

## **Azure Solutions Architect Certification: Technologies (AZ-300)**

**Modality: Virtual Classroom**

**Duration: 5 Days**

**SATV Value: 5 Days**

**SUBSCRIPTION: Master, Master Plus**

### **About the Course:**

This course has been designed to offer in-depth knowledge about how to manage Microsoft Azure resources like the deployment and configuration of storage accounts, virtual machines and virtual networks along with Microsoft Azure AS. In this course, candidates will learn about the process of managing and implementing hybrid identifies. In addition, they will develop an understanding of how to manage cloud resources in Microsoft Azure through user accounts and group accounts, inclusive of the process used in order to provide access to Microsoft Azure AD services, groups, and users, through role based access control (RBAC).

In addition, the students will gain information about the various services as well as storage accountants that are available in addition to the replication schemes. Students will also learn about the basic concepts for data applications. In addition, storage explorer will be introduced to the students, which is considered to be one of the most convenient methods of working with the storage data in Microsoft Azure. Moreover, it offers a detailed explanation of the different storage options and their utilization when it comes to working with custom and managed disks. Microsoft Azure Blob storage is used to store data in the cloud in Microsoft Azure, hence all enrolled in this course will learn how to use blobs and blob containers. Table and Queue Storage is also covered within the course, which are two of the storage options that can be used to save structured data.

Those enrolled in this course will learn about how to develop and deploy virtual machines in Microsoft Azure using Microsoft Azure portal, Microsoft Azure PowerShell, along with templates from ARM. Proper instructions are given regarding the correct method of executing Linux as well as custom images virtual machines. In addition, you will learn about the correct method of configuring the network and storage components of virtual machines. The deployment of highly available virtual machines is essential for unplanned as well as planned events, and this course has been designed to include classes, which will equip you with the knowledge that will allow you to use the optimal methods of utilizing availability sets with the objectives of guaranteeing the availability of virtual machine resources during downtime.

Additionally, these classes will also impart knowledge about the monitoring tools and capabilities available in Microsoft Azure like Microsoft Azure Alerts and Microsoft Azure log. This will eventually lead you to learn about Log Analytics which is used as an effective data analytics solution. It also offers detailed information of the health and status of the system. However, one of the most sought after things to learn in this course is the process of utilizing the Microsoft Azure Resource Manager deployment model for working with ARM templates, resource groups, and other resources.

This course is the first in a series of courses, designed to provide Microsoft Azure Solutions Architect

Exam information, and contains immense content which is taught during the classes, that will prepare the students for the other courses, part of the series. The lessons also offer the tips and tricks required for working with Microsoft Azure portal, and in addition, provides an introduction to all the key tools that can be found in a Microsoft Azure environment, such as Cloud Shell and Resource Explorer. Microsoft Azure Command Line Interface (CLI) and Power Shell are some of the key areas that will be focused on throughout the course and they are considered to be essential skills that can be used for preparing for the upcoming exams and eventually the professional world.

## **Course Objective:**

Once the course is complete, candidates will be able to;

- Manage Microsoft Azure Resources and Subscriptions
- Deploy and Manage Microsoft Azure Storage
- Deploy and manage virtual machines
- Configure and manage virtual networks
- Perform and assess Server Migration to Microsoft Azure
- Design and Connectivity Patterns
- Secure and Protect Identities using Microsoft Azure AD.
- Use Microsoft Azure Active Directory for managing identities
- Implement and manage applications services
- Deploy Advanced Virtual Networking.
- Hybrid Networking
- Address Durability of Data and Caching
- Create an App Service Web App via shell commands
- Measure Throughput and Structure of Data Access
- Create Background Tasks
- Document and API via Swagger
- Create a reliable service
- Gain information about and understand the mechanism of Microsoft Azure Container Registry

- Create a Reliable Actors app
- Utilize Azure Container instances
- Hands-on with Reliable collections
- Understand the process of deploying authentication via Microsoft Azure AD, token, certificates, and Azure AD Connect.
- Implement secure data for executing SSL and TLS communications.
- Manage cryptographic keys via Microsoft Azure Key Vault
- Execute Role-based Access Control (RBAC) authorization.
- Understand the process of developing for Asynchronous Processing
- Understand Microsoft Azure Cognitive Services Solutions
- Implement secure data for end-to-end encryption.
- Understand the process of configuring a message-based integration structure
- Develop apps for Autoscaling

## **Audience:**

This course has been designed to be opted for by Cloud Solutions Architect having previous experience in the use of operating systems, networking, virtualization, cloud infrastructures, storage systems, and billing.

