

Exam AZ-104: Microsoft Azure Administrator – Skills Measured

This exam was updated on September 24, 2021. Following the current exam guide, we have included a version of the exam guide with Track Changes set to “On,” showing the changes that were made to the exam on that date.

Audience Profile

Candidates for this exam should have subject matter expertise implementing, managing, and monitoring an organization's Microsoft Azure environment.

Responsibilities for this role include implementing, managing, and monitoring identity, governance, storage, compute, and virtual networks in a cloud environment, plus provision, size, monitor, and adjust resources, when needed.

An Azure administrator often serves as part of a larger team dedicated to implementing an organization's cloud infrastructure.

A candidate for this exam should have at least six months of hands-on experience administering Azure, along with a strong understanding of core Azure services, Azure workloads, security, and governance. In addition, this role should have experience using PowerShell, Azure CLI, Azure portal, and Azure Resource Manager templates.

Skills Measured

NOTE: The bullets that follow each of the skills measured are intended to illustrate how we assess that skill. This list is not definitive or exhaustive.

NOTE: Most questions cover features that are General Availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Manage Azure identities and governance (15–20%)

Manage Azure Active Directory (Azure AD) objects

- create users and groups
- create administrative units
- manage user and group properties
- manage device settings
- perform bulk user updates
- manage guest accounts
- configure Azure AD join
- configure self-service password reset

[Collections - MSFT Official Curriculum-4292 | Microsoft Docs](#)

[Reimagining the Azure Solutions Architect Expert certification - Microsoft Tech Community](#)

[Become Microsoft Certified](#)

<https://techcommunity.microsoft.com/t5/fasttrack-for-azure/the-benefits-of-infrastructure-as-code/ba-p/2069350#:~:text=What%20is%20infrastructure%20as%20code%3F%20The%20Azure%20Well-Architected, similar%20to%20what%20is%20used%20for%20source%20code.>

Manage role-based access control (RBAC)

- create a custom role
- provide access to Azure resources by assigning roles at different scopes
- interpret access assignments

Manage subscriptions and governance

- configure Azure policies
- configure resource locks
- apply and manage tags on resources
- manage resource groups
- manage subscriptions
- manage costs
- configure management groups

Implement and manage storage (15–20%)

Secure storage

- configure network access to storage accounts
- create and configure storage accounts
- generate shared access signature (SAS) tokens
- manage access keys
- configure Azure AD authentication for a storage account
- configure access to Azure Files

Manage storage

- export from Azure job
- import into Azure job
- install and use Azure Storage Explorer
- copy data by using AZCopy
- implement Azure Storage replication
- configure blob object replication

Configure Azure files and Azure Blob Storage

- create an Azure file share
- create and configure Azure File Sync service
- configure Azure Blob Storage
- configure storage tiers
- configure blob lifecycle management

Deploy and manage Azure compute resources (20–25%)

Automate deployment of virtual machines (VMs) by using Azure Resource Manager templates

- modify an Azure Resource Manager template
- configure a virtual hard disk (VHD) template
- deploy from a template
- save a deployment as an Azure Resource Manager template
- deploy virtual machine extensions

Configure VMs

- configure Azure Disk Encryption
- move VMs from one resource group to another
- manage VM sizes
- add data disks
- configure networking
- redeploy VMs
- configure high availability
- deploy and configure virtual machine scale sets

Create and configure containers

- configure sizing and scaling for Azure Container Instances
- configure container groups for Azure Container Instances
- configure storage for Azure Kubernetes Service (AKS)
- configure scaling for AKS
- configure network connections for AKS
- upgrade an AKS cluster

Create and configure Azure App Service

- create an App Service plan
- configure scaling settings in an App Service plan
- create an App Service
- secure an App Service
- configure custom domain names
- configure backup for an App Service
- configure networking settings
- configure deployment settings

Configure and manage virtual networking (25–30%)

Implement and manage virtual networking

- create and configure virtual networks, including peering
- configure private and public IP addresses
- configure user-defined network routes
- implement subnets
- configure endpoints on subnets
- configure private endpoints
- configure Azure DNS, including custom DNS settings and private or public DNS zones

Secure access to virtual networks

- create security rules
- associate a network security group (NSG) to a subnet or network interface
- evaluate effective security rules
- implement Azure Firewall
- implement Azure Bastion

Configure load balancing

- configure Azure Application Gateway
- configure an internal or public load balancer
- troubleshoot load balancing

Monitor and troubleshoot virtual networking

- monitor on-premises connectivity
- configure and use Azure Monitor for Networks
- use Azure Network Watcher
- troubleshoot external networking
- troubleshoot virtual network connectivity

Integrate an on-premises network with an Azure virtual network

- create and configure Azure VPN Gateway
- create and configure Azure ExpressRoute
- configure Azure Virtual WAN

Monitor and back up Azure resources (10–15%)

Monitor resources by using Azure Monitor

- configure and interpret metrics
- configure Azure Monitor logs

- query and analyze logs
- set up alerts and actions
- configure Application Insights

Implement backup and recovery

- create a Recovery Services vault
- create a Backup vault
- create and configure backup policy
- perform backup and restore operations by using Azure Backup
- perform site-to-site recovery by using Azure Site Recovery
- configure and review backup reports

The exam guide below shows the changes that were implemented on September 24, 2021.

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Other interesting links

November 12, 2021 3:44 PM

[MicrosoftLearning/AZ-104-MicrosoftAzureAdministrator: AZ-104 Microsoft Azure Administrator \(github.com\)](#)

[Tools and Weapons: The Promise and the Peril of the Digital Age by Brad Smith \(goodreads.com\)](#)

[AWS to Azure services comparison - Azure Architecture Center | Microsoft Docs](#)

[Shared responsibility in the cloud - Microsoft Azure | Microsoft Docs](#)

[Preventing Rhino Poaching With Microsoft Azure - CSE Developer Blog](#)

[Home Page \(ch1-retailappy37ha6.azurewebsites.net\)](#)

[What is canary test \(canary deployment\)? - Definition from WhatIs.com \(techtarget.com\)](#)

[Azure Charts - Your Cloud Radar](#)

[Payment Card Industry Data Security Standard - Wikipedia](#)

[PCI DSS - Azure Compliance | Microsoft Docs](#)

[Representational state transfer - Wikipedia](#)

[YAML - Wikipedia](#)

[Microsoft Cybersecurity Reference Architectures - Security documentation | Microsoft Docs](#)

LinkedIn Emerging Jobs Report [Jobs on the Rise Reports | LinkedIn Talent Solutions](#) This is a great resource to learn what roles/jobs are in demand.

