Course Details

CLOUD ADMINISTRATION – FOUNDATION IN AWS

Course Objective

The course is for beginners who will understand the various components of cloud administration in the AWS platform. Based on the course, they will:

- Understand the basics of cloud computing, with specific focus on the AWS platform
- Understand AWS infrastructure components and how to use them
- Understand the AWS costing and cost calculators for recommending budgets
- Understand basics of Networking & Security concepts with respect to hosting of applications
- And finally, be able to host a fully functional, static website on an external URL

Course Content

Module 1: Introduction to Cloud Computing and AWS Basics (3 hours)

1. Understanding cloud computing concepts
2. Introduction to AWS and its services
3. AWS global infrastructure overview
4. AWS account setup and management
5. AWS Identity and Access Management (IAM)

Module 2: AWS Compute Services (9 hours)

1. Amazon Elastic Compute Cloud (EC2)
2. EC2 instance types, pricing models, and configuration
3. Launching and managing EC2 instances
4. Load balancing and auto scaling

Module 3: AWS Storage and Content Delivery Services (6 hours)

1. Amazon Simple Storage Service (S3)
2. S3 bucket creation and configuration
3. Uploading and managing objects in S3
4. S3 lifecycle policies and data management
5. Amazon Elastic Block Store (EBS)
6. Creating and attaching EBS volumes
7. Snapshot management and data backups

Module 4: AWS Networking and Security (9 hours)

1. Amazon Virtual Private Cloud (VPC)
2. VPC concepts and components
3. VPC peering and connectivity options
4. Network Access Control Lists (ACLs) and Security Groups (SGs)
5. AWS Direct Connect and VPN
6. Establishing secure connections to AWS
7. AWS Identity and Access Management (IAM)
8. User and group management
9. IAM policies and permissions

Module 5: Database and Analytics Services (6 hours)

1. Amazon Relational Database Service (RDS)
2. RDS instance creation and configuration
3. Database backups and scaling (Single database – MySQL/Postgres/MariaDB)

Module 6: Monitoring, Logging, and Automation (6 hours)

1. AWS CloudWatch
   a. Monitoring AWS resources and applications
   b. Setting up alarms and notifications

Module 7: Application Services and Deployment (6 hours)

1. AWS Elastic Beanstalk
   a. Deploying web applications

Module 8: Advanced AWS Topics (6 hours)

1. AWS Global Accelerator and Route 53
   o Global traffic routing and load balancing

Module 9: Cost Optimization and Billing (3 hours)

1. AWS billing and pricing models
2. Cost optimization strategies and best practices
3. AWS Budgets and Cost Explorer

Module 10: Project Preparation and Next Steps (3 hours)

1. AWS Capstone projects
2. How to setup and publish
3. Documentation required

Note: The module durations provided are just estimates and can be adjusted based on the depth of coverage and pace of the course.

Tests & Use Cases: Foundations of AWS Administration

Module 1: Introduction to Cloud Computing and AWS Basics

1. Test Case: Verify that the AWS account creation process is explained clearly and students can successfully create an AWS account.
2. Test Case: Verify that students can create an IAM user, assign appropriate permissions, and understand the concept of least privilege.
3. Test Case: Verify that students understand the different types of AWS services (compute, storage, networking, etc.) and can provide examples of each.

Module 2: AWS Compute Services

1. Test Case: Verify that students can launch a Lightsail instance and connect to it using SSH or RDP

Module 3: AWS Storage and Content Delivery Services

1. Test Case: Verify that students can create an S3 bucket and upload objects to it, and can set appropriate permissions and access control.
2. Test Case: Verify that students understand the differences between S3 Standard, S3 Intelligent-Tiering, and S3 Glacier storage classes and can explain when to use each.
3. Test Case: Verify that students can launch an EC2 instance and connect to it using SSH or RDP.
4. Test Case: Verify that students can create an EBS volume, attach it to an EC2 instance, and verify data persistence.

Module 4: AWS Networking and Security

1. Test Case: Verify that students can create a VPC with the appropriate subnets, route tables, and security groups.
2. Test Case: Verify that students understand how to configure a VPC peering connection between two VPCs and can test connectivity between them.
3. Test Case: Verify that students can create and manage IAM roles and policies for granting temporary access to AWS services.

Module 5: Monitoring, Logging, and Automation

1. Test Case: Verify that students can set up Amazon CloudWatch alarms to monitor specific metrics and receive notifications.

Module 7: Application Services and Deployment

1. Test Case: Verify that students can deploy a web application using AWS Elastic Beanstalk and access it from a web browser.
2. Test Case: Verify that students can configure route 53 and setup AWS SSL to access application via https://

Module 9: Cost Optimization and Billing

1. Test Case: Verify that students can create a budget using AWS Budgets

Learning Outcomes

Upon completing this 45-hour course on Introduction to Cloud Administration on AWS, learners can expect to achieve the following learning outcomes:

1. Understand the fundamental concepts and benefits of cloud computing.
2. Gain comprehensive knowledge of the Amazon Web Services (AWS) platform and its core services.
3. Configure and manage AWS resources, including compute instances, storage, databases, and networking components.
4. Implement security best practices for protecting AWS infrastructure and resources.

5. Develop proficiency in monitoring and logging techniques to ensure optimal performance and availability.
6. Learn to automate infrastructure provisioning and application deployment using AWS services.
7. Gain familiarity with advanced AWS topics such as serverless computing, containerization, and global traffic management.
8. Acquire the necessary skills to prepare for AWS certification exams.
9. Apply cost optimization strategies to manage AWS expenses efficiently.
10. Identify potential use cases and deployment scenarios for leveraging AWS services in real-world scenarios.

By the end of the course, learners will have a solid foundation in cloud administration on AWS, enabling them to effectively deploy, manage applications and infrastructure in the AWS cloud environment.

Software requirements
- Windows or Linux OS
- Putty setup
- FTP software – WINSCP or FileZilla

Hardware Requirements
- Laptop with high-speed internet connection

Industry Scope
With this and the advanced course, students can get jobs as cloud administrators in any industry, as cloud server adoption is there in almost all businesses. Additionally, they complete the advanced course and start prepared for SysOps/SA certification in the AWS platform. This is a globally valid certification and will be over and above the certification given by Naan Mudhalvan & MVG Digital.

10 Industry Use Cases
Cloud administrators can:

1. Evaluate existing infrastructure and find out ways to reduce cost
2. Improve the infrastructure without major increase in costs
3. Reduce infrastructure requirements by consolidation of servers
4. Reduce costing by consolidating server pricing
5. Improve reporting and add thresholds /alerts
6. Streamline deployment of application, securely
7. Improve security for hosted applications
8. Configure backups using Storage services
9. Configure Application Snapshots of entire VMs, to improve RTO
10. Configure long-term storage to optimize storage costs

-