

## Introduction

### Cloud Computing Introduction

- What is Cloud Computing
- Cloud Characteristics
- Cloud Computing Service Models
- Deployment Models in Cloud Computing
- Advantages and Disadvantages of Cloud Computing
- Cloud Computing Job Roles.
- Cloud Computing Platforms and Certifications.

### Getting Starting with Azure

- Introduction to Azure
- Why, What and Benefits of Azure
- Azure Hosting Models
- Azure Services
- Subscribing to Microsoft Azure
- Azure Portals
- Azure Key Concepts
- Azure Resource Group
- Installing Microsoft Azure SDK

## Create and Manage Azure Resource Manager Virtual Machines (20-25%)

### Azure Virtual Machine

- Introduction
- About Virtual Machine Workloads
- Comparing VM with Web Apps and Cloud Services
- Create a Windows Virtual Machine using Portal / PowerShell / ARM Templates
- Deploy popular application frameworks by using Azure Resource Manager templates
- Understand and Capture VM Images
- Upload an on-premise VHD to Storage Account
- Deploy a New VM from the Captured Image
- Manage ARM VM availability
- Virtual Machine Scale Sets
- Virtual Machine Disk Types and Disk Caching
- VM Storage

- Disk Encryption
- Virtual Machine Sizes in Azure
- Importing and Exporting Disks
- Configuring VM Security
- Perform configuration management
  - VM Extensions & VM Agents
  - Custom Script Extensions
  - Desired State Configuration (DSC)
  - Puppet or Chef
- Configure VM monitoring, configure alerts, diagnostic and monitoring storage location.
- Azure VM Backup and Restore Services

### Design and Implement a Storage and Data Strategy (25-30%)

#### Azure Storage

- About Storage Service and Account
- Creating a Storage Account
- Working with Blob Storage
  - Types of Blobs (Block, Append, Page)
  - Container and Metadata
  - Programming Blob Storage
  - Async Blob Copy
  - Access blobs securely
  - Configure CDN
  - Configure Custom Domain
  - Scale Blob Storage
- Working with Table Storage
  - Understanding NoSQL Database
  - Creating Table and Entities using Storage Explorer
  - Programming Table Storage
  - Entities and Properties
- Azure Queues Storage
  - Understanding Async Communication using Queues
  - Comparing Azure Queues and Service Bus Queues
  - Programming Queues
- Azure SMB File Storage
  - Common usage of File Storage

- Shares, Directory and File
- Managing Using Azure Portal
- Programming File Storage
- Manage access
  - Create and Manage Shared Access Signature
  - Account SAS vs Service SAS
  - Using Stored Access Policies
  - Regenerating Keys
  - Encrypt Keys using Azure Key Vault integration
  - Programming in C#
- Configure diagnostics, monitoring and analytics
  - Capturing Metrics Data
  - Analyzing Diagnostic Data
  - Capturing Logs
  - Retention Policies and Logging Levels
  - Analyze Logs
  - Enabling Monitoring
  - Enabling Alerts
- Storage Service Encryption

#### **Azure CosmosDB Service**

- What is CosmosDB
- Understanding DocumentDB database Schema
- Creating and Saving Documents using Portal
- Programming Schema
- Adding / Editing / Deleting and Reading Documents

#### **Managing Data in Azure SQL Database**

- Introduction/Overview of SQL Database.
- Comparing SQL Azure Database to Azure / On-Premise SQL Server.
- Creating and Using SQL Server and SQL Database Services.
- Azure SQL Database Tools.
- Migrating on premise database to SQL Azure.
- Planning the Deployment of an Azure SQL Database
- Elastic Pools.
- Monitoring Azure SQL Database

- Configure SQL Database Auditing
- Manage Business Continuity
- Export and Import of Database
- Backup and Recovery options in SQL Database
- Active GEO-Replication
- Long Term Backup Retention

#### Redis Caching

- Caching Overview
- What is Redis Cache
- Creating a Redis Cache
- Developing Redis Cache Client
- Controlling Expiration

#### Implement Azure Search

- About Search Service
- Create Search Service
- Create Index
- Import Data
- Handle Search Results
- Programming Search in .NET using Azure Search SDK