Additional Study Links

November 18, 2021 3:07 PM

MS Learn (scroll down) - [Exam AZ-104: Microsoft Azure Administrator - Learn | Microsoft Docs](#)

Tuesdays with Corey [Tuesdays With Corey | Channel 9 \(msdn.com\)](#)

Azure Fridays [Azure Friday | Channel 9 \(msdn.com\)](#)

<https://microsoftlearning.github.io/AZ-900T0x-MicrosoftAzureFundamentals/>

[Azure Charts - Your Cloud Radar](#)

[Browse Azure Architectures - Azure Architecture Center | Microsoft Docs](#)

[Microsoft Cloud Adoption Framework for Azure - Cloud Adoption Framework | Microsoft Docs](#)

[Microsoft Azure Well-Architected Framework - Azure Architecture Center | Microsoft Docs](#)

[Microsoft Cybersecurity Reference Architectures - Security documentation | Microsoft Docs](#)

[Become Microsoft Certified](#)

IaC

January 21, 2022 3:42 PM

Microsoft Learn [Explore infrastructure as code and configuration management - Learn | Microsoft Docs](#)

[Explore Azure Automation with DevOps - Learn | Microsoft Docs](#)

[Implement Terraform - Learn | Microsoft Docs](#)

[IaC on Azure - An introduction of Infrastructure as Code \(IaC\) with Azure Resource Manager \(ARM\) Template - Microsoft Tech Community](#)

IaC - Bicep [Introduction to infrastructure as code using Bicep - Learn | Microsoft Docs](#)

[Fundamentals of Bicep - Learn | Microsoft Docs](#)

Manage Azure Active Directory (Azure AD) objects

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[What is Azure Active Directory? - Azure Active Directory | Microsoft Docs](#)
[Architecture overview - Azure Active Directory | Microsoft Docs](#)
[Sign up your organization - Azure Active Directory | Microsoft Docs](#)
[Compare Active Directory to Azure Active Directory | Microsoft Docs](#)
[Azure AD Multi-Factor Authentication versions and consumption plans | Microsoft Docs](#)

[What is device identity in Azure Active Directory? | Microsoft Docs](#)
[Service limits and restrictions - Azure Active Directory | Microsoft Docs](#)
[What is Conditional Access in Azure Active Directory? | Microsoft Docs](#)
[About admin roles in the Microsoft 365 admin center - Microsoft 365 admin | Microsoft Docs](#)

[Azure AD Connect sync: Understand and customize synchronization | Microsoft Docs](#)

User admin	<p>Assign the User admin role to users who need to do the following for all users:</p> <ul style="list-style-type: none">- Add users and groups- Assign licenses- Manage most users properties- Create and manage user views- Update password expiration policies- Manage service requests- Monitor service health <p>The user admin can also do the following actions for users who aren't admins and for users assigned the following roles: Directory reader, Guest inviter, Helpdesk admin, Message center reader, Reports reader:</p> <ul style="list-style-type: none">- Manage usernames- Delete and restore users- Reset passwords- Force users to sign out- Update (FIDO) device keys
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From <<https://docs.microsoft.com/en-us/microsoft-365/admin/add-users/about-admin-roles?view=o365-worldwide>>

create administrative units

[Add and remove administrative units - Azure Active Directory | Microsoft Docs](#)
[Add, remove, and list users in an administrative unit - Azure Active Directory | Microsoft Docs](#)
[Add, remove, and list groups in an administrative unit - Azure Active Directory | Microsoft Docs](#)
[Assign and list roles with administrative unit scope - Azure Active Directory | Microsoft Docs](#)
[Administrative units in Azure Active Directory | Microsoft Docs](#)

manage user and group properties

<https://docs.microsoft.com/en-us/azure/active-directory/fundamentals/add-users-azure-active-directory>
<https://docs.microsoft.com/en-us/azure/active-directory/fundamentals/active-directory-users-profile-azure-portal>
<https://docs.microsoft.com/en-us/azure/active-directory/fundamentals/active-directory-users-reset-password-azure-portal>
[Restore or permanently remove recently deleted user - Azure AD | Microsoft Docs](#)
[Groups in Microsoft 365 and Azure, and Which is Right for You | Microsoft Docs](#)

[Assign Azure AD roles to users - Azure Active Directory | Microsoft Docs](#)
[Assign or remove licenses - Azure Active Directory | Microsoft Docs](#)
<https://docs.microsoft.com/en-us/azure/active-directory/fundamentals/active-directory-users-restore>
[Rules for dynamically populated groups membership - Azure AD | Microsoft Docs](#)
[Create or edit a dynamic group and get status - Azure AD | Microsoft Docs](#)

manage device settings

[What are Azure AD registered devices? | Microsoft Docs](#)
[What is an Azure AD joined device? | Microsoft Docs](#)
[What is a hybrid Azure AD joined device? | Microsoft Docs](#)
[How Azure AD device registration works | Microsoft Docs](#)

perform bulk user updates

[Bulk create users in the Azure Active Directory portal | Microsoft Docs](#)

manage guest accounts

[Quickstart: Add guest users in the Azure portal - Azure AD | Microsoft Docs](#)
[What is B2B collaboration in Azure Active Directory? | Microsoft Docs](#)

configure Azure AD join

[Plan your Azure Active Directory device deployment | Microsoft Docs](#)
[How to plan your Azure Active Directory join implementation | Microsoft Docs](#)
[Plan hybrid Azure Active Directory join - Azure Active Directory | Microsoft Docs](#)

configure self-service password reset

[Enable Azure Active Directory self-service password reset | Microsoft Docs](#)
[Enable Azure Active Directory password writeback | Microsoft Docs](#)
[Self-service password reset policies - Azure Active Directory | Microsoft Docs](#)
[Self-service password reset deep dive - Azure Active Directory | Microsoft Docs](#)

