

Advanced DevOps Experiment-1

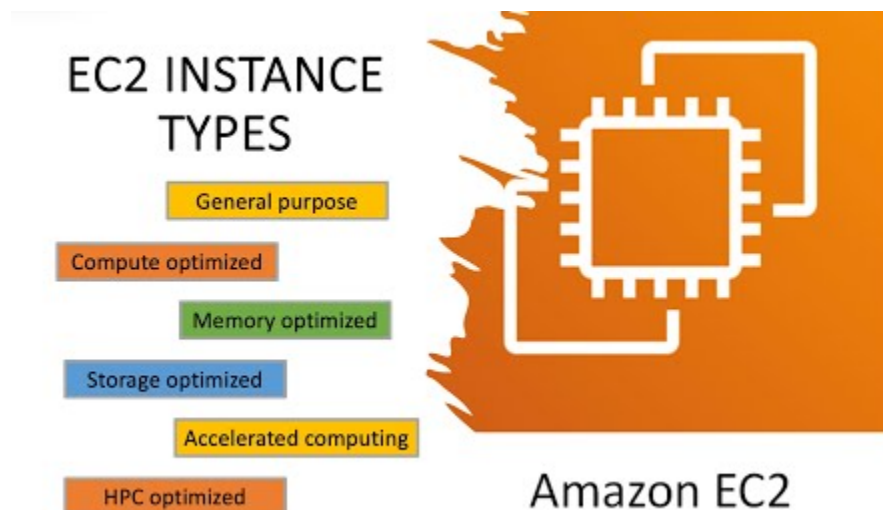
Aim: Using AWS CodePipeline, deploy Sample Application on EC2 instance using AWS CodeDeploy.

Theory:-

Amazon Elastic Compute Cloud (Amazon EC2) offers flexible, on-demand computing capacity in the Amazon Web Services (AWS) Cloud, enabling faster development and deployment of applications without the need for upfront hardware investments. EC2 allows you to launch and manage virtual servers based on your workload needs. You can adjust security settings, configure networking, and manage storage efficiently.

EC2's scalable nature lets you easily increase capacity (scale up) to handle compute-intensive tasks such as data analysis, seasonal traffic spikes, or resource-heavy applications. Conversely, when demand decreases, you can reduce capacity (scale down), ensuring cost-effective resource management.

Each EC2 instance is a virtual server, and the instance type you select determines the combination of compute, memory, network, and storage resources available. This flexibility ensures you can tailor your environment to meet specific performance and cost requirements. For further details, refer to the Amazon EC2 Instance Types Guide.



Key Features of Amazon EC2

Amazon EC2 offers a range of powerful features to enhance your cloud computing experience:

Instances: Virtual servers that you can configure and launch to meet your application needs.

Amazon Machine Images(AMIs): Preconfigured templates containing the necessary components for your server, such as the operating system and additional software.

Instance Types: A variety of configurations offering different combinations of CPU, memory, storage, networking capacity, and graphics hardware, allowing you to choose the best fit for your workloads.

Amazon EBS Volumes: Persistent storage solutions using Amazon Elastic Block Store (Amazon EBS) that provide durable storage for your data.

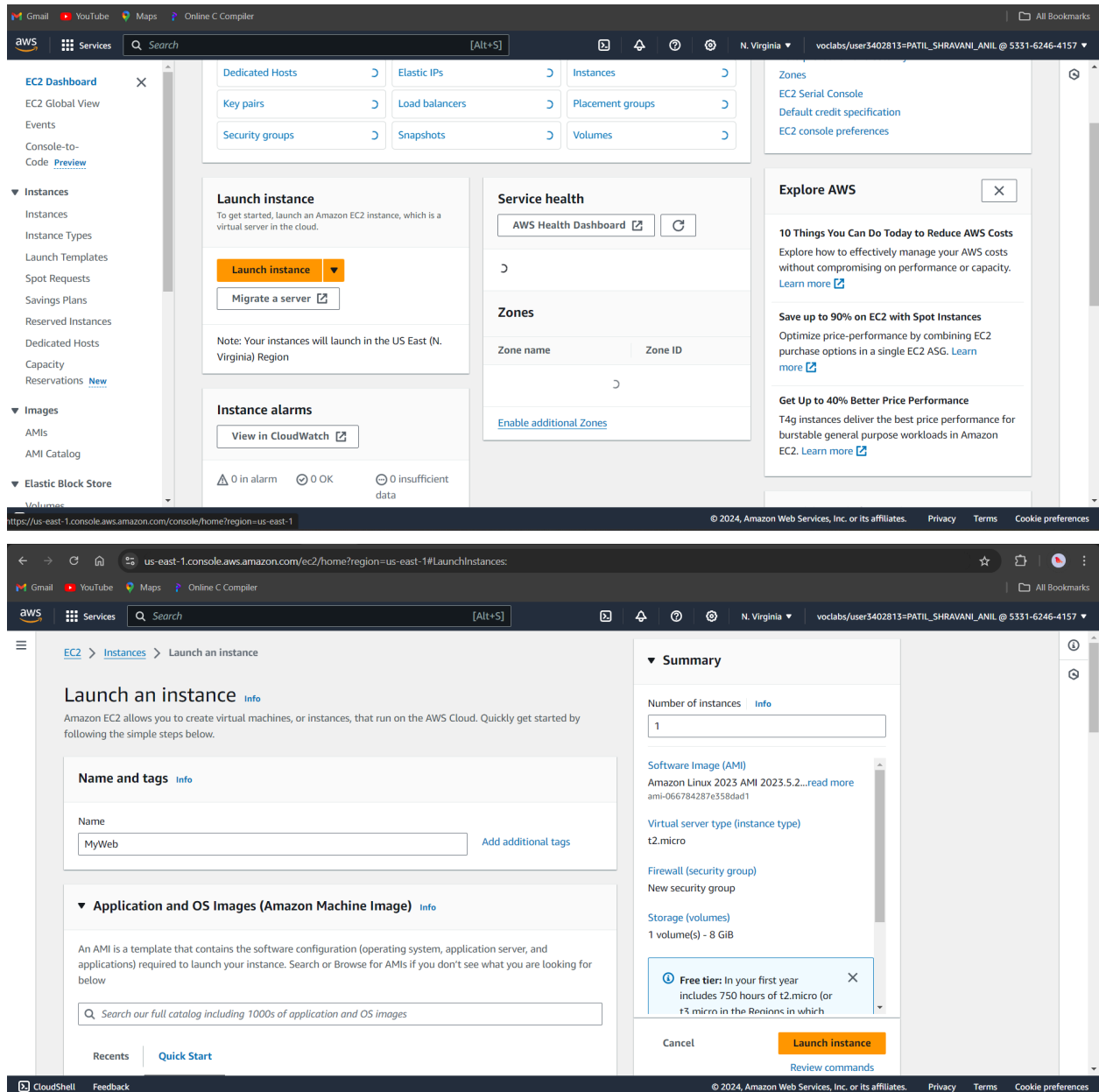
Instance Store Volumes: Temporary storage that offers high-performance local storage for your instance, deleted automatically when the instance is stopped, hibernated, or terminated.

