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Class: D15A

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ADVANCE DEVOPS EXPERIMENT : 1

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

EC2 Instance Creation and static site hosting

EC2 > Instances > Launch an instance

It seems like you may be new to launching instances in EC2. Take a walkthrough to learn about EC2, how to launch instances and about best practices

[Take a walkthrough](#) [Do not show me this message again.](#)

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.

Name and tags [Info](#)

Name

[Add additional tags](#)

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

Summary

Number of instances [Info](#)

Software Image (AMI)

Amazon Linux 2023 AMI 2023.7.2...[read more](#)
ami-0d03cb826412c6b0f

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Name and tags [Info](#)

Name

[Add additional tags](#)

Quick Start

Amazon Linux
aws

macOS
Mac


Ubuntu
ubuntu®

Windows
Microsoft

Red Hat
Red Hat

SUSE Linux
SUSE

Debian
debian


[Browse more AMIs](#)
Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

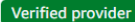
Ubuntu Server 24.04 LTS (HVM), SSD Volume Type
ami-0f918f7e67a3323f0 (64-bit (x86)) / ami-02f607855bfce66b6 (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

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	
64-bit (x86)	ami-0f918f7e67a3323f0	2025-06-10	ubuntu	

▼ Configure storage [Info](#)


[Advanced](#)

1x GiB Root volume, 3000 IOPS, 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 instance store volumes, however the instance does not allow any instance store volumes. None of the 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](#)

✔ Success
Successfully initiated launch of instance (i-05132cf1a59a0ed7f)

► 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

Learn more

Create EBS snapshot policy

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

Create EBS snapshot policy

✔ Success
Successfully initiated launch of instance (i-05132cf1a59a0ed7f)

▼ Launch log

Initializing requests	✔ Succeeded
Creating security groups	✔ Succeeded
Creating security group rules	✔ Succeeded
Launch initiation	✔ Succeeded

Next Steps

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< 1 2 3 4 5 6 >

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Create EBS snapshot policy

EC2

Dashboard

EC2 Global View

Events

Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

Images

Instances (1) Info

Last updated 1 minute ago

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

< 1 >

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv
<input type="checkbox"/>	Devansh	i-05132cf1a59a0ed7f	Running	t2.micro	2/2 checks passed	View alarms	ap-south-1b	ec2-15-206-194-163.ap-south-1.compute.amazonaws.com

Select an instance

Instances (1/1) Info

Last updated 2 minutes ago

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

< 1 >

<input checked="" type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv
<input checked="" type="checkbox"/>	Devansh	i-05132cf1a59a0ed7f	Running	t2.micro	2/2 checks passed	View alarms	ap-south-1b	ec2-15-206-194-163.ap-south-1.compute.amazonaws.com

i-05132cf1a59a0ed7f (Devansh)

