Microsoft | Learning

Microsoft Azure Administrator

Course AZ-104T00: 4 days; Instructor-Led

Introduction
This course teaches IT Professionals how to manage their Azure subscriptions, secure identities, administer the infrastructure, configure virtual networking, connect Azure and on-premises sites, manage network traffic, implement storage solutions, create and scale virtual machines, implement web apps and containers, back up and share data, and monitor your solution.

Audience
This course is for Azure Administrators. The Azure Administrator implements, manages, and monitors identity, governance, storage, compute, and virtual networks in a cloud environment. The Azure Administrator will provision, size, monitor, and adjust resources as appropriate. Successful Azure Administrators start this role with experience in virtualization, networking, identity, and storage.

Job role: Administrator
Preparation for exam: AZ-104

Prerequisites
- Successful Azure Administrators start this role with experience in virtualization, networking, identity, and storage.
- Understanding of on-premises virtualization technologies, including: VMs, virtual networking, and virtual hard disks.
- Understanding of network configurations, including TCP/IP, Domain Name System (DNS), virtual private networks (VPNs), firewalls, and encryption technologies.
- Understanding of Active Directory concepts, including users, groups, and role-based access control.
- Understanding of resilience and disaster recovery, including backup and restore operations.

Course Outline

Module 1: Configure Microsoft Entra ID
Learn how to configure Microsoft Entra ID, including features like Microsoft Entra ID join and self-service password reset.

In this module, you will:
- Define Microsoft Entra concepts, including identities, accounts, and tenants.
- Describe Microsoft Entra features to support different configurations.
- Understand differences between Microsoft Entra ID and Active Directory Domain Services (AD DS).
- Choose between supported editions of Microsoft Entra ID.
- Use the Microsoft Entra self-service password reset feature.

Lessons
- Introduction
- Describe Microsoft Entra ID benefits and features
- Describe Microsoft Entra concepts
- Compare Active Directory Domain Services to Microsoft Entra ID
- Select Microsoft Entra editions
- Implement Microsoft Entra self-service password reset

Module 2: Configure user and group accounts
Learn how to configure user and group accounts.

In this module, you will:
- Configure users accounts and user account properties.
- Create new user accounts.
- Import bulk user accounts with a template.
- Configure group accounts and assignment types.

Lessons
- Introduction c
- Create user accounts
- Manage user accounts
- Create bulk user accounts
- Create group accounts
- Create administrative units
- Interactive lab simulation

Module 3: Configure subscriptions
Learn how to configure Azure subscriptions, including how to obtain a subscription, implement cost management, and apply Azure resource tags.

In this module, you will:
- Determine the correct region to locate Azure services.
- Review features and use cases for Azure subscriptions.
- Obtain an Azure subscription.
- Understand billing and features for different Azure subscriptions.
- Use Microsoft Cost Management for cost analysis.
- Discover when to use Azure resource tagging.
- Identify ways to reduce costs.

Lessons
- Introduction
- Identify Azure regions
- Implement Azure subscriptions
- Obtain an Azure subscription
- Identify Azure subscription usage
- Implement Microsoft Cost Management
- Apply resource tagging
- Apply cost savings

Module 4: Configure Azure Policy
Learn how to configure Azure Policy to implement compliance requirements.

In this module, you will:
- Create management groups to target policies and spending budgets.
- Implement Azure Policy with policy and initiative definitions.
- Scope Azure policies and determine compliance.

Lessons
- Introduction
- Create management groups
- Implement Azure policies
- Create Azure policies
- Create policy definitions
- Create an initiative definition
- Scope the initiative definition
- Determine compliance
- Interactive lab simulation

Module 5: Configure role-based access control
Learn how to use role-based access control (RBAC) to ensure resources are protected, but users can still access the resources they need.

In this module, you will:
- Identify features and use cases for role-based access control.
- List and create role definitions.
- Create role assignments.
- Identify differences between Azure RBAC and Azure Active Directory roles.
- Manage access to subscriptions with RBAC.
- Review built-in Azure RBAC roles.

Lessons
- Introduction
- Implement role-based access control
- Create a role definition
- Create a role assignment
- Compare Azure roles to Azure Active Directory roles
- Apply role-based access control
- Review fundamental Azure RBAC roles
- Interactive lab simulation

Module 6: Configure Azure resources with tools
You will learn how to select a tooling option such as Azure portal, Azure PowerShell, Azure CLI, or Azure Cloud Shell.

In this module, you will:
- Manage resources with the Azure portal.
- Manage resources with Azure Cloud Shell.
- Manage resources with Azure PowerShell.
- Manage resources with Azure CLI.