Key Pairs: Secure login credentials for your instances, with AWS storing the public key and you keeping the private key in a secure location.

Security Groups: Virtual firewalls that enable you to control inbound and outbound traffic by specifying allowed protocols, ports, and IP ranges.

PCI DSS Compliance: Amazon EC2 supports the secure processing, storage, and transmission of credit card data, adhering to the Payment Card Industry Data Security Standard (PCI DSS). For further details and to request the AWS PCI Compliance Package, refer to the PCI DSS Level 1 guidelines.

These features provide a robust and secure foundation for deploying, managing, and scaling applications in the cloud Implementation:-



The screenshot shows the AWS Management Console in the 'us-east-1' region. The 'Launch instance' wizard is in progress, showing the 'Summary' tab. The instance configuration is as follows:

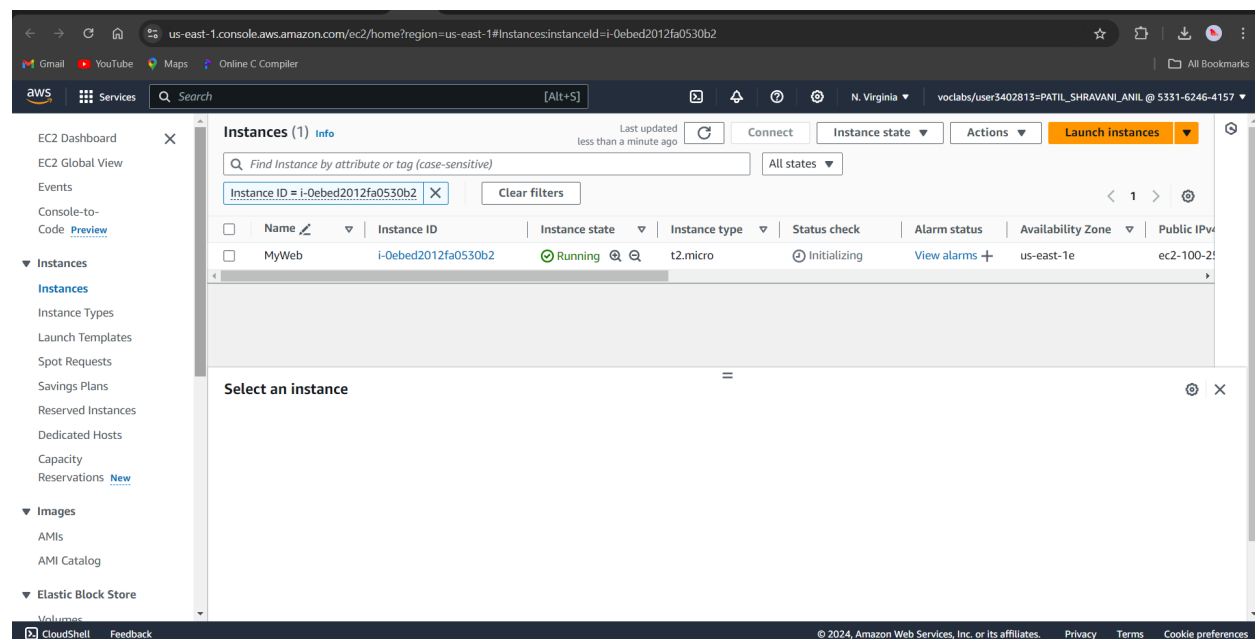
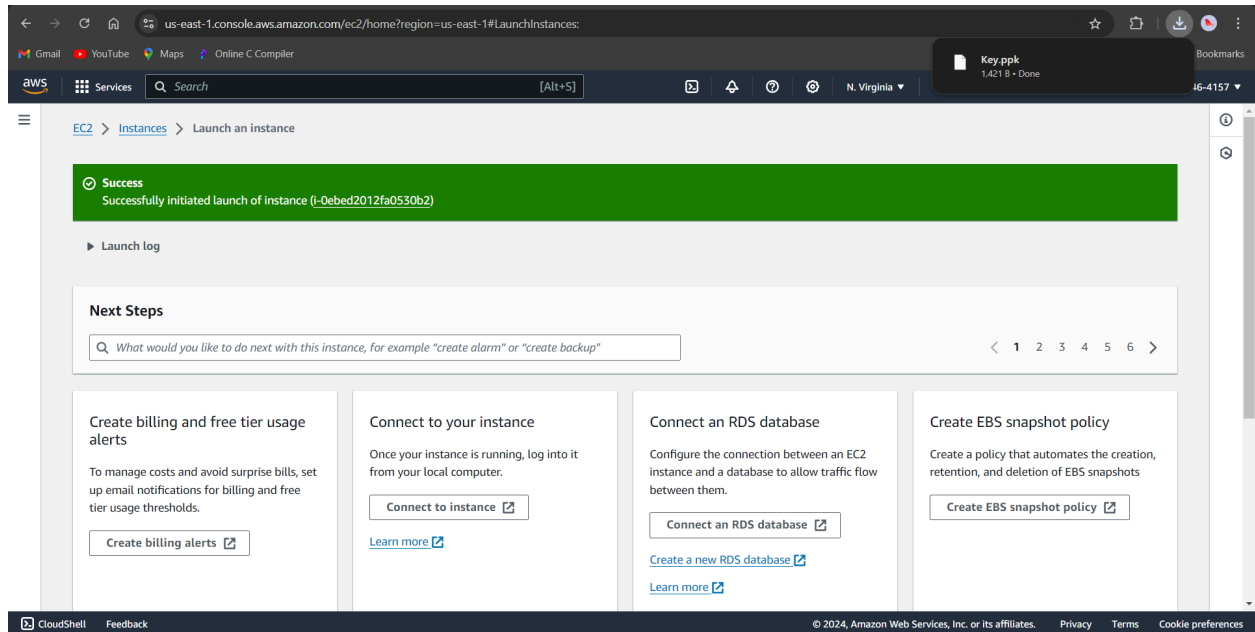
- Number of instances:** 1
- Software Image (AMI):** Amazon Linux 2023 AMI 2023.5.2...read more (ami-066784287e358dad1)
- Virtual server type (instance type):** t2.micro
- Firewall (security group):** New security group
- Storage (volumes):** 1 volume(s) - 8 GiB

A notification box states: "Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Region in which)". The 'Launch instance' button is visible.

The screenshot shows the 'Configure storage' step of the 'Launch instance' wizard. The instance configuration is as follows:

- Number of instances:** 1
- Software Image (AMI):** Amazon Linux 2023 AMI 2023.5.2...read more (ami-066784287e358dad1)
- Virtual server type (instance type):** t2.micro
- Firewall (security group):** New security group
- Storage (volumes):** 1 volume(s) - 8 GiB

The 'Configure storage' section shows a single volume configuration: 1x 8 GiB gp3 Root volume (Not encrypted). A notification box states: "Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage". The 'Launch instance' button is visible.




```

aws Services Search
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-34-11 ~]# yum install -y httpd
Last metadata expiration check: 0:02:58 ago on Sat Aug 17 17:14:1
Dependencies resolved.
=====
Package                                         Architecture
=====
Installing:
  httpd                                         x86_64
Installing dependencies:
  apr                                         x86_64
  apr-util                                    x86_64
  generic-logos-httpd                        noarch
  httpd-core                                 x86_64
  httpd-filesystem                          noarch
  httpd-tools                                x86_64
  libbrotli                                  x86_64
  mailcap                                     noarch
Installing weak dependencies:
  apr-util-openssl                           x86_64
  mod_http2                                  x86_64
  mod_lua                                    x86_64
Transaction Summary
=====
i-0868fcbf7b775cb51 (MyProject)

```

```

aws Services Search [Alt+S] N. Virginia voclabs/user3402813=PATIL_SHRAVANI_ANIL @ 5331-6246-4157
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-34-11 ~]# yum install -y httpd
Last metadata expiration check: 0:02:58 ago on Sat Aug 17 17:14:13 2024.
Dependencies resolved.
=====
Package                                         Architecture      Version              Repository      Size
=====
Installing:
  httpd                                         x86_64            2.4.62-1.amzn2023   amazonlinux     48 k
Installing dependencies:
  apr                                         x86_64            1.7.2-2.amzn2023.0.2 amazonlinux     129 k
  apr-util                                    x86_64            1.6.3-1.amzn2023.0.1 amazonlinux     90 k
  generic-logos-httpd                        noarch            18.0.0-12.amzn2023.0.3 amazonlinux     19 k
  httpd-core                                 x86_64            2.4.62-1.amzn2023   amazonlinux     1.4 M
  httpd-filesystem                          noarch            2.4.62-1.amzn2023   amazonlinux     14 k
  httpd-tools                                x86_64            2.4.62-1.amzn2023   amazonlinux     81 k
  libbrotli                                  x86_64            1.0.9-4.amzn2023.0.2 amazonlinux     315 k
  mailcap                                     noarch            2.1.49-3.amzn2023.0.3 amazonlinux     33 k
Installing weak dependencies:
  apr-util-openssl                           x86_64            1.6.3-1.amzn2023.0.1 amazonlinux     17 k
  mod_http2                                  x86_64            2.0.27-1.amzn2023.0.3 amazonlinux     166 k
  mod_lua                                    x86_64            2.4.62-1.amzn2023   amazonlinux     61 k
Transaction Summary
=====

