

# Digital Skills Learning Pathway

[www.aka.ms/pathways](http://www aka.ms/pathways)



## Digital Literacy

Learn how to effectively use devices, software, and the internet to collaborate with others and discover, use, and create information. Click [HERE](#) to visit the site.

[LinkedIn Learning](#)

- 1 Introduction
- 2 Computer and Device Basics
- 3 Working with Desktop Operating Systems
- 4 Working with Applications
- 5 Keeping your Computer Secure & Updated
- 6 Getting Online
- 7 Creating Content in Microsoft Office
- 8 Get Started with Word
- 9 Get Started with Excel
- 10 Working & Collaborating Online

## Microsoft 365 App Training

Learn about Microsoft 365 - a productivity cloud that delivers innovative and intelligent experiences, rich organizational insights, and a trusted platform to help people and organizations get more done.

[Quick Start](#) [Get Started](#) [Create & Save](#) [Share & Collaborate](#) [Work from Anywhere](#)  
[Work with Teams](#) [Get the most out of Windows](#) [Cool Microsoft 365 Features](#)

### Outlook



Quick Start

Set Up & Customise

Manage email

Contacts & Tasks

Calendar

Create and send email

Organise your inbox

### Word



Quick Start

Welcome to Word

Write & Edit

Format Text

Insert Tables, Pictures and Watermarks

Layout Pages

Save & Print

Share & Co-author

### Excel



Quick Start

Print & Share

Formulas & Functions

Enter & Format Data

Create a PivotTable

Import & Analyse Data

Troubleshooting

### PowerPoint



Quick Start

Collaborate & Share

Slide Design

Slides and Text

Pictures, charts, and tables

Print and Present

Animations / Multimedia

## More Microsoft 365 Training



OneNote



One Drive



SharePoint



Teams



Access



More

## Continuing your Learning

Learn new skills and discover the power of Microsoft products with step-by-step guidance. Click [HERE](#) to continue your learning journey.

### Accessibility Fundamentals

### Identity Concepts

Carnegie Mellon University: Cloud Administrator course

Quantum Computing Foundations

### Cloud Concepts

Enabling Digital Transformation

### Fundamentals of Networking

Fundamentals of Network Security

### Build your Tech resilience

Basic Concepts of Cybersecurity

### AI Business School

Web Development for beginners

### Introduction to Power Apps

Introduction to Power Automate

### Introduction to Power BI

How to build a basic chatbot

### How to build a simple dashboard

Take your first steps with C#

### Explore Data roles and Services

Python for beginners

### Understand Data concepts

Explore what Power BI can do for you

### Introduction to AI for business users

Create and use analytics reports with Power BI

## Cloud Fundamentals



Jump-start your career and demonstrate your achievements through industry-recognized Microsoft certifications



Azure Fundamentals



M365 Fundamentals



Dynamics 365 Fundamentals (CRM)  
Dynamics 365 Fundamentals (ERP)



Power Platform Fundamentals



Data Fundamentals



AI Fundamentals



Security, Compliance, and Identity Fundamentals



### Microsoft Virtual Training Days

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# Data Skills Learning Pathway

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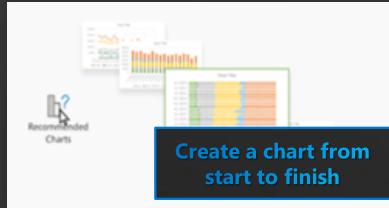


## Virtual Tutorials

Discover something new or build on your skills with free, virtual tutorials including Microsoft Excel



Analyse Data



Create a chart from start to finish

### Quick links:

Quick Start	Freezing Panes
-------------	----------------

Drop Down Lists	Print & Share
-----------------	---------------

Formulas & Functions	Troubleshooting
----------------------	-----------------

Enter & Format Data	Create a PivotTable
---------------------	---------------------

Import & Analyse Data	More....
-----------------------	----------

[Learn Excel for free](#)

## Data Analyst Essentials

Explore foundational concepts used in data analysis and practice using software tools for data analytics and data visualization. Gain skills in data gathering and cleaning, SQL queries, quality data sets and visualizations and data analysis software tools.

### LinkedIn Learning



#### Introduction to Career Skills in Data Analytics

Introduction

Introduction to Data and Data Analysis

Introduction to Business Intelligence

Identifying Data

Preparing Data

Transforming Data

Modelling Data

Visualising Data

Job Mapping

Continue your journey



#### Learning Data Analytics 1. Foundations

Introduction

Getting Started

Fundamentals of Data

Key Elements

Get Started with a Data Project

Importing, Exporting and Connections

Data Cleaning and Modeling

Applying Common Techniques

Conclusion



#### Learning Data Analytics 2. Apply Knowledge

Introduction

Working with Business Data

Building Data Sets with Queries

Chart Data Anytime and Anywhere

Pivot Data Anytime and Anywhere

Building in Power BI Desktop

Power Query Tips and Tricks

Presenting Data in Meetings

Conclusion

## Continue your learning

Learn new skills and discover the power of Microsoft products with step-by-step guidance. Click [HERE](#) to continue your learning journey.

### Get Started with Power BI



Understand how your business can use Power BI and how you can get started building with it yourself!

### Create/use analytics reports with Power BI



This learning path introduces you to Power BI and teaches you to use and build business intelligence reports.

### Design Effective Reports in Power BI



Learn the process to design and deliver compelling Power BI reports.

### Use DAX in Power BI Desktop



This learning path introduces Data Analysis Expressions (DAX) and provides you with foundational skills required to enhance data models with calculations.

### Consume Data with Power BI



Do you want to make business decisions backed by data? Learn how to do that in Power BI.

### Design and build tabular models



This learning path introduces the foundational components of designing scalable tabular models using Power BI.

### Distribute Power BI Insights



Publish and share Power BI reports to enable data driven decision making.

### Get and transform data with Power BI



Start here to learn how to ingest and transform data in Power BI.

### Continue your foundational learning



Data Fundamentals (DP-900)



Power BI Data Analyst (PL-300)



Azure Enterprise Data Analyst (DP-500)



# Azure Network Engineer Learning Pathway (1/2)

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## Getting started



Azure Skills Navigator

# Network Engineer



DOWNLOAD

Cloud networking continues to evolve and network engineers face a growing list of tasks, from migrating workloads to the cloud and managing hybrid connectivity to empowering remote workers and supporting strategic scenarios that enable digital transformation.

This Azure learning journey is designed for network engineering professionals needing to recommend, plan, and implement Azure networking solutions, including hybrid networking, connectivity, routing, security, and private access to Azure services. Start your networking journey in the cloud by understanding the basic tenets of Azure networking, how to configure hybrid connections, and manage the solutions for performance, resiliency, scale, and security.

Then learn how to deploy networking solutions by using the Azure Portal and other methods, including PowerShell, Azure Command-Line Interface (CLI), and Azure Resource Manager templates (ARM templates). You will gain an understanding of networking architectures and patterns, and how to configure, manage, secure, and troubleshoot virtual networks.

## Continue your foundational learning

- Azure Fundamentals
- Build your Tech resilience
- Fundamentals of computer networking
- Fundamentals of network security
- Configure the network for your virtual machines
- Monitor and troubleshoot your end-to-end Azure network infrastructure by using network monitoring tool
- Secure network connectivity on Azure

## Continue your learning

- Tutorial: Configure route filters for Microsoft peering using the Azure portal
- Configure a virtual network gateway for ExpressRoute
- Tutorial: Connect a virtual network to an ExpressRoute circuit using the portal
- ExpressRoute routing requirements
- ExpressRoute encryption: IPsec over ExpressRoute for Virtual WAN
- Configure BFD over ExpressRoute
- Verifying ExpressRoute connectivity
- Troubleshooting network performance
- Reset a failed ExpressRoute circuit

### Design and implement core networking infrastructure:

- Quickstart: Create a virtual network
- Azure networking services overview
- Azure Networking architecture docs
- Azure for network engineers
- Choosing between Azure VNet Peering and VNet Gateways
- What is Azure Private Endpoint?
- Add, change, or delete a virtual network subnet
- Add or remove a subnet delegation
- What is Azure DNS?
- Create an Azure DNS zone and record
- Quickstart: Create an Azure private DNS zone
- Name resolution for resources in Azure virtual networks
- What is a virtual network link?
- Configure VPN gateway transit for virtual network peering
- Configure a VNet-to-VNet VPN gateway connection by using the Azure portal
- Virtual network peering
- Create, change, or delete a virtual network peering
- What is Azure Virtual WAN?