Lessons
- Introduction
- Use the Azure portal
- Use Azure Cloud Shell
- Use Azure PowerShell
- Interactive lab simulation (Azure PowerShell)
- Use Azure CLI
- Interactive lab simulation (Azure CLI)

Module 7: Use Azure Resource Manager
You'll learn how to use resource groups to organize your Azure resources.

In this module, you will:
- Identify the features and usage cases for Azure Resource Manager.
- Describe each Azure Resource Manager component and its usage.
- Organize your Azure resources with resource groups.
- Apply Azure Resource Manager locks.
- Move Azure resources between groups, subscriptions, and regions.
- Remove resources and resource groups.
- Apply and track resource limits.

Lessons
- Introduction
- Review Azure Resource Manager benefits
- Review Azure resource terminology

- Create resource groups
- Create Azure Resource Manager locks
- Reorganize Azure resources
- Remove resources and resource groups
- Determine resource limits

Module 8: Configure resources with Azure Resource Manager templates
. You'll learn how to use Azure Resource Manager templates to consistently deploy assets.

In this module, you will:
- List the advantages of Azure templates.
- Identify the Azure template schema components.
- Specify Azure template parameters.
- Locate and use Azure Quickstart Templates.

Lessons
- Introduction
- Review Azure Resource Manager template advantages
- Explore the Azure Resource Manager template schema
- Explore the Azure Resource Manager template parameters
- Consider Bicep templates
- Review QuickStart templates
- Interactive lab simulation - templates

Module 9: Configure virtual networks
Learn to configure virtual networks and subnets, including IP addressing.

In this module, you will:
- Describe Azure Virtual Network features and components.
- Identify features and usage cases for subnets and subnetting.
- Identify usage cases for private and public IP addresses.
- Create and determine which resources require public IP addresses.
- Create and determine which resources require private IP addresses.
- Create virtual networks.

Lessons
- Introduction
- Plan virtual networks
- Create subnets
- Create virtual networks
- Plan IP addressing
- Create public IP addressing
- Associate public IP addresses
- Associate private IP addresses
- Interactive lab simulation

Module 10: Configure network security groups
Learn how to implement network security groups, and ensure network security group rules are correctly applied.

In this module, you will:
- Determine when to use network security groups.
- Implement network security group rules.
- Evaluate network security group effective rules.
- Examine advantages of application security groups.

Lessons
- Introduction
- Implement network security groups
- Determine network security group rules
- Determine network security group effective rules
- Create network security group rules
- Implement application security groups
- Interactive lab simulation
- Interactive lab simulation

Module 11: Configure Azure DNS
Learn how to configure Azure DNS including custom domain names and record sets.

In this module, you will:
- Identify features and usage cases for domains, custom domains, and private zones.
- Verify custom domain names by using DNS records.
- Implement DNS zones, DNS delegation, and DNS record sets.

Lessons
- Introduction
- Identify domains and custom domains
- Verify custom domain names
- Create Azure DNS zones
- Delegate DNS domains
- Add DNS record setsV
- Plan for Azure Private DNS zones
- Review Azure Private DNS zone scenarios

Module 12: Configure Azure Virtual Network peering
Learn to configure an Azure Virtual Network peering connection and address transit and connectivity concerns.

In this module, you will:
- Identify usage cases and product features of Azure Virtual Network peering.
- Configure your network to implement Azure VPN Gateway for transit connectivity.
- Extend peering by using a hub and spoke network with user-defined routes and service chaining.

Lessons
- Introduction
- Determine Azure Virtual Network peering uses
- Determine gateway transit and connectivity
- Create virtual network peering
- Extend peering with user-defined routes and service chaining
- Interactive lab simulation

Module 13: Configure network routing and endpoints
Learn how to configure network routes, including endpoints and private links.

In this module, you will:
- Implement system routes and user-defined routes.
- Configure a custom route.
- Implement service endpoints.
- Identify features and usage cases for Azure Private Link and endpoint services.

Lessons
- Introduction

- Review system routes
- Identify user-defined routes
- Determine service endpoint uses
- Determine service endpoint services
- Identify private link uses
- Interactive lab simulation

Module 14: Configure Azure Load Balancer
Learn how to configure an internal or public load balancer.

In this module, you will:
- Identify features and usage cases for Azure Load Balancer.
- Implement public and internal Azure load balancers.
- Compare features of load balancer SKUs and configuration differences.
- Configure back-end pools, load-balancing rules, session persistence, and health probes.

