

Cloud Computing

Course Overview: This unique cloud computing course aims at honing the skills of individuals in Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform and enables them to blossom as consummate Cloud Solutions Architects. This **cloud computing course** is a preparatory session for certification in AWS, Azure, and GCP. Students will comprehend AWS Cloud Architecture, AWS Elastic Compute Cloud services (EC2), AWS Networking, AWS Simple Storage Services (S3), AWS Relational Database Services (RDS), Google Cloud Platform technology, and Azure Cloud Architecture Technology.

The course ventures into topics like Decision Trees, Random Forest Models, and the use of Machine Learning Services on the Cloud. At the end of this course, participants can showcase their abilities in any one or all three Cloud Technologies in the current IT Industry.

This cloud computing triple certification course is a three-month program comprising 72 classroom sessions. At the end of the course, the participant can easily apply for the AWS, Microsoft Azure, and GCP certifications. The first two modules of the course bear an introduction to Cloud Computing and the types of Cloud Service Models - IAAS, PAAS, and SAAS along with a pricing and market comparison of AWS, Azure, and GCP. The succeeding module deals with deploying Virtual Machines, load balancers, and servers on AWS, Azure, and GCP. The concluding modules of this **Cloud Computing course**, deal with storage and security services functional in AWS, Azure, and GCP

Duration :3Months

Module 1: Introduction to Cloud Computing and Types of Cloud Computing

Module 2: Pricing and Market Comparison between AWS, Azure, and GCP

Module 3: Deploying Servers and Load Balancers in all Computing Platforms

Module 4: Storage Services in AWS, Azure and GCP

Module 5: Security Services - Identity and Access Management

Module 6: Types of Network Service and Setting up them

Module 7: Database Services in AWS, Azure and GCP

Module 8: Content Delivery and Domain Setup

Module 9: Monitoring and Notification Service

Module Module10: Real Time Projects

Module 11: Capstone Project

Module 1: Introduction to Cloud Computing and Types of Cloud Computing

- Learn what is Cloud Computing
- Definition of Cloud Computing,
- Types of Cloud Deployment Models - Public, Private and Hybrid Cloud.
- Learn about Cloud Service Models - IAAS, PAAS, SAAS
- Advantages of Cloud.

Module 2: Pricing and Market Comparison between AWS, Azure, and GCP

- Learn to estimate pricing for different Cloud Services,
- comparison between Amazon Web Service vs Microsoft Azure vs Google Cloud Platform.
- How do Cloud Service providers stand
- positioning of the 3 Cloud Services
- differences between 3 Cloud Service Providers.

Module 3: Deploying Servers and Load Balancers in all Computing Platforms

- How to deploy a Virtual Machine in AWS, Azure, and GCP
- Types of VMs that can be purchased based on the workloads and their classifications. Understanding the Load Balancer concept
- How Load Balancer works
- Configure a Load Balancer in AWS, Azure and GCP using VMs depending on workload

Module 4: Storage Services in AWS, Azure and GCP

- Working with Cloud Storage Services
- Object-Based Storage Service
- Block-Based Storage Service,
- File-Based Storage Service
- more about Storage Services under Cloud and their use cases,
- Various Functions of Cloud Storage Services.

Module 5: Security Services - Identity and Access Management

- Learn to Secure your Cloud Account in AWS, Azure, and GCP.
- Best Practices to be followed for Cloud Users.
- Creating users, groups, and roles,
- Assigning policies to users & groups
- Multi- Factor Authentication for individual users
- working with Federations.

Module 6: Types of Network Service and Setting up them

- Understanding the basics of Network and concepts of networking,
- Difference between IPV4 and IPV6 addressing.
- Differences between On Premise and Cloud Networks
- Setting up a VPN, Subnets, Route Tables,
- Creating Gateways and Securing your network and their functionalities.

Module 7: Database Services in AWS, Azure and GCP

- What is a Database,
- Learning the difference between SQL and NoSQL Databases
- Deployment of RDS,
- Configuring NoSQL Databases,
- Connecting a Database from remote Login Server etc.

Module 8: Content Delivery and Domain Setup

- What is Content Delivery and
- how the performance will be enhanced by using Content Delivery,
- Various ways Content Delivery can be set up using AWS, Azure and GCP.
- What is Domain
- How to Setup Domain in AWS, Azure and GCP.

Module 9: Monitoring and Notification Service

- How to set up monitoring services on AWS, Azure, and GCP,
- Learn to Monitor various parameters based on Standard Metrics,
- Controlling your cloud resources,
- setting up a Notification Service based on the thresholds you have set up,
- Learn about various notification services in AWS, Azure, and GCP.

Module 10: Real Time Projects:

1. Serverless Image Processing Application:

- **Objective:** Create a serverless application that allows users to upload images, automatically process them (e.g., resizing, filtering), and store the processed images in a cloud storage service.
- **Cloud Services:** AWS Lambda, AWS S3, GCP Cloud Functions, GCP Cloud Storage, Azure Functions, Azure Blob Storage.

2. Real-Time Analytics Dashboard:

- **Objective:** Develop a real-time analytics dashboard that visualizes data from various sources, such as web traffic, social media, or IoT devices.
- **Cloud Services:** AWS Kinesis, GCP Dataflow, Azure Stream Analytics, and cloud-based data visualization tools.

3. E-commerce Website on the Cloud:

- **Objective:** Build a scalable e-commerce website with features like product listings, user authentication, shopping cart, and real-time order tracking.
- **Cloud Services:** AWS EC2, GCP Compute Engine, Azure Virtual Machines, and managed database services.

4. Cloud-Based IoT Data Processing:

- **Objective:** Set up an IoT data processing pipeline in the cloud, collecting and analyzing data from IoT sensors/devices.
- **Cloud Services:** AWS IoT Core, GCP Cloud IoT Core, Azure IoT Hub, and cloud data analytics tools.

5. Multi-Cloud Disaster Recovery Solution:

- **Objective:** Create a disaster recovery solution that replicates data and applications across multiple cloud providers to ensure high availability.
- **Cloud Services:** AWS S3 Cross-Region Replication, GCP Cloud Storage Object Versioning, Azure Site Recovery.

Module 11: Capstone Project

A capstone project in cloud computing is an opportunity to demonstrate your expertise in cloud technologies by solving real-world problems or implementing a significant cloud-based solution. Here's a capstone project idea along with prerequisites:

Capstone Project Idea: Cloud-Based Healthcare Data Platform

Objective: Build a secure and scalable cloud-based platform for managing healthcare data. This project addresses the increasing need for efficient healthcare data management, storage, and analysis.

Prerequisites:

1. **Fundamental Cloud Knowledge:** You should have a strong understanding of cloud computing concepts, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). Familiarity with at least one major cloud provider (AWS, GCP, Azure) is essential.

2. **Cloud Security:** Understand cloud security best practices, including identity and access management (IAM), encryption, and compliance standards (e.g., HIPAA, GDPR).
3. **Database Management:** Proficiency in database management and SQL, as healthcare data often involves structured data.
4. **Web Development:** Knowledge of web development fundamentals (HTML, CSS, JavaScript) for creating a user-friendly interface.
5. **Healthcare Data Regulations:** Familiarity with healthcare data privacy regulations, such as HIPAA (for the U.S.) or GDPR (for the EU).