

Experiment.1

Aim: To understand the benefits of Cloud Infrastructure and Setup AWS Cloud9 IDE, Launch AWS Cloud9 IDE and Perform Collaboration Demonstration.

Theory:

Benefits of Cloud Infrastructure and AWS Cloud9 IDE

1. Benefits of Cloud Infrastructure:

- **Scalability:** Cloud infrastructure allows resources to scale up or down as needed, providing flexibility and supporting growing business demands.
- **Cost Efficiency:** With a pay-as-you-go model, businesses reduce upfront costs on hardware and maintenance, paying only for what they use.
- **Global Accessibility:** Cloud services can be accessed from anywhere with an internet connection, enabling remote collaboration and operations.
- **High Availability:** Cloud providers ensure high uptime and redundancy, offering 24/7 availability of data and applications.
- **Enhanced Security:** Cloud platforms provide advanced security features like encryption, identity management, and constant monitoring.
- **Disaster Recovery:** Built-in backup and disaster recovery options help maintain business continuity during failures.

2. AWS Cloud9 IDE Setup and Launch:

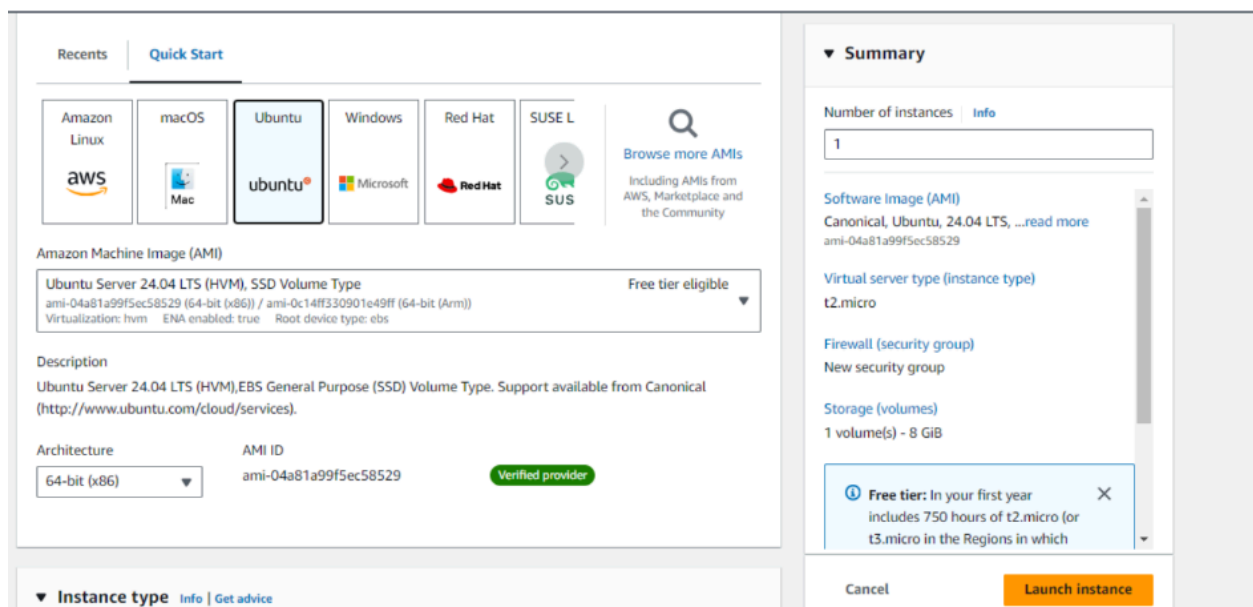
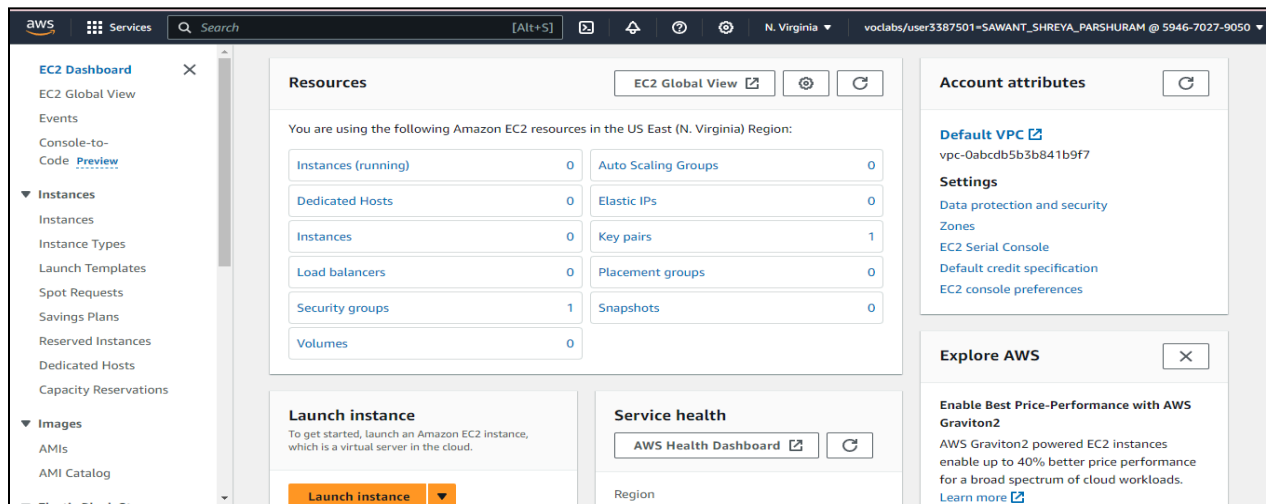
- **Login to AWS Console:** Access AWS Cloud9 through the AWS Management Console.
- **Create an Environment:** Set up an AWS Cloud9 environment by selecting a name, EC2 instance, and network configuration.
- **Launch IDE:** After creation, the IDE opens in the browser with pre-installed tools (AWS CLI, Git, etc.), ready for coding.

