

**Azure Administration / Infrastructure Syllabus (AZ-104)****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

**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

- Load Balancer
  - Configure external and internal Azure Load balancer
  - Load Balancing Rules
  - Implement front end IP configuration
  - Configure NAT rules
- Azure Firewall
- Understanding Azure DNS
  - Configure Azure DNS
  - Public and Private DNS Zones
- Understanding and Creating Availability Set
- Understanding Availability Zones
- Azure Front Door Service
- Monitoring and Troubleshooting Network Connectivity

### **Implement Advanced Virtual Networking**

- Azure Application Gateway
- Azure Traffic Manager
- Create connectivity between virtual networks
  - Create and configure VNET peering
  - Create and configure VNET to VNET
  - Verify virtual network connectivity
- 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

#### **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

#### **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
- Working with Table Storage
  - Understanding NoSQL Database
  - Creating Table and Entities using Storage Explorer
  - Entities and Properties
  - Table storage vs COSMOS DB Table API
- Azure Queues Storage
  - Understanding Async Communication using Queues
  - Comparing Azure Queues and Service Bus Queues
- Azure SMB File Storage
  - Common usage of File Storage
  - Shares, Directory and File
  - Managing Using Azure Portal
- Azure File Sync

### **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 Azure Backup and Restore**

- 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

#### **Azure Monitoring and Log Analytics Workspace**

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

#### **Manage Azure Subscriptions and Azure**

- 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
- Privilege Identity Management
- Integrating SaaS Applications with Azure AD for SSO
  - Add Users and Groups to Application
  - Revoke access to SaaS Applications
- Managed Identities
- Multi-Tenant vs Single-Tenant Applications