

AZURE SUITE SYLLABUS**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

Manage resource groups

- Use Azure policies for resource groups
- Configure resource locks
- Configure resource policies
- Implement and set tagging on resource groups
- Move resources across resource groups
- Remove resource groups

Configure and Manage Azure Virtual Networks

- Overview of Azure Networking
- Virtual Network Benefits
- Understanding Network Resources
- Implement and manage virtual networking
 - Create a VNet using Azure Portal
 - Create a Subnet

- Configure private and public IP addresses
 - Create Network Interface Card with public, and private IP addresses
 - Create a Virtual Machine
- Setup Network Security Group
 - Create security rules
 - Associate NSG to a subnet or network interface
 - Identify required ports
 - Evaluate effective security rules
- Azure Firewall
- Understanding Azure DNS
 - Configure Azure DNS
 - Public and Private DNS Zones
- Create connectivity between virtual networks
 - Create and configure VNET peering
 - Create and configure VNET to VNET
 - Verify virtual network connectivity
- Monitoring and Troubleshooting Network Connectivity

Implement Advanced Virtual Networking

- Load Balancing
 - Configure external and internal Azure Load balancer
 - Load Balancing Rules
 - Implement front end IP configuration
- Understanding and Creating Availability Set
- Understanding Availability Zones
- Azure Application Gateway
- Azure Traffic Manager
- Integrate on-premises network with Azure virtual network
 - Site-to-Site VPN
 - Express Route Solution
- Monitor and Manage Networking
 - Verify, Manage and Monitor on-premises connectivity;
 - Use network resource monitoring and Network Watcher
 - Manage external networking and virtual network connectivity

Managing Azure with Windows PowerShell and Azure CLI.

- Installing the required modules
- Login to Azure Portal
- Managing Resource Group
- Managing App Service Plans and App Service Web Apps
- Create and Configure a Storage Account
- Managing Storage Accounts using PowerShell
- Azure CLI Introduction and Setup
- Creating Resources
- Listing and Formatting output
- Connect a Web App to SQL Database
- Deleting Resources
- Interactive Mode

Managing ARM Templates.

- Understanding Azure Resource Manager (ARM)
- Exporting and Importing ARM templates.
- ARM Resource Providers
- Deploy ARM Templates
 - Using PowerShell
 - Azure CLI
 - Azure Portal
- Incremental and Complete Deployments

Azure Storage Service

- About Storage Service and Account
- Creating a Storage Account
- Working with Blob Storage
 - Types of Blobs (Block, Append, Page)
 - Container and Metadata
 - Soft Copy
 - Azure Storage Explorer
 - Transfer Data using AzCopy
 - Programming Blob Storage
 - Async Blob Copy
 - Import and Export Service
 - Implement and Configure CDN

- Configure Custom Domain
- Scale Blob Storage
- Storage Service Encryption
- Manage Access / Securing Storage
 - 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#
- Working with Table Storage
 - Understanding NoSQL Database
 - Creating Table and Entities using Storage Explorer
 - Entities and Properties
 - Table storage vs COSMOS DB Table API
 - Programming Table Storage
- 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
- Azure File Sync
- Configure diagnostics, monitoring and analytics
 - Capturing Metrics Data
 - Analyzing Diagnostic Data
 - Capturing Logs
 - Retention Policies and Logging Levels
 - Analyze Logs
 - Enabling Monitoring
 - Enabling Alerts

Azure Virtual Machine

- Introduction
- About Virtual Machine Workloads
- Create a Windows Virtual Machine using Portal / PowerShell / ARM Templates
- Deploy popular application frameworks by using Azure Resource Manager templates
- Virtual Machine Disk
- Convert Unmanaged Disk to Managed Disk
- Generalizing VM and Capture VM Images
- Upload an on-premise VHD to Storage Account and attach to VM as Data Disk
- Working with Disk Snapshot
- VM Disk Types
- VM Sizes in Azure
- Configuring VM Disk Encryption
- Perform configuration management
 - VM Extensions & VM Agents
 - Custom Script Extensions
 - Desired State Configuration (DSC)
 - Access Extension
- Virtual Machine Scale Sets
- Configure VM monitoring, configure alerts, diagnostic and monitoring storage location.

