

# Microsoft Azure Advanced Administration

## Table of Content

### **Module 1: Implement Azure Active Directory**

In this module, you will learn how to secure identities with Azure Active Directory and implement users and groups.

#### **Lessons**

- Overview of Azure Active Directory
- Users and Groups
- Administrative Units
- Domains and Custom Domains
- Azure AD Identity Protection
- Implement Conditional Access
- Configure Guest Users (B2B) in Azure AD
- Manage Multiple Directories
- Azure AD Identity Governance
- Access Reviews
- Access Packages
- Privileged Identity Management

#### Lab 1: Implement Azure AD Security

- Implement Azure AD conditional access
- Implement Azure AD Identity Protection

After completing this module, students will be able to:

- Understand how Multiple AAD organizations interact
- Add Guest Users to Azure AD
- Configure Location Condition Configuration
- Configure Privileged Identity Management

- Implement Conditional Access

## **Module 2: Implement and Manage Hybrid Identities**

In this module, you will learn how to install and configure Azure AD Connect and implement Azure AD Connect Health.

### **Lessons**

- Install and Configure Azure AD Connect
- Configure Password Sync and Password Writeback
- Configure Azure AD Connect Health
- Configure Cloud Sync

#### Lab 1: Implement and Manage Hybrid Identities

- Manage Azure Active Directory Identities
- Synchronize Active Directory Forest with Azure AD tenant

After completing this module, students will be able to:

- Implement Azure AD seamless Single Sign-On
- Perform an Azure AD Connect installation
- Implement Azure AD Connect Health
- Implement Cloud Sync

## **Module 3: Implement Virtual Networking**

In this module, you will learn about basic virtual networking concepts like virtual networks and subnetting, IP addressing, network security groups, Azure Firewall, and Azure DNS.

### **Lessons**

- Virtual Networking
- Virtual Network Peering
- VPNs
- Advanced Virtual Networking

#### Lab 1: Azure Networking

- Create a virtual network
- Managing Azure Virtual Machine NICs

- IP Addressing
- VNet Peering

Lab 2: Connect On-Prem environments to Azure

- Create a Site to Site VPN

Lab 3: Advanced Azure Networking

- Filtering Network Traffic with Network Security Groups
- Route network traffic with a routing table
- Create a Private Endpoint
- Create a Private Link service
- Restrict network access to PaaS resources with Service Endpoints

After completing this module, students will be able to:

- Connect services with Virtual Network Peering
- Configure VNet Peering
- Understand Service Chaining
- Modify or delete VNet Peering
- Site to Site VPN Connections

#### **Module 4: Implement VMs for Windows and Linux**

In this module, you will learn about Azure virtual machines including planning, creating, availability and extensions.

##### **Lessons**

- Select Virtual Machine Size
- Configure High Availability
- Proximity Placement Groups
- Implement Azure Dedicated Hosts
- Deploy and Configure Scale Sets
- Configure Azure Disk Encryption
- Other Features
- Auto manage
- Configuration Management

- Change Tracking
- Inventory

#### Lab 1: Implement VMs for Windows

- Managing and Deploying Virtual Machine Scale Sets with Azure Application Gateways
- Configure Azure Disk Encryption
- Implementing HA Azure IaaS compute architecture

After completing this module, students will be able to:

- Plan for virtual machine implementations
- Create virtual machines
- Configure virtual machine availability, including scale sets
- Understand High Availability options for VMs in Azure

### **Module 5: Implement Load Balancing and Network Security**

In this module, you will learn about network traffic strategies including network routing and service endpoints, Azure Load Balancer, Azure Application Gateway, and Traffic Manager.

#### **Lessons**

- Implement Azure Load Balancer
- Implement an Application Gateway
- Understand Web Application Firewall
- Implement Azure Firewall
- Implement Azure Front Door
- Implementing Azure Traffic Manager
- Implement Network Security Groups and Application Security Groups
- Implement Azure Bastion

#### Lab 1: Implementing Load Balancing and Network Security

- Direct web traffic with Azure Application Gateway
- Deploy Azure Firewall
- Deploy Azure Front Door
- Deploy Azure Traffic Manager
- Implement Azure Bastion

After completing this module, students will be able to:

- Select a Load Balancer solution
- Configure Application Gateway
- Implement Azure Firewall
- Create an Azure Front Door
- Understand Traffic Manager routing methods
- Configure Network Security Groups (NSGs)

### **Module 6: Implement Storage Accounts**

In this module, you will learn about basic storage features including storage accounts, blob storage, Azure files and File Sync, storage security, and storage tools.

#### **Lessons**

- Storage Accounts
- Blob Storage
- Storage Security
- Managing Storage
- Accessing Blobs and Queues using AAD

Lab 1: Implementing and Configuring Azure Storage File and Blob Services

- Implementing and Configuring Azure Storage File and Blob Services

After completing this module, students will be able to:

- Understand Storage Account services and types
- Configure Blob storage, accounts, containers, and access tiers
- Implement Shared Access Signatures (SAS)
- Understand Azure Storage firewalls and virtual networks

### **Module 7: Implement NoSQL Databases**

In this module, you will learn about Azure Table Storage and recommend options for CosmosDB APIs.

#### **Lessons**

- Configure Storage Account Tables
- Select Appropriate CosmosDB APIs

### Lab 1: Implementing and Configuring Cosmos DB

- Globally Distributed Databases with Cosmos DB

After completing this module, students will be able to:

- Outline the Table Service Data Model
- Understand options for Azure Cosmos DB
- Understand high availability using CosmosDB

## **Module 8: Implement Azure SQL Databases**

In this module, you will create an Azure SQL Database single database, create an Azure SQL Database managed Instance, and review high-availability and Azure SQL database.

