



# AZ300 - Azure Solutions Architect - Technologies

Course ID #: 1413-300-00-W

Hours: 35

## Course Content

### Course Description:

This course teaches IT Professionals how to manage their Azure resources, including deployment and configuration of virtual machines, virtual networks, storage accounts, and Azure AD that includes implementing and managing hybrid identities. You will also learn how cloud resources are managed in Azure through user and group accounts, and how to grant access to Azure AD users, groups, and services using Role-based access control (RBAC).

You will learn about the different storage accounts and services as well as basic data replication concepts and available replication schemes. Students are also introduced to Storage Explorer as a convenient way to work with Azure storage data. Students also learn the types of storage and how to work with managed and custom disks.

Learn how to migrate your datacenter to Azure to obtain increased productivity, better agility, and reduced costs. Achieve this using a process of discovery, assessment, targeting the destinations, and finally migrating your workloads.

Learn how to select the technologies offered in Microsoft Azure to best fit your development solution and prepare for Microsoft exam AZ-300. Topics covered include design and connectivity patterns, hybrid networking, address durability of data and caching, and how to measure throughput.

Learn how to create web applications using PaaS, create apps and services that run on Service Fabric, and design and develop applications to run in containers such as Azure Kubernetes.

### At Course Completion:

After completing this course, student will be able to:

- Managing Azure Subscriptions and Resources
- Implementing and Managing Storage
- Deploying and Managing VMs
- Configuring and Managing Virtual Networks
- Managing Identities using Azure Active Directory
- Evaluating and Performing Server Migration to Azure
- Implementing and Managing Application Services
- Implementing Advanced Virtual Networking.
- Securing Identities using Azure AD.
- Design and Connectivity Patterns



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- Hybrid Networking
- Address Durability of Data and Caching
- Measure Throughput and Structure of Data Access
- Use shell commands to create an App Service Web App
- Create Background Tasks
- Use Swagger to document an API
- Create a reliable service
- Create a Reliable Actors app
- Hands-on with Reliable collections
- Understand the Azure Container Registry
- Use Azure Container instances
- How to configure a message-based integration architecture
- Understand how to Develop for Asynchronous Processing
- Begin creating apps for Autoscaling
- Understand Azure Cognitive Services Solutions

## Target Student:

Successful Cloud Solutions Architects begin this role with practical experience with operating systems, virtualization, cloud infrastructure, storage structures, billing, and networking.

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## Topics:

### 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.



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## 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.

## 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.

## 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

## 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

## Module 6: 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 organization's 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.

## Module 7: 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



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## **Module 8: 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.

## **Module 9: 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.

## **Module 10: 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.

## **Module 11: 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.

## **Module 12: 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

## **Module 13: 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.

## **Module 14: 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



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## Module 15: 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

## Module 16: 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 17: 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

## Module 18: 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

## Module 19: Developing for Autoscaling

### Lessons

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

## Module 20: 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