Details

Status and alarms

Monitoring

Security

Networking

Storage

Tags

▼ Instance summary Info

Instance ID

i-05132cf1a59a0ed7f

IPv6 address

-

Public IPv4 address

15.206.194.163 | open address

Instance state

Running

Private IPv4 addresses

172.31.11.116

Public DNS

ec2-15-206-194-163.ap-south-1.compute.amazonaws.com | open address

```
[ec2-user@ip-172-31-11-116 ~]$ ls
myfile.txt
[ec2-user@ip-172-31-11-116 ~]$ echo "hello"
hello
[ec2-user@ip-172-31-11-116 ~]$ cat myfile.txt
This is Advance Devops Lab
^C

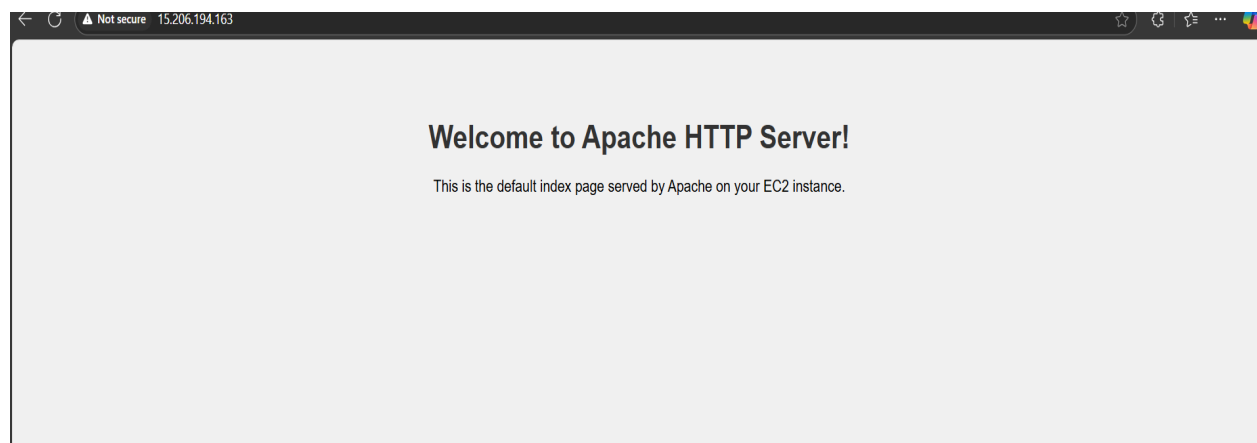
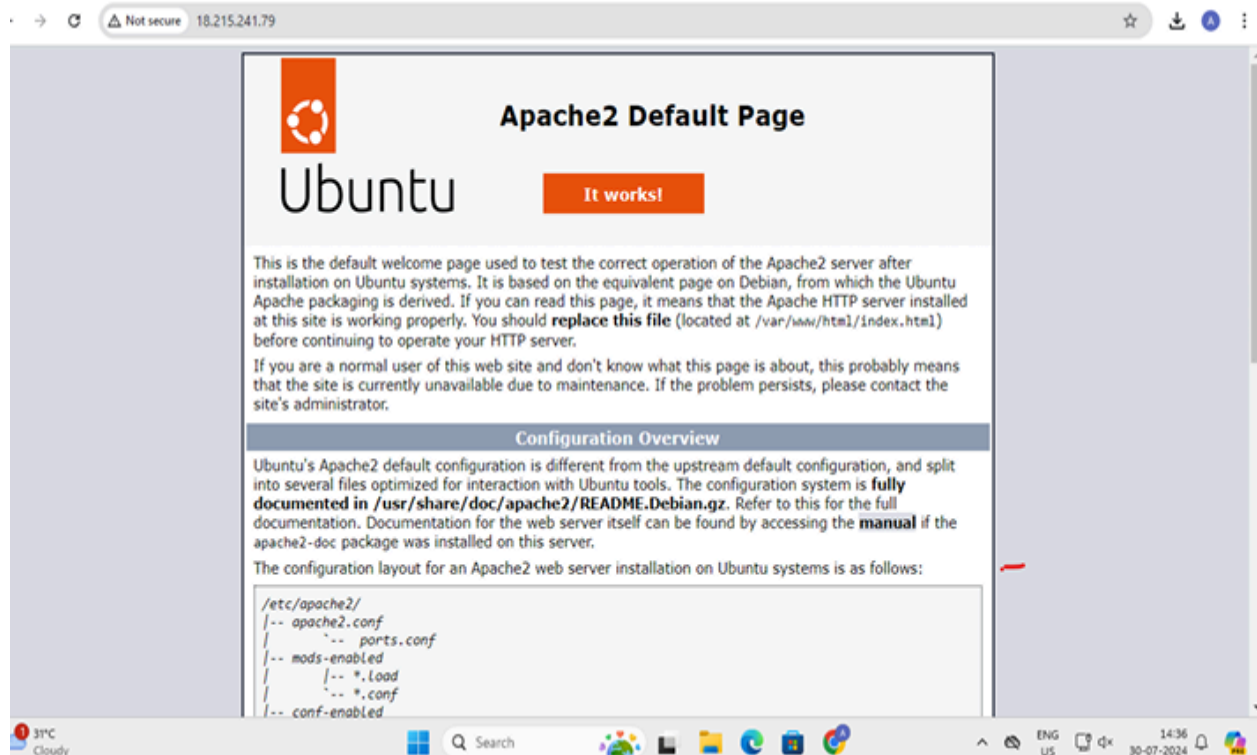
[ec2-user@ip-172-31-11-116 ~]$
```

