

Experiment No. 4

**Title: Hosting a website on Linux Virtual Machine
Instance using AWS (IaaS)**



Batch: A4 Roll No.: 1914078

Experiment No.:4

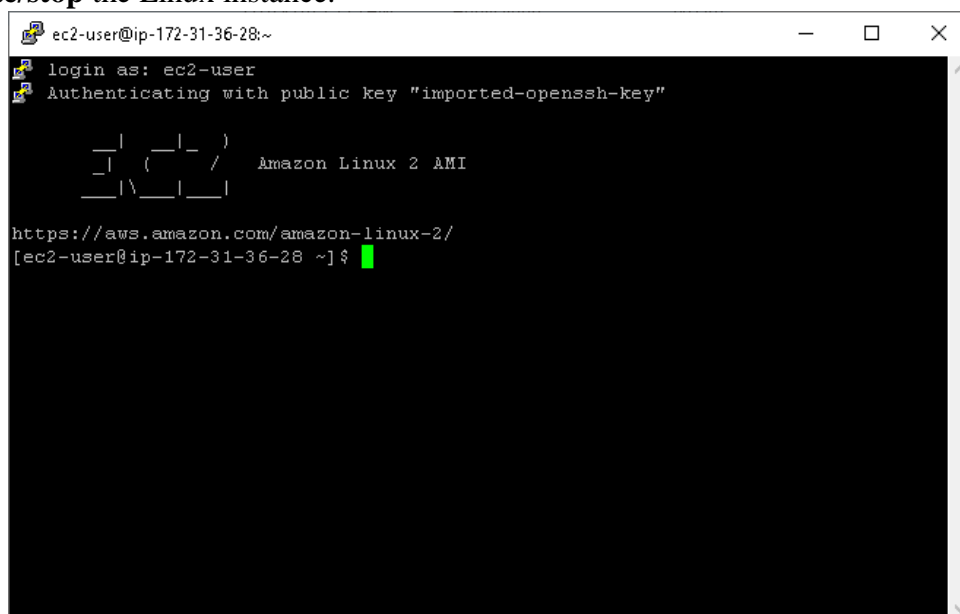
Aim: Creating Linux Virtual Machine Instance and Hosting a website using AWS (IaaS)**Resources needed:** AWS account**Pre Requisite:** Knowledge of Client Server communication**Theory:**

Amazon Linux 2 is a Linux operating system from Amazon Web Services (AWS). It provides a security-focused, stable, and high-performance execution environment to develop and run cloud applications. AWS provides ongoing security and maintenance updates for Amazon Linux 2.

Amazon Elastic Compute Cloud (EC2) is one of the most popular AWS services. EC2 allows you to launch different types of cloud instances and pay for them with a pay-per-use model. EC2 allows you to have operating system level control of your computing resources while running in Amazon's computing environment.

Procedure:

1. Download PuTTY client putty.org [Select 32 bit or 64 bit installer]
2. It will install two files, PuTTY and PuTTYgen
3. Create EC2 Linux instance.
4. Use PuTTYgen to convert key .pem file to .ppk file.[because .ppk file is used with PuTTY]
5. Use PuTTY for connecting to Linux instance using Username : ec2-user [copy Public IP of Linux instance in PuTTY Host Name. Select SSH and Auth and browse key .ppk file]
6. Switch to the root user [sudo su]
7. Download any Webserver.
8. Launch a sample website on the Webserver of virtual Linux machine.
9. Check the website on any browser.
10. **Delete/stop** the Linux instance.



```
ec2-user@ip-172-31-36-28:~  
login as: ec2-user  
Authenticating with public key "imported-openssh-key"  
  
  _ | _ | _ )  
  _ | ( _ | /   Amazon Linux 2 AMI  
  _ | \ _ | _ |  
  
https://aws.amazon.com/amazon-linux-2/  
[ec2-user@ip-172-31-36-28 ~]$
```

Results: (Program / Steps with screenshots) for all steps of download, connection and hosting a website.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 1: Choose an Amazon Machine Image (AMI)

Cancel and Exit

Search by Systems Manager parameter

Quick Start

My AMIs

AWS Marketplace

Community AMIs

☐ Free tier only ⓘ

Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type - ami-033b95fb8079dc481 (64-bit x86) / ami-0f7691f59fd7c47af (64-bit Arm)

Amazon Linux 2 comes with five years support. It provides Linux kernel 5.10 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras. This AMI is the successor of the Amazon Linux AMI that is now under maintenance only mode and has been removed from this wizard.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

Select

☒ 64-bit (x86)

☐ 64-bit (Arm)

Amazon Linux 2 AMI (HVM) - Kernel 4.14, SSD Volume Type - ami-038b3df3312ddf25d (64-bit x86) / ami-0a200d3f40a2f6ca0 (64-bit Arm)

Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras. This AMI is the successor of the Amazon Linux AMI that is now under maintenance only mode and has been removed from this wizard.