### **Lessons**

- Configure Azure SQL Database Settings
- Implement Azure SQL Database Managed Instances
- High-Availability and Azure SQL Database

### Lab 1: Implement Azure SQL Databases

- Implement Azure SQL Databases

After completing this module, students will be able to:

- Create an Azure SQL Database (single database)
- Create an Azure SQL Database Managed Instance
- Recommend high-availability architectural models used in Azure SQL Database

## **Module 9: Automate Deployment and Configuration of Resources**

In this module, you will learn about the tools an Azure Administrator uses to manage their infrastructure. This includes the Azure Portal, Cloud Shell, Azure PowerShell, CLI, and Resource Manager, and Bicep Templates.

### **Lessons**

- Azure Resource Manager Templates
- Save a Template for a VM
- Evaluate the Location of New Resources
- Configure a Virtual Hard Disk Template
- Deploy from a template

- Create and deploy Bicep Templates
- Create and Execute an Automation Runbook

#### Lab 1: Automate Deployment and Configuration of Resources

- Deploy Resources using ARM Templates
- Deploy Resources using Azure Bicep Templates
- Automating Infrastructure Health with Azure Automation Runbooks

After completing this module, students will be able to:

- Leverage Azure Resource Manager to organize resources
- Use ARM Templates to deploy resources
- Create and Execute an Automation Runbook
- Deploy an Azure VM from a VHD
- Understand Azure encryption technologies

### **Module 10: Implement and Manage Azure Governance**

In this module, you will learn about managing your subscriptions and accounts, implementing Azure policies, and using Role-Based Access Control.

#### **Lessons**

- Create Management Groups, Subscriptions, and Resource Groups
- Overview of Role-Based Access Control (RBAC)
- Role-Based Access Control (RBAC) Roles
- Implement and Configure an Azure Policy
- Azure Blueprints

#### Lab 1: Implement and Manage Azure Governance

- Define a custom RBAC role
- Assign a custom RBAC role
- Implementing Azure Blueprints

After completing this module, students will be able to:

- Understand Resource Group Organisation
- Understand how RBAC works

- Create an Azure AD access review
- Create and manage policies to enforce compliance

### **Module 11: Manage Security for Applications**

In this module, you will learn about Azure Key Vault and implementing authentication using Azure Managed Identities.

#### **Lessons**

- Azure Key Vault
- Azure Managed Identity

#### Lab 1: Implement Security for Applications

- Implementing Azure Key Vault
- Creating Managed Identities

After completing this module, students will be able to:

- Explain Key Vault uses such as secrets, key, and Certificate management
- Use Managed Identities with Azure resources

### **Module 12: Manage Workloads in Azure**

In this module, you will learn how to migrate workloads using Azure Migrate, perform VMware agent-based and agent-less migrations, and perform Azure Backup and Azure Site Recovery.

#### **Lessons**

- Migrate Workloads using Azure Migrate
- VMware - Agentless Migration
- VMware - Agent-Based Migration
- Implement Azure Backup
- Azure to Azure Site Recovery
- Implement Azure Update Management

#### Lab 1: Protecting Hyper-V VMs by using Azure Site Recovery

- Configure Azure Site Recovery
- Perform test failover
- Perform planned failover
- Perform unplanned failover



After completing this module, students will be able to:

- Understand agent-based migration architecture
- Prepare for Azure for migration
- Prepare an on-premises VMware environment
- Understand Azure VM backup architecture
- Manage updates and patches for Azure VMs

### **Module 13: Implement Container-Based Applications**

In this module, you will learn how to run Azure Container instances and how to deploy Kubernetes with AKS.

#### **Lessons**

- Azure Container Instances
- Configure Azure Kubernetes Service
- Networking
- Node Pool Types and usages
- Upgrading Clusters
- Upgrading Nodes

Lab 1: Implement Azure Kubernetes Service

- Implement Azure Kubernetes Service

After completing this module, students will be able to:

- Run Azure Container instances
- Deploy Kubernetes with AKS

### **Module 14: Implement an Application Infrastructure**

In this module, you will learn how to create an App Service web App for Containers, Create, and Configure an App Service Plan, and create and manage Deployment Slots.

#### **Lessons**

- Create and Configure Azure App Service
- Create an App Service Web App for Containers
- Create and Configure an App Service Plan

- Configure Networking for an App Service
- Create and Manage Deployment Slots
- Implement Logic Apps
- Implement Azure Functions

#### Lab 1: Implement an Application Infrastructure

- Implementing an Azure App Service web app with a staging slot
- Azure App Services - Advanced Settings
- Implement Azure Logic Apps integration with Azure Event Grid
- Implement Azure Logic Apps - Check traffic on a schedule with Azure Logic Apps

After completing this module, students will be able to:

- Configure an Azure App Service
- Create an App Service Plan
- Create a Workflow using Azure Logic Apps
- Create a Function App

### **Module 15: Implement Cloud Infrastructure Monitoring**

In this module, you will learn about Azure Monitor, Azure Workbooks, Azure Alerts, Network Watcher, Azure Service Health, and Azure Application Insights.

#### **Lessons**

- Azure Infrastructure Security Monitoring
- Azure Monitor
- Azure Workbooks
- Azure Alerts
- Log Analytics
- Defender for Cloud
- Network Watcher
- Azure Service Health
- Monitor Azure Costs
- Azure Application Insights
- Unified Monitoring in Azure

## Lab 1: Implement Cloud Infrastructure Monitoring

- Implementing Azure Monitor
- Getting Started with Log Analytics
- Monitoring Network Communication using Network Watcher

After completing this module, students will be able to:

- Understand Azure Log Analytics
- Understand Azure Service Health