Command for writing index.html

```
sudo nano /var/www/html/index.html
```

index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Welcome to Apache</title>
  <style>
    body {
      font-family: Arial, sans-serif;
      background-color: #f2f2f2;
      text-align: center;
      padding: 50px;
    }
    h1 {
      color: #333;
    }
  </style>
</head>
<body>
  <h1>Welcome to Apache HTTP Server!</h1>
  <p>This is the default index page served by Apache on your EC2 instance.</p>
</body>
</html>
```



Browser is successfully connected!

Create S3 bucket

Create bucket [Info](#)

Buckets are containers for data stored in S3.

General configuration

AWS Region

Asia Pacific (Mumbai) ap-south-1

Bucket type [Info](#)

☒ **General purpose**

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.

☐ **Directory**

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.

Bucket name [Info](#)

devansh-project-bucket

Bucket names must be 3 to 63 characters and unique within the global namespace. Bucket names must also begin and end with a letter or number. Valid characters are a-z, 0-9, periods (.), and hyphens (-). [Learn More](#)

Copy settings from existing bucket - optional

Only the bucket settings in the following configuration are copied.

[Choose bucket](#)

Format: s3://bucket/prefix

Default encryption [Info](#)

Server-side encryption is automatically applied to new objects stored in this bucket.

Encryption type [Info](#)

☒ Server-side encryption with Amazon S3 managed keys (SSE-S3)

☐ Server-side encryption with AWS Key Management Service keys (SSE-KMS)

☐ Dual-layer server-side encryption with AWS Key Management Service keys (DSSE-KMS)

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](#).

Bucket Key

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](#)

☐ Disable

☒ Enable

► Advanced settings

① After creating the bucket, you can upload files and folders to the bucket, and configure additional bucket settings.

[Cancel](#)

[Create bucket](#)

🟢 Successfully created bucket "devansh-project-bucket"
