CompTIA Cloud+ (Exam CV0-004), Skill Labs

Course Specifications

Course Number: ACI76-006SL_rev1.0
Lab Length: Approximately 17 hours

Cloud Service Models

Introduction
Objective

Welcome to the Cloud Service Models lab. In this lab you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Cloud Shared Responsibility Service Models
- Exercise 2 – Advanced Cloud Services

After completing this module, you should be able to:

- Define and describe different cloud service models including the shared responsibility model.
- Define and describe Software as a Service.
- Explore and identify Infrastructure as a Service resource in a public cloud.
- Explore and identify Platform as a Service resource in a public cloud.
- Define and describe different emerging cloud technologies.
- Define and describe artificial intelligence and machine learning in cloud environments.
- Explore and identify IoT resources.
- Explore and identify serverless architectures.

Exam Objectives:

- The following exam objectives are covered in this module:
  1.1 Given a scenario, use the appropriate cloud service model.

Service Availability Concepts

Introduction
Objective

Welcome to the Service Availability Concepts lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – High Availability and Scalability in a Private Cloud Environment

After completing this module, you should be able to:

- Define and describe the importance of high availability and scalability in a cloud environment.
- Compare different options to ensure high availability and methods of scaling a cloud infrastructure.
- Investigate and analyze scalability options in a private cloud environment.

Exam Objectives:

The following exam objectives are covered in this module:

1.2 Explain concepts related to service availability.

Introduction to Cloud Networking Concepts

Introduction
Objective

Welcome to the Introduction to Cloud Networking Concepts lab. In this lab you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Network Segmentation in the Cloud
- Exercise 2 – Network Services in Cloud Security
- Exercise 3 – Protocols to Secure Cloud Traffic

After completing this module, you should be able to:

- Create a Virtual Network in Microsoft Azure
- Create a Subnet in Microsoft Azure
- Configure a Virtual Network
- Explore Azure Cloud Shell
- Create a VM with PowerShell

Exam Objectives:

The following exam objectives are covered in this module:

1.3 Explain cloud networking concepts.

Cloud Storage Concepts

Introduction
Objective

Welcome to the Conducting Network Attacks lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Provisioning an S3 Bucket
- Exercise 2 – Provisioning Azure Storage Account Resources

After completing this module, you should be able to:

- Create an S3 bucket.
- Provision a storage account in Azure.
- Create an Azure blob container.
- Create an Azure file share.

Exam Objectives:

The following exam objectives are covered in this module:

1.4 Compare and contrast storage resources and technologies.

Introduction to Virtualization

Introduction
Objective

Welcome to the Introduction to Virtualization lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Virtual Machines (VMs) are created using Hypervisor software, and when working in private cloud infrastructures there are multiple considerations to consider when looking to provision VMs. Hypervisors can be one of two types, known as Type 1 and Type 2 hypervisors.

Type 1 refers to a hypervisor that runs on a host's physical hardware, otherwise known as a "bare metal" configuration.

In this type of virtualization, the Hypervisor does not rely on the operating system (OS) used by the host machine and instead makes calls directly to the hardware to generate virtual resources and an example of this would be VMWare ESXi.

This is the opposite with Type 2 hypervisors, which run "on top" of an OS and rely on that OS to make calls to the system hardware in its place. An example of this type of configuration would be Virtual Box.

In this module, a Type 1 hypervisor called Microsoft Hyper-V, will be used to explain the virtualization concepts.

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Virtual Networking Software

After completing these exercises, you should be able to:

- Define and describe compute sizing requirements and concepts.
- Install and explore the Microsoft Hyper-V application.
- Provisioning a Virtual Machine for Oversubscription.

Exam Objectives:

The following exam objectives are covered in this module:

1.7 Compare and contrast virtualization concepts.

Cloud Database Concepts

Introduction
Objective

Welcome to the Cloud Database Concepts lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Amazon Web Services (AWS) provides a range of database services. These services include relational databases like Amazon Relational Database Service (RDS), which supports popular database engines such as My Structured Query Language (MySQL), PostgreSQL, and Structured Query Language (SQL) Server, as well as non-relational databases like Amazon DynamoDB, a fully managed NoSQL database. Additionally, AWS provides database migration tools and services to facilitate the migration of on-premises databases to the AWS cloud.