```

```

aws Services Search [Alt+S] N. Virginia voclabs/user3402813=PATIL_SHRAVANI_ANIL @ 5331-62

Transaction Summary
-----
Install 12 Packages

Total download size: 2.3 M
Installed size: 6.9 M
Downloading Packages:
(1/12): apr-util-1.6.3-1.amzn2023.0.1.x86_64.rpm          1.6 MB/s | 98 kB  00:00
(2/12): apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64.rpm 248 kB/s | 17 kB  00:00
(3/12): apr-1.7.2-2.amzn2023.0.2.x86_64.rpm             1.7 MB/s | 129 kB 00:00
(4/12): generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch.rpm 863 kB/s | 19 kB  00:00
(5/12): httpd-2.4.62-1.amzn2023.x86_64.rpm              1.9 MB/s | 48 kB  00:00
(6/12): httpd-filesystem-2.4.62-1.amzn2023.noarch.rpm    638 kB/s | 14 kB  00:00
(7/12): httpd-core-2.4.62-1.amzn2023.x86_64.rpm         22 MB/s | 1.4 MB  00:00
(8/12): httpd-tools-2.4.62-1.amzn2023.x86_64.rpm        1.6 MB/s | 81 kB  00:00
(9/12): libbrotli-1.0.9-4.amzn2023.0.2.x86_64.rpm       7.0 MB/s | 315 kB 00:00
(10/12): mailcap-2.1.49-3.amzn2023.0.3.noarch.rpm       1.5 MB/s | 33 kB  00:00
(11/12): mod_http2-2.0.27-1.amzn2023.0.3.x86_64.rpm     6.7 MB/s | 166 kB 00:00
(12/12): mod_lua-2.4.62-1.amzn2023.x86_64.rpm           2.6 MB/s | 61 kB  00:00
-----
Total                                                    9.7 MB/s | 2.3 MB  00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction

```

```

Running transaction test
Transaction test succeeded.
Running transaction
  Preparing : 1/1
  Installing : apr-1.7.2-2.amzn2023.0.2.x86_64 1/12
  Installing : apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64 2/12
  Installing : apr-util-1.6.3-1.amzn2023.0.1.x86_64 3/12
  Installing : mailcap-2.1.49-3.amzn2023.0.3.noarch 4/12
  Installing : httpd-tools-2.4.62-1.amzn2023.x86_64 5/12
  Installing : libbrotli-1.0.9-4.amzn2023.0.2.x86_64 6/12
  Running scriptlet: httpd-filesystem-2.4.62-1.amzn2023.noarch 7/12
  Installing : httpd-filesystem-2.4.62-1.amzn2023.noarch 7/12
  Installing : httpd-core-2.4.62-1.amzn2023.x86_64 8/12
  Installing : mod_http2-2.0.27-1.amzn2023.0.3.x86_64 9/12
  Installing : mod_lua-2.4.62-1.amzn2023.x86_64 10/12
  Installing : generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch 11/12
  Installing : httpd-2.4.62-1.amzn2023.x86_64 12/12
  Running scriptlet: httpd-2.4.62-1.amzn2023.x86_64 12/12
  Verifying : apr-1.7.2-2.amzn2023.0.2.x86_64 1/12
  Verifying : apr-util-1.6.3-1.amzn2023.0.1.x86_64 2/12
  Verifying : apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64 3/12
  Verifying : generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch 4/12
  Verifying : httpd-2.4.62-1.amzn2023.x86_64 5/12
  Verifying : httpd-core-2.4.62-1.amzn2023.x86_64 6/12
  Verifying : httpd-filesystem-2.4.62-1.amzn2023.noarch 7/12
  Verifying : httpd-tools-2.4.62-1.amzn2023.x86_64 8/12
  Verifying : libbrotli-1.0.9-4.amzn2023.0.2.x86_64 9/12