To upload files and folders, or to configure additional bucket settings, choose [View details](#).

[View details](#) ✕

► **Account snapshot** - updated every 24 hours All AWS Regions

[View Storage Lens dashboard](#)

Storage lens provides visibility into storage usage and activity trends. Metrics don't include directory buckets. [Learn more](#)

[General purpose buckets](#)

[Directory buckets](#)

General purpose buckets (1) Info All AWS Regions



[Copy ARN](#)

[Empty](#)

[Delete](#)

[Create bucket](#)

Buckets are containers for data stored in S3.

< 1 >

Name	AWS Region	IAM Access Analyzer	Creation date
devansh-project-bucket	Asia Pacific (Mumbai) ap-south-1	View analyzer for ap-south-1	July 5, 2025, 14:12:45 (UTC+05:30)

Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDKs or Amazon S3 REST API. [Learn more](#)

Drag and drop files and folders you want to upload here, or choose [Add files](#) or [Add folder](#).

Files and folders (1 total, 49.0 B)

[Remove](#)

[Add files](#)

[Add folder](#)

All files and folders in this table will be uploaded.

< 1 >

<input checked="" type="checkbox"/>	Name	Folder	Type	Size
<input checked="" type="checkbox"/>	Test.txt	-	text/plain	49.0 B

Destination Info

Destination

[s3://devansh-project-bucket](#)

► **Destination details**

Bucket settings that impact new objects stored in the specified destination.

Upload succeeded
For more information, see the Files and folders table.

Close

Upload: status

After you navigate away from this page, the following information is no longer available.

Summary

Destination

s3://devansh-project-bucket

Succeeded

1 file, 49.0 B (100.00%)

Failed

0 files, 0 B (0%)

Files and folders

Configuration

Files and folders (1 total, 49.0 B)

Find by name

< 1 >

Name	Folder	Type	Size	Status	Error
Test.txt	-	text/plain	49.0 B	Succeeded	-

Amazon S3

devansh-project-bucket

Test.txt

Copy S3 URI

Download

Open

Object actions

Properties

Permissions

Versions

Object overview

Owner

286d424b7cdf1ede9d4846bf0f508ef8f69207ec2b84bd55218b9acc06e93bb2

AWS Region

Asia Pacific (Mumbai) ap-south-1