Select

☒ 64-bit (x86)

☐ 64-bit (Arm)

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Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance families Current generation Show/Hide Columns

Currently selected: t2.micro (- ECUs, 1 vCPUs, 2.5 GHz, -, 1 GiB memory, EBS only)

| | Family | Type | vCPUs | Memory (GiB) | Instance Storage (GB) | EBS-Optimized Available | Network Performance | IPv6 Support |
|-------------------------------------|--------|--------------------------------|-------|--------------|-----------------------|-------------------------|---------------------|--------------|
| <input type="checkbox"/> | t2 | t2.nano | 1 | 0.5 | EBS only | - | Low to Moderate | Yes |
| <input checked="" type="checkbox"/> | t2 | t2.micro Free tier eligible | 1 | 1 | EBS only | - | Low to Moderate | Yes |
| <input type="checkbox"/> | t2 | t2.small | 1 | 2 | EBS only | - | Low to Moderate | Yes |
| <input type="checkbox"/> | t2 | t2.medium | 2 | 4 | EBS only | - | Low to Moderate | Yes |
| <input type="checkbox"/> | t2 | t2.large | 2 | 8 | EBS only | - | Low to Moderate | Yes |
| <input type="checkbox"/> | t2 | t2.xlarge | 4 | 16 | EBS only | - | Moderate | Yes |

Cancel Previous Review and Launch Next: Configure Instance Details

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances ⓘ 1 Launch into Auto Scaling Group ⓘ

Purchasing option ⓘ ☐ Request Spot instances

Network ⓘ vpc-050497dda82c070f4 (default) Create new VPC

Subnet ⓘ No preference (default subnet in any Availability Zone) Create new subnet

Auto-assign Public IP ⓘ Use subnet setting (Enable)

Hostname type ⓘ Use subnet setting (IP name)

DNS Hostname ⓘ ☒ Enable IP name IPv4 (A record) DNS requests ☒ Enable resource-based IPv4 (A record) DNS requests ☐ Enable resource-based IPv6 (AAAA record) DNS requests

Placement group ⓘ ☐ Add instance to placement group

Cancel Previous Review and Launch Next: Add Storage

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

| Volume Type ⓘ | Device ⓘ | Snapshot ⓘ | Size (GiB) ⓘ | Volume Type ⓘ | IOPS ⓘ | Throughput (MB/s) ⓘ | Delete on Termination ⓘ | Encryption ⓘ |
|---------------|-----------|------------------------|--------------|---------------------------|------------|---------------------|-------------------------------------|--------------|
| Root | /dev/xvda | snap-0e8a7a7609c630051 | 8 | General Purpose SSD (gp2) | 100 / 3000 | N/A | <input checked="" type="checkbox"/> | Not Encrypt |

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.

A copy of a tag can be applied to volumes, instances or both.

Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

| Key | Value | Instances | Volumes | Network Interfaces |
|------|-------------|-------------------------------------|-------------------------------------|-------------------------------------|
| NAME | aayushLinux | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Add another tag (Up to 50 tags maximum)

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☒ Create a **new** security group
☐ Select an **existing** security group

Security group name: launch-wizard-6

Description: launch-wizard-6 created 2022-02-18T11:05:00.327+05:30

| Type | Protocol | Port Range | Source | Description |
|------|----------|------------|------------------|----------------------------|
| SSH | TCP | 22 | Custom 0.0.0.0/0 | e.g. SSH for Admin Desktop |

Add Rule

Warning
 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.