[Azure Active Directory integration with MDM - Windows Client Management | Microsoft Docs](#)

[What's the difference between Azure roles and Azure AD roles? - Microsoft Tech Community](#)

[Identity and access management checklist - Azure Architecture Center | Microsoft Docs](#)

[Kerberos constrained delegation for Azure AD Domain Services | Microsoft Docs](#)

[Multitenancy and identity management - Azure Architecture Center | Microsoft Docs](#)

Manage role-based access control (RBAC)

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[Azure AD built-in roles - Azure Active Directory | Microsoft Docs](#)

[Delegate roles by admin task - Azure Active Directory | Microsoft Docs](#)

[What is Azure role-based access control \(Azure RBAC\)? | Microsoft Docs](#)

[What's the difference between Azure roles and Azure AD roles? - Microsoft Tech Community](#)

📌 create a custom role

[Custom role permissions for app registration - Azure AD | Microsoft Docs](#)

[App permissions for custom roles in Azure Active Directory | Microsoft Docs](#)

[App consent permissions for custom roles in Azure Active Directory | Microsoft Docs](#)

[Group management permissions for Azure AD custom roles \(Preview\) - Azure Active Directory | Microsoft Docs](#)

[Create custom roles for Azure resources with Azure role-based access control \(Azure RBAC\) - Learn | Microsoft Docs](#)

📌 provide access to Azure resources by assigning roles at different scopes

[Assign Azure AD roles at different scopes - Azure Active Directory | Microsoft Docs](#)

📌 interpret access assignments

[View, add, and remove assignments for an access package in Azure AD entitlement management - Azure Active Directory | Microsoft Docs](#)

Manage subscriptions and governance

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[Azure security features that help with identity management | Microsoft Docs](#)

[Microsoft identity platform overview - Azure - Microsoft identity platform | Microsoft Docs](#)

▣ configure Azure policies

[Overview of Azure Policy - Azure Policy | Microsoft Docs](#)
[Tutorial: Build policies to enforce compliance - Azure Policy | Microsoft Docs](#)
[Understand scope in Azure Policy - Azure Policy | Microsoft Docs](#)
[Get policy compliance data - Azure Policy | Microsoft Docs](#)

▣ configure resource locks

[Lock resources to prevent changes - Azure Resource Manager | Microsoft Docs](#)

▣ apply and manage tags on resources

[Tutorial: Manage tag governance - Azure Policy | Microsoft Docs](#)

▣ manage resource groups

[Delete resource group and resources - Azure Resource Manager | Microsoft Docs](#)
[Manage resource groups - Azure portal - Azure Resource Manager | Microsoft Docs](#)
[Move resources to a new subscription or resource group - Azure Resource Manager | Microsoft Docs](#)

▣ manage subscriptions

[Create an additional Azure subscription | Microsoft Docs](#)
[Change Azure subscription offer | Microsoft Docs](#)
[Azure subscription limits and quotas - Azure Resource Manager | Microsoft Docs](#)

▣ manage costs

[Plan to manage Azure costs | Microsoft Docs](#)
[Optimize your cloud investment with Azure Cost Management | Microsoft Docs](#)
[Analyze unexpected Azure charges | Microsoft Docs](#)
[Introduction to analyzing costs and creating budgets with Azure Cost Management - Learn | Microsoft Docs](#)

▣ configure management groups

[Organize your resources with management groups - Azure Governance - Azure governance | Microsoft Docs](#)
[How to work with your management groups - Azure Governance - Azure governance | Microsoft Docs](#)
[How to protect your resource hierarchy - Azure Governance - Azure governance | Microsoft Docs](#)
[Azure Management Overview - Azure Governance | Microsoft Docs](#)
[Organize your resources with management groups - Azure Governance - Azure governance | Microsoft Docs](#)

[Azure regions decision guide - Cloud Adoption Framework | Microsoft Docs](#) - this is from Migrate but still relevant.

[Choose the Right Azure Region for You | Microsoft Azure Global Infrastructure \(microsoft.com\)](#)
[Ensure business continuity & disaster recovery using Azure Paired Regions | Microsoft Docs](#)

[Azure reservations & server subscriptions - Partner Center | Microsoft Docs](#)

[Bicep documentation | Microsoft Docs](#)
[Azure Cloud Shell overview | Microsoft Docs](#)
[Overview of Azure PowerShell | Microsoft Docs](#)
[Resource Explorer \(azure.com\)](#)
[Azure Quickstart Templates \(microsoft.com\)](#)
[Azure/azure-quickstart-templates: Azure Quickstart Templates \(github.com\)](#)
[Deploy Azure infrastructure by using JSON ARM templates - Learn | Microsoft Docs](#)
[Template structure and syntax - Azure Resource Manager | Microsoft Docs](#)

Tools

December 20, 2021 2:22 PM

PowerShell

[Learn Windows PowerShell in a Month of Lunches: Donald W. Jones, Jeffrey Hicks: 9781617294167: Books - Amazon.ca](#)

<https://docs.microsoft.com/en-us/powershell/scripting/learn/ps101/01-getting-started?view=powershell-7.2>

[Azure Resource Manager overview - Azure Resource Manager | Microsoft Docs](#)

[Pricing - Virtual Machine IP Address Options | Microsoft Azure](#)

CLI

[Get started with Azure Command-Line Interface \(CLI\) | Microsoft Docs](#)

[Pricing - Cloud Shell | Microsoft Azure](#)

Portal

[Manage Azure portal settings and preferences - Azure portal | Microsoft Docs](#)

Templates

[Templates overview - Azure Resource Manager | Microsoft Docs](#)

[Introduction to JSON - Microsoft Tech Community](#)

<https://github.com/Azure/azure-quickstart-templates>

Bicep - not an objective

[Get Started With Azure Bicep - Alternative To ARM Templates | Build5Nines](#)

[Decompile ARM template JSON to Bicep - Azure Resource Manager | Microsoft Docs](#)