```

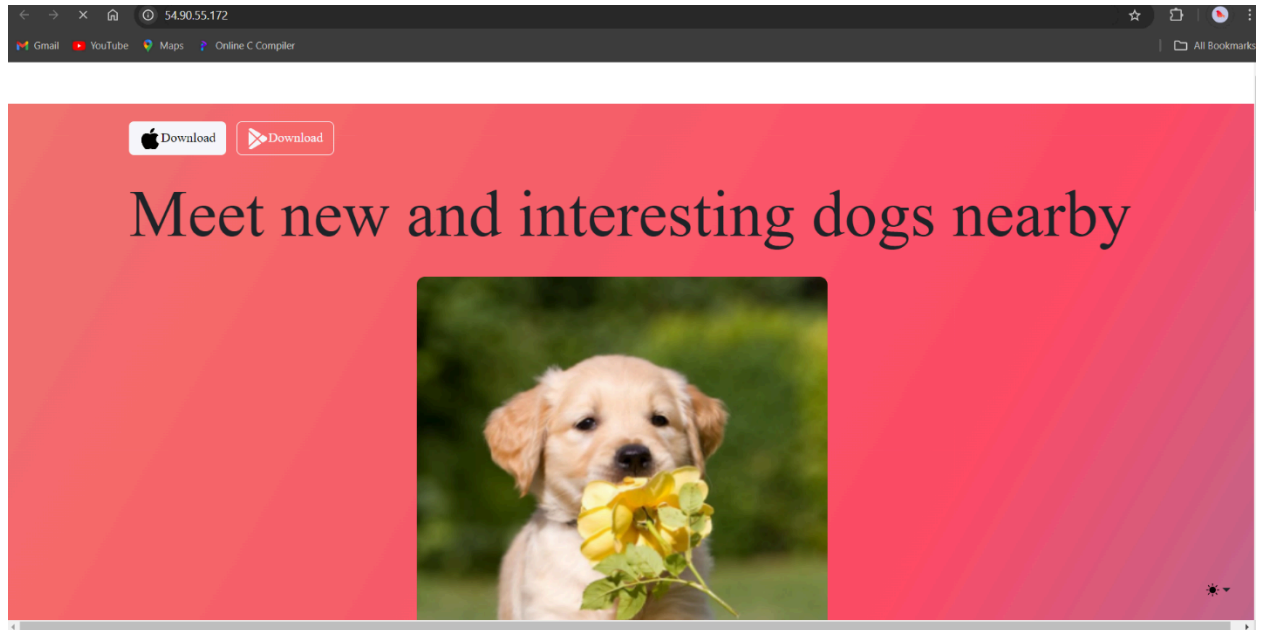
```

Verifying : mod_lua-2.4.62-1.amzn2023.x86_64 12/12

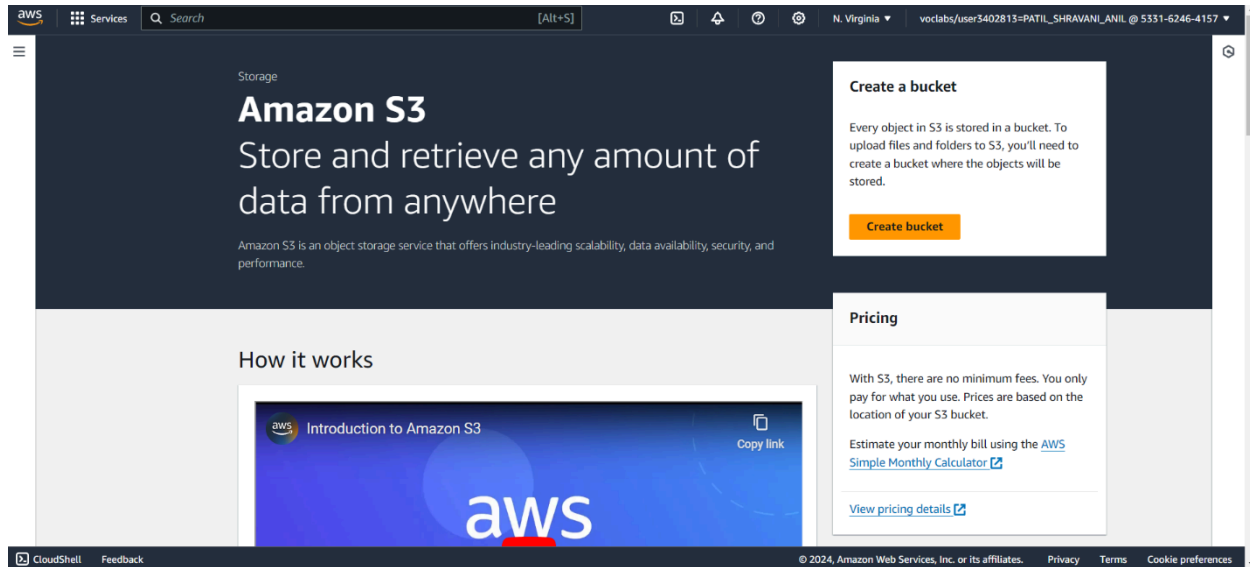
Installed:
apr-1.7.2-2.amzn2023.0.2.x86_64          apr-util-1.6.3-1.amzn2023.0.1.x86_64          apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64
generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch  httpd-2.4.62-1.amzn2023.x86_64          httpd-core-2.4.62-1.amzn2023.x86_64
httpd-filesystem-2.4.62-1.amzn2023.noarch  httpd-tools-2.4.62-1.amzn2023.x86_64          libbrotli-1.0.9-4.amzn2023.0.2.x86_64
mailcap-2.1.49-3.amzn2023.0.3.noarch      mod_http2-2.0.27-1.amzn2023.0.3.x86_64          mod_lua-2.4.62-1.amzn2023.x86_64

Complete!
[root@ip-172-31-34-11 ~]# systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; preset: disabled)