3. AWS Cloud9 IDE Features:

- **Cloud-Based Development:** No local setup is needed, as AWS Cloud9 runs entirely in the cloud, accessible from any device.
- **Multi-Language Support:** The IDE supports various programming languages like JavaScript, Python, and more.

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- Serverless Development: Easily work on serverless applications using AWS Lambda, without managing servers.



▼ Network settings [Info](#)

Edit

Network [Info](#)

vpc-0abfdb5b3b841b9f7

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

▼ Summary

Number of instances [Info](#)

1

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

×

Cancel

Launch instance

▼ Configure storage [Info](#)

Advanced

1x 8 GiB gp3 ▼ Root volume (Not encrypted)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

×

Add new volume

The selected AMI contains more instance store volumes than the instance allows. Only the first 0 instance store volumes from the AMI will be accessible from the instance

Click refresh to view backup information

The tags that you assign determine whether the instance will be backed up by any Data Lifecycle Manager policies.

↻

0 x File systems [Edit](#)

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[EC2](#) > [Instances](#) > Launch an instance

Success

Successfully initiated launch of instance (i-0c5c8c0f74e8cffdd)

Launch log

Next Steps

What would you like to do next with this instance, for example "create alarm" or "create backup"

< 1 2 3 4 5 6 >

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

Create a new RDS database

Create EBS snapshot policy

Create a policy that automates the creation, retention, and deletion of EBS snapshots

Create EBS snapshot policy

EC2 Dashboard

EC2 Global View

Events

Console-to-Code

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

Images

AMIs

AMI Catalog

Instances (1) Info

Refresh

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

Instance ID = i-0c5c8c0f74e8cffdd

Clear filters

< 1 >

| | Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability |
|--------------------------|------|---------------------|----------------|---------------|--------------|--------------|--------------|
| <input type="checkbox"/> | | i-0c5c8c0f74e8cffdd | Running | t2.micro | Initializing | View alarms | us-east-1d |

Select an instance

aws

Services

Search

[Alt+S]

N. Virginia

voclabs/user3387501-SAWANT_SHREYA_PARSHURAM @ 5946-7027-90

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-172-31-9-188:~\$ echo hello

hello

ubuntu@ip-172-31-9-188:~\$

Instances (1/1) Info

Refresh

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

Instance ID = i-0c5c8c0f74e8cffdd

Clear filters

< 1 >

| <input checked="" type="checkbox"/> | Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability |
|-------------------------------------|------|---------------------|----------------|---------------|--------------|--------------|--------------|
| <input checked="" type="checkbox"/> | | i-0c5c8c0f74e8cffdd | Running | t2.micro | Initializing | View alarms | us-east-1d |

i-0c5c8c0f74e8cffdd

Root device name

Root device type

EBS optimization

/dev/sda1

EBS

disabled

Block devices

Filter block devices

| <input checked="" type="checkbox"/> | Volume ID | Device name | Volume size (GiB) | Attachment status | Attachment time | Encrypted |
|-------------------------------------|-----------------------|-------------|-------------------|-------------------|---------------------------|-----------|
| <input checked="" type="checkbox"/> | vol-0fd1f9298d126ba86 | /dev/sda1 | 8 | Attached | 2024/07/23 15:14 GMT+5:30 | No |

```
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applicable law.
```

