

## Manage Azure identities and governance (15-20%)

### Manage Azure AD objects

- Create users and groups ○ [Creating a new user in Azure AD](#)
  - [Create a basic group and add members using Azure Active Directory](#) ○ [Add or delete users using Azure Active Directory](#) ○ [Create Azure users and groups in Azure Active Directory](#) (Learn)
- Manage user and group properties ○ [Edit your group information using Azure Active Directory](#) ○ [Add or update a user's profile information using Azure Active Directory](#) ○ [Manage users and groups in Azure Active Directory](#) (Learn)  
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- Manage device settings ○ [Manage device identities using the Azure portal](#) ○ [How To: Manage stale devices in Azure AD](#) ○ [What is enterprise state roaming?](#)
  - [Manage device identity with Azure AD join and Enterprise State Roaming](#) (Learn)
- Perform bulk user updates ○ [Bulk create users in Azure Active Directory](#)
  - [Manage users and groups in Azure Active Directory](#) (Learn)
- Manage guest accounts ○ [What is guest user access in Azure Active Directory B2B?](#)
  - [Manage guest access with Azure AD access reviews](#) ○ [Quickstart: Add guest users to your directory in the Azure portal](#) ○ [Create Azure users and groups in Azure Active Directory](#) (Learn)
- Configure Azure AD join
  - [How to: Plan your Azure AD join implementation](#) ○ [Tutorial: Configure hybrid Azure Active Directory join for managed domains](#) ○ [Manage device identity with Azure AD join and Enterprise State Roaming](#) (Learn)
- Configure self-service password reset ○ [Plan an Azure Active Directory self-service password reset](#) ○ [How it works: Azure AD self-service password reset](#) ○ [Licensing](#)

[requirements for Azure AD self-service password reset](#) ○  
[Allow users to reset their password with Azure Active Directory self-service password reset](#) (Learn)

## Manage role-based access control (RBAC)

- Create a custom role ○ [Custom roles for Azure resources](#)
  - [Create custom roles for Azure resources with role-based access control](#) (Learn)
- Provide access to Azure resources by assigning roles (subscriptions, resource groups, resources) ○ [What is role-based access control \(RBAC\) for Azure resources?](#) ○ [Add or remove role assignments using Azure RBAC and the Azure portal](#) ○ [List role definitions in Azure RBAC](#) ○ [Secure your Azure resources with role-based access control](#) (Learn)
- Interpret access assignments ○ [List role assignments using Azure RBAC and the Azure portal](#) ○ [Understand deny assignments for Azure resources](#)
  - [Manage access to an Azure subscription by using Azure role-based access control](#) (Learn)
- Manage multiple directories ○ [Understand how multiple Azure Active Directory organizations interact](#)

## Manage subscriptions and governance

- Configure Azure policies ○ [What is Azure Policy?](#) ○ [Quickstart: Create a policy assignment to identify non-compliant resources](#) ○ [Tutorial: Create and manage policies to enforce compliance](#) ○ [Apply and monitor infrastructure standards with Azure Policy](#) (Learn)
- Configure resource locks  
[Lock resources to prevent unexpected changes](#)

- [Control and organize Azure resources with Azure Resource Manager](#) (Learn)
- Apply tags ○ [Use tags to organize your Azure resources](#) ○ [Control and organize Azure resources with Azure Resource Manager](#) (Learn)
- Create and manage resource groups (move and remove) ○ [Manage Azure Resource Manager resource groups by using the Azure portal](#) ○ [Move Azure resources to another resource group](#) (Learn)
- Manage subscriptions ○ [Create an additional Azure subscription](#) ○ [Change your Azure subscription to a different offer](#) ○ [Transfer billing ownership of an Azure subscription to another account](#)
- Configure Cost Management ○ [What is Azure Cost Management and Billing?](#) ○ [Quickstart: Explore and analyze costs with cost analysis](#) ○ [Analyze costs and create budgets with Azure Cost Management](#) (Learn) ○ [Predict costs and optimize spending for Azure](#) (Learn)
- Configure management groups ○ [Create management groups for resource organization and management](#) ○ [Manage your resources with management groups](#)

## Implement and manage storage (10-15%)

### Manage storage accounts

- Configure network access to storage accounts
  - [Introduction to Azure Storage](#)
  - [Configure Azure Storage firewalls and virtual networks](#) ○ [Secure access to your storage account](#) (Learn)
- Create and configure storage accounts ○ [Storage account overview](#) ○ [Create an Azure Storage account](#)
  - [Upgrade to a general-purpose v2 storage account](#) ○ [Create an Azure Storage account](#) (Learn)
- Generate shared access signature ○ [Delegate access with a shared access signature](#)