Lessons
- Introduction
- Determine Azure Load Balancer uses
- Implement a public load balancer
- Implement an internal load balancer
- Determine load balancer SKUs
- Create back-end pools
- Create health probes
- Create load balancer rules
- Interactive lab simulation

Module 15: Configure storage accounts
Learn how to configure storage accounts, including replication and endpoints.

In this module, you will:
- Identify features and usage cases for Azure storage accounts.
- Select between different types of Azure Storage and storage accounts.
- Select a storage replication strategy.
- Configure network access to storage accounts.
- Secure storage endpoints.

Lessons
- Introduction
- Implement Azure Storage
- Explore Azure Storage services
- Determine storage account types
- Determine replication strategies
- Access storage
- Secure storage endpoints

Module 16: Configure Azure Blob Storage
Learn how to configure Configure Azure Blob Storage, including tiers and object replication.

In this module, you will:
- Identify features and usage cases for Azure Blob Storage.
- Configure Blob Storage and Blob access tiers.
- Configure Blob lifecycle management rules.
- Configure Blob object replication.
- Upload and price Blob Storage.

Lessons
- Introduction
- Implement Azure Blob Storage
- Create blob containers
- Assign blob access tiers
- Add blob lifecycle management rules
- Determine blob object replication
- Upload blobs
- Determine Blob Storage pricing
- Interactive lab simulation

Module 17: Configure Azure Storage security
Learn how to configure common Azure Storage security features like storage access signatures.

In this module, you will:
- Configure a shared access signature (SAS), including the uniform resource identifier (URI) and SAS parameters.
- Configure Azure Storage encryption.
- Implement customer-managed keys.
- Recommend opportunities to improve Azure Storage security.

Lessons
- Introduction
- Review Azure Storage security strategies
- Create shared access signatures
- Identify URI and SAS parameters
- Determine Azure Storage encryption
- Create customer-managed keys
- Apply Azure Storage security best practices
- Interactive lab simulation

Module 18: Configure Azure Files and Azure File Sync
Learn how to configure Azure Files and Azure File Sync.

In this module, you will:
- Identify storage for file shares and blob data.
- Configure Azure Files shares and file share snapshots.
- Identify features and usage cases of Azure File Sync.
- Identify Azure File Sync components and configuration steps.

Lessons
- Introduction
- Compare storage for file shares and blob data
- Manage Azure Files shares
- Create file share snapshots
- Implement Azure File Sync
- Identify Azure File Sync components
- Deploy Azure File Sync

Module 19: Configure Azure Storage with tools
Learn how to configure Azure Storage with tools like Azure Storage Explorer and AZCopy.

In this module, you will:
- Configure and use Azure Storage Explorer.
- Configure the Azure Import/Export service.

- Use the WAImportExport tool with the Azure Import/Export service.
- Configure and use AZCopy.

Lessons
- Introduction
- Use Azure Storage Explorer
- Use the Azure Import/Export service
- Use the WAImportExport tool
- Use the AzCopy tool

Module 20: Configure virtual machines
Learn how to configure virtual machines including sizing, storage, and connections.

In this module, you will:
- Create a virtual machine planning checklist.
- Determine virtual machine locations and pricing models.
- Determine the correct virtual machine size.
- Configure virtual machine storage.

Lessons
- Introduction
- Review cloud services responsibilities
- Plan virtual machines
- Determine virtual machine sizing
- Determine virtual machine storage
- Create virtual machines in the Azure portal
- Connect to virtual machines
- Interactive lab simulation

Module 21: Configure virtual machine availability
Learn how to configure virtual machine availability including vertical and horizontal scaling.

In this module, you will:
- Implement availability sets and availability zones.
- Implement update and fault domains.
- Implement Azure Virtual Machine Scale Sets.
- Autoscale virtual machines.

Lessons
- Introduction
- Plan for maintenance and downtime
- Create availability sets
- Review update domains and fault domains
- Review availability zones
- Compare vertical and horizontal scaling
- Implement Azure Virtual Machine Scale Sets
- Create Virtual Machine Scale Sets
- Implement autoscale
- Configure autoscale
- Interactive lab simulation

Module 22: Configure Azure App Service plans
Learn how to configure an Azure App Service plan, including pricing and scaling.

In this module, you will:

- Identify features and usage cases for Azure App Service.
- Select an appropriate Azure App Service plan pricing tier.
- Scale an Azure App Service plan.
- Scale out an Azure App Service plan.

Lessons
- Introduction
- Implement Azure App Service plans
- Determine Azure App Service plan pricing
- Scale up and scale out Azure App Service
- Configure Azure App Service autoscale

Module 23: Configure Azure App Service
Learn how to configure and monitor Azure App Service instances, including deployment slots.