This PC > Downloads

Organize New folder

Favorites
 Desktop
 Downloads
 Recent places

This PC
 Desktop
 Documents
 Downloads
 Music
 Pictures
 Videos
 Local Disk (C:)
 Local Disk (D:)

Network

1614106_expt01_s
pm_b4

1614109_CC_Exp2

AAYUSH.pem

aayush

Anaconda3-2019.10-Windows-x86_64

b3_085_avyay_ex
pt2_AA_inlab

CC_A4_1914068_E
xp3

CC_EXPT_NO_1-2
018-19

CC_EXPT_NO_1-2
019-20

CC_EXPT_NO_2-2
018-19

CC_EXPT_NO_2-2
019-20

darshan

dishika

ec2-3-83-96-212-compute-1.amaz
onaws.com

ec2-54-197-194-165.compute-1.a
mazonaws.com

EXP2_AA_21-22

image (1)

image

LinCCExp4-priv

NAME

plink

putty-64bit-0.76-i
nstaller

rajas

rohit1 cc lab 14.2
(1)

rohit1 cc lab 14.2
(2)

rohit1 cc lab 14.2

Adobe
TY_CC_EXPT_NO
_3-2021-22 (1)

TY_CC_EXPT_NO
_3-2021-22
(1)-converted

TY_CC_EXPT_NO
_3-2021-22

Adobe
TY_CC_EXPT_NO
_3-2021-22

a

File name: AAYUSH.pem

All Files (*.*)

Open Cancel

```

ec2-user@ip-172-31-16-58:~
login as: ec2-user
Authenticating with public key "imported-openssh-key"

  _ _ | _ _ )
 _ | ( _ /   Amazon Linux 2 AMI
 _ | \ _ | _ |

https://aws.amazon.com/amazon-linux-2/
3 package(s) needed for security, out of 6 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-16-58 ~]$ sudo su

-----
Total                               7.9 MB/s | 1.9 MB 00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : apr-1.7.0-9.amzn2.x86_64                                1/9
  Installing : apr-util-bdb-1.6.1-5.amzn2.0.2.x86_64                 2/9
  Installing : apr-util-1.6.1-5.amzn2.0.2.x86_64                     3/9
  Installing : httpd-tools-2.4.52-1.amzn2.x86_64                     4/9
  Installing : generic-logos-httpd-18.0.0-4.amzn2.noarch             5/9
  Installing : mailcap-2.1.41-2.amzn2.noarch                         6/9
  Installing : httpd-filesystem-2.4.52-1.amzn2.noarch                7/9
  Installing : mod_http2-1.15.19-1.amzn2.0.1.x86_64                 8/9
  Installing : httpd-2.4.52-1.amzn2.x86_64                          9/9
  Verifying : apr-util-1.6.1-5.amzn2.0.2.x86_64                    1/9
  Verifying : httpd-tools-2.4.52-1.amzn2.x86_64                    2/9
  Verifying : apr-util-bdb-1.6.1-5.amzn2.0.2.x86_64                3/9
  Verifying : httpd-filesystem-2.4.52-1.amzn2.noarch                4/9
  Verifying : httpd-2.4.52-1.amzn2.x86_64                          5/9
  Verifying : mailcap-2.1.41-2.amzn2.noarch                         6/9
  Verifying : generic-logos-httpd-18.0.0-4.amzn2.noarch            7/9
  Verifying : mod_http2-1.15.19-1.amzn2.0.1.x86_64                 8/9
  Verifying : apr-1.7.0-9.amzn2.x86_64                             9/9

Installed:
  httpd.x86_64 0:2.4.52-1.amzn2

Dependency Installed:
  apr.x86_64 0:1.7.0-9.amzn2
  apr-util.x86_64 0:1.6.1-5.amzn2.0.2
  apr-util-bdb.x86_64 0:1.6.1-5.amzn2.0.2
  generic-logos-httpd.noarch 0:18.0.0-4.amzn2
  httpd-filesystem.noarch 0:2.4.52-1.amzn2
  httpd-tools.x86_64 0:2.4.52-1.amzn2
  mailcap.noarch 0:2.1.41-2.amzn2
  mod_http2.x86_64 0:1.15.19-1.amzn2.0.1

Complete!
[ec2-user@ip-172-31-16-58 ~]$ sudo systemctl start httpd.service
[ec2-user@ip-172-31-16-58 ~]$ sudo systemctl enable httpd.service
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/system/httpd.service.
[ec2-user@ip-172-31-16-58 ~]$

```

Test Page

This page is used to test the proper operation of the Apache HTTP server after it has been installed. If you can read this page, it means that the Apache HTTP server installed at this site is working properly.

If you are a member of the general public:

The fact that you are seeing this page indicates that the website you just visited is either experiencing problems, or is undergoing routine maintenance.

If you would like to let the administrators of this website know that you've seen this page instead of the page you expected, you should send them e-mail. In general, mail sent to the name "webmaster" and directed to the website's domain should reach the appropriate person.

For example, if you experienced problems while visiting www.example.com, you should send e-mail to "webmaster@example.com".