Last modified

July 5, 2025, 14:31:52 (UTC+05:30)

Size

49.0 B

Type

txt

Key

Test.txt

S3 URI

s3://devansh-project-bucket/Test.txt

Amazon Resource Name (ARN)

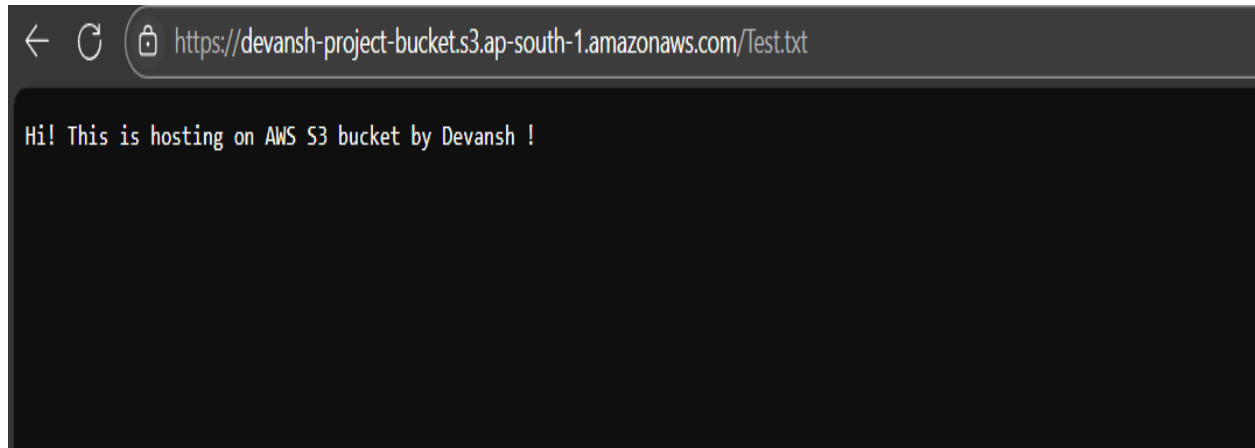
arn:aws:s3:::devansh-project-bucket/Test.txt

Entity tag (Etag)

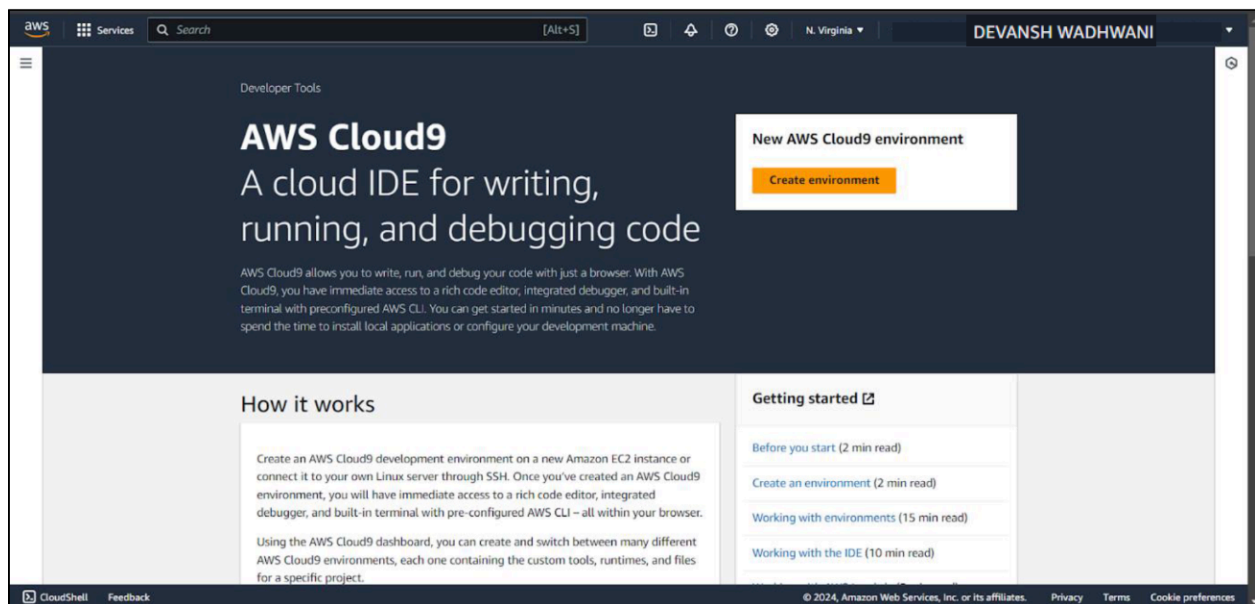
f135f912ca2912a24bd3001911032a21

Object URL

https://devansh-project-bucket.s3.ap-south-1.amazonaws.com/Test.txt



Hosting Using 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 > Create environment

Create environment [Info](#)

Details

Name

Devansh3108

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

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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 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](#)

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

Console password

☐ **Autogenerated password**

You can view the password after you create the user.

☒ **Custom password**

Enter a custom password for the user.

☐ Show password

☐ **Users must create a new password at next sign-in - Recommended**

Users automatically get the [IAMUserChangePassword](#) policy to allow them to change their own password.



If you are creating programmatic access through access keys or service-specific credentials for AWS CodeCommit or Amazon Keyspaces, you can generate them after you create this IAM user. [Learn more](#)

Cancel

Next

Set permissions

Add user to an existing group or create a new one. Using groups is a best-practice way to manage user's permissions by job functions. [Learn more](#)

Permissions options

☒ Add user to group

Add user to an existing group, or create a new group. We recommend using groups to manage user permissions by job function.

☐ Copy permissions

Copy all group memberships, attached managed policies, and inline policies from an existing user.

☐ Attach policies directly

Attach a managed policy directly to a user. As a best practice, we recommend attaching policies to a group instead. Then, add the user to the appropriate group.