- Connect a VPN Gateway (virtual network gateway) to Virtual WAN
- Tutorial: Create a Site-to-Site connection using Azure Virtual WAN
- How to create a Network Virtual Appliance in an Azure Virtual WAN hub
- How to configure virtual hub routing
- Virtual WAN FAQ

### Design and implement routing :

- Virtual network traffic routing
- Route network traffic with a route table
- Create, change, or delete a route table
- Configure forced tunnelling
- Diagnose a virtual machine routing problem
- Troubleshoot VPN Gateway
- Azure Load Balancer SKUs
- What is Azure Load Balancer?
- Create a public load balancer to load balance VMs
- Create a cross-region Azure Load Balancer
- Outbound rules Azure Load Balancer
- Configure port forwarding in Azure Load Balancer
- Outbound-only load balancer configuration
- Application Gateway configuration overview
- Azure Application Gateway features
- Autoscaling and Zone-redundant Application Gateway v2
- Application gateway components
- Application Gateway listener configuration
- Monitoring Azure Application Gateway
- Application Gateway request routing rules
- Application Gateway HTTP settings configuration
- Overview of TLS termination and end to end TLS with Application Gateway
- Rewrite HTTP headers and URL with Application Gateway

### Design, Implement, and Manage Hybrid Networking:

- Highly Available cross-premises and VNet-to-VNet connectivity
- What is VPN Gateway?
- VPN Gateway design
- About zone-redundant virtual network gateways in Azure Availability Zones
- What is VPN Gateway?
- VPN Gateway FAQ
- Tutorial: Create a Site-to-Site connection
- Configure IPsec/IKE policy for site-to-site VPN
- Tutorial: Create and manage a VPN gateway
- Troubleshoot VPN Gateway
- Troubleshoot Azure VPN Gateway using diagnostic logs
- Configure a Point-to-Site connection to a VNet using RADIUS authentication: PowerShell
- Configure a Point-to-Site VPN connection using Azure certificate authentication
- Configure OpenVPN for Point-to-Site VPN gateways
- Create an Azure Active Directory tenant for P2S OpenVPN protocol connections
- Configure a Point-to-Site VPN connection to a VNet using multiple authentication types
- Create and install VPN client configuration files for P2S RADIUS authentication
- Troubleshoot an AAD authentication VPN client
- What is Azure ExpressRoute?
- About ExpressRoute Direct
- Cross-network connectivity
- Designing for disaster recovery with ExpressRoute private peering
- About ExpressRoute virtual network gateways
- Configure ExpressRoute Global Reach
- About ExpressRoute FastPath
- ExpressRoute circuits and peering
- Tutorial: Create and modify peering for an ExpressRoute circuit using the Azure portal



# Azure Network Engineer Learning Pathway (2/2)

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## Additional Study

### Design and implement routing (cont..):

- Overview of Azure Front Door Standard/Premium SKU
- Frequently asked questions for Azure Front Door
- Application Gateway listener configuration
- Backends and backend pools in Azure Front Door
- Traffic Manager routing methods
- Add, disable, enable, or delete endpoints
- Verify Traffic Manager settings
- What is Virtual Network NAT?
- Designing virtual networks with NAT gateway resources
- Tutorial: Create a NAT gateway using the Azure portal

### Secure and Monitor Networks:

- What is Azure Firewall?
- Azure Firewall features
- Azure Firewall Premium features
- Deploy and configure Azure Firewall using Azure PowerShell
- Tutorial: Deploy and configure Azure Firewall and policy using the Azure portal
- Use FQDN filtering in network rules
- Configure Azure Firewall application rules with SQL FQDNs
- Azure Firewall Manager policy overview
- Tutorial: Secure your virtual hub using Azure Firewall Manager
- About Network Virtual Appliance in an Azure Virtual WAN hub
- Create, change, or delete a network security group
- Application security groups
- Network security groups
- Tutorial: Log network traffic to and from a virtual machine using the Azure portal
- Introduction to flow logging for network security groups

- Create Web Application Firewall policies for Application Gateway
- Azure Web Application Firewall on Azure Front Door
- Create Web Application Firewall policies for Application Gateway
- Configure a Web Application Firewall policy using Azure PowerShell
- Custom rules for Web Application Firewall v2 on Azure Application Gateway
- Create Web Application Firewall policies for Application Gateway
- Azure Monitor Network Insights
- Create a monitor in Connection Monitor by using the Azure portal
- Traffic Analytics
- Introduction to flow logging for network security groups
- Resource logging for a network security group
- What is Azure Network Watcher?
- Create an Azure Network Watcher instance

### Design and implement Private access to Azure Services:

- What is Azure Private Link service?
- What is Azure Private Endpoint?
- Virtual network service tags
- Virtual Network service endpoints
- Integrate your app with an Azure virtual network
- Create a private Azure Kubernetes Service cluster
- Configuring an App Service Environment v1
- Network Architecture Overview of App Service Environments

## Role based certification

### Azure Administrator

Azure Administrator is a great complimentary certification for Azure Network Engineer. Whilst the certification is only recommended and not mandatory, the Virtual Networking components of the curriculum are a prerequisite for the study

Please see the [Microsoft Azure Administrator Learning Pathway](#) for more information

#### Skills measured

- Prerequisites for Azure Administrators
- Manage Azure identities and governance
- Implement and manage storage
- Deploy and manage Azure compute resources
- **Configure and manage virtual networking**
- Monitor and back up Azure resources

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[Azure AD Docs](#)

## Microsoft Learn Collections

[Azure Networking](#)

[Azure Networking Security](#)

[Modernise your infrastructure](#)

[Azure Infrastructure](#)

## Role based certification

### Azure Network Engineer

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

#### Skills measured:

- Design and implement core networking infrastructure
- Design, implement, and manage connectivity services
- Design and implement application delivery services
- Design and implement private access to Azure services
- Secure network connectivity to Azure resources

#### Microsoft Learn content:

- Introduction to Azure virtual networks
- Design and implement hybrid networking
- Design and implement Azure ExpressRoute
- Load balance non-HTTP(S) traffic in Azure
- Load balance HTTP(S) traffic in Azure
- Design and implement network security
- Design and implement private access to Azure services
- Design and implement network monitoring

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[Azure Network Documentation](#)

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## 30 Days to Learn it – Cloud Skills Challenge

Gain expertise in planning, implementing, and maintaining Azure networking solutions, including hybrid networking, connectivity, routing, security, and private access to Azure services.



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# Azure Administrator Learning Pathway (1/2)

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## Getting started

### Azure Skills Navigator



### System Administrator

Looking to develop your Microsoft Azure knowledge and skills? You're on the right path!

[DOWNLOAD](#)

This Azure learning journey is designed for two different types of explorers:

**Systems administrators** just beginning their careers in the cloud. These IT professionals manage the configuration, performance, and security of Windows Server environments on-premises or operate, protect, and monitor cloud workloads. This includes IT Managers looking to enhance their existing on-premises systems with the hybrid benefits of cloud capabilities.

**Students** who are just getting started learning about Azure

This guide maps out your itinerary for deepening your Azure knowledge, drawing on a wide array of Microsoft resources. You'll begin by diving into the fundamental concepts of cloud computing and Azure core infrastructure services, then move on to management, monitoring, security, and compliance. These modules are designed to be completed in order, step by step, as outlined in this guide

### Microsoft Resources:

- Build your Tech resilience
- Azure Fundamentals
- Virtualization - Sharing cloud resources
- Linux on Azure
- Microsoft Azure Blog
- Microsoft Trust Centre | Compliance
- Azure Community Support
- Threat Modeling Security Fundamentals
- Intro to data protection and privacy regulations
- Get started with Azure Advisor
- Automate administrative tasks by using PowerShell

## Role based certification

### Azure Administrator

#### AZ-104: Microsoft Azure Administrator

##### Skills Measured:

- Manage Azure identities and governance (15-20%)
- Implement and manage storage (15-20%)
- Deploy and manage Azure compute resources (20-25%)
- Configure and manage virtual networking (20-25%)
- Monitor and back up Azure resources (10-15%)

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##### - Prerequisites for Azure Administrators

##### Manage Azure identities and governance

- Configure Azure Active Directory
- Configure user and group accounts
- Configure subscriptions
- Configure Azure policy
- Configure role-based access control
- Create Azure users and groups in Azure Active Directory
- Secure your Azure resources with Azure role-based access control (Azure RBAC)
- Allow users to reset their password with Azure Active Directory self-service password reset

##### Implement and manage storage

- Configure storage accounts
- Configure blob storage
- Configure storage security
- Configure Azure files and Azure File Sync
- Configure storage with tools
- Create an Azure Storage account
- Control access to Azure Storage with shared access signatures
- Upload, download, and manage data with Azure Storage Explorer

##### Deploy and manage Azure compute resources

- Configure virtual machines
- Configure virtual machine availability
- Configure virtual machine extensions
- Configure app service plans
- Configure Azure App Services
- Configure Azure Container Instances
- Configure Azure Kubernetes Service
- Manage virtual machines with the Azure CLI
- Create a Windows virtual machine in Azure
- Host a web application with Azure App Service
- Protect your virtual machine settings with Azure Automation State Configuration

##### Configure and manage virtual networking

- Configure virtual networks
- Configure network security groups
- Configure Azure Firewall
- Configure Azure DNS
- Configure virtual network peering
- Configure VPN Gateway
- Configure ExpressRoute and Virtual WAN
- Configure network routing and endpoints

- Configure Azure Load Balancer
- Configure Azure Application Gateway
- Design an IP addressing schema for your Azure deployment
- Distribute your services across Azure virtual networks and integrate them by using virtual network peering
- Host your domain on Azure DNS
- Manage and control traffic flow in your Azure deployment with routes
- Improve application scalability and resiliency by using Azure Load Balancer

##### Monitor and back up Azure resources

- Configure file and folder backups
- Configure virtual machine backups
- Configure Azure Monitor
- Configure Azure alerts
- Configure Log Analytics
- Configure Network Watcher
- Improve incident response with alerting on Azure
- Analyze your Azure infrastructure by using Azure Monitor logs
- Monitor performance of virtual machines by using Azure Monitor VM Insights



# Azure Administrator Learning Pathway (2/2)

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## Supporting Study | Doing More

### Managing Azure Active Directory (Azure AD)

- What is Azure Active Directory?
- Compare AD to Azure AD
- Azure AD Objects
- Creating & Managing Users
- Setting up self service password resets
- What is Azure AD join?