### Manage Identity, Application, and Network Services (10-15%)

#### Azure Active Directory

- Azure AD Introduction
- Azure AD Editions
- Managing Active Directories
- Adding a custom domain name to Azure AD
- Managing Azure AD Users, Groups and Devices
- Adding Partner Users from other organization
- Configure Windows 10 with Azure AD domain join
- Configuring Role Based Access Control
- Synchronizing On-Premise AD Identities with Azure AD
- Azure AD Connect
- Azure AD User Sign-In Options

- Password Synchronization
  - Passthrough Authentication
  - Federated SSO
- Using SSO with Azure AD
- Integrating SaaS Applications with Azure AD for SSO
  - Add Users and Groups to Application
  - Revoke access to SaaS Applications
- Integrating Line of Business Applications with Azure AD
- Implementing Azure AD B2B Collaboration
- Implementing Azure AD B2C Collaboration
- Social Identity Provider Authentication
  - Username and Password
  - Microsoft Account
  - Facebook
  - Google
  - Twitter
- Azure AD Graph API
- Microsoft Graph API

### Key Vault

Secrets vs Keys

Accessing Keys and Secrets

Use cases for Key Vault

Use Azure Key Vault from a Web Application

Using Key Vault with ARM Template

Encrypt and Decrypt BLOBS in Azure Storage

## Design and Implement Azure Compute, Web, and Mobile Services (35-40%)

### Azure App Services - Web Apps

- Introduction
- App Service - Application Types
- Deploy Web Apps
  - Deploying Web App directly from Visual Studio
  - Automate deployment from Dropbox and One Drive
  - Create, configure and deploy packages
  - Implement pre- and post-deployment actions;

- App Service plans
  - Create App Service Plan
  - Migrate Web Apps between App Service plans;
  - Create a Web App within an App Service plan
- Configuring Web Apps
  - Application Settings Configuration,
  - Database Connection Strings,
  - Configuring Handlers and Virtual Directories,
- Configure a custom domain name
- Enable SSL for your custom domain
- Understanding Deployment Slots and Roll back deployments;
- Configure Web Apps for scale and resilience
  - Horizontal and Vertical Scaling of a Web App
  - Configure auto-scale
  - Change the size of an instance
- Azure Traffic Manager to Scale out Globally
- Monitoring, Debugging and Diagnosis
  - Retrieve Diagnostics data
  - View Streaming Logs
  - Configure endpoint monitoring
  - Configuring Alerts
  - Configure diagnostics
  - Use remote debugging
  - Monitor Web App resources

### **Azure Web Jobs**

- Introduction
- Developing and Hosting Web Jobs Application
- Azure WebJobs SDK
- Sample Application including WebApps and WebJobs.

### **Implement Azure Functions**

- About Azure Functions.
- Azure Webjobs vs Azure Functions
- Create an Azure Function
- Create an event processing function

- Timer Triggered Function,
- GitHub Webhook Triggered Function.
- Blog Storage Triggered Function
- Implement an Azure-connected functions
  - Adding message to Storage Queue
  - Connecting to SQL Database

### **App Service API Apps**

- Introduction
- Creating an API App
- Deploying an API App
- Consuming an API App
- Authentication and Authorization in API App.
- Using API App in Logic App

### **API Management Service**

- Overview of API Management
- Components of API Management System.
- API Apps vs API Management.
- Create managed APIs.
- Configure API management policies.
- Protect APIs with rate limits.
- Add caching to improve performance.

### **Azure App Service – Logic Apps**

- Introduction
- Creating a Simple Logic App
- Handling array of Items using for-each and condition
- Understanding Triggers and Actions
- Using Custom API App in Logic App

### **App Service – Mobile Apps**

- Mobile Apps Introduction
- Creating Server Service and Client Application
- Working with Easy tables using Azure Portal

- Developing Windows 8.1 Client Application
- Mobile App Authentication
  - Facebook Authentication
  - Azure Active Directory Authentication
- Enabling Offline Sync
- Implementing Push Notification

### **Service Fabric and Microservices**

- What are Microservices
- Overview of Service Fabric
- How Service Fabric Works
- Key capabilities of Service Fabric
- Cloud Services vs Service Fabric
- Service Fabric Application Model
- Service Fabric Programming Model
- Prepare development environment
- Create a .NET Service Fabric Application
- Making the service to listen and connect with other services
- Specifying environment specific parameters
- Deploying Service Fabric application to Azure
- Service Fabric Explorer
- Scale applications and services in a cluster.
- Perform a rolling application upgrade
- Guest Executables programming model