Get started with groups

Create a group and select policies to attach to the group. We recommend using groups to manage user permissions by job function, AWS service access, or custom permissions. [Learn more](#)

Create group

▼ Set permissions boundary - optional

Set a permissions boundary to control the maximum permissions for this user. Use this advanced feature used to delegate permission management to others. [Learn more](#)

- ☐ Use a permissions boundary to control the maximum permissions
You can select one of the existing permissions policies to define the boundary.

Cancel

Previous

Next

Create user group

Create a user group and select policies to attach to the group. We recommend using groups to manage user permissions by job function, AWS service access, or custom permissions. [Learn more](#)

User group name

Enter a meaningful name to identify this group.

webapppgrp

Maximum 128 characters. Use alphanumeric and '+,=, @, _' characters.

Permissions policies (946)



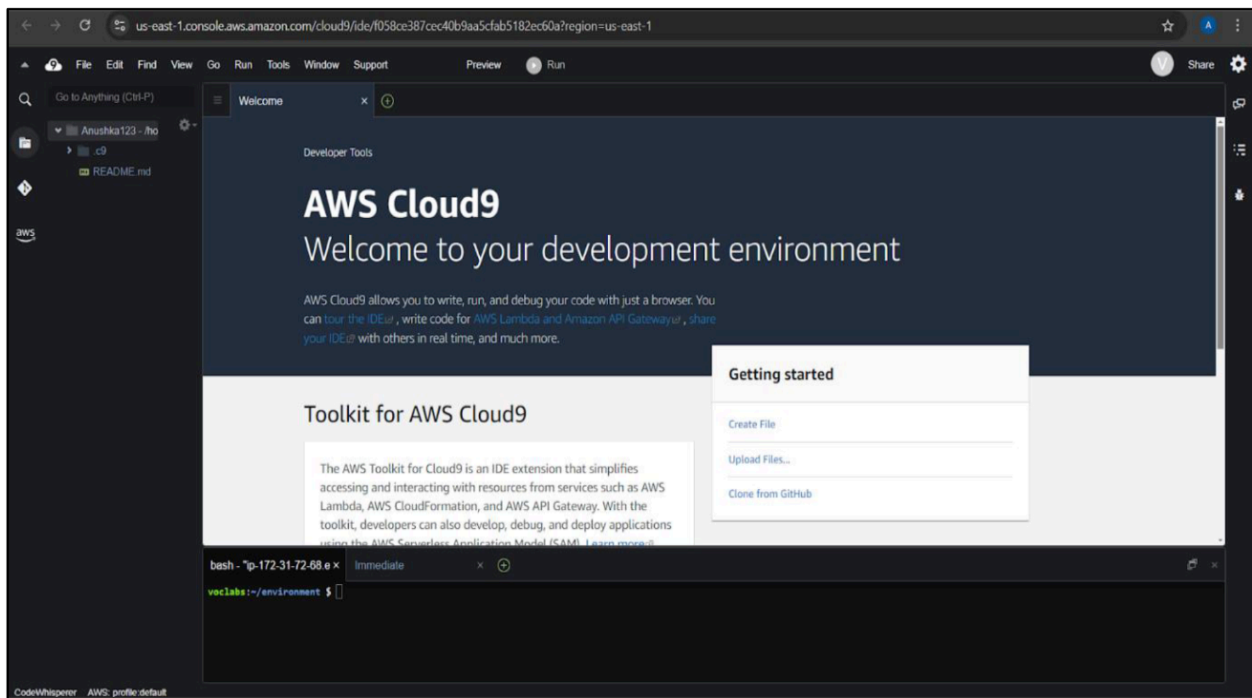
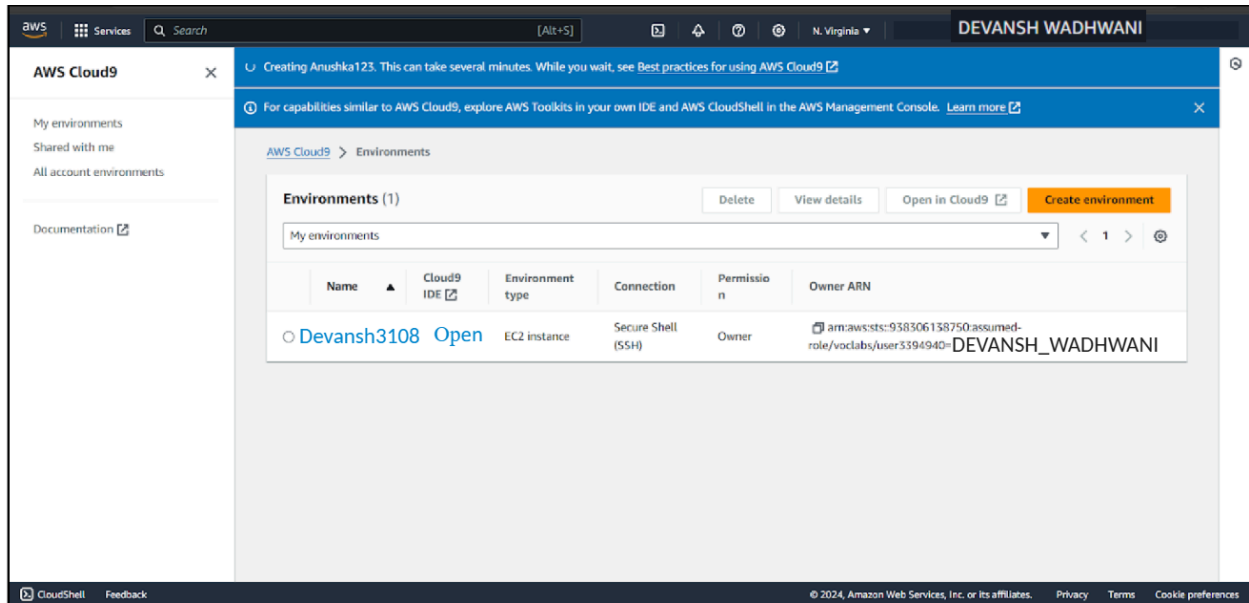
Search

Filter by Type

All ty...

< 1 2 3 4 5 6 7

<input type="checkbox"/>	Policy name	Type	Use...	Description
<input type="checkbox"/>	AdministratorAccess	AWS managed ...	None	Provides full
<input type="checkbox"/>	AdministratorAcce...	AWS managed	None	Grants accou
<input type="checkbox"/>	AdministratorAcce...	AWS managed	None	Grants accou
<input type="checkbox"/>	AlexaForBusinessD...	AWS managed	None	Provide devi
<input type="checkbox"/>	AlexaForBusinessF...	AWS managed	None	Grants full a



aws [Search] [Alt+S] Asia Pacific (Mumbai) DEVANSH WADHWANI

EC2 > Instances

EC2

- Dashboard
- EC2 Global View
- Events
- ▼ Instances
 - Instances
 - Instance Types
 - Launch Templates
 - Spot Requests
 - Savings Plans
 - Reserved Instances
 - Dedicated Hosts
 - Capacity Reservations
- ▼ Images
 - AMIs
 - AMI Catalog
- ▼ Elastic Block Store
 - Volumes
 - Snapshots

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 IP address
<input type="checkbox"/>	Devansh	i-05132cf1a59a0ed7f	Running	t2.micro	2/2 checks passed	View alarms +	ap-south-1b	ec2-15-206-194-163.ap...	15.20