In this lab, you will explore the various database types and migration options that AWS offers.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – AWS Databases
- Exercise 2 – MSSQL Server Database
- Exercise 3 – Database Migration

After completing these exercises, you should be able to:

- Compare database types.
- Create MSSQL server database.
- Install SSMS.
- Connect to the MSSQL database.
- Explore database migration options.
- Discover database schema conversion.

Exam Objectives:

The following exam objectives are covered in this module:

1.9 Explain the importance of database concepts.

Cloud Deployment Models (CV0-004)

Introduction
Objective

Welcome to the Cloud Deployment Models lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Exploring Cloud Deployment Models
- Exercise 2 – Exploring Private Clouds

After completing these exercises, you should be able to:

- Define and describe different cloud deployment models.
- Navigate the Azure portal.
- Create a private cloud infrastructure using Hyper-V.

Exam Objectives:

The following exam objectives are covered in this module:

2.1 Compare and contrast cloud deployment models.

Code-based Cloud Deployment and Configuration

Introduction
Objective

Welcome to the Code-based Cloud Deployment and Configuration lab.

In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Amazon Web Services (AWS) offers a comprehensive suite of cloud computing services designed to provide scalable, reliable, and cost-effective solutions for business. These services include computing power with Amazon Elastic Compute Cloud (EC2), storage options like Amazon Simple Storage Service (S3), and databases such as Amazon Relational Database Service (RDS) and Amazon DynamoDB. AWS also provides networking services, content delivery, machine learning, and analytics tools, among others.

To manage and automate infrastructure deployment, AWS offers AWS CloudFormation, a service that allows users to define their infrastructure in code using templates, enabling consistent and repeatable provisioning of resources.

In this lab, you will conduct a manual configuration of a simple public web server deployment then deploy the same configuration with CloudFormation.

Overview

Learning Outcomes:

In this lab, you will complete the following exercises:

- Exercise 1 – Create a Public Website Using CloudFormation

After completing these exercises, you should be able to:

- Exercise 1 – Create a Public Website Using CloudFormation

Exam Objectives:

The following exam objectives are covered in this module:

2.4 Given a scenario, use code to deploy and configure cloud resources

Provisioning Cloud Resources (CV0-004)

Introduction
Objective

Welcome to the Provisioning Cloud Resources lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Amazon Web Services (AWS) offers a comprehensive suite of computing services designed to meet diverse workload requirements efficiently and cost-effective. For example, Amazon Elastic Compute Cloud (EC2) provides a wide range of instance types tailored to specific use cases, providing flexibility in selecting the right balance of compute, memory, and storage resources. With AWS Auto Scaling, users can dynamically adjust the number of EC2 instances in response to changing demand, ensuring optimal performance and cost optimization. Additionally, AWS Load Balancing services distribute incoming traffic across multiple EC2 instances, enhancing fault tolerance and scalability while improving the overall availability of applications and services.

In this lab, you will explore EC2 instance options and the advantages of auto scaling and load balancing.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – EC2 Instances
- Exercise 2 – Load Balancing

After completing these exercises, you should be able to:

- Compare instance types.
- Explain auto scaling benefits.
- Create a VPC and web servers.
- Configure load balancing.
- Test load balancing.

Exam Objectives:

The following exam objectives are covered in this module:

2.5 Given a set of requirements, provision the appropriate cloud resources.

Configuring Logging in the Cloud

Introduction
Objective

Welcome to the Configuring Logging in the Cloud lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Examining and Configuring Dashboard and Reporting

After completing these exercises, you should be able to:

- Explain dashboard and reporting with an emphasis on costs, elasticity usage, connectivity, latency, capacity, incidents, health, utilization, and availability.
- Configure reporting within a dashboard.