Secure storage

November 12, 2021 1:48 PM

[About Blob \(object\) storage - Azure Storage | Microsoft Docs](#)
[Introduction to Azure Storage - Cloud storage on Azure | Microsoft Docs](#)
[Introduction to Blob \(object\) storage - Azure Storage | Microsoft Docs](#)

- configure network access to storage accounts
- create and configure storage accounts
 - [Quickstart: Upload, download, and list blobs - Azure portal - Azure Storage | Microsoft Docs](#)
 - [Quickstart - Create a blob with Azure Storage Explorer - Azure Storage | Microsoft Docs](#)
 - [Quickstart: Upload, download, and list blobs - Azure PowerShell - Azure Storage | Microsoft Docs](#)
 - [Create a storage account - Azure Storage | Microsoft Docs](#)
- generate shared access signature (SAS) tokens
 - [Grant limited access to data with shared access signatures \(SAS\) - Azure Storage | Microsoft Docs](#)
- manage access keys
 - [Manage account access keys - Azure Storage | Microsoft Docs](#)
- configure Azure AD authentication for a storage account
 - [Use the Azure Identity library to get an access token for authorization - Azure Storage | Microsoft Docs](#)
- configure access to Azure Files
 - [Overview - On-premises AD DS authentication to Azure file shares | Microsoft Docs](#)
 - [Managing file locks \(FileREST API\) - Azure Files | Microsoft Docs](#)

[Data redundancy - Azure Storage | Microsoft Docs](#)

[Azure Storage Blobs Pricing | Microsoft Azure Data lakes - Azure Architecture Center | Microsoft Docs](#)
[Azure Data Lake Storage Gen2 Introduction | Microsoft Docs](#)
[SLA for Storage Accounts | Microsoft Azure Disaster recovery and storage account failover - Azure Storage | Microsoft Docs](#)
[Data residency in Azure | Microsoft Azure](#)

[Azure Policy Regulatory Compliance controls for Azure Storage | Microsoft Docs](#)
[Pricing - Bandwidth | Microsoft Azure](#)
[Azure encryption overview | Microsoft Docs](#)

[MD5 hash checks on Azure Blob Storage files \(galdin.dev\)](#)

Manage storage

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[Requirements for Azure Import/Export service | Microsoft Docs](#)
[FAQ for Azure Import/Export service | Microsoft Docs](#)

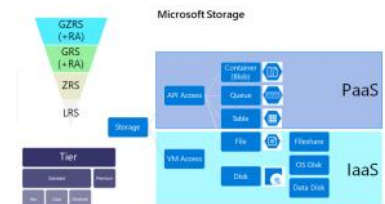
- export from Azure job
 - [Using Azure Import/Export to transfer data to and from Azure Storage | Microsoft Docs](#)
 - [Tutorial to export data from Azure Blob storage with Azure Import/Export | Microsoft Docs](#)
- import into Azure job
 - [Tutorial to import data to Azure Blob Storage with Azure Import/Export service | Microsoft Docs](#)
 - [Tutorial to import data to Azure Blob Storage with Azure Import/Export service | Microsoft Docs](#)
- install and use Azure Storage Explorer
 - [Get started with Storage Explorer | Microsoft Docs](#)
- copy data by using AZCopy
 - [Copy or move data to Azure Storage by using AzCopy v10 | Microsoft Docs](#)
 - [Transfer data to or from Azure Files by using AzCopy v10 | Microsoft Docs](#)
- implement Azure Storage replication
 - [Change how a storage account is replicated - Azure Storage | Microsoft Docs](#)
- configure blob object replication
 - [Configure object replication - Azure Storage | Microsoft Docs](#)

[Criteria for data store choice - Azure Application Architecture Guide | Microsoft Docs](#)

[Azure Storage Blobs Pricing | Microsoft Azure](#)

[Configure Azure Storage firewalls and virtual networks | Microsoft Docs](#)

[SLA for Storage Accounts | Microsoft Azure](#)



Configure Azure files and Azure Blob Storage

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[Introduction to Azure Files | Microsoft Docs](#)

[Planning for an Azure Files deployment | Microsoft Docs](#)

[SMB file shares in Azure Files | Microsoft Docs](#)

[NFS file shares in Azure Files | Microsoft Docs](#)

[Choose an Azure solution for data transfer | Microsoft Docs](#)

[Tutorial - Extend Windows file servers with Azure File Sync | Microsoft Docs](#)

- create an Azure file share
 - [Create and use an Azure file shares on Windows VMs | Microsoft Docs](#)
 - [Quickstart for managing Azure file shares | Microsoft Docs](#)
- create and configure Azure File Sync service
 - [Deploy Azure File Sync | Microsoft Docs](#)
- configure Azure Blob Storage
- configure storage tiers
 - [Hot, Cool, and Archive access tiers for blob data - Azure Storage | Microsoft Docs](#)
 - [Blob rehydration from the Archive tier | Microsoft Docs](#)
- configure lifecycle management
 - [Optimize costs by automatically managing the data lifecycle - Azure Storage | Microsoft Docs](#)





Automate deployment of virtual machines

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[Templates overview - Azure Resource Manager | Microsoft Docs](#)

[Best practices for templates - Azure Resource Manager | Microsoft Docs](#)

[ARM template frequently asked questions | Microsoft Docs](#)

- modify an Azure Resource Manager template
 - [Template structure and syntax - Azure Resource Manager | Microsoft Docs](#)
 - [Create and deploy Azure Resource Manager templates - Learn | Microsoft Docs](#)
-  configure a virtual hard disk (VHD) template
 -
-  deploy from a template
 - [Deploy template - Azure portal - Azure Resource Manager | Microsoft Docs](#)
 - [Tutorial - Deploy a local Azure Resource Manager template - Azure Resource Manager | Microsoft Docs](#)
 - [Tutorial - Deploy a linked template - Azure Resource Manager | Microsoft Docs](#)
 - [Deployment modes - Azure Resource Manager | Microsoft Docs](#)
-  save a deployment as an Azure Resource Manager template
 -
-  deploy virtual machine extensions
 - [Deploy VM extensions with template - Azure Resource Manager | Microsoft Docs](#)
 - <https://docs.microsoft.com/en-us/azure/virtual-machines/extensions/features-windows?toc=%2Fazure%2Fvirtual-machines%2Fwindows%2Ftoc.json>
 - <https://docs.microsoft.com/en-us/azure/virtual-machines/extensions/dsc-overview>