### Role Based Access Control (RBAC)

- What is Azure RBAC? | Built in RBAC roles
- RBAC – add/remove assignments

### Subscriptions & Governance

- Principles of resource groups
- Get started with the Azure Enterprise portal
- Management/Resource Groups
- What is Azure Policy?

### Storage:

- Azure Storage Overview | Storage Services
- Replication – Azure Storage Redundancy
- Azure Key Vault – Customer Managed Keys
- Azure Blob Storage | Files vs Blobs
- What is Azure Import/Export?

### Virtual Machines:

- Windows VM in Azure Documentation
- Availability options for VMs in Azure
- Regions and Availability Zones in Azure
- Use VM Images from Azure Marketplace
- Define Azure Resource Manager templates
- Using Custom Script Extensions
- Azure Disk Encryption for Windows VMs

### Containers:

- Container Instances Documentation
- YAML Files | Docker
- AKS Kubernetes – 50 days zero to hero

### Virtual Networking:

- Virtual Network Documentation
- Manage DNS Records
- What is Azure Load Balancer?

### Microsoft Learn

- Best practices for Azure migration
- Prepare to migrate VMware workloads to Azure by deploying Azure VMware Solution
- Improve your reliability with modern operations practices
- Secure your cloud applications in Azure
- Managing bulk Azure Reserved Instances
- Protect identity and access with Azure Active Directory
- Implement Windows Server IaaS VM Identity
- Implement Windows Server IaaS VM Security
- Secure your cloud data
- Architect secure infrastructure in Azure
- Azure security best practices and patterns
- Deploy and configure Windows Server IaaS VM
- Implement a Windows Server hybrid cloud infrastructure
- Implement Windows Server hybrid cloud management, monitoring, and security

### Azure Active Directory | Identity

- Azure Active Directory Documentation
- Azure AD Domain Services Documentation
- External Identities Documentation
- Azure Information Protection
- Implement Microsoft Identity
- Describe the identity and access management capabilities of Microsoft 365
- Protect identity and access with Azure Active Directory
- Manage identity and access in Azure Active Directory
- Manage identities and governance for Azure administrators
- Monitor and report on security events in Azure AD
- Monitor and maintain Azure Active Directory
- Implement hybrid identity with Windows Server
- Deploy and manage Azure IaaS Active Directory domain controllers in Azure



## Learn Live

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### Azure Core IaaS Study Hall

Learn about highly secure, available, and scalable cloud services. Modernize your IT with an enterprise-grade cloud infrastructure and migrate your apps with confidence. Running through to June 2023.

On demand library: Watch all previous shows on demand [HERE](#) including:

- Hybrid Infrastructure Study Hall
- FastTrack for Azure Season 1
- Azure Hybrid Cloud Study Hall
- Run VMware workloads on Azure VMware Solution

## Backup and Disaster Recovery

Learn why centrally managed backup for on-premises and cloud data is best for reducing the management burden and costs of a BDR infrastructure while optimizing the speed and reliability of backup and data recovery operations. Then dive into the Azure backup architecture and learn how to design your backup and recovery solution.

### Azure Skills Navigator

# Backup and Disaster Recovery

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## Microsoft Learn Collections

Azure VMware Solution

Azure Virtual Desktop

Azure Compute

Azure Arc

Azure Storage

Azure Monitor

BCDR

Automanage

Modernise your Infrastructure

Azure Infrastructure Official Collection

## Azure Connected Learning Experience

Microsoft Azure Connected Learning Experience (CLX) is an experiential training program that sets a trajectory for aspiring learners and working professionals to be Azure experts. The CLX program offers a personalized journey that aims to optimize learning experience while maximizing return on time invested.

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## Microsoft Virtual Training Days

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## Microsoft

# TECHNICAL QUEST

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# Azure for SAP Workloads Learning Pathway (1/2)

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## New to Azure? Start Here

Azure Skills Navigator



### System Administrator

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## Role based certification

Azure Administrator

### AZ-104: Microsoft Azure Administrator

Skills Measured:

- Manage Azure identities and governance (15-20%)
- Implement and manage storage (15-20%)
- Deploy and manage Azure compute resources (20-25%)
- Configure and manage virtual networking (20-25%)
- Monitor and back up Azure resources (10-15%)

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## Role based certification

Azure for SAP Workloads Specialty

### AZ-120: Azure for SAP Workloads Specialty

Skills Measured:

- Migrate SAP workloads to Azure
- Design and implement an infrastructure to support SAP workloads on Azure
- Design and implement high availability and disaster recovery (HA/DR)
- Maintain SAP workloads on Azure

## Exam Curriculum

### Explore Azure for SAP workloads

- Explore Azure for SAP workloads
- Discover common terms and meanings for SAP on Azure
- Identify SAP-certified configurations
- Examine SAP NetWeaver with AnyDB on Azure virtual machines
- Examine SAP S/4HANA on Azure virtual machines

### Explore the foundations of IaaS for SAP on Azure

- Explore Azure for SAP compute
- Explore Azure for SAP networking
- Explore Azure for SAP storage
- Explore Azure for SAP databases

### Explore the foundations of identity and governance for SAP on Azure

- Explore identity services for SAP on Azure
- Explore remote management for SAP on Azure
- Explore governance and manageability for SAP on Azure

### Deploy SAP on Azure

- Deploy single-instance implementations of SAP on Azure (2-tier and 3-tier)
- Implement high availability in SAP NetWeaver with AnyDB on Azure virtual machines

### Ensure business continuity and implement disaster recovery for SAP solutions on Azure

- Implement high availability for SAP workloads in Azure
- Implement disaster recovery for SAP workloads in Azure
- Perform backups and restores for SAP workloads on Azure

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# Azure for SAP Workloads Learning Pathway (2/2)

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## Supporting Study | Doing More

### Migrate SAP workloads to Azure

- Use the planning and deployment checklist for SAP workloads on Azure
- Explore migration options for SAP on Azure
- Migrate very large databases (VLDB) to Azure for SAP

### Explore SAP HANA on Azure (Large Instances)

- Identify SAP HANA on Azure (Large Instances) certified offerings
- Examine SAP HANA on Azure (Large Instances) sample architecture
- Plan SAP HANA on Azure (Large Instances) deployments
- Plan SAP HANA on Azure (Large Instances) high availability and disaster recovery
- Examine backup security licensing and support considerations for SAP HANA on Azure (Large Instances)
- Implement and deploy SAP HANA on Azure (Large Instances)
- Manage SAP HANA on Azure (Large Instances)
- Monitor and troubleshoot SAP HANA on Azure (Large Instances)
- Implement business continuity, disaster recovery, and backup for SAP HANA on Azure (Large Instances)

### Monitor and troubleshoot Azure for SAP workloads

- Explore monitoring requirements of Azure for SAP workloads
- Configure the Azure Enhanced Monitoring Extension for SAP
- Explore licensing, pricing, and support for SAP on Azure virtual machines

[SAP on Azure Documentation](#)

### Other

- Connect Power Platform to SAP on Azure
- Implement Azure Monitoring for SAP workloads on Azure VMs
- Using Azure NetApp Files application groups with SAP HANA
- Turn insight into action by combining SAP and other data
- Automate Deployment of SAP on Azure
- Plan to deploy the Microsoft Sentinel solution for SAP
- Improve SAP seller productivity with Microsoft Teams and Power Platform
- Implement Azure Backup for SAP workloads on Azure VMs
- Securely connect to SAP on Azure
- SAP on Azure landing zone accelerator
- SAP on Azure Deployment Automation Framework

### SAP workloads on Azure VMs

#### Overview

- Use Azure to host and run SAP workload scenarios
- Documentation Change Log
- SAP certifications and configurations running on Microsoft Azure
- SAP workload on Azure virtual machine supported scenarios
- What SAP software is supported for Azure deployments

#### Concept

- Azure Virtual Machines planning and implementation for SAP NetWeaver
- Azure Storage types for SAP workload
- High-availability architecture and scenarios for SAP NetWeaver
- SAP workload configurations with Azure Availability Zones

### How to:

- Azure Virtual Machines deployment for SAP NetWeaver
- Considerations for Azure Virtual Machines DBMS deployment for SAP workload

### Azure Center for SAP solutions

#### Overview

- What is Azure Center for SAP solutions? (preview)
- Common questions about Azure Center for SAP solutions (preview)

### How to:

- Prepare network for infrastructure deployment (preview)
- Deploy S/4HANA infrastructure with Azure Center for SAP solutions (preview)
- Install SAP software (preview)
- Register existing SAP system (preview)
- Start and stop SAP systems (preview)
- Manage a Virtual Instance for SAP solutions (preview)
- Get quality checks and insights for a Virtual Instance for SAP solutions (preview)
- View post-deployment cost analysis for SAP system (preview)

### Azure Monitor for SAP solutions

#### Overview

- What is Azure Monitor for SAP solutions? (preview)
- Azure Monitor for SAP solutions FAQ (preview)

#### Concept

- What are providers in Azure Monitor for SAP solutions? (preview)

#### Quickstart

- Quickstart: deploy Azure Monitor for SAP solutions in Azure portal (preview)
- Quickstart: deploy Azure Monitor for SAP solutions with PowerShell (preview)

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- Run VMware workloads on Azure VMware Solution

## Backup and Disaster Recovery

Learn why centrally managed backup for on-premises and cloud data is best for reducing the management burden and costs of a BDR infrastructure while optimizing the speed and reliability of backup and data recovery operations. Then dive into the Azure backup architecture and learn how to design your backup and recovery solution.

