

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 shows the 'Create environment' page in the AWS Cloud9 console. At the top, there is a blue header bar with a hamburger menu icon, a status message: 'For capabilities similar to AWS Cloud9, explore AWS Toolkits in your own IDE and AWS CloudShell in the AWS Management Console. Find out more', and a close button. Below the header, the breadcrumb navigation reads 'AWS Cloud9 > Environments > Create environment'. The main heading is 'Create environment' with an 'Info' link. The 'Details' section contains three input fields: 'Name' (with 'WebAppIDE' entered), 'Description - optional', and 'Environment type'. The 'Environment type' section has two radio buttons: 'New EC2 instance' (selected) and 'Existing compute'. The 'New EC2 instance' option includes a description: 'Cloud9 creates an EC2 instance in your account. The configuration of your EC2 instance cannot be changed by Cloud9 after creation.' The 'Existing compute' option includes a description: 'You have an existing instance or server that you'd like to use.' At the bottom, a section titled 'New EC2 instance' is partially visible.

The screenshot shows the 'New EC2 instance' configuration page. The heading is 'New EC2 instance'. The 'Instance type' section has an 'Info' link and a description: 'The memory and CPU of the EC2 instance that will be created for Cloud9 to run on.' There are three radio buttons for instance types: 't2.micro (1 GiB RAM + 1 vCPU)' (selected), 't3.small (2 GiB RAM + 2 vCPU)', and 'm5.large (8 GiB RAM + 2 vCPU)'. Each option has a brief description. Below these is an 'Additional instance types' option with a description: 'Explore additional instances to fit your needs.' The 'Platform' section has an 'Info' link and a description: 'This will be installed on your EC2 instance. We recommend Amazon Linux 2023.' It features a dropdown menu currently set to 'Amazon Linux 2023'. The 'Timeout' section has a description: 'How long Cloud9 can be inactive (no user input) before auto-hibernating. This helps prevent unnecessary charges.' and a dropdown menu set to '30 minutes'. At the bottom, a section titled 'Network settings' with an 'Info' link is partially visible.

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. [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

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

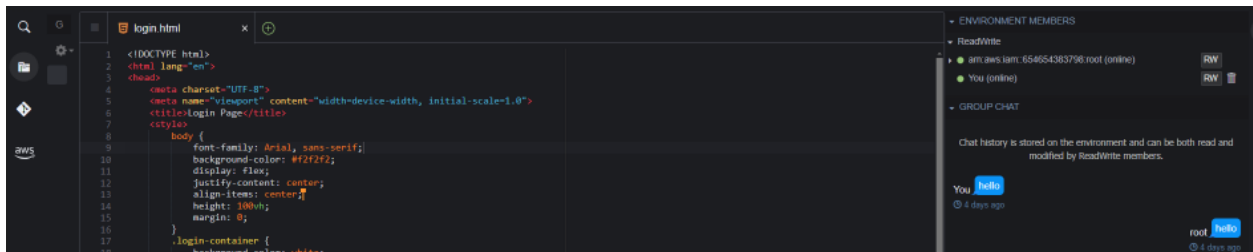
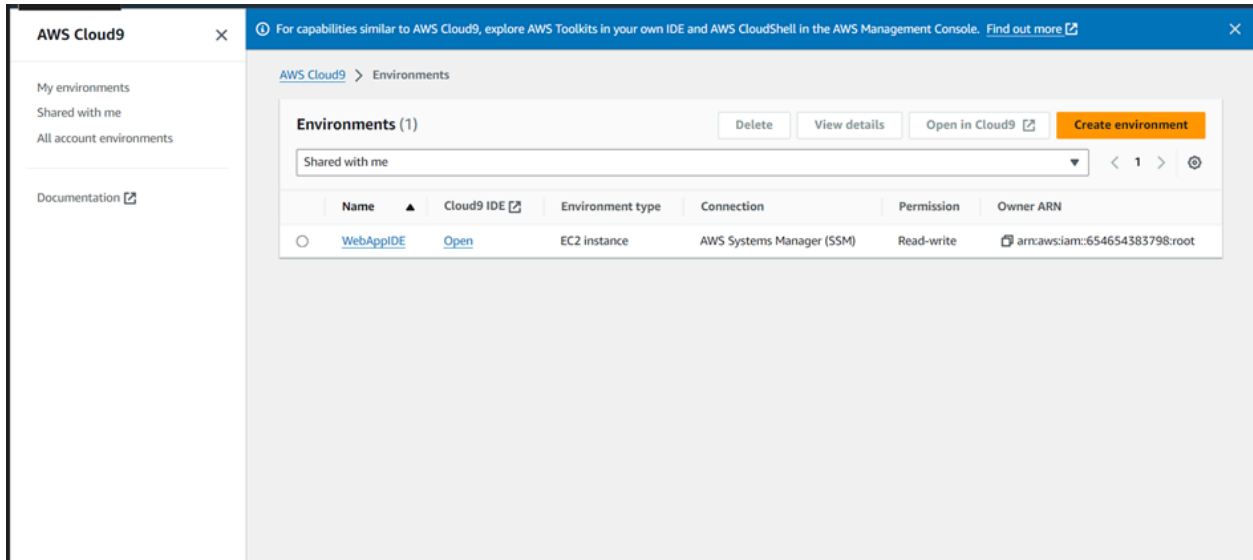


Search

< 1 > 

<input type="checkbox"/>	Group name ?	▲	Users	▼	Attached policies ?	▼	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.