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- [Grant limited access to Azure Storage resources using shared access signatures \(SAS\)](#) ○ [Control access to Azure Storage with shared access signatures](#)
- Manage access keys ○ [Manage storage account access keys](#) ○ [Secure your Azure Storage account](#) (Learn)
- Implement Azure storage replication ○ [Azure Storage redundancy](#)
- Configure Azure AD Authentication for a storage account ○ [Authorize access to blobs and queues using Azure Active Directory](#)

### Manage data in Azure Storage

- Export from Azure job ○ [Use the Azure Import/Export service to export data from Azure Blob storage](#) ○ [Export large amounts of data from Azure by using Azure Import/Export](#) (Learn)
- Import into Azure job ○ [Use the Azure Import/Export service to import data to Azure Blob Storage](#) ○ [Move large amounts of data to the cloud by using Azure Data Box family](#) (Learn) ○ [Get started with Storage Explorer](#)
  - [Upload, download, and manage data with Azure Storage Explorer](#)
- Copy data by using AZCopy ○ [Get started with AzCopy](#)
  - [Copy and move blobs from one container or storage account to another from the command line and in code](#) (Learn)

### Configure Azure files and Azure blob storage

- Create an Azure file share ○ [What is Azure Files?](#)

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- [Create an Azure file share](#) ○ [Quickstart: Create and manage Azure file shares with the Azure portal](#) ○ [Store and share files in your application with Azure Files](#) (Learn)
- Create and configure Azure File Sync service
  - [Planning for an Azure File Sync deployment](#) ○ [Tutorial: Extend Windows file servers with Azure File Sync](#) ○ [Create and configure Azure File Sync service](#) (Learn)
- Configure Azure blob storage ○ [What is Azure Blob storage?](#)  
[Quickstart: Upload, download, and list blobs with the Azure portal](#)  
[Store application data with Azure Blob storage](#) (Learn)
- Configure storage tiers for Azure blobs ○ [Azure Blob storage: hot, cool, and archive access tiers](#)
  - [Optimize storage performance and costs using Blob storage tiers](#) (Learn)

## Deploy and manage Azure compute resources (25-30%)

### Configure VMs for high availability and scalability

- Configure high availability ○ [Availability options for virtual machines in Azure](#) ○ [Manage the availability of Windows virtual machines in Azure](#) ○ [Microsoft Azure Well-Architected Framework - Reliability](#)
- Deploy and configure scale sets ○ [What are virtual machine scale sets?](#) ○ [Quickstart: Create a virtual machine scale set in the Azure portal](#) ○ [Build a scalable application with virtual machine scale sets](#) (Learn)

### Automate deployment and configuration of VMs

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- Modify Azure Resource Manager (ARM) template ○ [Azure Resource Manager templates overview](#) ○ [Extend Azure Resource Manager template functionality](#)
  - [Tutorial: Create and deploy your first Azure Resource Manager template](#) ○ [Build Azure Resource Manager templates](#) (Learn)
- Configure VHD template ○ [Create a VM from a VHD by using the Azure portal](#) ○ [Deploy Azure virtual machines from VHD templates](#) (Learn)
- Deploy from template ○ [Quickstart: Create and deploy ARM templates by using the Azure portal](#)
- Save a deployment as an ARM template ○ [Download the template for a VM](#)
  - [Single and multi-resource export to a template in Azure portal](#)
- Automate configuration management by using custom script extensions ○ [Custom Script Extension for Windows](#)
  - [Use the Azure Custom Script Extension Version 2 with Linux virtual machines](#)

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- [Protect your virtual machine settings with Azure Automation State Configuration](#)  
(Learn)

## Create and configure VMs

- Configure Azure Disk Encryption ○ [Azure Disk Encryption for Linux VMs](#) ○ [Azure Disk Encryption for Windows VMs](#) ○ [Secure your Azure virtual machine disks](#) (Learn)
- Move VMs from one resource group to another ○ [Move a Windows VM to another Azure subscription or resource group](#)
- Manage VM sizes ○ [Sizes for Linux virtual machines in Azure](#) ○ [Sizes for Windows virtual machines in Azure](#)
  - [Resize a Windows VM](#)
- Add data discs ○ [Attach a managed data disk to a Windows VM by using the Azure portal](#) ○ [Use the portal to attach a data disk to a Linux VM](#)
  - [Choose the right disk storage for your virtual machine workload](#) (Learn) ○ [Add and size disks in Azure virtual machines](#) (Learn)
- Configure networking ○ [Virtual networks and virtual machines in Azure](#) ○ [Configure the network for your virtual machines](#) (Learn)
- Redeploy VMs ○ [Redeploy Windows virtual machine to new Azure node](#) ○ [Redeploy Linux virtual machine to new Azure node](#)

