demand Windows base pricing: 0.0081 USD per Hour
On-Demand Ubuntu Pro base pricing: 0.0076 USD per Hour
- t2.micro** Free tier eligible
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Windows base pricing: 0.0162 USD per Hour On-Demand Ubuntu Pro base pricing: 0.0134 USD per Hour
On-Demand SUSE base pricing: 0.0116 USD per Hour On-Demand RHEL base pricing: 0.026 USD per Hour
On-Demand Linux base pricing: 0.0116 USD per Hour
- t2.small**
Family: t2 1 vCPU 2 GiB Memory Current generation: true On-Demand Windows base pricing: 0.032 USD per Hour
On-Demand Linux base pricing: 0.023 USD per Hour On-Demand RHEL base pricing: 0.0376 USD per Hour
On-Demand SUSE base pricing: 0.053 USD per Hour On-Demand Ubuntu Pro base pricing: 0.025 USD per Hour
- t2.medium**
Family: t2 2 vCPU 4 GiB Memory Current generation: true On-Demand Ubuntu Pro base pricing: 0.0499 USD per Hour
On-Demand Linux base pricing: 0.0464 USD per Hour On-Demand RHEL base pricing: 0.0752 USD per Hour
On-Demand Windows base pricing: 0.0644 USD per Hour On-Demand SUSE base pricing: 0.1464 USD per Hour
- t2.large**
Family: t2 2 vCPU 8 GiB Memory Current generation: true On-Demand Windows base pricing: 0.1208 USD per Hour
On-Demand Linux base pricing: 0.1216 USD per Hour On-Demand SUSE base pricing: 0.1928 USD per Hour
- t2.micro** Free tier eligible
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Windows base pricing: 0.0162 USD per Hour On-Demand Ubuntu Pro base pricing: 0.0134 USD per Hour
On-Demand SUSE base pricing: 0.0116 USD per Hour On-Demand RHEL base pricing: 0.026 USD per Hour
On-Demand Linux base pricing: 0.0116 USD per Hour

Additional costs apply for AMIs with pre-installed software

Key pair (login) Info
You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required
Select Create new key pair

Summary
Number of instances | Info
1
Software Image (AMI)
Canonical, Ubuntu, 24.04, amd64...read more
ami-084568db4383264d4
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Launch instance Preview code

Prevent others to enter your EC2 instance

aws Search [Alt+S] United States (N. Virginia) voclabs/user3968721-Test_Student @ 8896-6497-3370

EC2 > Instances > Launch an instance

Instance type Info | Get advice

Instance type

t2.micro Free tier eligible

Family: t2 1 vCPU 1 GiB Memory Current generation: true

On-Demand Windows base pricing: 0.0162 USD per Hour On-Demand Ubuntu Pro base pricing: 0.0134 USD per Hour

On-Demand SUSE base pricing: 0.0116 USD per Hour On-Demand RHEL base pricing: 0.026 USD per Hour

On-Demand Linux base pricing: 0.0116 USD per Hour

Additional costs apply for AMIs with pre-installed software

All generations Compare instance types

Key pair (login) Info

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required

Select Create new key pair

Network settings Info Edit

Network Info

vpc-0f7861559159e2280

Subnet Info

No preference (Default subnet in any availability zone)

Auto-assign public IP Info

Enable

Additional charges apply when outside of free tier allowance

Firewall (security groups) Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group Select existing security group

We'll create a new security group called 'launch-wizard-1' with the following rules:

Allow SSH traffic from Anywhere

Summary

Number of instances Info

1

Software Image (AMI)

Canonical, Ubuntu, 24.04, amd64...read more

ami-084568db4383264d4

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Launch instance Preview code

To SSH into an EC2 instance, you need to create a key pair

By creating a key

The screenshot shows the AWS Management Console interface for launching an instance. A modal dialog titled "Create key pair" is open, highlighted with a red border. The dialog contains the following fields and options:

- Key pair name:** A text input field containing "my-sweet-key". A red circle with the number "6" is positioned to the right of the field.
- Key pair type:** Two radio button options: "RSA" (selected) and "ED25519".
- Private key file format:** Two radio button options: ".pem" (selected) and ".ppk".
- Warning:** A yellow box with a warning icon containing the text: "When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. [Learn more](#)".
- Buttons:** "Cancel" and "Create key pair". A red circle with the number "8" is next to the "Create key pair" button, and a hand cursor is pointing at it.

The background shows the "Launch an instance" page with sections for "Instance type" (t2.micro), "Key pair (login)", "Network settings", and "Summary". A "Free tier" notification is also visible in the bottom right of the dialog area.