### Azure Skills Navigator

# Backup and Disaster Recovery

[DOWNLOAD](#)

# Azure VMware Solution Learning Companion

[www.aka.ms/pathways](http://www.aka.ms/pathways)



## Getting started

### Run VMware workloads on Azure VMware Solution

#### Introduction to Azure VMware Solution

- Introduction
- What is Azure VMware Solution
- How Azure VMware Solution Works
- When to use Azure VMware Solution
- Summary

#### Prepare to migrate VMware workloads to Azure by deploying Azure VMware Solution

- Introduction
- Plan an Azure VMware Solution deployment
- Plan network topology for Azure VMware Solution deployment
- Deploy Azure VMware Solution
- Connect to an on-premises VMware vSphere environment
- Configure NSX-T network components
- Knowledge check
- Summary

#### Migrate VMware workloads on-premises to Azure VMware Solution

- Introduction
- Plan HCX deployment
- Deploy and install VMware HCX
- Configure networking and compute profiles for VMware HCX
- Create service mesh for VMware HCX
- Migrate virtual machine workloads into Azure VMware Solution
- Knowledge check
- Summary

#### Deploy disaster recovery using VMware Site Recovery Manager and Azure VMware Solution

- Introduction
- Identify deployment workflow prerequisites
- Install SRM in Azure VMware Solution
- Install vSphere Replication Appliance
- Configure vCenter site pairing
- Knowledge Check
- Summary

## Azure VMware Solution Documentation

Learn how to use Azure VMware Solution to deploy a VMware Software-Defined Data Center (SDDC) private cloud to Azure

#### Overview:

- What is Azure VMware Solution?
- What's new
- FAQ

#### Get Started:

- Plan the deployment
- Deploy Azure VMware Solution
- Connect to on-premises
- Configure on-premises HCX connector
- Uninstall VMware HCX

#### Tutorials:

- Network Planning Checklist
- Create a private cloud
- Access a private cloud
- Configure networking
- Create an NSX-T network segment
- Peer on-premises to private cloud
- Expand or shrink clusters in a private cloud
- Delete a private cloud

#### Azure native integration:

- Protect, monitor and manage VMs
- Integrate Microsoft Defender for Cloud
- Protect web apps with Azure Application Gateway
- Deploy Traffic Manager to balance workloads
- Configure alerts and work with metrics
- Configure customer-managed key encryption at rest

#### Concepts:

- Access and Identity
- API Management
- Hub and Spoke
- Internet connectivity design considerations
- Network Design Considerations
- Networking and interconnectivity
- Private Cloud and Clusters
- Run Command
- Storage

#### Identity Management:

- Identity Concepts
- Configure external identity source for vCenter Server
- Configure external identity source for NSX-T Data Center
- Rotate the clouadmin credentials

#### How to.....:

- Create an Azure VMware Solution Assessment
- Request host quota Azure VMware Solution
- Save costs with a reserved instance

#### VMware Solutions – How to:

- Configure HCX network extension
- Configure HCX network extension HA
- Configure vRealize Operations
- Deploy Horizon
- Create a content library to deploy VMs
- Upgrade HCX on Azure VMware Solution

#### Enterprise Scale for Azure VMware Solution:

- Azure VMware Solution landing zone accelerator
- Identity & Access Management
- Network Topology and connectivity
- Management and monitoring
- Enterprise-scale business continuity and disaster recovery
- Enterprise-scale security, governance and compliance
- Platform Automation and DevOps
- Enterprise-scale Automation

#### How to.....:

- Configure DHCP server or relay
- Configure DHCP on L2 stretched networks
- Configure a DNS forwarder
- Configure port mirroring
- Enable Public IP to the NSX-T Data Center Edge
- Configure a site-to-site VPN in vWAN
- Configure Windows Server Failover Cluster
- Connect multiple Azure VMware Solution private clouds in the same region
- Configure storage policy

#### Microsoft Blog:

- Azure Migration and Modernization Blog

[Click for Azure VMware Solution Documentation](#)

## Microsoft Learn Collections

Azure VMware Solution

Azure Compute

Azure Storage

Modernise your Infrastructure

Azure Virtual Desktop

Azure Arc

Azure Monitor

Infrastructure Official Collection



## Microsoft Virtual Training Days

Build the technical skills you need with free Virtual Training Days.

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Live sessions running until June 23: [Azure Core IaaS Study Hall](#)

On demand library: Watch previous shows on demand [HERE](#) including:

- Hybrid Infrastructure Study Hall
- Azure Hybrid Cloud Study Hall
- Run VMware workloads on Azure VMware Solution

Learn Live



# Azure Data Engineer Learning Pathway

[www aka.ms/pathways](http://www aka.ms/pathways)

## Getting started

Azure Data Engineers integrate, transform, and consolidate data from various structured and unstructured data systems into structures that are suitable for building analytics solutions.

### Microsoft Learn

- Build your Tech resilience
- [New to the Cloud or Azure?](#) Start with Azure Fundamentals
- [New to data solutions on Azure?](#) Build your knowledge with Data Fundamentals
- Intro to data classification and protection
- Intro to data protection and privacy regulations

## Additional Study

## Additional Study

### Design and implement data storage:

- Understand Azure Data Lake Storage Gen2
- Access tiers for Azure Blob Storage
- Storage considerations when using Azure Synapse serverless SQL pools
- Query a Parquet file using Azure Synapse serverless SQL pools
- Dynamic file pruning
- Understand table distribution design
- Partitioning tables in dedicated SQL pool
- Understand table distribution design
- Best practices for dedicated SQL pools in Azure Synapse Analytics

- Star Schema
- Multidimensional Schemas and Data
- Manage retention of historical data in system-versioned temporal tables
- Getting started with temporal tables
- Create and configure a self-hosted integration runtime
- Manage self-hosted integration runtime
- Choosing an analytical data store in Azure
- Synapse Analytics shared metadata tables
- When do you use Apache Spark pools?
- Data Compression
- Exercise - Use table distribution and indexes to improve performance
- Change storage account is replication
- Slowly Changing Dimension Transformation
- Populate slowly changing dimensions
- Create external tables in Azure Synapse serverless SQL pools
- Views in Synapse serverless SQL pools
- Tutorial: Load data to Azure Synapse Analytics SQL pool
- Create, develop, and maintain Synapse notebooks in Azure Synapse Analytics
- Quickstart: Create a serverless Apache Spark pool in Synapse Analytics using web tools
- Lifecycle Management
- Exercise: Flatten nested structures and explode arrays with Apache Spark in synapse
- Preserve metadata and ACLs using copy activity in Azure Data Factory

### Design and develop data processing:

- Common practices for data loading
- Tutorial: Extract, transform, and load data by using Azure Databricks
- Understand the Streaming Analytics Workflow
- Handling bad records and files

- Prepare and transform data with Azure Synapse Analytics
- Analyse complex data types in Azure Synapse Analytics
- Understand data store models
- Prepare and transform data
- Define a modern data warehouse architecture
- Choosing a batch processing technology
- Manage source data files
- Copy activity in Azure Data Factory
- MERGE (Transact-SQL)
- Continuous integration and delivery for Azure Synapse workspace
- Handle SQL truncation error rows in Data Factory mapping data flows
- Backup and restore in Azure Synapse Dedicated SQL pool
- Implement workload management
- Use extended Apache Spark history server to debug and diagnose Apache Spark applications
- Enterprise Data Warehouse Architecture
- Stream processing with Azure Databricks
- Azure Synapse Analytics
- Monitoring for performance efficiency
- Work with windowing functions
- Schema drift
- Time handling in Stream Analytics
- Checkpoint and replay concepts in Azure Stream Analytics jobs
- Scale an Azure Stream Analytics job to increase throughput
- Use repartitioning to optimize processing
- Azure Stream Analytics output error policy
- Stream Analytics output to Cosmos DB
- Stream processing with Stream Analytics
- Data Loading best practices
- Get Started with Synapse Analytics
- Monitor your Synapse Workspace

### Design and implement data security :

- Implement encryption
- Data ingestion security considerations
- Configure authentication
- Access control lists (ACLs) in Azure Data Lake Storage Gen2
- Synapse access control
- Column-level security
- Manage authorization through column and row level security
- Manage user permissions
- Auditing for Azure SQL Database and Azure Synapse Analytics
- Retention Policy on storage accounts
- Understand network security options
- Dynamic Data Masking
- Secure a dedicated SQL pool

### Monitor and optimize data storage and data processing :

- Monitor and Alert Data Factory by using Azure Monitor
- Exercise - implement workload management
- Monitor your Azure Synapse Analytics dedicated SQL pool workload using DMVs
- Collect custom logs with Log Analytics agent
- Use Synapse Studio to monitor your workspace pipeline runs
- Deploying Apache Airflow in Azure to build and run data pipelines
- Auto Optimize in Azure Databricks
- Modify user-defined functions
- Designing distributed tables
- Data spillage scenario - Search and purge
- Quickstart: Create an Azure Synapse workspace using an ARM template
- Indexing dedicated SQL pool tables
- Performance tuning with result set caching
- Optimize Apache Spark jobs
- Troubleshoot library installation errors
- Debug data factory pipelines