## Create and configure containers

- Create and configure Azure Kubernetes Service (AKS) ○ [Azure Kubernetes Service \(AKS\)](#)
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- [Quickstart: Deploy an Azure Kubernetes Service \(AKS\) cluster using the Azure portal](#)
- [Introduction to Azure Kubernetes Service](#) (Learn) ○ [Azure Kubernetes Service Workshop](#) (Learn)
- Create and configure Azure Container Instances (ACI)  
[What is Azure Container Instances?](#)  
[Quickstart: Deploy a container instance in Azure using the Azure portal](#) ○  
[Run Docker containers with Azure Container Instances](#) (Learn)

## Create and configure Web Apps

- Create and configure App Service ○  
[App Service overview](#)
  - [Configure an App Service app in the Azure portal](#)
  - [Deploy and run a containerized web app with Azure App Service](#) (Learn)
- Create and configure App Service Plans ○ [Azure App Service plan overview](#) ○ [Manage an App Service plan in Azure](#)
  - [Scale an App Service web app to efficiently meet demand with App Service scale up and scale out](#) (Learn)

## Configure and manage virtual networking (30-35%)

### Implement and manage virtual networking

- Create and configure VNET peering ○ [Virtual network peering overview](#)
  - [Create, change, or delete a virtual network peering](#)
  - [Azure Virtual Network frequently asked questions \(FAQ\) VNet Peering](#) ○ [Tutorial: Connect virtual networks with virtual network peering using the Azure portal](#)
  - [Create a virtual network peering – different deployment models, same subscription](#) ○ [Distribute your services across Azure virtual networks and integrate them by using virtual network peering](#) (Learn)
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- Configure private and public IP addresses, network routes, network interface, subnets, and virtual network
  - [What is Azure Virtual Network?](#) ◦ [Quickstart: Create a virtual network using the Azure portal](#) ◦ [Virtual network traffic routing](#)
    - [Networking limits](#)
    - [Create, change, or delete a public IP address](#)
    - [Add, change, or remove IP addresses for an Azure network interface](#) ◦ [Associate a public IP address to a virtual machine](#)
    - [Subnet extension](#) ◦ [Virtual network traffic routing](#)
    - [Add network interfaces to or remove network interfaces from virtual machines](#) ◦ [Design an IP addressing schema for your Azure deployment](#) (Learn)
    - [Manage and control traffic flow in your Azure deployment with routes](#) (Learn)

### Configure name resolution

- Configure Azure DNS
  - [What is Azure DNS?](#) ◦ [What is Azure Private DNS?](#)
  - [Quickstart: Create an Azure DNS zone and record using the Azure portal](#)
  - [Host your domain on Azure DNS](#) (Learn)
- Configure custom DNS settings
  - [Name resolution for resources in Azure virtual networks](#) ◦ [Add your custom domain name using the Azure Active Directory portal](#) ◦ [Use Azure DNS to provide custom domain settings for an Azure service](#)
- Configure a private or public DNS zone
  - [Tutorial: Host your domain in Azure DNS](#)
  - [Quickstart: Create an Azure private DNS zone using the Azure portal](#)

### Secure access to virtual networks

- Create security rules
  - [Network Security Groups](#)
    - [Create, change, or delete a network security group](#)
    - [Tutorial: Filter network traffic with a network security group using the Azure portal](#)
- Associate an NSG to a subnet or network interface
  - [Secure and isolate access to](#)

- [Azure resources by using network security groups and service endpoints](#) (Learn)
- Evaluate effective security rules
  - [Diagnose a virtual machine network traffic filter problem](#)
  - [Troubleshoot inbound network connectivity for Azure Load Balancer](#) (Learn)
- Deploy and configure Azure Firewall
  - [Azure Firewall documentation](#)
  - [Tutorial: Deploy and configure Azure Firewall using the Azure portal](#)
- Deploy and configure Azure Bastion Service
  - [Azure Bastion documentation](#)