Select an instance

aws Services [Search] [Alt+S] N. Virginia DEVANSH WADHWANI

service IP addresses for your Region: 18.206.107.24/29. [Learn more.](#)

Instance ID

i-0c4a90f8f43f90a7f (dynamic-server)

Connection Type

☒ Connect using EC2 Instance Connect

Connect using the EC2 Instance Connect browser-based client, with a public IPv4 address.

☐ Connect using EC2 Instance Connect Endpoint

Connect using the EC2 Instance Connect browser-based client, with a private IPv4 address and a VPC endpoint.

Public IP address

3.91.180.229

Username

Enter the username defined in the AMI used to launch the instance. If you didn't define a custom username, use the default username, ubuntu.

ubuntu

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

You have insufficient IAM permissions to connect to an instance using EC2 Instance Connect

To connect to an instance via EC2 Instance Connect, you must have an attached IAM policy that grants the following permissions:

- ec2-instance-connect:SendSSHPublicKey
- ec2:DescribeInstances

aws Services Search [Alt+S] N. Virginia DEVANSH WADHWANI

EC2 Dashboard X

EC2 Global View

Events

Console-to-Code Preview

▼ Instances

Instances

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Spot Requests

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Reserved Instances

Dedicated Hosts

Capacity Reservations

▼ Images

AMIs

AMI Catalog

▼ Elastic Block Store

Volumes

Security Groups (1/6) Info

Find resources by attribute or tag

Actions Export security groups to CSV Create security group

	Name	Security group ID	Security group name	VPC ID
<input checked="" type="checkbox"/>	-	sg-0e9c7347eda0b5a19	launch-wizard-3	vpc-0dbcbbe5ce8b91c8d

Details Inbound rules Outbound rules Tags

Inbound rules (2)

Search

	Name	Security group rule...	IP version	Type	Protocol	Port
<input type="checkbox"/>	-	sgr-0719276f3e5dc89d2	IPv4	HTTP	TCP	80
<input type="checkbox"/>	-	sgr-02b44d0276b699...	IPv4	SSH	TCP	22

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