   Active: inactive (dead)
     Docs: man:httpd.service(8)
[root@ip-172-31-34-11 ~]# mkdir aws_assgl
[root@ip-172-31-34-11 ~]# cd aws_assgl
[root@ip-172-31-34-11 aws_assgl]# ls -lrt
total 0
[root@ip-172-31-34-11 aws_assgl]# wget https://github.com/ShravaniAnilPatil/TinDog.git
--2024-08-17 17:21:08-- https://github.com/ShravaniAnilPatil/TinDog.git
Resolving github.com (github.com)... 140.82.112.3
Connecting to github.com (github.com)|140.82.112.3|:443... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://github.com/ShravaniAnilPatil/TinDog [following]
--2024-08-17 17:21:08-- https://github.com/ShravaniAnilPatil/TinDog
Reusing existing connection to github.com:443.
HTTP request sent, awaiting response... 200 OK

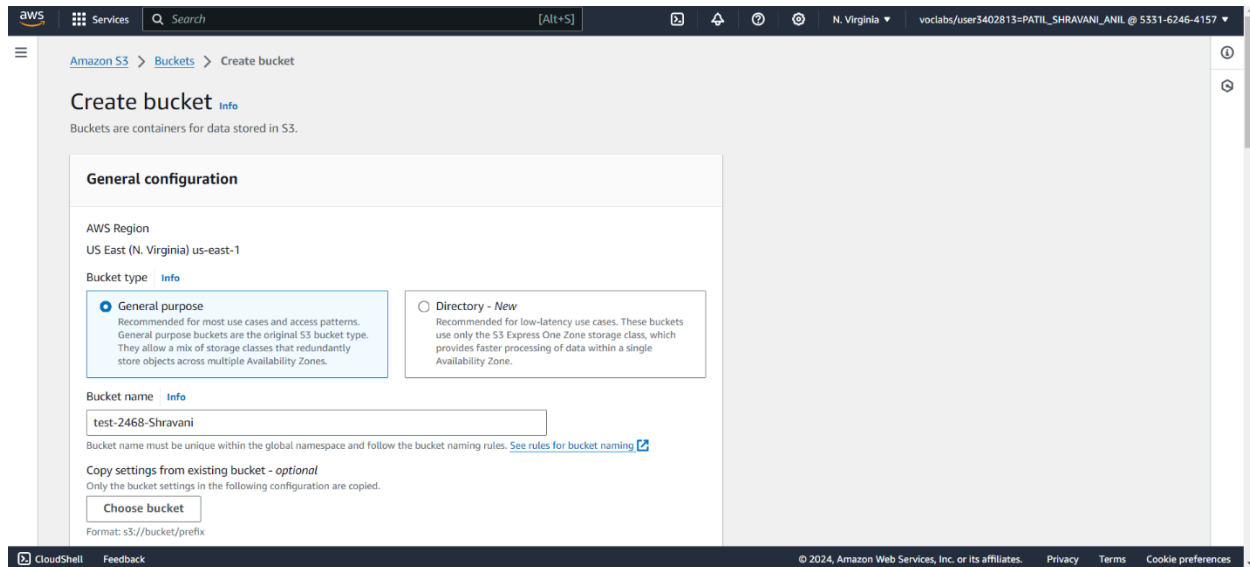
```