## Role based certification

### Azure Data Engineer

#### DP-203: Data Engineering on Microsoft Azure

##### Skills measured:

- Design and implement data storage
- Design and develop data processing
- Design and implement data security
- Monitor and optimize data storage and data processing

##### Microsoft Learn content:

- Get started with data engineering on Azure
- Build data analytics solutions using Azure Synapse serverless SQL pools
- Perform data engineering with Azure Synapse Apache Spark Pools
- Work with Data Warehouses using Synapse Analytics
- Transfer and transform data with Synapse Analytics pipelines
- Work with Hybrid Transactional and Analytical Processing Solutions using Azure Synapse Analytics
- Implement a Data Streaming Solution with Azure Stream Analytics
- Govern data across an enterprise
- Data engineering with Azure Databricks

[Exam Study Guide](#)

[Course Page](#)

[30 Day Challenge](#)

[Exam Page](#)

[Azure Data Architecture Guide](#)

[Practice Assessment](#)

# Microsoft Purview Learning Companion



[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Getting started

Microsoft Purview is a unified data-governance service that helps you manage and govern your on-premises, multicloud, and software-as-a-service (SaaS) data. You can easily create a holistic, up-to-date map of your data landscape with automated data discovery, sensitive data classification, and end-to-end data lineage. You can also empower data consumers to find valuable, trustworthy data.

### The basics

Learn about data classification capabilities, data loss prevention, and records management

- Introduction
- Know your data, protect your data, and govern your data
- Data classification capabilities of the compliance portal
- Sensitivity labels and policies
- Data loss prevention
- Retention policies and retention labels
- Records Management

### Govern data across an enterprise



Use Microsoft Purview to register and scan data, catalog data artifacts, find data for reporting, and manage Power BI artifacts to improve data governance in your organization.

- Introduction to Microsoft Purview
- Discover trusted data using Purview
- Catalogue data artifacts by using Purview
- Manage Power BI assets using Purview
- Integrate Purview and Synapse Analytics

## Manage information protection and governance



Microsoft's solutions for information protection and governance help organizations achieve the right balance between keeping their data protected and their people productive.

Introduction to information protection and data lifecycle management

- Classify data for protection and governance
- Protect information in Purview
- Prevent data loss in Purview
- Manage the data lifecycle in Purview
- Manage records in Purview

## Other

- eDiscovery and audit capabilities of Purview
- Manage Purview eDiscovery (Standard)
- Manage Purview eDiscovery (Premium)
- Manage Purview Audit (Standard)
- Manage Purview Audit (Premium)
- Insider risk capabilities in Purview
- Implement Microsoft Purview Insider Risk Management
- Prepare Microsoft Purview Communication Compliance
- Explore Purview Message Encryption
- Deploy Purview Message Encryption

## Purview

### Governance Documentation

### Manage visibility and governance of data assets

Purview Data Map      Purview Data Catalogue      Data Estate Insights

### Protect sensitive data across clouds, apps, and devices

Information Protection      Data Loss Prevention      Message Encryption

Customer Key      Double Key Encryption      Data Connectors

Data Lifecycle Management      Information Protection SDK      Customer Lockbox

### Identify data risks and manage regulatory compliance requirements

Insider Risk Management	Communications Compliance	Information Barriers
Privileged Access Management	Compliance Manager	Records Management
Purview Audit	eDiscovery	Graph API for compliance capabilities

## Purview Workshop

### Prerequisites:

- ✓ An [Azure account](#) with an active subscription. Note: If you don't have access to an Azure subscription, you may be able to start with a [free account](#).
- ✓ You must have the necessary privileges within your Azure subscription to create resources, perform role assignments, register resource providers (if required), etc

[Click Here](#)

## Microsoft Purview

Govern, protect and manage your data estate



Microsoft Purview provides a unified data governance solution to help manage and govern your on-premises, multicloud, and software as a service (SaaS) data. Easily create a holistic, up-to-date map of your data landscape with automated data discovery, sensitive data classification, and end-to-end data lineage.

[Purview Data Catalogue](#)

[Data Estate Insights](#)

[Data Policy](#)

[Data Sharing](#)

[Purview FAQ](#)

[Product Glossary](#)

## Microsoft Certifications

With relatable content

[DP-203: Data Engineering on Microsoft Azure](#)

[DP-500 Enterprise Data Analyst](#)

[SC-400: Information Protection Administrator](#)

## Videos

- Microsoft Purview Data Governance
- Govern your data from origin to consumption
- Govern your data wherever it resides
- Enable unified data governance

# Azure Synapse Analytics Learning Pathway

[www.aka.ms/pathways](http://www.aka.ms/pathways)



## Getting started

Azure Synapse Analytics is a limitless analytics service that brings together data integration, enterprise data warehousing and big data analytics.

### Microsoft Learn & Docs:

#### Azure Synapse Documentation

- [New to the Cloud or Azure?](#) Start with Azure Fundamentals
- [New to data solutions on Azure?](#) Build your knowledge with Data Fundamentals
- Azure Synapse Analytics Introduction
- What is Azure Synapse Analytics?
- Azure Synapse Analytics Terminology
- Azure Synapse FAQs
- Azure Synapse Analytics Blog
- Quickly get started with samples in Azure Synapse Analytics
- Azure Synapse Pathway: Turbocharge your data warehouse migration
- Azure Synapse Pathway
- Introducing Azure Synapse Link for Dataverse

### Microsoft Playbooks

- Azure Synapse Proof of Concept Playbook

### Microsoft Quick Start Tutorials

1. Create and setup a Synapse workspace
2. Analyse using a serverless SQL pool
3. Analyse using Apache Spark
4. Analyse using a dedicated SQL pool
5. Analyse data in a storage account
6. Orchestrate with pipelines
7. Visualize with Power BI
8. Monitor activities
9. Explore the Knowledge centre
10. Add an administrator



## Going Further

- Azure Synapse SQL architecture
- Maintenance schedules for Synapse SQL pool
- Shared metadata tables
- Work with Hybrid Transactional and Analytical Processing Solutions using Synapse Analytics
- Populate slowly changing dimensions in Azure Synapse Analytics pipelines
- Integrate Azure Synapse Analytics with Azure Data and AI services

### Dedicated SQL pool (formerly SQL DW)

- What is dedicated SQL pool
- Cheat sheet for dedicated SQL pool
- Analyse using a dedicated SQL pool
- Best practices for dedicated SQL pools
- Dedicated SQL pool architecture
- Capacity limits for dedicated SQL pool
- Load Data with dedicated SQL pools using COPY

### Serverless SQL pool

- Analyse using a serverless SQL pool
- Quick start: Use serverless SQL pool
- Best practices for serverless SQL pool
- Tutorial: Explore and Analyse data lakes with serverless SQL pool
- Tutorial: Use serverless SQL pool with Power BI Desktop & create a report

### Microsoft Cloud Workshop

- GitHub - Microsoft Cloud Workshop: Azure Synapse Analytics and AI

## Introduction to Data Analytics on Azure

### Microsoft Learn & Docs

- Explore Azure data services for modern analytics
- Understand concepts of data analytics
- Explore data analytics at scale

## Microsoft Learn

### Perform Data Engineering with Azure Synapse Apache Spark Pools

- Analyze data with Apache Spark in Azure Synapse Analytics
- Use Delta Lake in Azure Synapse Analytics
- Integrate SQL and Apache Spark pools
- Monitor and manage data engineering workloads with Apache Spark



### Model, query & explore data

- Introduction to Azure Synapse Analytics
- Survey the Components of Azure Synapse Analytics
- Explore Azure Synapse Studio
- Design a Modern Data Warehouse using Azure Synapse Analytics



### Work with Data Warehouses using Azure Synapse Analytics

- Design a Modern Data Warehouse using Azure Synapse Analytics
- Analyze data in a relational data warehouse
- Use data loading best practices in Azure Synapse Analytics
- Optimize data warehouse query performance in Azure Synapse Analytics
- Integrate SQL and Apache Spark pools in Azure Synapse Analytics
- Understand data warehouse developer features of Azure Synapse Analytics
- Manage and monitor data warehouse activities
- Analyze and optimize data warehouse storage
- Secure a data warehouse in Synapse



### Microsoft Learn Cloud Games Data and AI

Data Feeds Trailer

Play

### Integrate Synapse Analytics with Azure Data and AI Services

- Build reports using Power BI
- Integrate machine learning



### Build Data Analytics Solutions using Synapse serverless SQL pools

- Use Azure Synapse serverless SQL pool to query files in a data lake
- Create a lake database
- Use Azure Synapse serverless SQL pools for transforming the data in the lake
- Serve the data from Azure Synapse serverless SQL pool
- Secure data and manage users in Azure Synapse serverless SQL pools



Stop the Waste



Crisis Response



# Azure Developer Learning Pathway (1/2)

[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Getting started

Azure Skills Navigator



### Developers

Looking to develop your Microsoft knowledge and skills? You're on the right path!



DOWNLOAD

This Microsoft learning journey is designed for developers. This guide maps out your itinerary for deepening your knowledge, drawing on a wide array of Microsoft resources, divided into three phases:

#### Ramp up

Discover core skills and language fundamentals.