Network Settings

Key pair name - *required*
my-sweet-key [Create new key pair](#)

▼ Network settings [Info](#) [Edit](#)

Network [Info](#)
vpc-0f7861559159e2280

Subnet [Info](#)
No preference (Default subnet in any availability zone)

Auto-assign public IP [Info](#)
Enable
Additional charges apply when outside of free tier allowance

Firewall (security groups) [Info](#)
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group Select existing security group

We'll create a new security group called 'launch-wizard-1' with the following rules:

- Allow SSH traffic from
Helps you connect to your instance Anywhere (0.0.0.0/0)
- Allow HTTPS traffic from the internet
To set up an endpoint, for example when creating a web server
- Allow HTTP traffic from the internet
To set up an endpoint, for example when creating a web server

Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

▼ Summary

Number of instances [Info](#)
1

Software Image (AMI)
Canonical, Ubuntu, 24.04, amd6...[read more](#)
ami-084568db4385264d4

Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

[Cancel](#) [Launch instance](#) [Preview code](#)

If you need http/https traffic then select these buttons

7

Configure storage

it is not binding, you can change it later

LabInstance Profile !!!

The screenshot shows the AWS Management Console interface for launching an instance. The top navigation bar includes the AWS logo, a search bar, and the user's location (United States (N. Virginia)) and account information (voclabs/user3968721-Test_Student @ 8896-6497-3370). The main content area is divided into several sections:

- Configure storage** (Advanced): Shows 1x 20 GiB gp3 storage. A red box highlights the storage configuration, and a red '8' is placed to its right. A note indicates that free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. There is an 'Add new volume' button and a note about AMI instance store volumes. A 'Click refresh to view backup information' button is also present. At the bottom, it shows '0 x File systems' with an 'Edit' link.
- Advanced details** (Info): Includes a 'Domain join directory' dropdown set to 'Select' and a 'Create new directory' link. The 'IAM instance profile' dropdown is set to 'LabInstanceProfile' (arn:aws:iam::889664973370:instance-profile/LabInstanceProfile) and is highlighted with a red box. A 'Create new IAM profile' link is next to it. The 'Hostname type' dropdown is set to 'IP name'. Under 'DNS Hostname', three checkboxes are checked: 'Enable IP name IPv4 (A record) DNS requests', 'Enable resource-based IPv4 (A record) DNS requests', and 'Enable resource-based IPv6 (AAAA record) DNS requests'. A red '9' is placed to the right of this section.
- Summary**: Shows 'Number of instances' set to 1. The 'Software Image (AMI)' is Canonical, Ubuntu, 24.04, amd64... with a 'read more' link. The 'Virtual server type (instance type)' is t2.micro. The 'Firewall (security group)' is 'New security group'. The 'Storage (volumes)' section shows '1 volume(s) - 20 GiB'. A 'Free tier' note is present: 'In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.' At the bottom, there are 'Cancel', 'Launch instance', and 'Preview code' buttons. The 'Launch instance' button is highlighted with a red box and a red '10', with a hand cursor pointing to it.

You just created the EC2 instance

The screenshot displays the AWS Management Console interface for EC2 instances. The top navigation bar includes the AWS logo, a search bar, and the current region (United States (N. Virginia)). The left sidebar shows the navigation menu with 'Instances' highlighted. The main content area shows a table of instances with the following data:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
my-first-ec2-instance	i-0c25ecc4ea769c10	Running	t2.micro	Initializing	View alarms +	us-east-1d	ec2-98-84-96-153.com...	98.84.96.153	-

Below the table, there is a large green text overlay that reads: "Your new instance is ready. Just wait a moment for it to initialize (Instance State == Running)".

Click on the Instance ID

The screenshot displays the AWS Management Console interface for EC2 instances. The top navigation bar includes the AWS logo, a search bar, and user information. The left sidebar shows the navigation menu with categories like EC2, Images, Elastic Block Store, Network & Security, and Load Balancing. The main content area is titled "Instances (1) Info" and features a table of instances. The instance "my-first-ec2-instance" is listed with the ID "i-0c25eecd4ea769c10", which is highlighted with a red box and a hand cursor. The instance is in a "Running" state. Below the table, there is a "Select an instance" section.

aws [Alt+S] United States (N. Virginia) voclabs/user3968721=Test_Student @ 8896-6497-3370

EC2 > Instances

Instances (1) Info

Last updated less than a minute ago

Connect Instance state Actions Launch instances

Find Instance by attribute or tag (case-sensitive) All states

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
<input type="checkbox"/>	my-first-ec2-instance	i-0c25eecd4ea769c10	Running	t2.micro	Initializing	View alarms +	us-east-1d	ec2-98-84-96-153.com...	98.84.96.153	-