Exam Objectives:

The following exam objectives are covered in this module:

3.1 Given a scenario, configure appropriate resources to achieve observability.

Implementing Cloud Security Controls

Introduction
Objective

Welcome to the Implementing Cloud Security Controls lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Amazon Web Services (AWS) security services are designed to protect data, applications, and infrastructure within the AWS cloud. They offer comprehensive solutions for identity and access management, network security, encryption, threat detection, and compliance management. Some important implementation concepts are Security Groups and Network Access Control Lists (NACLs). These serve as fundamental components for controlling network traffic within Amazon Virtual Private Cloud (VPC) environments. Specifically, security groups acts as virtual firewalls at the instance level, allowing or denying traffic based on port, protocol, and IP address rules. NACLs operate at the subnet level, providing additional control over inbound and outbound traffic with rules based on IP addresses and port ranges.

AWS Marketplace complements these security measures by offering a vast selection of third-party security solutions and services, empowering users to enhance their cloud security posture through customizable and specialized offerings that address specific security needs and compliance requirements.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Security Groups and Network ACLs
- Exercise 2 – AWS Marketplace

After completing these exercises, you should be able to:

- Establish Cloud Infrastructure
- Use Security Group to Block ICMP
- Use Network ACL to Block Internet Control Message Protocol (ICMP)
- Search for CIS Benchmark Machines

Exam Objectives:

The following exam objectives are covered in this module:

4.5 Given a scenario, apply security controls in the cloud

Implementing Cloud Backup Solutions

Introduction
Objective

Welcome to the Implementing Cloud Backup Solutions lab. In this lab you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this lab, you will complete the following exercises:

- Exercise 1 – Performing a Backup and Restoration of a Virtual Machine

After completing these exercises, you should be able to:

- Define and describe backup types, backup objects, backup targets, backup restore policies, and restoration methods.
- Deploy, backup, and restore a virtual machine in Microsoft Azure.
- Explain backup types, backup objects, backup targets, backup and restore policies, and restoration methods.

Exam Objectives:

The following exam objectives are covered in this lab:

3.3 Given a scenario, use appropriate backup and recovery methods

Cloud Vulnerability Management

Introduction
Objective

Welcome to the Cloud Vulnerability Management lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Log Collection with Splunk

After completing these exercises, you should be able to:

- Collect logs from devices on the network using the Splunk Enterprise application.

Exam Objectives:

The following exam objective is covered in this module:

4.1 Explain vulnerability management concepts.

Cloud Resource Access Management

Introduction
Objective

Welcome to the Cloud Resource Access Management lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Connecting Securely to Cloud Resources in AWS
- Exercise 2 - Connecting Securely to a Cloud Resource in Azure

After completing these exercises, you should be able to:

- Create and securely connect to a cloud resource in AWS.
- Create and securely connect to a cloud resource in Azure.

Exam Objectives:

The following exam objective is covered in this module:

4.3 Given a scenario, implement identity and access management.

Cloud Security Best Practices

Introduction
Objective

Welcome to the Cloud Security Best Practices lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Creating a Secure Cloud Storage Solution Using AWS
- Exercise 2 - Creating a Secure Cloud Storage Solution Using Azure

After completing these exercises, you should be able to:

- Create a secure cloud storage solution within AWS using best practices.
- Create a secure cloud storage solution within Azure using best practices.

Exam Objectives:

The following exam objective is covered in this module:

4.4 Given a scenario, apply security best practices.

Cloud Security Monitoring Techniques (CV0-004)

Introduction
Objective

Welcome to the Cloud Security Monitoring Techniques lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Monitor a Virtual Machine in Azure

After completing these modules, you should be able to:

- Monitor a virtual machine in Azure.

Exam Objectives:

The following exam objective is covered in this module:

4.6 Given a scenario, monitor suspicious activities to identify common attacks.

Cloud DevOps Fundamentals

Introduction
Objective

Welcome to the Cloud DevOps Fundamentals lab. In this lab, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercises:

- Exercise 1 – Create and Configure an App Configuration

After completing these modules, you should be able to:

- Create a web app in Azure.
- Create and configure an app configuration.
- Create and configure application insights for an application.

Exam Objectives:

The following exam objective is covered in this module:

5.3 Explain concepts related to integration of systems.