#### App development

Learn how to build cloud-native apps with various cloud architectures, frameworks for web, mobile apps, and relevant Azure services.

#### In production

Explore services for monitoring, logging, instrumentation, and authorization

#### Continue your foundational learning:

- Azure Fundamentals
- Data Fundamentals
- Build your Tech resilience
- Introduction to Visual Studio Code
- Introduction to Kubernetes on Azure
- Orchestrate containers for cloud-native apps with AKS
- Cloud computing basics for developers
- Get started with Azure DevOps
- Microsoft Developer Channel
- Developer LunchBytes

## Role based certification

Azure Developer

### AZ-204: Microsoft Azure Developer

Skills Measured:

- Develop Azure compute solutions (25-30%)
- Develop for Azure storage (15-20%)
- Implement Azure security (20-25%)
- Monitor, troubleshoot/optimize Azure solutions (15-20%)
- Connect to and consume Azure services and third-party services (15-20%)

Exam Study Guide

Course Page

30 Days to Learn Challenge!

Exam Page

Practice Test

## Exam Curriculum

Learn how to implement Azure compute solutions, create Azure Functions, implement and manage web apps, develop solutions utilizing Azure storage, implement authentication and authorization, and secure their solutions by using KeyVault and Managed Identities.

#### Certification Curriculum:

- Create Azure App Service Web Apps
- Implement Azure Functions
- Develop Solutions that use Blob Storage
- Develop Solutions that use Azure Cosmos DB
- Implement Infrastructure as a service solutions
- Implement user authentication and authorisation
- Implement secure cloud solutions
- Implement API management
- Develop event-based solutions
- Develop message-based solutions
- Instrument solutions to support monitoring and logging
- Integrate caching and content delivery within solutions

## Reinforce your learning

#### Microsoft Learn

- Apply and monitor infrastructure standards with Azure Policy
- Work with relational data in Azure
- Choose a data storage approach in Azure
- Work with NoSQL data in Azure Cosmos DB
- Take your first steps with Python
- Build JavaScript applications with Node.js
- Distributed programming on the cloud

#### Azure App Service web apps

- App Service Documentation
- Azure App Service | App Service Plan
- Create a web app and deploy code from GitHub
- Web application monitoring on Azure

#### CLI:

- Get started with Azure CLI
- Control Azure services with the CLI
- Manage virtual machines with the Azure CLI
- Create Azure resources by using Azure CLI
- Azure Command-Line Interface (CLI) documentation

#### Azure Functions:

- Introduction to Azure Functions
- Azure Functions documentation

#### Developer for Azure Storage:

- Azure Cosmos DB | APIs
- Quickstart: Create an Azure Cosmos DB Instance
- Partitioning
- Blob Storage

#### Monitoring & Logging:

- Azure Monitor | Monitor Documentation
- Enabling Application Insights
- Alerts & Rules
- Log Queries

#### Content Delivery Network (CDN):

- What is a content delivery network on Azure?
- Caching Fundamentals
- What is Azure Front Door (difference from CDN)
- Azure Cache for Redis Documentation



# Azure Developer Learning Pathway (2/2)

[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Java



### Azure Skills Navigator

## Java Skills Navigator



[DOWNLOAD](#)

There are a host of reasons why developers prefer building Java applications in Azure, from the ability to build, debug, and deploy Java applications using their favourite development environments to quickly adding services and capabilities and integrating them with other apps and services in the Microsoft partner ecosystem. And not least of all, the productivity bonus of not having to manage infrastructure during development.

This guide helps you navigate the resources and training for choosing the right service, building, and deploying, monitoring, and expanding the capabilities of Java applications on Azure.

#### Continue your foundational learning:

- Get started with Java on Azure
  - Microsoft's Java for beginners
  - Microsoft for Java Developers
  - Java learning path
  - Workshops and videos for Java developers
  - Java on Azure Samples
  - Cheat sheets for Java developers
- [Get started with Java on Azure](#)
 [Microsoft's Java for beginners](#)

 [Java to Azure migration strategy documentation](#)
 [Microsoft for Java Developers](#)
- Azure for Java developer documentation
  - Azure SDK for Java documentation

## Developer Resource Guide



#### Languages & Frameworks:

##### Python

- Python for beginners
- Django
- Flask
- Web Application Project Templates

##### JavaScript

- JavaScript at Microsoft
- React
- jQuery
- Node.js

##### C#:

- .NET on Microsoft Learn
- Build .NET applications with C#

##### Tooling:

##### Visual Studio Code

- Visual Studio Code – Code Editing
- VS Code – Latest Documentation
- Introduction to Visual Studio Code

#### Web Development:

- Develop Web apps with Visual Studio Code
- Blazor

#### App Development:

- Create a mobile app with Xamarin.Forms
- Write your first Windows application
- Introduction to Linux on Azure

#### Agile / DevOps

- GitHub Projects and Azure DevOps Boards
- GitHub Actions
- Terraform on Azure
- Fundamentals of Bicep
- Docker
- UI test with Selenium
- Jenkins on Azure
- Puppet
- Chef
- Ansible on Azure

#### Cloud Development:

- ARM Templates
- Azure Container Registry
- Azure Container Instance
- Application Insights
- Azure Functions
- Azure Cache for Redis
- Azure Event Grid
- Azure Event Hub
- Azure Service Bus
- DAPR
- Microservices
- Azure Key Vault

#### Resources:

- Microsoft UK Developers
- Microsoft Developer
- Sign up for the Microsoft.Source newsletter
- .NET documentation
- Azure Developer Tools

## Learn Live

It's right there in the name: We present Microsoft Learn content Live. Every episode we'll choose a Learn module and work through it. We'll pull in guests to give you extra commentary from experts and sometimes even the engineers who built it. Join and ask questions, live!



#### Azure Core IaaS Study Hall

Learn about highly secure, available, and scalable cloud services. Modernize your IT with an enterprise-grade cloud infrastructure and migrate your apps with confidence. Running through to June 2023.

On demand library: Watch all previous shows on demand [HERE](#)

## 30 days to Learn it Challenge



#### Java on Azure Developer

In about 15 hours, you'll learn how to build and scale Java applications on Azure with a range of Azure services and popular Java tools and frameworks.



#### Azure Developer

In under 30 hours, you'll learn about storing data in Azure, creating serverless applications, connecting your services together, and more.



# Azure DevOps Engineer Learning Pathway

[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Get started

Gain the knowledge and skills to design and implement DevOps processes and practices. Students will learn how to plan for DevOps, use source control, scale Git for an enterprise, consolidate artifacts, design a dependency management strategy, manage secrets, implement continuous integration, implement a container build strategy, design a release strategy, set up a release management workflow, implement a deployment pattern, and optimize feedback mechanisms

New to the Cloud or Azure? Start with Azure Fundamentals

- Build your Tech resilience
- Get started with Windows PowerShell
- Get started with Azure DevOps
- DevOps at Microsoft
- Want to get Started learning GitHub and DevOps?
- Threat Modelling Security Fundamentals
- Secure your infrastructure with threat modelling)
- Explore DevOps Technology
- Intro to data protection and privacy regulations

Prerequisites:  
Microsoft Certified: Azure Administrator or  
Microsoft Certified: Azure Developer

Check out the Administrator and Developer Pathways for more information on this training and certification



## Additional Study

### Continuous Integration

- Key concepts for new Azure Pipelines users
- Pipeline Tasks | Pipeline Agents
- Run quality tests in your build pipeline by using Azure Pipelines
- Quickstart: trigger a pipeline run from GitHub Actions
- Run functional tests in Azure Pipelines
- Overview of testing with Azure DevOps
- Create test plans and test suites
- Release approvals and gates overview
- Manage build dependencies with Azure Artifacts
- Azure Artifacts: Feeds | Views
- Semantic Versioning (SemVer)
- Use a PowerShell script to customize your pipeline
- Desired State Configuration (DSC)
- Azure Pipelines: Agents | Triggers
- Configure infrastructure in Azure Pipelines

### Continuous Delivery

- Infrastructure as code
- Create a release pipeline in Azure Pipelines
- Deployment Jobs
- Migrate from Jenkins to Azure Pipelines
- Automate deployments with Release Management
- What is Azure Pipelines?
- CI/CD Deployment: Classic pipelines
- Deploy applications with Azure DevOps
- Third Party DevOps solutions
- Azure Automation State Configuration overview
- Exercise: Hotfix Changes using releases

### Site Reliability Engineering (SRE)

- SRE principles and practices: virtuous cycles
- Azure Monitor: Action Groups | Schema
- Health monitoring
- Service Fabric health monitoring

### Communication & Collaboration

- About dashboards/charts/reports/widgets
- DevOps Dashboards | Adding a Chart
- Azure DevOps Reporting
- Azure Boards documentation
- Azure Boards & GitHub
- Link GitHub commits, pull requests, and issues to work items
- Tutorial: Follow a user story, bug, issue, or other work item or pull request
- AbRelease artifacts and artifact sources
- Integrate with service hooks
- Create a service hook for Azure DevOps with Microsoft Teams
- Create a service hook for Azure DevOps with Slack
- Integrate third-party services
- Webhooks