Select an instance

This is the Dashboard of this specific EC2 instance

The screenshot displays the AWS Management Console interface for an EC2 instance. The breadcrumb navigation shows 'EC2 > Instances > i-0c25eecd4ea769c10'. The main content area is titled 'Instance summary for i-0c25eecd4ea769c10 (my-first-ec2-instance)'. The instance is currently in a 'Running' state. A red rectangular box highlights the 'Public IPv4 DNS' field, which shows the address 'ec2-98-84-96-153.compute-1.amazonaws.com'. A hand cursor is positioned over this field. The console also shows various other details such as the instance ID, IP addresses, DNS names, and IAM role.

Instance summary for i-0c25eecd4ea769c10 (my-first-ec2-instance) Info

Updated less than a minute ago

Instance ID
i-0c25eecd4ea769c10

IPv6 address
-

Hostname type
IP name: ip-172-31-16-136.ec2.internal

Answer private resource DNS name
IPv4 (A)

Auto-assigned IP address
98.84.96.153 [Public IP]

IAM Role
LabRole

IMDSv2
Required

Operator
-

Public IPv4 address
98.84.96.153 | open address

Instance state
Running

Private IP DNS name (IPv4 only)
ip-172-31-16-136.ec2.internal

Instance type
t2.micro

VPC ID
vpc-0f7861559159e2280

Subnet ID
subnet-0d50ed8a694d7d766

Instance ARN
arn:aws:ec2:us-east-1:889664973370:instance/i-0c25eecd4ea769c10

Private IPv4 addresses
172.31.16.136

Public IPv4 DNS
ec2-98-84-96-153.compute-1.amazonaws.com | open address

Elastic IP addresses
-

AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations. | Learn more

Auto Scaling Group name
-

Managed
false

Details | Status and alarms | Monitoring | Security | Networking | Storage | Tags

Instance details Info

AMI ID
ami-084568db4383264d4

AMI name
ubuntu/images/hvm-ssd-gp3/ubuntu-noble-24.04-amd64-server-20250305

Stop protection
Disabled

Monitoring
disabled

Allowed image
-

Launch time
Sun Mar 30 2025 19:52:00 GMT+0300 (Eastern European Summer Time) (4 minutes)

Platform details
Linux/UNIX

Termination protection
Disabled

AMI location
amazon/ubuntu/images/hvm-ssd-gp3/ubuntu-noble-24.04-amd64-server-20250305

Second attempt: You did it :)

```
[~/aws-keys]$ ssh -i my-sweet-key.pem ubuntu@ec2-98-84-96-153.compute-1.amazonaws.com
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-1024-aws x86_64)
```

```
* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:       https://ubuntu.com/pro
```

```
System information as of Sun Mar 30 17:03:54 UTC 2025
```

```
System load:  0.0      Processes:      104
Usage of /:   9.2% of 18.33GB   Users logged in:  0
Memory usage: 21%      IPv4 address for enX0: 172.31.16.136
Swap usage:   0%
```

```
Expanded Security Maintenance for Applications is not enabled.
```

```
0 updates can be applied immediately.
```

```
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
```

```
The list of available updates is more than a week old.
To check for new updates run: sudo apt update
```

```
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
```

```
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.
```

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
```

```
ubuntu@ip-172-31-16-136:~$ ls
ubuntu@ip-172-31-16-136:~$ |
```

Don't forget to update/upgrade the instance

`sudo apt update && sudo apt upgrade`

Did we finish?

You may have an issue with ports later on

In this demo we will setup a flask server.

```
> sudo apt install python3-pip
> sudo apt install python3.12-venv
> python3 -m venv myenv
> source myenv/bin/activate
> pip install flask
> nano demo.py