2. Hosting using S3 bucket



The screenshot shows the Amazon S3 homepage. The header includes the AWS logo, a search bar, and navigation links. The main content area features a large heading "Amazon S3" with the subtext "Store and retrieve any amount of data from anywhere". Below this, a description states: "Amazon S3 is an object storage service that offers industry-leading scalability, data availability, security, and performance." To the right, there is a "Create a bucket" section with a brief explanation and a "Create bucket" button. Below that is a "Pricing" section with information about fees and a link to the "Simple Monthly Calculator". At the bottom, there is a "How it works" section with a video thumbnail titled "Introduction to Amazon S3" and a "Copy link" button. The footer contains links for "CloudShell", "Feedback", and copyright information.

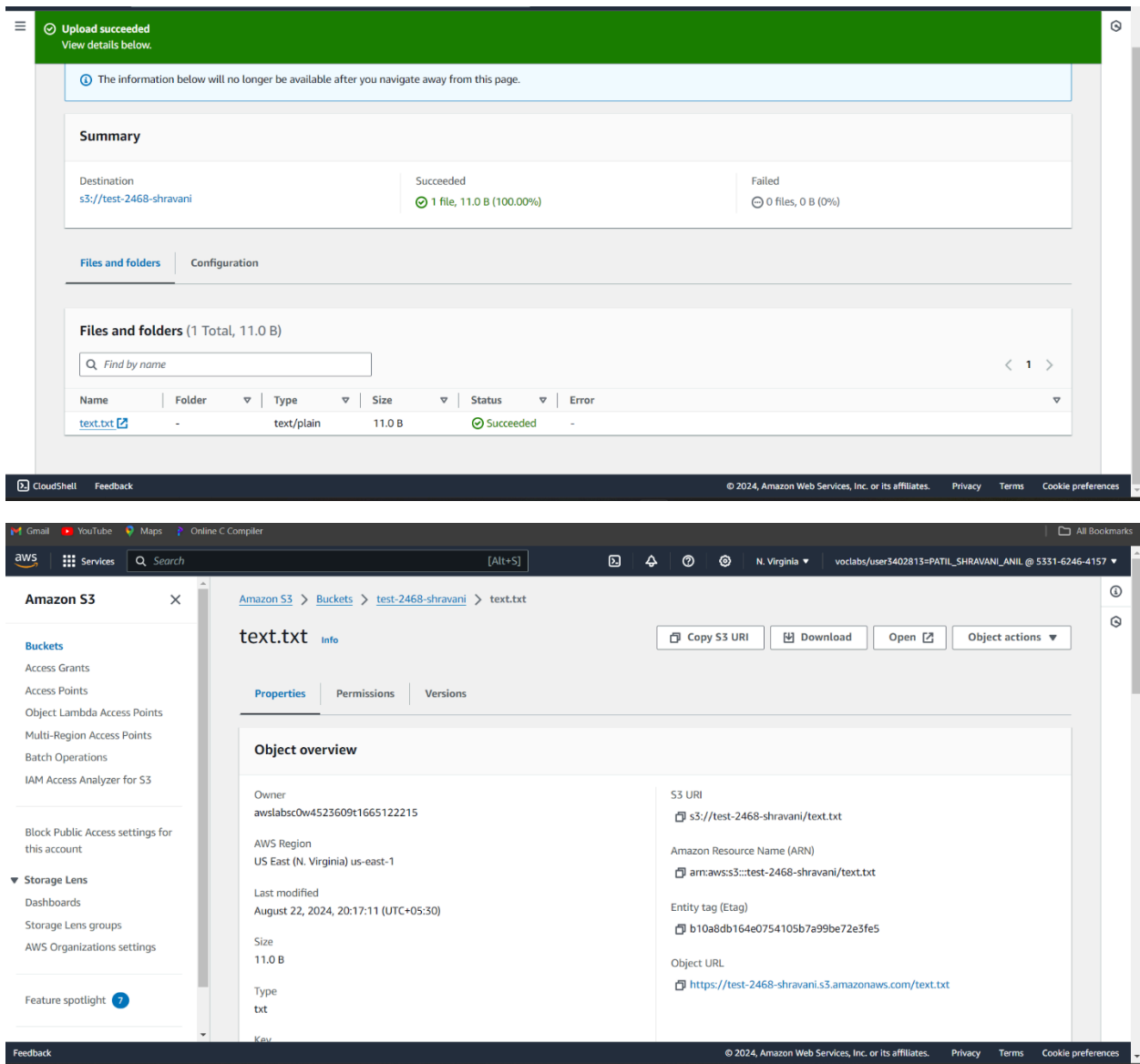


The screenshot shows the "Create bucket" page in the Amazon S3 console. The breadcrumb navigation is "Amazon S3 > Buckets > Create bucket". The page title is "Create bucket" with an "Info" link. Below the title, it says "Buckets are containers for data stored in S3." The "General configuration" section includes the "AWS Region" set to "US East (N. Virginia) us-east-1". Under "Bucket type", there are two options: "General purpose" (selected) and "Directory - New". The "General purpose" option is described as "Recommended for most use cases and access patterns. General purpose buckets are the original S3 bucket type. They allow a mix of storage classes that redundantly store objects across multiple Availability Zones." The "Directory - New" option is described as "Recommended for low-latency use cases. These buckets use only the S3 Express One Zone storage class, which provides faster processing of data within a single Availability Zone." Below this, the "Bucket name" field is filled with "test-2468-Shravani". A note states: "Bucket name must be unique within the global namespace and follow the bucket naming rules. See rules for bucket naming." There is a "Copy settings from existing bucket - optional" section with a "Choose bucket" button. At the bottom, there is a "Format: s3://bucket/prefix" field. The footer contains links for "CloudShell", "Feedback", and copyright information.

The screenshot shows the 'Default encryption' step in the AWS console. The page title is 'Default encryption' with an 'Info' link. Below the title, it states 'Server-side encryption is automatically applied to new objects stored in this bucket.' There are three radio button options for 'Encryption type': 'Server-side encryption with Amazon S3 managed keys (SSE-S3)' (selected), 'Server-side encryption with AWS Key Management Service keys (SSE-KMS)', and 'Dual-layer server-side encryption with AWS Key Management Service keys (DSSE-KMS)'. A note under the third option says 'Secure your objects with two separate layers of encryption. For details on pricing, see DSSE-KMS pricing on the Storage tab of the Amazon S3 pricing page.' Below this, there is a 'Bucket Key' section with the text 'Using an S3 Bucket Key for SSE-KMS reduces encryption costs by lowering calls to AWS KMS. S3 Bucket Keys aren't supported for DSSE-KMS. Learn more' and two radio button options: 'Disable' and 'Enable' (selected). A '► Advanced settings' section is collapsed. A blue information box at the bottom says 'After creating the bucket, you can upload files and folders to the bucket, and configure additional bucket settings.' At the bottom right are 'Cancel' and 'Create bucket' buttons.

The screenshot shows the 'Buckets' page in the AWS console. A green success message at the top says 'Successfully created bucket "test-2468-shravani"' with a 'View details' button. Below the message, it says 'To upload files and folders, or to configure additional bucket settings, choose View details.' The page has a breadcrumb 'Amazon S3 > Buckets'. There is a section for 'Account snapshot - updated every 24 hours' with a 'View Storage Lens dashboard' button. Below this are tabs for 'General purpose buckets' (selected) and 'Directory buckets'. The 'General purpose buckets' section shows 'General purpose buckets (1)' with an 'Info' link and 'All AWS Regions' filter. It includes a search bar 'Find buckets by name' and a table of buckets. The table has columns for 'Name', 'AWS Region', 'IAM Access Analyzer', and 'Creation date'. One bucket is listed: 'test-2468-shravani' in 'US East (N. Virginia) us-east-1' region, with a link to 'View analyzer for us-east-1' and a creation date of 'August 22, 2024, 20:13:56 (UTC+05:30)'. At the top right of the bucket list are buttons for 'Refresh', 'Copy ARN', 'Empty', 'Delete', and 'Create bucket'.