### Instrumentation and monitoring

- Use monitoring and analytics to gain operational insights
- Designing your Azure Monitor Logs deployment
- Roles, permissions, and security
- What is Distributed Tracing?
- Unify monitoring solutions in Azure
- Identify performance bottlenecks
- Monitoring solutions in Azure Monitor
- Analyse alerts to establish a baseline
- Analyse and understand mobile application use

### Security/Compliance

- Identity and access | Managed Identities
- Azure Active Directory groups
- Service Endpoints
- What is Azure Key Vault?
- Azure Key Vault – Overview
- Configure and manage secrets in Key Vault
- Key Vault certificates
- Using secrets from Key Vault in a pipeline
- Scanning Open-Source Libraries
- Protect your cloud workloads
- Understand Security Considerations for Application Lifecycle Management Solution
- Identity and access | Managed Identities
- Azure Active Directory groups
- Service Endpoints
- Protect your cloud workloads

### Source Control

- Monorepo vs. multi-repo
- Choosing the right version control for your project
- What is Azure Repos?
- Improve code quality with branch policies
- Check out multiple repositories in your pipeline
- Managing code review assignment for your team
- Create your first pipeline
- Create a build pipeline
- Tutorial: Azure Active Directory single sign-on (SSO) integration with a GitHub Enterprise Cloud Organization
- Is GitOps the next big thing in DevOps?
- ChatOps - Communication and collaboration
- DevOps Resource Center
- Enabling resilient DevOps practices with code to cloud automation
- Cloud Adoption Framework for Azure
- Introduction to Azure DevTest Labs

[Azure DevOps Documentation](#)

## Role Based Certification

### Microsoft Certified: DevOps Engineer Expert

Prerequisite: Azure Admin (AZ-104) or Azure Developer (AZ-204)

#### AZ-400: Designing and Implementing Microsoft DevOps Solutions

##### Skills measured:

- Configure processes and communications Design and implement source control
- Design and implement build and release pipelines
- Develop a security and compliance plan
- Implement an instrumentation strategy

##### Microsoft Learn:

- Getting started on a DevOps transformation journey
- Development for enterprise DevOps
- Implement CI with Azure Pipelines and GitHub Actions
- Design and implement a release strategy
- Implement a secure continuous deployment using Azure Pipelines
- Manage Infrastructure as code using Azure and DSC
- Design and implement a dependency management strategy
- Implement continuous feedback
- Implement security and validate code for compliance

[Exam Study Guide](#)

[Course Page](#)

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[Practice Test](#)

## 30 days to Learn it Challenge

30 Days to Learn it – Cloud Skills Challenge  
In under 25 hours, you'll learn how DevOps powers every stage of your software development lifecycle from planning to monitoring.





# Azure Solutions Architect Learning Pathway (1/2)

[www.aka.ms/pathways](http://www aka.ms/pathways)

## Getting started

### Azure Skills Navigator



## Solution Architect

Looking to develop your Microsoft Azure knowledge and skills? You're on the right path!

[DOWNLOAD](#)

This Azure learning journey is designed for Solution Architects defining the design and implementation of technology solutions in Microsoft Azure. Using the understanding of an organization's business requirements and developer capabilities, these IT professionals use building blocks of different technology components to create robust, optimized architectures.

### Continue your foundational learning

#### Microsoft Learn

- Architecture Centre Home
- Browse Azure Architectures
- Explore Cloud Best Practices
- Assess, optimise and review your workload
- See what's new
- Best Practices and patterns for building applications on Azure
- Explore Architectures and guides for different technologies

#### Microsoft Learn

- Azure Fundamentals
- Data Fundamentals
- AI Fundamentals
- Architect secure infrastructure in Azure
- Architect network infrastructure in Azure
- Architect infrastructure operations in Azure
- Architect compute infrastructure in Azure
- Architect storage infrastructure in Azure
- Architect migration, business continuity, and disaster recovery in Azure
- Architect a data platform in Azure
- Architect modern applications in Azure
- Architect API integration in Azure
- Microsoft Azure Well-Architected Framework

Azure Architecture Documentation

Well Architected Framework

## Continue your learning

### Design identity, governance, and monitoring solutions

- Azure Monitor Logs overview
- Azure Diagnostic Logs
- Enable diagnostics logging for apps in Azure App Service
- Create diagnostic setting to collect platform logs and metrics in Azure
- Azure security logging and auditing
- Azure Monitor Overview
- Best practices for monitoring cloud applications
- What is Microsoft Sentinel?
- Assign Azure roles using the Azure portal
- What is Azure role-based access control (Azure RBAC)?
- Quickstart: Check access for a user to Azure resources
- What are managed identities for Azure resources?
- Use a Windows VM system-assigned managed identity to access Resource Manager
- What are Azure AD access reviews?
- What is Identity Protection?
- Secure your management ports with just-in-time access
- What is Azure AD Privileged Identity Management?
- What are the Azure Management areas?
- What are Azure management groups?
- What is Azure Policy?
- Tutorial: Create and manage policies to enforce compliance
- What are managed identities for Azure resources?
- Use a Windows VM system-assigned managed identity to access Resource Manager
- About Azure Key Vault
- Azure Key Vault keys, secrets and certificates overview
- Configure how users consent to applications

### Design Data Storage Solutions

- Azure SQL Database service tiers
- General purpose service tier – Azure SQL Database
- Scalability
- Azure Data Encryption at rest
- Azure encryption overview
- Transparent data encryption for SQL Database and Azure Synapse
- What is Azure Data Factory?
- What is Azure Databricks?
- What is Azure Data Lake Storage Gen1
- Introduction to Azure Data Lake Storage Gen2
- What is dedicated SQL pool (formerly SQL DW) in Azure Synapse Analytics?
- Understand data store models
- What is SQL Server on Windows Azure Virtual Machines?
- What is Azure SQL Database?
- What is Azure SQL Managed Instance?
- What is Azure Database for PostgreSQL?
- What is Azure Database for MariaDB?
- What is Azure Database for MySQL?
- Welcome to Azure Cosmos DB
- Understand data store models
- Non-relational data and NoSQL
- What is Apache HBase in Azure HDInsight
- Azure Cache for Redis
- Table storage
- Azure Time Series Insights
- Azure Blob Storage
- Azure Data Lake Storage
- Azure Files
- Azure Cognitive Search
- Non-relational data and NoSQL
- Core Azure Storage services
- Access control model in Azure Data Lake Storage Gen2
- Data protection overview

### Design business continuity solutions

- Site Recovery | General questions
- VMware to Azure replication
- Hyper-V to Azure disaster recovery
- What is the Azure Backup service?
- Azure Backup architecture and components
- Azure Backup server protection matrix
- Best practices for business continuity and disaster recovery in Azure Kubernetes Service (AKS)
- Azure Backup architecture and components
- An overview of Azure VM backup
- About SQL Server Backup in Azure VMs
- Azure Database for PostgreSQL backup
- Regions and availability zones
- Azure services that support availability zones
- Availability options for Azure Virtual Machines
- Build solutions for high availability using availability zones
- Azure Storage redundancy
- Achieve high availability with Cosmos DB
- Build solutions for high availability using availability zones
- High availability for Azure SQL Database and SQL Managed Instance



# Azure Solutions Architect Learning Pathway (2/2)

[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Additional Study

### Design Infrastructure Solutions

- Virtual machines in Azure
- What is Azure Virtual Desktop?
- Choose an Azure compute service
- App Service documentation
- Azure Kubernetes Service
- What is Azure Container Instances?
- Introduction to private Docker container registries in Azure
- Introduction to Azure Functions
- Caching guidance
- Azure CDN Documentation
- CDN guidance
- Create an Azure CDN endpoint
- What is Azure Front Door?
- About Azure Cache for Redis
- Choose between Azure messaging services - Event Grid, Event Hubs, and Service Bus
- What is Azure Service Bus?
- Use Azure portal to create a Service Bus namespace and a queue
- Get started with Azure Service Bus queues (.NET)
- What is Azure Event Grid?
- Event-Driven Architecture in the Cloud with Azure Event Grid
- Route custom events to web endpoint with the Azure portal and Event Grid
- Tutorial: Monitor virtual machine changes by using Azure Event Grid and Logic Apps
- Features and terminology in Azure Event Hubs
- Quickstart: Create an event hub using Azure portal
- Tutorial: Stream data into Azure Databricks using Event Hubs

## Role based Certification

### Azure Administrator

#### AZ-104: Microsoft Azure Administrator (prerequisite for AZ-305)

##### Skills measured:

- Manage Azure identities and governance
- Implement and manage storage
- Deploy and manage Azure compute resources
- Configure and manage virtual networking
- Monitor and back up Azure resources

Please see the [Azure Administrator Learning Pathway](#) for more details.

## Role based Certification

### Solutions Architect

#### AZ-305: Designing Microsoft Azure Infrastructure Solutions

##### Skills measured:

- Design identity, governance, and monitoring solutions
- Design data storage solutions
- Design business continuity solutions
- Design infrastructure solutions

[Exam Skills Outline](#)

[Course Page](#)

[Exam Page](#)

[Practice Assessment](#)

##### Microsoft Learn:

- Microsoft Azure Architect Design Prerequisites
- Design identity, governance and monitor solutions
- Design business continuity solutions
- Design data storage solutions
- Design infrastructure solutions
- Build great solutions with Microsoft Azure Well-Architected Framework
- Accelerate cloud adoption with the Microsoft Cloud Adoption Framework for Azure

## Well-Architected Framework

The Azure Well-Architected Framework is a set of guiding tenets that can be used to improve the quality of a workload. The framework consists of five pillars of architectural excellence. Start with the >> [overview](#) <<

### Pillar

#### Reliability

### Description

The ability of a system to recover from failures and continue to function.