Configure VMs

November 17, 2021 9:06 AM

<https://docs.microsoft.com/en-us/azure/cloud-adoption-framework/ready/azure-best-practices/resource-naming>

- configure Azure Disk Encryption
 - [Overview of managed disk encryption options - Azure Virtual Machines | Microsoft Docs](#)
 - [Server-side encryption of Azure managed disks - Azure Virtual Machines | Microsoft Docs](#)
 - [Enable Azure Disk Encryption for Windows VMs - Azure Virtual Machines | Microsoft Docs](#)
 - [Enable Azure Disk Encryption for Linux VMs - Azure Virtual Machines | Microsoft Docs](#)
- move VMs from one resource group to another
 - [Move Azure VMs to new subscription or resource group - Azure Resource Manager | Microsoft Docs](#)
- manage VM sizes
 - [VM sizes - Azure Virtual Machines | Microsoft Docs](#)
 -
- add data disks
 - [Attach a managed data disk to a Windows VM - Azure - Azure Virtual Machines | Microsoft Docs](#)
 - [Attach a data disk to a Windows VM in Azure by using PowerShell - Azure Virtual Machines | Microsoft Docs](#)
 - [Azure Disk Storage overview - Azure Virtual Machines | Microsoft Docs](#)
- configure networking
 - [Virtual networks and virtual machines in Azure | Microsoft Docs](#)
 - [Add network interfaces to or remove from Azure VMs | Microsoft Docs](#)
- redeploy VMs
 - [Redeploy Windows virtual machines in Azure - Virtual Machines | Microsoft Docs](#)
 - [Redeploy Linux Virtual Machines in Azure - Virtual Machines | Microsoft Docs](#)
- configure high availability
 - [Availability options for Azure Virtual Machines - Azure Virtual Machines | Microsoft Docs](#)
 - [Azure regions and availability zones | Microsoft Docs](#)
 - [Proximity placement groups - Azure Virtual Machines | Microsoft Docs](#)
 - [Azure regions - Azure Virtual Machines | Microsoft Docs](#)
 - [Understand VM reboots - Azure Virtual Machines | Microsoft Docs](#)
 - [Availability sets overview - Azure Virtual Machines | Microsoft Docs](#)
- deploy and configure virtual machine scale sets
 - [Azure virtual machine scale sets overview - Azure Virtual Machine Scale Sets | Microsoft Docs](#)
 - [Quickstart - Create a virtual machine scale set in the Azure portal - Azure Virtual Machine Scale Sets | Microsoft Docs](#)
 - [Quickstart - Create a virtual machine scale set with Azure PowerShell - Azure Virtual Machine Scale Sets | Microsoft Docs](#)
 - [Availability options for Azure Virtual Machines - Azure Virtual Machines | Microsoft Docs](#)
 - [Azure virtual machine scale sets FAQs - Azure Virtual Machine Scale Sets | Microsoft Docs](#)

[Overview of the Azure Compute Unit - Azure Virtual Machines | Microsoft Docs](#)

[Microsoft Azure VM Selector](#)

[Azure Bastion | Microsoft Docs](#)

[Manage updates and patches for your VMs in Azure Automation | Microsoft Docs](#)

[Scaling out vs scaling up | Microsoft Azure](#)

[SLA for Virtual Machine Scale Sets | Microsoft Azure](#)
[SLA for Virtual Machines | Microsoft Azure](#)

[Overview of Azure Blueprints - Azure Blueprints | Microsoft Docs](#)

<https://azure.microsoft.com/en-us/overview/what-is-iaas/>

<https://docs.microsoft.com/en-us/azure/cloud-adoption-framework/migrate/azure-best-practices/multiple-regions>

<https://azure.microsoft.com/en-us/pricing/vm-selector/>

<https://docs.microsoft.com/en-us/azure/virtual-machines/linux/endorsed-distros#supported-distributions-versions>

<https://docs.microsoft.com/en-us/learn/modules/azure-well-architected-reliability/>

<https://k21academy.com/microsoft-azure/az-303/azure-availability-zones-and-regions/>

Create and configure containers

November 17, 2021 9:06 AM

[Serverless containers in Azure - Azure Container Instances | Microsoft Docs](#)
[Azure Kubernetes Service \(AKS\) design - Azure Architecture Center | Microsoft Docs](#)
[Introduction to Azure Kubernetes Service - Azure Kubernetes Service | Microsoft Docs](#)
[Azure Kubernetes Service \(AKS\) documentation | Microsoft Docs](#)
[Azure Serverless | Microsoft Azure](#)
[Containers vs. virtual machines | Microsoft Docs](#)

[Choose an Azure compute service - Azure Architecture Center | Microsoft Docs](#)

[Azure Serverless | Microsoft Azure](#)

- configure sizing and scaling for Azure Container Instances
 - [Quickstart - Deploy Docker container to container instance - Portal - Azure Container Instances | Microsoft Docs](#)
 - [Quickstart - Deploy Docker container to container instance - PowerShell - Azure Container Instances | Microsoft Docs](#)
- configure container groups for Azure Container Instances
 - [Tutorial - Deploy multi-container group - template - Azure Container Instances | Microsoft Docs](#)
- configure storage for Azure Kubernetes Service (AKS)
 - [Concepts - Storage in Azure Kubernetes Services \(AKS\) - Azure Kubernetes Service | Microsoft Docs](#)
- configure scaling for AKS
 - [Kubernetes on Azure tutorial - Scale Application - Azure Kubernetes Service | Microsoft Docs](#)
- configure network connections for AKS
 - [Concepts - Networking in Azure Kubernetes Services \(AKS\) - Azure Kubernetes Service | Microsoft Docs](#)
- upgrade an AKS cluster
 - [Kubernetes on Azure tutorial - Upgrade a cluster - Azure Kubernetes Service | Microsoft Docs](#)

[When to deploy Windows Containers to Azure VMs \(IaaS cloud\) | Microsoft Docs](#)