In this module, you will:

- Identify features and usage cases for Azure App Service.
- Configure deployment settings, specifically deployment slots.
- Secure your Azure App Service app.
- Configure custom domain names.
- Back up and restore your Azure App Service app.
- Configure Azure Application Insights.

Lessons
- Introduction
- Implement Azure App Service
- Create an app with App Service
- Explore continuous integration and deployment
- Create deployment slots
- Back up and restore your App Service app
- Use Azure Application Insights
- Interactive lab simulation

Module 24: Configure Azure Container Instances
Learn how to configure Azure Container Instances including container groups.

In this module, you will:

- Identify when to use containers versus virtual machines.
- Identify the features and usage cases of Azure Container Instances.
- Implement Azure container groups.

Lessons
- Introduction
- Compare containers to virtual machines
- Review Azure Container Instances
- Implement container groups
- Review the Docker platform
- Interactive lab simulation

Module 25: Configure file and folder backups
Learn how to configure backup and restore policies that meet your company's regulatory needs.

In this module, you will:

- Identify features and usage cases for Azure Backup.
- Configure Azure Recovery Services vault backup options.
- Configure the Microsoft Azure Recovery Services (MARS) agent for Azure Backup.
- Implement on-premises file and folder backups.

Lessons
- Introduction
- Describe Azure Backup benefits
- Implement Backup center for Azure Backup
- Configure Azure Recovery Services vault backup options
- Use the Microsoft Azure Recovery Services (MARS) agent
- Configure on-premises file and folder backups
- Interactive lab simulation

Module 26: Configure virtual machine backups
Learn how to configure virtual machine backups including restore operations.

In this module, you will:

- Identify features and usage cases for different Azure backup methods.
- Configure virtual machine snapshots and backup options.
- Implement virtual machine backup and restore, including soft delete.
- Perform site-to-site recovery by using Azure Site Recovery.
- Compare the Azure Backup agent to the Microsoft Azure Backup Server.

Lessons
- Introduction
- Explore options to protect virtual machine data
- Create virtual machine snapshots in Azure Backup
- Set up Azure Recovery Services vault backup options
- Back up your virtual machines
- Restore your virtual machines
- Implement System Center DPM and Azure Backup Server
- Compare the MARS agent and Azure Backup Server
- Implement soft delete for your virtual machines
- Implement Azure Site Recovery
- Interactive lab simulation

Module 27: Configure Azure Monitor
Learn how to configure Azure Monitor, including querying the Azure Monitor activity log.

In this module, you will:

- Identify the features and usage cases for Azure Monitor.
- Configure and interpret metrics and logs.
- Identify the Azure Monitor components and data types.
- Configure the Azure Monitor activity log.

Lessons
- Introduction

- Describe Azure Monitor key capabilities
- Describe Azure Monitor components
- Define metrics and logs
- Identify monitoring data and tiers
- Describe activity log events
- Query the activity log
- Interactive lab simulation

Module 28: Improve incident response with alerting on Azure
Respond to incidents and activities in your infrastructure through alerting capabilities in Azure Monitor.

In this module, you will:
- Configure alerts on events in your Azure resources based on metrics, log events, and activity log events.
- Learn how to use action groups in response to an alert, and how to use alert processing rules to override action groups when necessary.

Lessons
- Introduction
- Explore the different alert types that Azure Monitor supports
- Use metric alerts for alerts about performance issues in your Azure environment
- Exercise - Use metric alerts to alert on performance issues in your Azure environment
- Use log alerts to alert on events in your application
- Use activity log alerts to alert on events within your Azure infrastructure
- Use action groups and alert processing rules to send notifications when an alert is fired
- Exercise -Use an activity log alert and an action group to notify users about events in your Azure infrastructure

Module 29: Configure Log Analytics
You will learn how to configure Log Analytics including structuring queries.

In this module, you will:
- Identify the features and usage cases for Log Analytics.
- Create a Log Analytics workspace.
- Structure a Log Analytics query and review results.

Lessons
- Introduction
- Determine Log Analytics uses
- Create a Log Analytics workspace
- Create Kusto (KQL) queries
- Structure Log Analytics queries

Module 30: Configure Network Watcher
Learn how to configure Azure Network Watcher and troubleshoot common networking problems.

In this module, you will:
- Identify the features and usage cases for Azure Network Watcher.
- Configure diagnostic capabilities like IP flow verify, next hop, and network topology.

Lessons
- Introduction
- Describe Azure Network Watcher features
- Review IP flow verify diagnostics

- Review next hop diagnostics
- Visualize the network topology