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

```
ubuntu@ip-172-31-9-188:~$ echo hello  
hello  
ubuntu@ip-172-31-9-188:~$ cat> myfile  
HELLO!!!  
ubuntu@ip-172-31-9-188:~$ cat myfile  
HELLO!!!  
ubuntu@ip-172-31-9-188:~$
```

```
ubuntu@ip-172-31-9-188:~$ cat myfile  
HELLO!!!  
ubuntu@ip-172-31-9-188:~$ mkdir  
mkdir: missing operand  
Try 'mkdir --help' for more information.  
ubuntu@ip-172-31-9-188:~$ mkdir myfile  
mkdir: cannot create directory 'myfile': File exists  
ubuntu@ip-172-31-9-188:~$ mkdir file  
ubuntu@ip-172-31-9-188:~$ ls  
file  myfile  
ubuntu@ip-172-31-9-188:~$ mkdir>file  
-bash: file: Is a directory  
ubuntu@ip-172-31-9-188:~$
```

```
Last login: Tue Jul 30 08:30:11 2024 from 18.206.107.27  
ubuntu@ip-172-31-9-188:~$ sudo su  
root@ip-172-31-9-188:/home/ubuntu# apt install apache2  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
apache2 is already the newest version (2.4.58-1ubuntu8.4).  
0 upgraded, 0 newly installed, 0 to remove and 26 not upgraded.  
root@ip-172-31-9-188:/home/ubuntu# systemctl status apache2  
● apache2.service - The Apache HTTP Server  
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)  
   Active: active (running) since Tue 2024-07-30 08:58:14 UTC; 12min ago  
     Docs: https://httpd.apache.org/docs/2.4/  
    Main PID: 2975 (apache2)  
      Tasks: 55 (limit: 1130)  
     Memory: 5.3M (peak: 5.5M)  
        CPU: 73ms  
    CGroup: /system.slice/apache2.service  
            └─2975 /usr/sbin/apache2 -k start  
            └─2978 /usr/sbin/apache2 -k start
```

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```
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
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      CPU: 73ms
   CGroup: /system.slice/apache2.service
           └─2975 /usr/sbin/apache2 -k start
           └─2978 /usr/sbin/apache2 -k start
           └─2979 /usr/sbin/apache2 -k start

Jul 30 08:58:14 ip-172-31-9-188 systemd[1]: Starting apache2.service - The Apache HTTP Server...
Jul 30 08:58:14 ip-172-31-9-188 systemd[1]: Started apache2.service - The Apache HTTP Server.
root@ip-172-31-9-188:/home/ubuntu# cd /var/www/html/
root@ip-172-31-9-188:/var/www/html#
```



IDE Hosting-

Developer Tools

AWS Cloud9

A cloud IDE for writing, running, and debugging code

AWS Cloud9 allows you to write, run, and debug your code with just a browser. With AWS Cloud9, you have immediate access to a rich code editor, integrated debugger, and built-in terminal with preconfigured AWS CLI. You can get started in minutes and no longer have to spend the time to install local applications or configure your development machine.

New AWS Cloud9 environment

[Create environment](#)

How it works

Create an AWS Cloud9 development environment on a new Amazon EC2 instance or connect it to your own Linux server through SSH. Once you've created an AWS Cloud9 environment, you will have immediate access to a rich code editor, integrated debugger, and built-in terminal with pre-configured AWS CLI – all within your browser.

Using the AWS Cloud9 dashboard, you can create and switch between many different AWS Cloud9 environments, each one containing the custom tools, runtimes, and files for a specific project.

[Learn more](#)

Getting started

- [Before you start](#) (2 min read)
- [Create an environment](#) (2 min read)
- [Working with environments](#) (15 min read)
- [Working with the IDE](#) (10 min read)
- [Working with AWS Lambda](#) (5 min read)

[AWS Cloud9](#) > [Environments](#) > Create environment

Create environment [Info](#)

Details

Name

Limit of 60 characters, alphanumeric, and unique per user.

Description - optional

Limit 200 characters.

Environment type [Info](#)
Determines what the Cloud9 IDE will run on.

☒ **New EC2 instance**
Cloud9 creates an EC2 instance in your account. The configuration of your EC2 instance cannot be changed by Cloud9 after creation.

☐ **Existing compute**
You have an existing instance or server that you'd like to use.

New EC2 instance

Instance type [Info](#)
The memory and CPU of the EC2 instance that will be created for Cloud9 to run on.

☒ **t2.micro (1 GiB RAM + 1 vCPU)**
Free-tier eligible. Ideal for

☐ **t3.small (2 GiB RAM + 2 vCPU)**
Recommended for small web

☐ **m5.large (8 GiB RAM + 2 vCPU)**
Recommended for production and

30 minutes

Network settings [Info](#)


Connection
How your environment is accessed.

☒ **AWS Systems Manager (SSM)**
Accesses environment via SSM without opening inbound ports (no ingress).

☐ **Secure Shell (SSH)**
Accesses environment directly via SSH, opens inbound ports.

[VPC settings](#) [Info](#)

Tags - optional [Info](#)
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

 **The following IAM resources will be created in your account**

- **AWSServiceRoleForAWSCloud9** - AWS Cloud9 creates a service-linked role for you. This allows AWS Cloud9 to call other AWS services on your behalf. You can delete the role from the AWS IAM console once you no longer have any AWS Cloud9 environments. [Learn more](#)
- **AWSCloud9SSMAccessRole** and **AWSCloud9SSMInstanceProfile** - A service role and an instance profile are automatically created if Cloud9 accesses its EC2 instance through AWS Systems Manager. If your environments no longer require EC2 instances that block incoming traffic, you can delete these roles using the AWS IAM console. [Learn more](#)

Cancel

Create