

## Day 14: Cloud Security under DevOps

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### Topics Covered:

- Cloud security and its role in DevOps
  - Service models in cloud computing: IaaS, PaaS, SaaS
  - Overview of Amazon AWS services (e.g., EC2)
  - IAM (Identity and Access Management) in cloud environments
  - Hosting websites with Apache2 web server
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### What is Cloud Security?

Cloud security refers to the practices and technologies used to protect cloud-based infrastructure, applications, and data. In a DevOps environment, cloud security is essential to safeguard every phase of the CI/CD pipeline, including code repositories, build servers, deployed applications, and storage.

Cloud security is not a separate stage but an integrated component of the DevOps lifecycle—known as **DevSecOps**.

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### Cloud Service Models:

Model Full Form		Description
IaaS	Infrastructure as a Service	Provides virtual machines, storage, and networking resources. Example: AWS EC2
PaaS	Platform as a Service	Offers a development environment with OS, tools, and databases. Example: Google App Engine
SaaS	Software as a Service	Delivers complete software applications over the internet. Example: Gmail, Google Docs

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### Amazon Web Services (AWS):

#### EC2 (Elastic Compute Cloud)

- A virtual machine hosted on AWS
- Used for hosting websites, running applications, or setting up labs
- Supports various OS types including Linux and Windows

#### IAM (Identity and Access Management)

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- A system for managing user access and permissions
  - Allows fine-grained control over who can access what in AWS
  - Uses roles, policies, and permissions to secure cloud resources
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### Hosting a Website with Apache2:

**Apache2** is a widely used open-source web server. It can be installed on an EC2 instance or any Linux server. It is used to:

- Host static or dynamic websites
  - Serve web pages over HTTP or HTTPS
  - Run backend applications (PHP, Python, etc.)
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### Key Learnings:

- Cloud security must be integrated into every DevOps process
- IAM helps enforce least privilege access to cloud resources
- Hosting websites on Apache2 in EC2 is a common deployment method
- Understanding IaaS, PaaS, and SaaS enables better architectural decisions in cloud environments