Create and configure Azure App Service

November 17, 2021 9:06 AM

[Overview - Azure App Service | Microsoft Docs](#)
[App Service Environment overview - Azure App Service Environment | Microsoft Docs](#)
[Deployment best practices - Azure App Service | Microsoft Docs](#)
[App Service Pricing | Microsoft Azure](#)

[Azure - Inside the Azure App Service Architecture | Microsoft Docs](#)

[Azure DevOps - Status](#)

- create an App Service plan
 - [Manage App Service plan - Azure App Service | Microsoft Docs](#)
 - [App Service plans - Azure App Service | Microsoft Docs](#)
- configure scaling settings in an App Service plan
 - [Scale up features and capacities - Azure App Service | Microsoft Docs](#)
 - [Get started with autoscale in Azure - Azure Monitor | Microsoft Docs](#)
- create an App Service
 - [Configure apps in the portal - Azure App Service | Microsoft Docs](#)
 - [Configure deployment credentials - Azure App Service | Microsoft Docs](#)
- secure an App Service
 - [Add and manage TLS/SSL certificates - Azure App Service | Microsoft Docs](#)
 - [Azure App Service access restrictions - Azure App Service | Microsoft Docs](#)
 - [Use Key Vault references - Azure App Service | Microsoft Docs](#)
 - [Security - Azure App Service | Microsoft Docs](#)
- configure custom domain names
 - [Tutorial: Map existing custom DNS name - Azure App Service | Microsoft Docs](#)
- configure backup for an App Service
 - [Back up an app - Azure App Service | Microsoft Docs](#)
- configure networking settings
 - [Enable integration with an Azure virtual network - Azure App Service | Microsoft Docs](#)
- configure deployment settings
 - [Set up staging environments - Azure App Service | Microsoft Docs](#)
 -

Implement and manage virtual networking

November 12, 2021 1:49 PM

[Azure Networking architecture documentation | Microsoft Docs](#)
[Azure Virtual Network - Concepts and best practices | Microsoft Docs](#)
[Azure Virtual Network FAQ | Microsoft Docs](#)

[Azure Latency Test - Azure Speed Test](#)
[Azure Global Infrastructure \(microsoft.com\)](#)

[azure-demo-environment/deployments at main · joshuawaddell/azure-demo-environment \(github.com\)](#)

[Exam AZ-700: Designing and Implementing Microsoft Azure Networking Solutions - Learn | Microsoft Docs](#)

- create and configure virtual networks, including peering
 - [Quickstart: Create a virtual network - Azure portal - Azure Virtual Network | Microsoft Docs](#)
 - [Virtual network peering and VPN gateways - Azure Reference Architectures | Microsoft Docs](#)
 - [Azure Virtual Network peering | Microsoft Docs](#)
 - <https://www.bing.com/videos/search?q=azure+vnet+peering&view=detail&mid=44457EABFFEFAC58DB2D44457EABFFEFAC58DB2D&FORM=VIRE>
 - [Create an Azure virtual network peering - different deployment models - different subscriptions | Microsoft Docs](#)
- configure private and public IP addresses
 - [Configure IP addresses for an Azure network interface | Microsoft Docs](#)
 - [Upgrade a public IP address - Azure portal | Microsoft Docs](#)
 - [Configure routing preference for a public IP address - Azure portal | Microsoft Docs](#)
- configure user-defined network routes
 - [Azure virtual network traffic routing | Microsoft Docs](#)
 - [Azure virtual network traffic routing | Microsoft Docs](#)
- implement subnets
 - [Add, change, or delete an Azure virtual network subnet | Microsoft Docs](#)
- configure endpoints on subnets
 - [Azure virtual network service endpoints | Microsoft Docs](#)
 - [Azure virtual network service endpoint policies | Microsoft Docs](#)
 - [Azure service tags overview | Microsoft Docs](#)
- configure private endpoints
 - [What is an Azure Private Endpoint? | Microsoft Docs](#)
- configure Azure DNS, including custom DNS settings and private or public DNS zones
 - [What is Azure DNS? | Microsoft Docs](#)
 - [What is Azure Private DNS? | Microsoft Docs](#)

Private link

[What is Azure Private Link? | Microsoft Docs](#)
[Quickstart - Create a Private Endpoint using the Azure portal | Microsoft Docs](#)

Secure access to virtual networks

November 16, 2021 9:08 AM

[Azure Security : Firewall vs NSG - TechNet Articles - United States \(English\) - TechNet Wiki \(microsoft.com\)](#)
[OWASP Foundation | Open Source Foundation for Application Security](#)

[Azure security baseline for Azure DNS | Microsoft Docs](#)
[Azure security baseline for Virtual Network | Microsoft Docs](#)
[Hybrid connection with 2-tier application | Microsoft Docs](#)
[Implement a secure hybrid network - Azure Architecture Center | Microsoft Docs](#)

- create security rules
<https://docs.microsoft.com/en-us/azure/firewall/features>Create, change, or delete an Azure network security group | Microsoft Docs
- associate a network security group (NSG) to a subnet or network interface
 - [Azure network security groups overview | Microsoft Docs](#)
 - [Network security group - how it works | Microsoft Docs](#)
 - [Azure application security groups overview | Microsoft Docs](#)
- evaluate effective security rules
[Introduction to Effective security rules view in Azure Network Watcher | Microsoft Docs](#)
- implement Azure Firewall *******Please note: This is an expensive service to run. Watch your Azure credits/spend*******
 - [What is Azure Firewall? | Microsoft Docs](#)
 - [Tutorial: Deploy & configure Azure Firewall and policy using the Azure portal | Microsoft Docs](#)
 - [Next-generation firewall capabilities with Azure Firewall Premium | Azure Blog and Updates | Microsoft Azure](#)
 - [Azure Firewall Premium features | Microsoft Docs](#)[Azure Firewall Standard features | Microsoft Docs](#)
 - [Understanding just-in-time virtual machine access in Microsoft Defender for Cloud | Microsoft Docs](#)
- implement Azure Bastion
 - [Azure Bastion | Microsoft Docs](#)
 - [Quickstart: Configure Bastion from VM settings - Azure Bastion | Microsoft Docs](#)
 - [Tutorial: Create an Azure Bastion host: Windows VM: portal | Microsoft Docs](#)
 - [Azure Bastion FAQ | Microsoft Docs](#)

