

Advance Devops-1

Aim: To understand the benefits of cloud infrastructure and set up AWS Cloud9 IDE, launch it, and perform a collaboration demonstration.

Theory:

Cloud Infrastructure: Cloud infrastructure refers to the combination of hardware, software, networking, and storage that together create a cloud computing platform. It allows businesses to leverage resources like computing power, storage, and networking as per demand, without investing in physical infrastructure. Key cloud infrastructure providers include AWS, Google Cloud, and Microsoft Azure.

Benefits of Cloud Infrastructure:

1. **Scalability:** Easily scale resources up or down based on demand without upfront investment in hardware.
2. **Cost Efficiency:** Pay-as-you-go model reduces capital expenses, paying only for what you use.
3. **Flexibility and Accessibility:** Access services and resources from anywhere with an internet connection, promoting remote work and global reach.
4. **Reliability:** High availability and disaster recovery options ensure that services are available with minimal downtime.
5. **Security:** Cloud providers offer advanced security measures, including data encryption, compliance certifications, and continuous monitoring.
6. **Innovation:** Rapid deployment of new services and features accelerates innovation and business agility.

AWS Cloud9 IDE: AWS Cloud9 is a cloud-based integrated development environment (IDE) that allows developers to write, run, and debug code with just a browser. It supports a variety of programming languages, including JavaScript, Python, PHP, and more, making it an ideal tool for collaborative software development.

Benefits of AWS Cloud9:

1. **Collaborative Development:** Multiple developers can work on the same project in real-time, making it ideal for pair programming and team collaboration.
2. **Preconfigured Environment:** No need for complex setup; Cloud9 comes pre-installed with tools, libraries, and compilers needed for most development tasks.
3. **Accessible from Anywhere:** As a web-based IDE, it can be accessed from any device with an internet connection.
4. **Integrated with AWS:** Deep integration with AWS services allows developers to work seamlessly with cloud resources.
5. **Built-in Terminal:** Direct access to a terminal with full sudo privileges to manage AWS resources and run shell commands.

Collaboration Demonstration in AWS Cloud9: AWS Cloud9 allows multiple users to simultaneously edit code, chat, and review changes in real-time. To demonstrate collaboration:

- Invite team members via email or link.
- Collaborate on code, view changes in real-time, and chat within the IDE.
- Use version control systems like Git integrated within Cloud9 for better collaboration and tracking of changes.

Outputs:

The screenshot displays the AWS Cloud9 'Create environment' interface. At the top, a blue header bar contains a navigation menu icon, a status message about AWS Toolkits, and a close button. Below the header, the breadcrumb trail reads 'AWS Cloud9 > Environments > Create environment'. The main heading is 'Create environment' with an 'Info' link. The 'Details' section includes a 'Name' field with the value 'WebAppIDE' and a 'Description - optional' field. Below these is the 'Environment type' section, which has two radio buttons: 'New EC2 instance' (selected) and 'Existing compute'. The 'New EC2 instance' section is expanded, showing the 'Instance type' section with three options: 't2.micro' (selected), 't3.small', and 'm5.large'. Below the instance types is an 'Additional instance types' section. The 'Platform' section shows a dropdown menu with 'Amazon Linux 2023' selected. The 'Timeout' section shows a dropdown menu with '30 minutes' selected. The 'Network settings' section is partially visible at the bottom.

For capabilities similar to AWS Cloud9, explore AWS Toolkits in your own IDE and AWS CloudShell in the AWS Management Console. [Find out 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.

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 needs.

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

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

Network settings [Info](#)

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.

[i](#) 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. [Find out 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. [Find out more](#)

Cancel

Create

Step 2

Set permissions

Step 3

Review and create

Step 4

Retrieve password

User details

User name

valibhavi

The user name can have up to 64 characters. Valid characters: A-Z, a-z, 0-9, and +, -, @, _ (hyphen)

☒ **Provide user access to the AWS Management Console - optional**

If you're providing console access to a person, it's a best practice [to](#) manage their access in IAM Identity Center.