Name	AWS Region	IAM Access Analyzer	Creation date
test-2468-shravani	US East (N. Virginia) us-east-1	View analyzer for us-east-1	August 22, 2024, 20:13:56 (UTC+05:30)



Hello World

Hello World

3. Hosting using Cloud 9

The screenshot shows the 'Create environment' page in the AWS Cloud9 console. The breadcrumb navigation is 'AWS Cloud9 > Environments > Create environment'. A blue banner at the top provides a tip about using AWS Toolkits in IDEs and CloudShell. The main section is titled 'Create environment' with an 'Info' link. Under the 'Details' heading, there are three sections: 'Name' with a text input containing 'ShravaniEnv' and a 60-character limit; 'Description - optional' with a text area and a 200-character limit; and 'Environment type' with two radio buttons. The 'New EC2 instance' option is selected, with a note that Cloud9 creates an EC2 instance and its configuration cannot be changed. The 'Existing compute' option is also available. The footer includes 'CloudShell', 'Feedback', and copyright information for Amazon Web Services, Inc. (2024).

For capabilities similar to AWS Cloud9, explore AWS Toolkits in your own IDE and AWS CloudShell in the AWS Management Console. [Learn more](#)

[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.

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

The screenshot shows the 'New EC2 instance' page in the AWS Cloud9 console. The breadcrumb navigation is 'AWS Cloud9 > Environments > Create environment > New EC2 instance'. A blue banner at the top provides a tip about using AWS Toolkits in IDEs and CloudShell. The main section is titled 'New EC2 instance' with an 'Info' link. Under the 'Instance type' heading, there are three radio buttons: 't2.micro (1 GiB RAM + 1 vCPU)' (selected), 't3.small (2 GiB RAM + 2 vCPU)', and 'm5.large (8 GiB RAM + 2 vCPU)'. Below these are 'Additional instance types' and 'Platform' (set to 'Amazon Linux 2023'). The 'Timeout' is set to '30 minutes'. The footer includes 'CloudShell', 'Feedback', and copyright information for Amazon Web Services, Inc. (2024).

For capabilities similar to AWS Cloud9, explore AWS Toolkits in your own IDE and AWS CloudShell in the AWS Management Console. [Learn more](#)

[AWS Cloud9](#) > [Environments](#) > [Create environment](#) > New EC2 instance

New EC2 instance [Info](#)

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 educational users and exploration.

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

☐ **m5.large (8 GiB RAM + 2 vCPU)**
Recommended for production and most general-purpose development.

☐ **Additional instance types**
Explore additional instances to fit your need.

Platform [Info](#)
This will be installed on your EC2 instance. We recommend Amazon Linux 2023.

Amazon Linux 2023

Timeout
How long Cloud9 can be inactive (no user input) before auto-hibernating. This helps prevent unnecessary charges.

30 minutes

Network settings [Info](#)

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

AWS Cloud9

My environments
Shared with me
All account environments
Documentation

Creating ShravaniEnv. This can take several minutes. While you wait, see [Best practices for using AWS Cloud9](#)

For capabilities similar to AWS Cloud9, explore AWS Toolkits in your own IDE and AWS CloudShell in the AWS Management Console. [Learn more](#)

AWS Cloud9 > Environments

Environments (2) [Delete](#) [View details](#) [Open in Cloud9](#) [Create environment](#)

My environments

	Name	Cloud9 IDE	Environment type	Connection	Permission	Owner ARN
<input type="radio"/>	ShravaniEnv	Open	EC2 instance	Secure Shell (SSH)	Owner	arn:aws:sts::533162464157:assumed-role/voclabs/user3402813=PATIL_SHRAVANI_ANIL

AWS Cloud9

My environments
Shared with me
All account environments
Documentation

Successfully created ShravaniEnv. To get the most out of your environment, see [Best practices for using AWS Cloud9](#)

For capabilities similar to AWS Cloud9, explore AWS Toolkits in your own IDE and AWS CloudShell in the AWS Management Console. [Learn more](#)

AWS Cloud9 > Environments

Environments (2) [Delete](#) [View details](#) [Open in Cloud9](#) [Create environment](#)

My environments

	Name	Cloud9 IDE	Environment type	Connection	Permission	Owner ARN
<input type="radio"/>	ShravaniEnv	Open	EC2 instance	Secure Shell (SSH)	Owner	arn:aws:sts::533162464157:assumed-role/voclabs/user3402813=PATIL_SHRAVANI_ANIL

File Edit Find View Go Run Tools Window Support Preview Run

Go to Anything (Ctrl-F)

ShravaniEnv - /src
cloud9.html
README.md

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6   <title>Shravani</title>
7 </head>
8 <body>
9   <h1>Hello , I am Shravani Anil Patil</h1>
10  <h2>I am currently pursuing my Bachelors in Engineering from Vivekanand Education S
11 </body>
12 </html>
```

10:120 HTML Spaces: 4

Preview: /cloud9.html

Browser

Hello , I am Shravani Anil Patil

I am currently pursuing my Bachelors in Engineering from Vivekanand Education Society's Institute of Technology ,Chembur