> paste this code:
from flask import Flask

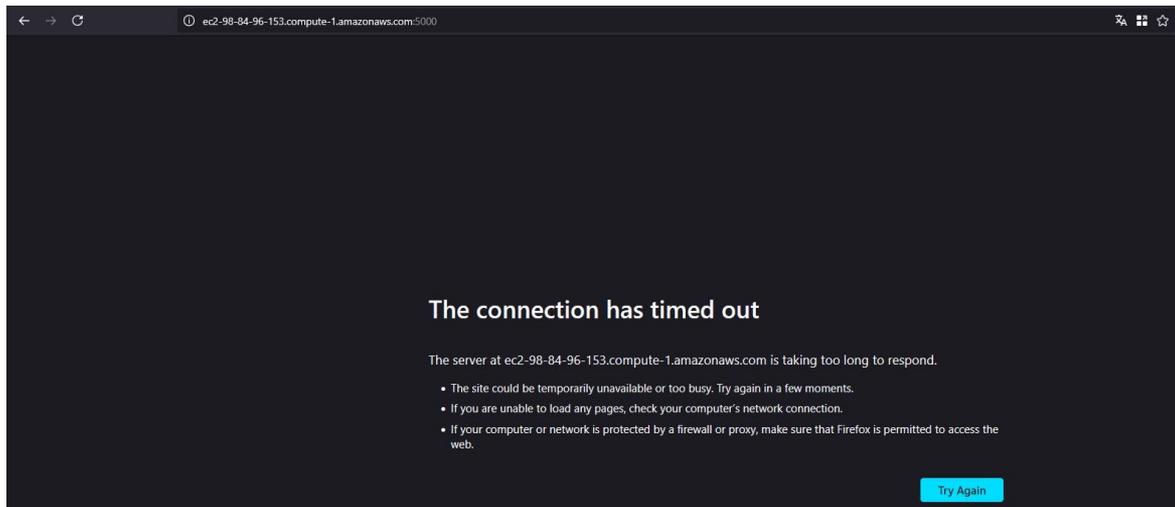
app = Flask(__name__)

@app.route('/')
def hello_world():
    return 'Hello, World!'

if __name__ == '__main__':
    app.run(host='0.0.0.0', port=5000)
```

Let's start a flask server listening on port 5000