Are you providing console access to a person?

User type

☐ **Specify a user in Identity Center - Recommended**

We recommend that you use Identity Center to provide console access to a person. With Identity Center, you can centrally manage user access to their AWS accounts and cloud applications.

☒ **I want to create an IAM user**

We recommend that you create IAM users only if you need to enable programmatic access through access keys, service-specific credentials for AWS CodeCommit or Amazon Keyspaces, or a backup credential for emergency account access.

Console password

☐ **Autogenerated password**

You can view the password after you create the user.

☒ **Custom password**

Enter a custom password for this user.

[IAM](#) > [Users](#) > Create user

Step 1

[Specify user details](#)

Step 2

Set permissions

Step 3

Review and create

Step 4

Retrieve password

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.

User groups (1)



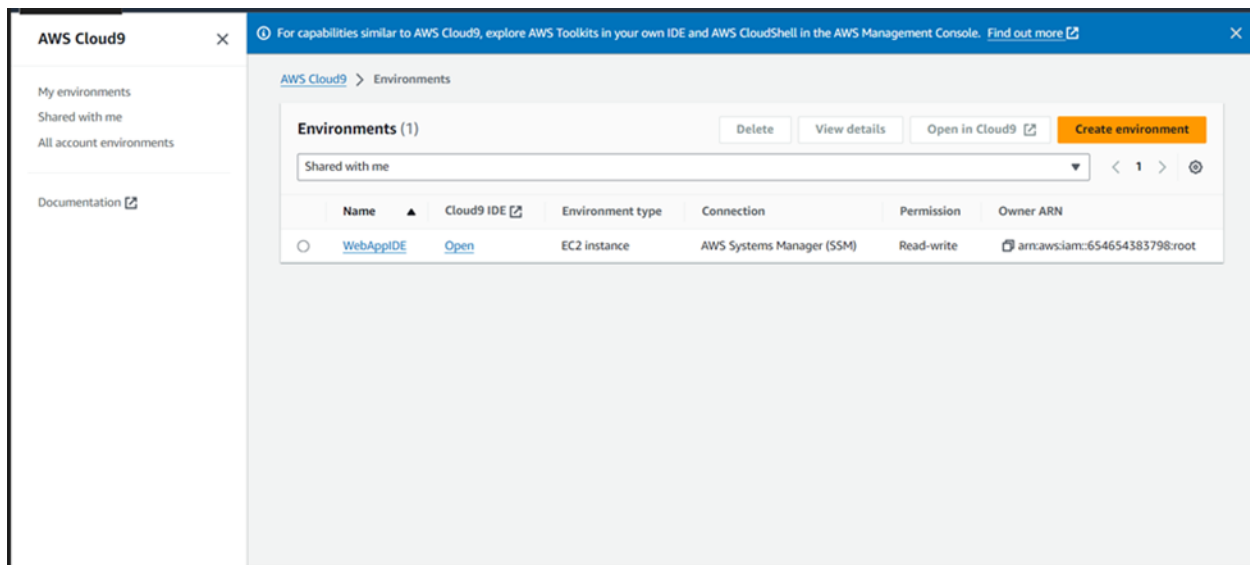
Create group

Search

< 1 >

<input type="checkbox"/>	Group name i	▲	Users	▼	Attached policies i	▼	Created	▼
<input type="checkbox"/>	WebGroup		0		AWSCloud9EnvironmentMember		2024-07-25 (4 days ago)	

► Set permissions boundary - optional



Conclusion:

Understanding cloud infrastructure is essential for leveraging the power of modern computing. AWS Cloud9 provides a robust, cloud-based IDE that enhances the software development process by offering a pre-configured environment, accessibility, and collaborative features. Setting up AWS Cloud9 and demonstrating its collaborative capabilities shows how teams can efficiently work together, making the development process faster and more streamlined. The hands-on experience with AWS Cloud9 highlights the practical benefits of cloud infrastructure and collaborative development tools in the modern software industry.