Configure load balancing

November 16, 2021 9:09 AM

- configure Azure Application Gateway
 - [What is Azure Application Gateway | Microsoft Docs](#)
 - [Quickstart: Direct web traffic using the portal - Azure Application Gateway | Microsoft Docs](#)
 - [Tutorial: URL path-based routing rules using portal - Azure Application Gateway | Microsoft Docs](#)
- configure an internal or public load balancer
 - [What is Azure Load Balancer? - Azure Load Balancer | Microsoft Docs](#)
 - [Quickstart: Create a public load balancer - Azure portal - Azure Load Balancer | Microsoft Docs](#)
 - [Quickstart: Create an internal load balancer - Azure portal - Azure Load Balancer | Microsoft Docs](#)
 - [Azure Load Balancer SKUs | Microsoft Docs](#)
 - [Azure Load Balancer concepts | Microsoft Docs](#)
 - [Health probes to scale and provide HA for your service - Azure Load Balancer | Microsoft Docs](#)
- troubleshoot load balancing
 - [Troubleshoot common issues Azure Load Balancer | Microsoft Docs](#)

Routes

[Route network traffic - tutorial - Azure portal | Microsoft Docs](#)

[Prevent Denial of Inventory Attacks - Cequence Security](#)

Azure Front Door

[Azure Front Door | Microsoft Docs](#)

Monitor and troubleshoot virtual networking

November 16, 2021 9:09 AM

- monitor on-premises connectivity
 - [Connection Monitor in Azure | Microsoft Docs](#)
- configure and use Azure Monitor for Networks
 - [Azure Monitor | Microsoft Docs](#)
- use Azure Network Watcher
 - [Introduction to IP flow verify in Azure Network Watcher | Microsoft Docs](#)
 - [Introduction to Network Configuration Diagnostics in Azure Network Watcher | Microsoft Docs](#)
 - [Introduction to next hop in Azure Network Watcher | Microsoft Docs](#)
 - [Introduction to Azure Network Watcher Connection Troubleshoot | Microsoft Docs](#)
 - [Introduction to resource troubleshooting - Azure Network Watcher | Microsoft Docs](#)
 - [Tutorial: Diagnose a VM network routing problem - Azure portal - Azure Network Watcher | Microsoft Docs](#)
- troubleshoot external networking
- troubleshoot virtual network connectivity

Integrate an on-premises network with an Azure virtual network

November 16, 2021 9:10 AM

[Azure Latency Test - Azure Speed Test](#)
[Implement a secure hybrid network - Azure Architecture Center | Microsoft Docs](#)

- create and configure Azure VPN Gateway
 - [Azure VPN Gateway topologies and design | Microsoft Docs](#)
 - [Tutorial - Create and manage a VPN gateway: Azure portal - Azure VPN Gateway | Microsoft Docs](#)
 - [Tutorial - Connect on-premises network to virtual network: Azure portal - Azure VPN Gateway | Microsoft Docs](#)
 - [Azure VPN Gateway FAQ | Microsoft Docs](#)
 - [About BGP with VPN Gateway - Azure VPN Gateway | Microsoft Docs](#)
 - [About VPN devices for connections - Azure VPN Gateway | Microsoft Docs](#)
 - [Tutorial - Connect on-premises network to virtual network: Azure portal - Azure VPN Gateway | Microsoft Docs](#)
- [About VPN devices for connections - Azure VPN Gateway | Microsoft Docs](#)

 - [About Highly Available gateway configurations - Azure VPN Gateway | Microsoft Docs](#)
- create and configure Azure ExpressRoute
 - [Azure ExpressRoute Overview: Connect over a private connection | Microsoft Docs](#)
 - [Quickstart: Create and modify a circuit with ExpressRoute - Azure portal | Microsoft Docs](#)
 - [FAQ - Azure ExpressRoute | Microsoft Docs](#)
 - [Configure ExpressRoute and S2S VPN coexisting connections: Azure PowerShell | Microsoft Docs](#)
- configure Azure Virtual WAN
 - [Azure Virtual WAN Overview | Microsoft Docs](#)
 - [Azure Virtual WAN FAQ | Microsoft Docs](#)

Monitor resources by using Azure Monitor

November 12, 2021 1:49 PM

[Azure Monitor overview - Azure Monitor | Microsoft Docs](#)
[What is monitored by Azure Monitor - Azure Monitor | Microsoft Docs](#)
[Azure Monitor FAQ - Azure Monitor | Microsoft Docs](#)
[Azure Activity log - Azure Monitor | Microsoft Docs](#)
[Overview of Log Analytics in Azure Monitor - Azure Monitor | Microsoft Docs](#)

- configure and interpret metrics
 - [Tutorial - Analyze metrics for an Azure resource - Azure Monitor | Microsoft Docs](#)
- configure Azure Monitor logs
 - [Tutorial - Collect resource logs from an Azure resource - Azure Monitor | Microsoft Docs](#)
- query and analyze logs
 - [Tutorial - Create a log query alert for an Azure resource - Azure Monitor | Microsoft Docs](#)
 - [Samples for Kusto Queries - Azure Data Explorer | Microsoft Docs](#)
- set up alerts and actions
 - [Tutorial - Create a metric alert for an Azure resource - Azure Monitor | Microsoft Docs](#)
 - [Azure Monitor best practices - Alerts and automated actions - Azure Monitor | Microsoft Docs](#)
- configure Application Insights
 - [What is Azure Application Insights? - Azure Monitor | Microsoft Docs](#)

[Kusto Query overview- Azure Data Explorer | Microsoft Docs](#)

[What is Microsoft Sentinel? | Microsoft Docs](#)

[Exam SC-200: Microsoft Security Operations Analyst - Learn | Microsoft Docs](#)

[Azure Network Watcher | Microsoft Docs](#)

[Create diagnostic settings to send Azure Monitor platform metrics and logs to different destinations - Azure Monitor | Microsoft Docs](#)

[Azure Activity log - Azure Monitor | Microsoft Docs](#)