```
(myenv) ubuntu@ip-172-31-16-136:~$ python3 demo.py
* Serving Flask app 'demo'
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on all addresses (0.0.0.0)
* Running on http://127.0.0.1:5000
* Running on http://172.31.16.136:5000
Press CTRL+C to quit
```



We didn't receive any response because of AWS's **Least Privilege Principle**. By default, all inbound traffic is blocked.

Next slide fixes this issue

Activate the required port (5000 in our example)

The screenshot displays the AWS Management Console interface for an EC2 instance. The left sidebar shows navigation options under 'EC2', including 'Instances', 'Images', 'Elastic Block Store', 'Network & Security', and 'Load Balancing'. The main content area shows the 'Instance summary for i-0c25eecd4ea769c10 (my-first-ec2-instance)'. The 'Security' tab is selected, and the 'Security groups' section is highlighted with a red box and a hand cursor. A red '1' is placed above the 'Security' tab, and a red '2' is placed next to the 'Security groups' list.

Instance summary for i-0c25eecd4ea769c10 (my-first-ec2-instance) Info

Updated 28 minutes ago

Instance ID
i-0c25eecd4ea769c10

IPv6 address
-

Hostname type
IP name: ip-172-31-16-136.ec2.internal

Answer private resource DNS name
IPv4 (A)

Auto-assigned IP address
98.84.96.153 [Public IP]

IAM Role
LabRole

IMDSv2
Required

Operator
-

Public IPv4 address
98.84.96.153 | open address

Instance state
Running

Private IP DNS name (IPv4 only)
ip-172-31-16-136.ec2.internal

Instance type
t2.micro

VPC ID
vpc-0f7861559159e2280

Subnet ID
subnet-0d50ed8a694d7d766

Instance ARN
arn:aws:ec2:us-east-1:889664973370:instance/i-0c25eecd4ea769c10

Private IPv4 addresses
172.31.16.136

Public IPv4 DNS
ec2-98-84-96-153.compute-1.amazonaws.com | open address

Elastic IP addresses
-

AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations. | Learn more

Auto Scaling Group name
-

Managed
false

Details | **Status and alarms** | **Monitoring** | **Security** | **Networking** | **Storage** | **Tags**

Security details

IAM Role
LabRole

Owner ID
889664973370

Launch time
Sun Mar 30 2025 19:52:00 GMT+0300 (Eastern European Summer Time)

Security groups
sg-028086dbc33ea7c8d (launch-wizard-1)

Inbound rules

Filter rules

Edit inbound rules

The screenshot shows the AWS Management Console interface for a security group named 'sg-028086dbc33ea7c8d - launch-wizard-1'. The 'Inbound rules' tab is selected and highlighted with a red box and a hand icon labeled '3'. The 'Edit inbound rules' button is also highlighted with a red box and a hand icon labeled '4'. The console displays details for the security group, including its name, ID, description, owner, and rule counts. Below the details, a table lists the inbound rules.

Details

- Security group name:** launch-wizard-1
- Security group ID:** sg-028086dbc33ea7c8d
- Description:** launch-wizard-1 created 2025-03-30T16:16:07.982Z
- VPC ID:** vpc-0f7861559159e2280
- Owner:** 889664973370
- Inbound rules count:** 3 Permission entries
- Outbound rules count:** 1 Permission entry

Inbound rules (3)

<input type="checkbox"/>	Name	Security group rule ID	IP version	Type	Protocol	Port range	Source	Description
<input type="checkbox"/>	-	sgr-0b7af4b6dacf17e60	IPv4	HTTP	TCP	80	0.0.0.0/0	-
<input type="checkbox"/>	-	sgr-0bb2e9ba4c147fe5b	IPv4	HTTPS	TCP	443	0.0.0.0/0	-
<input type="checkbox"/>	-	sgr-03bebd818b476a075	IPv4	SSH	TCP	22	0.0.0.0/0	-

Add a rule

Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules Info

Security group rule ID	Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>	
sg-0b7af4b6dacf17e60	HTTP	TCP	80	Custom	Q	<input type="text"/> <input type="button" value="Delete"/>
sg-0bb2e9ba4c147fe5b	HTTPS	TCP	443	Custom	Q	<input type="text"/> <input type="button" value="Delete"/>
sg-03bebd818b476a075	SSH	TCP	22	Custom	Q	<input type="text"/> <input type="button" value="Delete"/>
-	Custom TCP	TCP	5000	Anywh...	Q 0.0.0.0/0	<input type="text"/> <input type="button" value="Delete"/>

⚠ Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

you may want to use a Port range like 5000-5999

allows every ip to access this port

Cancel

6





Not Secure

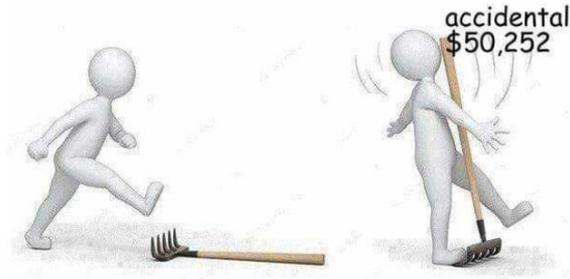
ec2-98-84-96-153.compute-1.amazonaws.com:5000

Hello, World!

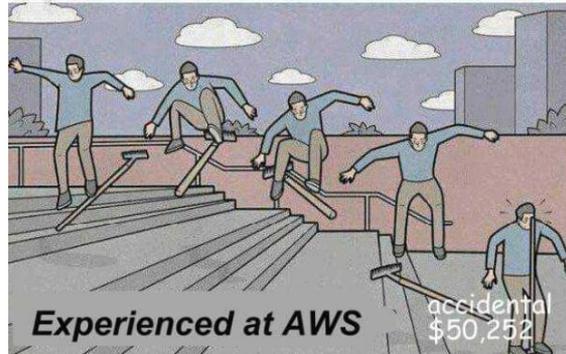
Don't forget to end lab session

The screenshot displays the AWS Academy Learner Lab interface. At the top, the breadcrumb navigation shows the path: ALLv2EN-US-LTI13-108269 > Modules > AWS Academy Learner Lab > Launch AWS Academy Learner Lab. The top status bar includes 'Used \$0 of \$50', a timer at '02:17', and buttons for 'Start Lab', 'End Lab', 'AWS Details', 'Readme', and 'Reset'. The 'End Lab' button is highlighted with a red rectangular box, and a hand cursor is pointing at it. The main content area is split into two panes. The left pane is a terminal window with the prompt 'eee_W_4341393@runweb167047:~\$'. The right pane is titled 'Learner Lab' and contains a list of links: Environment Overview, Environment Navigation, Access the AWS Management Console, Region restriction, Service usage and other restrictions, Using the terminal in the browser, Running AWS CLI commands, Using the AWS SDK for Python, Preserving your budget, Accessing EC2 Instances, SSH Access to EC2 Instances, SSH Access from Windows, and SSH Access from a Mac. Below the links, it states 'Instructions last updated: 2025-02-03'. A section titled 'Environment Overview' follows, describing the lab as a sandbox environment for ad-hoc exploration of AWS services. It concludes with the text: 'This environment is long-lived. When the session timer runs to 0:00, the session will end, but any data and

Thank you, for your attention !!!



New to AWS



Tips

- ❑ re-clicking "Start Lab" resets the timer to 4 hours. It may be useful to do this before the current session ends
- ❑ When you finish, be sure to end the lab, time is money
- ❑ If you can't reach your web service, check the security group settings
- ❑ You may not have access to certain EC2 instances due to academic account restrictions.