## Configure load balancing

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- Configure Application Gateway ○ [Application Gateway configuration overview](#) ○ [Quickstart: Direct web traffic with Azure Application Gateway - Azure portal](#) ○ [Load balance your web service traffic with Application Gateway](#) (Learn)
- Configure an internal load balancer ○ [What is Azure Load Balancer?](#) ○ [Azure Load Balancer Components](#)
  - [Tutorial: Balance internal traffic load with a Basic load balancer in the Azure portal](#) ○ [Improve application scalability and resiliency by using Azure Load Balancer](#) (Learn)
- Configure load balancing rules ○ [Tutorial: Load balance internet traffic to VMs using the Azure portal](#)
- Configure a public load balancer ○ [Quickstart: Create a Load Balancer to load balance VMs using the Azure portal](#) ○ [Troubleshoot Azure Load Balancer](#)

### Monitor and troubleshoot virtual networking

- Monitor on-premises connectivity ○ [Diagnose on-premises connectivity via VPN gateways](#)
- Use Network Performance Monitor ○ [Network Performance Monitor solution: Performance monitoring](#)
- Use Network Watcher ○ [What is Azure Network Watcher?](#)
  - [Monitor and troubleshoot your end-to-end Azure network infrastructure by using network monitoring tools](#) (Learn)
- Troubleshoot external networking ○ [Troubleshoot connections with Azure Network Watcher using the Azure portal](#)
- Troubleshoot virtual network connectivity ○ [Troubleshooting connectivity problems between Azure VMs](#)

### Integrate an on-premises network with an Azure virtual network

- Create and configure Azure VPN Gateway
  - [What is a VPN Gateway?](#) ◦ [Create a route-based VPN gateway using the Azure portal](#)
  - [Connect your on-premises network to Azure with VPN Gateway](#) (Learn)
- Create and configure VPNs ◦ [Create a Site-to-Site connection in the Azure portal](#)
- Configure ExpressRoute ◦ [ExpressRoute overview](#)
  - [Tutorial: Create and modify an ExpressRoute circuit](#)
  - [Connect your on-premises network to the Microsoft global network by using ExpressRoute](#)
- Configure Azure Virtual WAN ◦ [About Azure Virtual WAN](#)
  - [Tutorial: Create a Site-to-Site connection using Azure Virtual WAN](#)

## Monitor and back up Azure resources (10-15%)

### Monitor resources by using Azure Monitor

- Configure and interpret metrics (Analyze metrics across subscriptions) ◦ [Metrics in Azure Monitor](#)
  - [Quickstart: Monitor an Azure resource with Azure Monitor](#)
  - [Monitor the health of your Azure virtual machine by collecting and analyzing diagnostic data](#) (Learn)
- Configure Log Analytics (Implement a Log Analytics workspace, Configure diagnostic settings)
  - [Get started with Log Analytics in Azure Monitor](#) ◦ [Manage access to log data and workspaces in Azure Monitor](#) ◦ [Create a Log Analytics workspace in the Azure portal](#) ◦ [Create diagnostic setting to collect resource logs and metrics in Azure](#) ◦ [Analyze your Azure infrastructure by using Azure Monitor logs](#) (Learn)

- Query and analyze logs (Create a query, Save a query to the dashboard, Interpret graphs) ○ [Overview of log queries in Azure Monitor](#) ○ [Get started with log queries in Azure Monitor](#)
- Set up alerts and actions (Create and test alerts, Create action groups, View alerts in Azure Monitor, Analyze alerts across subscriptions) ○ [Create, view, and manage metric alerts using Azure Monitor](#) ○ [Metric Alerts with Dynamic Thresholds in Azure Monitor](#) ○ [Create Metric Alerts for Logs in Azure Monitor](#) ○ [Improve incident response with alerting on Azure](#) (Learn)
- Configure Application Insights ○ [Manage Application Insights resources using PowerShell](#)
  - [Capture and view page load times in your Azure web app with Application Insights](#) (Learn)

## Implement backup and recovery

- Configure and review backup reports ○ [Configure Azure Backup reports](#)
- Perform backup and restore operations by using Azure Backup Service ○ [Back up a virtual machine in Azure](#)
  - [Restore a disk and create a recovered VM in Azure](#) ○ [Protect your virtual machines by using Azure Backup](#) (Learn)
- Create a Recovery Services Vault (Use soft delete to recover Azure VMs) ○ [Recovery Services vaults overview](#) ○ [Create a Recovery Services vault](#)
  - [Soft delete for virtual machines](#)
- Create and configure backup policy ○ [Manage Azure VM backups with Azure Backup service](#)
- Perform site-to-site recovery by using Azure Site Recovery ○ [About Site Recovery](#)
  - [Set up disaster recovery of on-premises VMware virtual machines or physical servers to a secondary site](#)
  - [Protect your Azure infrastructure with Azure Site Recovery](#) (Learn)

Happy learning!