## **Course Outline:**

### **AZ-300T01-A: Deploying and Configuring Infrastructure**

#### **Module 1: Managing Azure Subscriptions and Resources**

In this module you will explore Azure monitoring capabilities using Azure alerts, Azure activity logs, and Log Analytics. You will learn to query, analyze, and interpret the data viewed in Log Analytics.

After completing this module, students will be able to:

- Managing Azure Subscriptions and Resources

#### **Module 2: Implementing and Managing Storage**

In this module you will learn about Azure storage accounts, data replication, how to use Azure Storage Explorer, and monitor storage.

After completing this module, students will be able to:

- Implementing and Managing Storage

### **Module 3: Deploying and Managing Virtual Machines (VMs)**

In this module you will learn how to do the following: , Create Virtual Machines (VM)s within the Azure Portal , Create Virtual Machines (VM)s using Azure PowerShell , Create Virtual Machines (VM)s using ARM templates , Deploy Linux Virtual Machines (VM)s , Monitor Virtual Machines (VM)s Additionally, you will learn how to protect data using backups at regular intervals, whether by snapshot, Azure Backup, or Azure Site Recovery.

After completing this module, students will be able to:

- Deploying and Managing VMs

### **Module 4: Configuring and Managing Virtual Networks**

In this module you will create and implement virtual networks using the Azure Portal as well as Azure PowerShell and CLI. You will receive and overview on how to assign IP addresses to Azure resources to communicate with other Azure resources, your on-premises network, and the Internet.

#### **Lessons**

- Network routing using routing tables and algorithms
- Inter-site connectivity using VNet-to-VNet connections and VPNs
- Virtual network peering for regional and global considerations
- Gateway transit

After completing this module, students will be able to:

- Configuring and Managing Virtual Networks

### **Module 5: Managing Identities**

This module covers Azure Active Directory (Azure AD) for IT Admins and Developers with a focus on the Azure AD multi-tenant cloud-based directory and identity management service.

#### **Lessons**

- Role-Based Access Control (RBAC)
- built-in roles
- Self-Service Password Reset (SSPR)
- authentication methods for password reset

After completing this module, students will be able to:

- Managing Identities using Azure Active Directory

## **AZ-300T02-A: Implementing Workloads and Security**

### **Module 1: Evaluating and Performing Server Migration to Azure**

This module covers migrating workloads to a new environment, whether it be another datacenter, or to a public cloud, and setting clear goals for the migration. Goals include both technology-focused and business-focused goals for migrations, and the benefits to an organizations business. Activities include components of the Azure migration process: creating a project, creating a collector, assessing readiness, and estimating costs. Additionally, you will receive and overview of Azure Site Recovery (ASR) that includes and end-to-end scenarios.

After completing this module, students will be able to:

- Evaluating and Performing Server Migration to Azure

### **Module 2: Implementing and Managing Application Services**

This module includes the following topics: Deploying Web Apps, Managing Web Apps, App Service Security, Serverless Computing Concepts, Managing Event Grid , Managing Service Bus , Managing Logic App

After completing this module, students will be able to:

- Implementing and Managing Application Services

### **Module 3: Implementing Advanced Virtual Networking**

This module includes the following topics: Azure Load Balancer, Azure Application Gateway, Site-to-Site VPN Connections As well as an overview of ExpressRoute which allows companies to extend on-premises networks into the Microsoft cloud over a dedicated private connection facilitated by a connectivity provider.

After completing this module, students will be able to:

- Implementing Advanced Virtual Networking.

### **Module 4: Securing Identities**

This module includes the following topics with an emphasis on identity and roles: Azure AD Identity Protection, Azure Domains and Tenants, Azure Users and Groups, Azure Roles As well as an overview of Azure AD integration options that focuses on Azure AD Connect to integrate on-premises directories with Azure Active Directory.

After completing this module, students will be able to:

- Securing Identities using Azure AD.

## **AZ-300T03-A: Understanding Cloud Architect Technology Solutions**

### **Module 1: Selecting Compute and Storage Solutions**

This module includes the following topics: Azure Architecture Center, Cloud design patterns, competing consumers pattern, Cache-aside pattern As well as sharding patterns to divide a data store into horizontal partitions, or shards. Each shard has the same schema but holds its own distinct subset of the data.

After completing this module, students will be able to:

- Design and Connectivity Patterns

### **Module 2: Hybrid Networking**

This module includes the following topics: Site-to-site connectivity, Point-to-site connectivity, Combining site-to-site and point-to-site connectivity, Virtual network-to-virtual network connectivity As well as connecting across cloud providers for failover, backup, or even migration between providers such as AWS.