[Introduction to IP flow verify in Azure Network Watcher | Microsoft Docs](#)
[Microsoft Defender for Cloud - an introduction | Microsoft Docs](#)
[View Azure virtual network topology | Microsoft Docs](#)

[Monitoring Azure Blob Storage | Microsoft Docs](#)

[Sources of data in Azure Monitor - Azure Monitor | Microsoft Docs](#)

[Azure Monitor Workbooks Overview - Azure Monitor | Microsoft Docs](#)

Implement backup and recovery

November 17, 2021 4:30 PM

[What is Azure Backup? - Azure Backup | Microsoft Docs](#)
[Pricing - Cloud Backup | Microsoft Azure](#)
[Architecture Overview - Azure Backup | Microsoft Docs](#)
[Guidance and best practices - Azure Backup | Microsoft Docs](#)
[Azure Backup support matrix - Azure Backup | Microsoft Docs](#)

[About Azure Site Recovery - Azure Site Recovery | Microsoft Docs](#)
[General questions about the Azure Site Recovery service | Microsoft Docs](#)

- create a Recovery Services vault
 - [Overview of Recovery Services vaults - Azure Backup | Microsoft Docs](#)
 - [Create and configure Recovery Services vaults - Azure Backup | Microsoft Docs](#)
- create a Backup vault
 - [Overview of Backup vaults - Azure Backup | Microsoft Docs](#)
 - [Soft delete for Azure Backup - Azure Backup | Microsoft Docs](#)
- create and configure backup policy
 - [Auto-Enable Backup on VM Creation using Azure Policy - Azure Backup | Microsoft Docs](#)
 - [Tutorial - Back up multiple Azure virtual machines - Azure Backup | Microsoft Docs](#)
- perform backup and restore operations by using Azure Backup
 - [Tutorial - Restore a VM with Azure CLI - Azure Backup | Microsoft Docs](#)
 - [Tutorial - Restore files to a VM with Azure Backup - Azure Backup | Microsoft Docs](#)
- perform site-to-site recovery by using Azure Site Recovery
 - [Set up Azure VM disaster recovery to a secondary region with Azure Site Recovery - Azure Site Recovery | Microsoft Docs](#)
 - [About recovery plans in Azure Site Recovery - Azure Site Recovery | Microsoft Docs](#)
 - [Set up failover/failback to a secondary Hyper-V site with Azure Site Recovery - Azure Site Recovery | Microsoft Docs](#)
 - [Monitor Azure Site Recovery - Azure Site Recovery | Microsoft Docs](#)
 - <https://docs.microsoft.com/en-us/azure/site-recovery/site-recovery-create-recovery-plans>
- configure and review backup reports
 - [Configure Azure Backup reports - Azure Backup | Microsoft Docs](#)
 - [Use diagnostics settings for Recovery Services vaults - Azure Backup | Microsoft Docs](#)

<https://support.microsoft.com/en-us/windows/file-history-in-windows-5de0e203-ebae-05ab-db85-d5aa0a199255>

[About Azure file share backup - Azure Backup | Microsoft Docs](#)

[About Azure VM backup - Azure Backup | Microsoft Docs](#)

[Back up Windows machines by using the MARS agent - Azure Backup | Microsoft Docs](#)

[Create an Azure snapshot of a virtual hard disk - Azure Virtual Machines | Microsoft Docs](#)

[Manage recovery points - Azure Backup | Microsoft Docs](#)

[Back up and restore encrypted Azure VMs - Azure Backup | Microsoft Docs](#)

Additional Resources

January 21, 2022 1:25 PM

<https://support.microsoft.com/en-us/windows/file-history-in-windows-5de0e203-ebae-05ab-db85-d5aa0a199255>

Create a Vnet & Subnet

January 19, 2022 5:03 PM

#Create a Resource Group

```
New-AzResourceGroup -Name RG01 -Location "EastUS"
```

#create the network

```
$myVNet2 = New-AzVirtualNetwork -ResourceGroupName RG01 -Location EastUS -Name myVNet2 -  
AddressPrefix 10.0.0.0/16
```

#view network

```
Get-AzVirtualNetwork -Name myVNet2
```

#Create subnet

```
$mySubnet2 = Add-AzVirtualNetworkSubnetConfig -Name mySubnet2 -AddressPrefix 10.0.0.0/24 -  
VirtualNetwork $myVNet2
```

#View Subnet

```
Get-AzVirtualNetworkSubnetConfig -Name mySubnet2 -VirtualNetwork $myVNet2
```

#Associate subnet

```
$myvnet2 | Set-AzVirtualNetwork
```

#Delete Resource Group

```
Remove-AZResourceGroup -Name RG01 -Force
```

Create a Basic default VM

January 19, 2022 5:05 PM

```
#Create a Basic default VM
```

```
#Variables
```

```
$ResourceGroup = "AZ104_Jan20"
```

```
$location = "CanadaCentral"
```

```
$VMName = "vm1"
```

```
#Create a Resource Group
```

```
New-AzResourceGroup -Name $ResourceGroup -Location $location
```

```
#Create a VM
```

```
New-AzVm `
```

```
-ResourceGroupName $ResourceGroup `
```

```
-Name $VMName `
```

```
-Location $location `
```

```
-VirtualNetworkName "myVnet" `
```

```
-SubnetName "mySubnet" `
```

```
-SecurityGroupName "myNetworkSecurityGroup" `
```

```
-PublicIpAddressName "myPublicIpAddress"
```

```
#Delete the Resource Group
```

```
Remove-AZResourceGroup -Name $ResourceGroup -Force
```

Create a storage account

January 20, 2022 2:30 PM

```
#Create a storage account
```

```
#Variables
```

```
$resourceGroup = "AZ104_Jan20"
```

```
$location = "CanadaCentral"
```

```
#Create a RG
```

```
New-AzResourceGroup -Name $resourceGroup -Location $location
```

```
#Create the storage account
```

```
New-AzStorageAccount -ResourceGroupName $resourceGroup `
```

```
-Name az104sbennettlsa `
```

```
-Location $location `
```

```
-SkuName Standard_RAGRS `
```

```
-Kind StorageV2
```

```
#Remove RG
```

```
Remove-AZResourceGroup -Name $resourceGroup -Force
```