If you are the website administrator:

You may now add content to the directory `/var/www/html/`. Note that until you do so, people visiting your website will see this page, and not your content. To prevent this page from ever being used, follow the instructions in the file `/etc/httpd/conf.d/welcome.conf`.

You are free to use the image below on web sites powered by the Apache HTTP Server:



Hello World

```

Running transaction test
Transaction test succeeded
Running transaction
  Installing : apr-1.7.0-9.amzn2.x86_64                1/9
  Installing : apr-util-bdb-1.6.1-5.amzn2.0.2.x86_64    2/9
  Installing : apr-util-1.6.1-5.amzn2.0.2.x86_64        3/9
  Installing : httpd-tools-2.4.52-1.amzn2.x86_64        4/9
  Installing : generic-logos-httpd-18.0.0-4.amzn2.noarch 5/9
  Installing : mailcap-2.1.41-2.amzn2.noarch             6/9
  Installing : httpd-filesystem-2.4.52-1.amzn2.noarch    7/9
  Installing : mod_http2-1.15.19-1.amzn2.0.1.x86_64     8/9
  Installing : httpd-2.4.52-1.amzn2.x86_64             9/9
  Verifying  : apr-util-1.6.1-5.amzn2.0.2.x86_64        1/9
  Verifying  : httpd-tools-2.4.52-1.amzn2.x86_64        2/9
  Verifying  : apr-util-bdb-1.6.1-5.amzn2.0.2.x86_64    3/9
  Verifying  : httpd-filesystem-2.4.52-1.amzn2.noarch    4/9
  Verifying  : httpd-2.4.52-1.amzn2.x86_64             5/9
  Verifying  : mailcap-2.1.41-2.amzn2.noarch            6/9
  Verifying  : generic-logos-httpd-18.0.0-4.amzn2.noarch 7/9
  Verifying  : mod_http2-1.15.19-1.amzn2.0.1.x86_64     8/9
  Verifying  : apr-1.7.0-9.amzn2.x86_64                9/9

Installed:
  httpd.x86_64 0:2.4.52-1.amzn2

Dependency Installed:
  apr.x86_64 0:1.7.0-9.amzn2
  apr-util.x86_64 0:1.6.1-5.amzn2.0.2
  apr-util-bdb.x86_64 0:1.6.1-5.amzn2.0.2
  generic-logos-httpd.noarch 0:18.0.0-4.amzn2
  httpd-filesystem.noarch 0:2.4.52-1.amzn2
  httpd-tools.x86_64 0:2.4.52-1.amzn2
  mailcap.noarch 0:2.1.41-2.amzn2
  mod_http2.x86_64 0:1.15.19-1.amzn2.0.1

Complete!
[ec2-user@ip-172-31-16-58 ~]$ sudo systemctl start httpd.service
[ec2-user@ip-172-31-16-58 ~]$ sudo systemctl enable httpd.service
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/system/httpd.service.
[ec2-user@ip-172-31-16-58 ~]$ sudo nsno /var/www/html/index.html
sudo: nsno: command not found
[ec2-user@ip-172-31-16-58 ~]$ sudo nano /var/www/html/index.html
[ec2-user@ip-172-31-16-58 ~]$

```

Questions:

1. Explore other methods of connection to Linux instance?
 1. SSH Client
 2. EC2 Instance Connect
 3. AWS Session Manager
 4. Putty
2. Write steps with screenshots, any one connection to Linux instance.

Connect to instance [Info](#)


Connect to your instance i-04603d25d530d313e using any of these options

EC2 Instance Connect

Session Manager

SSH client



EC2 Serial Console



This instance type is not supported for the EC2 serial console.
To connect to this instance using the EC2 serial console, the instance must use an instance type that is built on the [AWS Nitro System](#). This does not include bare metal instances. You can [change the instance type](#) to a supported instance type.

Instance ID

Serial port

 i-04603d25d530d313e
  ttyS0

Connect to your instance i-04603d25d530d313e using any of these options

EC2 Instance Connect

Session Manager



SSH client

EC2 Serial Console


Instance ID

Public IP address

User name

 i-04603d25d530d313e
  100.26.137.217

Connect using a custom user name, or use the default user name ec2-user for the AMI used to launch the instance.



Note: In most cases, the guessed user name is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.

Cancel

Connect

Outcomes: CO2 - Study the Evolution of Cloud Computing and its models

Conclusion: Created a Linux instance on AWS and hosted a web page on apache web server.

Signature of faculty in-charge with date

References:

Websites:

1. https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/EC2_GetStarted.html
(Autonomous College Affiliated to University of Mumbai)