Implement and Manage Application Services

- 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,

- Manage App Services
 - Configure a custom domain name
 - Enable SSL for your custom domain
 - Understanding Deployment Slots and Roll back deployments;
 - App Service Protection
 - Manage Roles for an App service
- Configure Web Apps for scale and resilience
 - Horizontal and Vertical Scaling of a Web App
 - Configure auto-scale
 - Change the size of an instance
- 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 Traffic Manager to Scale out Globally

Implement Azure Backup

- Overview of Azure Backup
- Configure VM backup
- Create Recovery Services Vault
- Define and Implement backup policies
- Perform VM restore
- Perform backup operation
- Configure and review backup reports

Managing Data in Azure SQL Database

- Introduction / Overview of SQL Database.
- Azure SQL Managed Instance
- 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.

- Dynamic Data Masking
- Transparent Data Encryption
- Planning the Deployment of an Azure SQL Database
- Elastic Pools.
- Dynamic Data Masking
- Configure SQL Database Auditing
- Export and Import of Database using .bacpac
- Manage Business Continuity / Data Recovery
- Backup and Recovery options in SQL Database
- Active GEO-Replication
- Monitoring Azure SQL Database and Alerting

Azure Monitoring and Log Analytics Workspace

- Azure Monitor Overview
- Monitoring Metrics
- Monitoring Logs
- Log Analytic Workspace
- Collect data from a Azure VM / Windows computer
- Azure Activity Logs
- Azure Diagnostics Logs
- Application Insight

Implement Azure Functions

- About Azure Functions.
- Azure Webjobs vs Azure Functions
- Create and Configure an Azure Function
- Create an event processing function
 - Timer Triggered Function
 - Blob Storage Triggered Function
- Implement an Azure-connected functions
 - Adding message to Storage Queue
 - Connecting to SQL Database
- Creating Azure Functions through Visual Studio
- Azure Durable Functions
- Walkthrough: Creating Image Thumbnail

Azure Web Jobs

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

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

Azure CosmosDB Service

- What is CosmosDB
- Global Replication and Consistency Levels
- Understanding SQL Model database Schema
- Creating and Saving Documents using Portal
- Programming Schema
- Adding / Editing / Deleting and Reading Documents

Azure App Service - Logic Apps

- Introduction
- Triggers and Actions
- Creating a Simple Logic App
- Handling array of Items using for-each and condition
- Logic App with Variables
- Add Custom Function with Azure Function
- Using Custom API App in Logic App
- Azure Functions vs Logic Apps

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 Service Bus

- Service Bus Basics
- Hosting WCF Service in Azure
- Relayed Messaging
- Service Bus Queues
- Topics and Subscriptions
- Handling Transactions
- Handling Sessions

Manage Azure Subscriptions

- Understanding Azure Subscriptions
- Configuring Role Based Access Control
- RBAC using Portal
- RBAC using PowerShell and CLI
- Custom Roles for RBAC
- Managing Subscription Policies
- Locking Resources
- Checking Resources Limits
- Resource Tags

Managing and Securing Identities using 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
- Synchronizing On-Premise AD Identities with Azure AD
- Azure AD Connect
- Azure AD User Sign-In Options
 - Password Synchronization
 - Passthrough Authentication
 - Federated SSO
- Multi Factory Authentication
- Conditional Access Policy
- Access Reviews
- Privileged Identity Management
- Integrating SaaS Applications with Azure AD for SSO
 - Add Users and Groups to Application
 - Revoke access to SaaS Applications
- Managed Identities

Authentication and Authorization using Azure Active Directory

- Application Types Scenarios
- Multi-Tenant vs Single-Tenant
- Integrating ASP.NET MVC Applications with Azure AD
- Integrating ASP.NET Web API Applications with Azure AD
- Claims Based Authentication
- Role Based Authentication
- Implementing Azure AD B2C Collaboration
- Social Identity Provider Authentication
 - Username and Password
 - Microsoft Account
 - Facebook
 - Google

- Twitter
- 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

Redis Caching

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

Azure Automation

- Introduction
- Azure Automation Account
- Automation Runbook
- PowerShell Runbook
- Adding Parameters to Runbook
- Starting a Runbook with a Webhook
- Scheduling a Runbook
- Graphical Runbook
- Error Handling in Graphical Runbook
- Runbook Input Parameters
- Azure Automation DSC

Implement Azure Search within Solution

- About Search Service,
- Create Search Service,
- Create Index
- Import Data,

- Handle Search Results
- Programming Search in .NET using Azure Search SDK

Docker Registry

- Azure Container Registry
- Azure Container Instance

Microservices and Kubernetes

- What is Monolithic Application
- What are Microservices
- Kubernetes Architecture
- Azure Kubernetes Service (AKS)
- Creating AKS Cluster and Deploying Application.

Azure Service Fabric and 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