C-ID Descriptor
Cloud Operations and Management

Descriptor Details

- **Descriptor Title**: Cloud Operations and Management
- **C-ID Number**: 172
- **Units**: 3
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General Description

This course is designed to prepare students for entry-level DevOps, support, and cloud operations roles. Students will solve problems and troubleshoot various cloud computing scenarios, learn how to create automatable and repeatable deployments of networks and systems, and work with features and tools related to configuration and deployment. With case studies and demonstrations, students will learn how to design their cloud infrastructures and implement various strategies and services. Prepares students for associate level certifications such as AWS SysOps Administrator and Microsoft Azure Administrator AZ-103 exams.

Prerequisites

No information provided

Corequisites

No information provided

Advisories

ITIS 170 – Cloud Computing and Virtualization

Content

1. Understanding Systems Operations
   a. Systems Operations in the Cloud
   b. Introduction to core services
   c. Access management
   d. Command Line Interface (CLI)

2. Computing (Servers)
   a. Computing in the cloud
   b. Creating computing instances
   c. Managing instances
   d. Securing instances

3. Computing (Scaling, Load Balancing, and Name Resolution)
   a. Load balancing
   b. Auto scaling
   c. Domain Name Service (DNS) and DNS routing options
   d. Configure auto scaling
   e. Configure failover routing

4. Computing (containers and serverless computing)
   a. Serverless computing
   b. Containers
   c. Application Programming Interfaces (APIs) and Representational State Transfer (REST)
   d. Deploy Docker

5. Computing (Database services)
   a. Database services
   b. Unmanaged and managed database solutions.
   c. Relational database services
   d. Structured Query Language (SQL) and NoSQL databases

6. Networking
   a. Cloud networking and virtual private cloud
   b. Virtual private cloud connectivity options
   c. Securing the network
   d. Troubleshooting networks
   e. Configuring and troubleshoot a virtual private cloud

7. Storage and Archiving
   a. Overview of cloud storage
   b. Block-level and Object-level storage

      c. Volumes and volume types

      d. File systems

      e. Data Transfer and Migration Services

      f. Automation and Optimization

8. Monitoring and Security

      a. Authentication and authorization

      b. Cloud monitoring services

      c. Cloud logging and log services

      d. Risk and compliance

Lab Activities

No information provided

Objectives

At the conclusion of this course, the student should be able to:

1. Understand cloud infrastructure as it relates to system operations, such as global infrastructure, core services, and account security.
2. Use the management interface, command line interface, and understand additional administration and development tools.
3. Manage, secure, and scale compute instances in the cloud.
4. Manage, secure, and scale configurations.
5. Identify container services and services that are available for serverless computing.
6. Manage, secure, and scale databases in the cloud.
7. Build and configure virtual private networks.
8. Configure and manage storage options using the various storage services offered in the cloud.
9. Monitor the health of your cloud infrastructure.
10. Manage cloud resource usage.
11. Create and configure automated and repeatable deployments with tools.

Evaluation Methods

Evaluation will include hands-on projects and a combination of examinations, presentations, discussions, or problem-solving assignments.

Textbooks

- Montgomery, T., *CompTIA Cloud+ Study Guide: Exam CV0-002*, Sybex
- Piper, B. & Clinton, D., *AWS Certified Cloud Practitioner Study Guide: Exam CLF-C01*, Sybex
- Cloud vendor-provided academy curriculum (AWS Cloud Architect Associate or comparable) (Free)