After completing this module, students will be able to:

- Hybrid Networking

### **Module 3: Measuring Throughput and Structure of Data Access**

This module includes the following topics: DTUs, Azure SQL Database, RUs, Azure Cosmos DB, Structured and unstructured data , Using structured data stores

After completing this module, students will be able to:

- Address Durability of Data and Caching
- Measure Throughput and Structure of Data Access

## **AZ-300T04-A: Creating and Deploying Apps**

### **Module 1: Creating Web Applications using PaaS**

This module provides an overview of Azure App Service Web Apps for hosting web applications, REST APIs, and a mobile back end. Topics include the following: Using shell commands to create an App Service Web App, Creating Background Tasks, Using Swagger to document an API as well as an explanation of how Logic Apps help to build solutions that integrate apps, data, systems, and services across enterprises or organizations by automating tasks and business processes as workflows.

After completing this module, students will be able to:

- Use shell commands to create an App Service Web App
- Create Background Tasks
- Use Swagger to document an API

## **Module 2: Creating Apps and Services Running on Service Fabric**

This module provides an overview of Azure Service Fabric as a distributed systems platform that makes it easy to package, deploy, and manage scalable and reliable microservices and containers. This module also addresses the challenges in developing and managing cloud native applications. Additional topics include: Creating a reliable service, creating a Reliable Actors app, Working with Reliable collections

After completing this module, students will be able to:

- Create a reliable service
- Create a Reliable Actors app
- Hands-on with Reliable collections

## **Module 3: Using Azure Kubernetes Service This module focuses on the Azure**

Kubernetes Service (AKS) for deploying and managing a Kubernetes cluster in Azure. Topics include how to reduce operational overhead of managing Kubernetes by offloading much of that responsibility to Azure, such as health monitoring and maintenance. Additional topics include: Azure Container Registry, Azure Container Instances

After completing this module, students will be able to:

- Understand the Azure Container Registry
- Use Azure Container instances

## **AZ-300T05-A: Implementing Authentication and Secure Data**

### **Module 1: Implementing Authentication Topics for this module include:**

#### **Lessons**

- Implementing authentication in applications (certificates, Azure AD, Azure AD Connect, token-based)
- Implementing multi-factor authentication
- Claims-based authorization
- Role-based access control (RBAC) authorization

After completing this module, students will be able to:

- Understand how to Implement authentication using certificates, Azure AD, Azure AD Connect, and tokens
- Implement Role-Based Access Control (RBAC) authorization

## Module 2: Implementing Secure Data

### Lessons

- End-to-end encryption
- Implementing Azure confidential computing
- Implementing SSL and TLS communications
- Managing cryptographic keys in Azure Key Vault

After completing this module, students will be able to:

- Implement secure data for end-to-end encryption
- Implement secure data for implementing SSL and TLS communications.
- Use Azure Key Vault to manage cryptographic keys

## AZ-300T06-A: Developing for the Cloud

### Module 1: Developing Long-Running Tasks and Distributed Transactions

Topics for this module include: Implementing large-scale, parallel, and high-performance apps using batches, HPC using Microsoft Azure Virtual Machines, implementing resilient apps by using queues. As well as, implementing code to address application events by using webhooks. Implementing a webhook gives an external resource a URL for an application. The external resource then issues an HTTP request to that URL whenever a change is made that requires the application to take an action.

### Module 2: Configuring a Message-Based Integration Architecture

#### Lessons

- Configure an app or service to send emails
- Configure an event publish and subscribe model
- Configure the Azure Relay service
- Configure apps and services with Microsoft Graph

After completing this module, students will be able to:

- How to configure a message-based integration architecture

### Module 3: Developing for Asynchronous Processing

#### Lessons

- Implement parallelism, multithreading, and processing
- Implement Azure Functions and Azure Logic Apps
- Implement interfaces for storage or data access
- Implement appropriate asynchronous computing models
- Implement autoscaling rules and patterns



After completing this module, students will be able to:

- Understand how to Develop for Asynchronous Processing

#### **Module 4: Developing for Autoscaling**

##### **Lessons**

- Implementing autoscaling rules and patterns
- Implementing code that addresses singleton application instances
- Implementing code that addresses a transient state

After completing this module, students will be able to:

- Begin creating apps for Autoscaling

#### **Module 5: Developing Azure Cognitive Services Solutions**

##### **Lessons**

- Developing Solutions using Computer Vision
- Developing solutions using Bing Web Search
- Developing solutions using Custom Speech Service
- Developing solutions using QnA Maker

After completing this module, students will be able to:

- Understand Azure Cognitive Services Solutions