#### Security

Protecting applications and data from threats.

#### Cost Optimization

Managing costs to maximize the value delivered.

#### Operational Excellence

Operations processes that keep a system running in production.

#### Performance Efficiency

The ability of a system to adapt to changes in load.

## Learn Live



### Azure Core IaaS Study Hall

Learn about highly secure, available, and scalable cloud services. Modernize your IT with an enterprise-grade cloud infrastructure and migrate your apps with confidence. Running through to June 2023.

On demand library: Watch all previous shows on demand [HERE](#)



### Designing Infrastructure Solutions

In about 21 hours, you'll learn about advising stakeholders and translating business requirements into designs for secure, scalable, and reliable Azure solutions.

## Azure Connected Learning Experience

Microsoft Azure Connected Learning Experience (CLX) is an experiential training program that sets a trajectory for aspiring learners and working professionals to be Azure experts. The CLX program offers a personalized journey that aims to optimize learning experience while maximizing return on time invested.

[Click Here](#)



### Microsoft Virtual Training Days

Build the technical skills you need with free Virtual Training Days.

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## Microsoft Learn Collections

### Azure VMware Solution

### Azure Compute

### Azure Storage

### BCDR

### Azure Networking Security

### Modernise your Infrastructure

### Azure Virtual Desktop

### Azure Arc

### Azure Monitor

### Automanage

### Azure Networking

### Azure Infrastructure Official Collection

## Microsoft Cloud Adoption Framework for Azure



### Microsoft

# TECHNICAL QUEST

[Here](#)



# Azure AI Engineer Learning Pathway

[www.aka.ms/pathways](http://www aka.ms/pathways)

## Getting started



### Zero to hero in 4 weeks with Azure AI

A guide to achieving artificial intelligence expertise on Azure

With cloud AI services and tools, now every developer can leverage AI to create innovative applications that solve complex problems.

This guide will show you how to create the next generation of applications using Azure AI in only 4 weeks. By committing less than an hour each day—think coffee-fueled morning ritual or mid-afternoon break—you'll be able to build intelligent apps confident with the tools and frameworks of your choice.

Each week you'll watch a video on foundational concepts of Azure AI, complete a step-by-step training, and try what you've learned with a hands-on exercise. This will give you the expertise you need to successfully complete your Azure AI Fundamentals certification.

Let's get started!



DOWNLOAD

## Audience Profile

Software engineers concerned with building, managing and deploying AI solutions that leverage Azure Cognitive Services, Azure Cognitive Search, and Microsoft Bot Framework. They are familiar with C# or Python and have knowledge on using REST-based APIs to build computer vision, language analysis, knowledge mining, intelligent search, and conversational AI solutions on Azure.

## Getting Started:

- New to the Cloud or Azure? Start with [Azure Fundamentals](#)
- New to AI on Azure? Check out our [Azure AI Fundamentals certification](#)
- Watch the Azure AI Essentials video series to get familiar with Azure AI products and services and learn how to bring these components together to build AI applications > [HERE](#)

## Microsoft Learn:

- |   |                                      |
|---|--------------------------------------|
| - Build your Tech resilience                        | - Computer Vision                    |
| - Get started with artificial intelligence on Azure | - Cognitive Service for Language     |
| - Microsoft AI Business School                      | - Azure Cognitive Services           |
| - Microsoft Cognitive Services Blog                 | - Speech service documentation       |
| - Azure Developer Guide                             | - Anomaly Detector API Documentation |
| - Responsible AI Principles                         |                                      |
| - Choose a bot-building tool                        |                                      |

## Additional Study

### Cognitive Services

- What are Azure Cognitive Services?
- Quickstart: Create a Cognitive Services resource using the Azure portal
- Provision and manage Azure Cognitive Services
- Azure Cognitive Services – Privacy Policy
- Manage Cognitive Services keys
- Authenticate requests to Azure Cognitive Service

### Computer Vision

- What is Computer Vision?
- Optical Character Recognition (OCR)
- What is the Ink Recognizer API?
- What is Form Recognizer?
- Cognitive Service Containers
- Process and classify images with the Azure Cognitive Vision Services
- Quickstart: Build a classifier with the Custom Vision website
- Quickstart: Build an object detector with the Custom Vision website
- Deploy a model to Azure Container Instances

### Natural Language

- Process natural language with Azure Cognitive Language Services
- Process and Translate Speech with Azure Cognitive Speech Services
- What is the Translator service?
- How to extract key phrases using Text Analytics
- Sentiment analysis and Opinion Mining
- Tutorial: Extract structured data from user utterance with machine-learning entities in Language Understanding (LUIS)
- Train your active version of the LUIS app
- Test your LUIS app in the LUIS portal

### Natural Language

- Batch testing with a set of example utterances
- Publish your active, trained app to a staging or production endpoint
- Deploy and run container on Azure Container Instance

### Knowledge Mining

- Knowledge Mining Introduction
- Introduction to Azure Cognitive Search
- Implement knowledge mining with Azure Cognitive Search
- Creating search indexes in Azure Cognitive Search
- Create Indexer (Azure Cognitive Search REST API)
- Autocomplete and Suggestions
- Synonyms in Azure Cognitive Search
- Security overview for Azure Cognitive Search
- Scale for performance on Azure Cognitive Search
- Data import overview - Azure Cognitive Search

### Conversational AI

- Create conversational AI solutions
- QnA Maker - Overview
- Create a new QnA Maker service
- Plan your QnA Maker app
- Migrate a knowledge base using export-import
- Create a bot with Azure Bot Service
- Dialogs library
- Create your own prompts to gather user input
- Bot Troubleshooting | Logging
- User authentication

Cognitive Services

Azure OpenAI Service

## Role Based Certification

Azure AI Engineer

### AI-102: Designing and Implementing a Microsoft Azure AI Solution

#### Skills Measured (AI-102)

Plan and manage an Azure AI solution (25–30%)  
Implement image and video processing solutions (15–20%)  
Implement natural language processing solutions (25–30%)  
Implement knowledge mining solutions (5–10%)  
Implement conversational AI solutions (15–20%)

#### Microsoft Learn:

- Prepare for AI engineering
- Provision and manage Azure Cognitive Services
- Process and translate text with Azure Cognitive Services
- Process and Translate Speech with Azure Cognitive Speech Services
- Create a Language Understanding solution
- Build a question answering solution
- Build custom text analytics solutions
- Create conversational AI solutions
- Create computer vision solutions with Azure Cognitive Services
- Extract text from images and documents
- Implement knowledge mining with Azure Cognitive Search

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## Azure Connected Learning Experience

Microsoft Azure Connected Learning Experience (CLX) is an experiential training program that sets a trajectory for aspiring learners and working professionals to be Azure experts. The CLX program offers a personalized journey that aims to optimize learning experience while maximizing return on time invested.

Click Here



## Microsoft Virtual Training Days

Build the technical skills you need with free Virtual Training Days.

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# Azure Data Scientist Learning Pathway

[www.aka.ms/pathways](http://www aka.ms/pathways)

## Getting started



### Zero to hero in 4 weeks with Machine Learning

A guide to achieving Machine Learning expertise on Azure

The cloud is the destination for an increasing number of machine learning projects. It's an easy, cost-effective way to experiment and scale at any level of expertise or demand.

This learning journey will teach you how to create innovative solutions for complex problems with Machine Learning on Azure in 4 short weeks. With just an hour each day—think coffee-fueled morning ritual or mid-afternoon break—you'll be able to collaborate and build models faster with the latest machine learning tools and frameworks. Regardless of where you are in your journey, we can propel you to the next level and prepare you for the Azure Data Scientist Associate certification. Let's get started!



[DOWNLOAD](#)

#### Getting Started:

- Build your Tech resilience
- New to the Cloud or Azure? Start with [Azure Fundamentals](#)
- Build on this with [Data Fundamentals](#) and [AI Fundamentals](#) then consider:
  - Foundations of data science for machine learning
  - Understand data science for machine learning
  - Create machine learning models
  - Introduction to Python
  - Take your first steps with Python
  - Learn Python basics with Wonder Woman
  - Azure Machine Learning helps customers stay ahead of challenges
  - Get started with artificial intelligence on Azure
  - Microsoft Data Science Azure Blog
  - Explore machine learning through videos

#### Microsoft Beginner Tutorials

- 1: The 5 questions data science answers
- 2: Is your data ready for data science
- 3: Ask a question you can answer with data
- 4: Predict an answer with a simple model
- 5: Copy other people's work to do data science
- Create your first ML experiment
- Get Started with Auto ML
- Use Designer for drag-and-drop ML

#### Microsoft Advanced Tutorials

- Train and deploy ML models with Auto ML
- MLOps examples (GitHub)
- Designer for Prediction

#### Microsoft Shows

- Dev Intro to Data Science (28 video series)
- The AI Show
- Even More Python for Beginners - Data Tools

## Additional Study

#### Azure Machine Learning workspaces

- What is an Azure Machine Learning workspace?
- Manage Azure Machine Learning workspaces
- Azure Machine Learning tools and interfaces
- What is Azure Machine Learning studio?
- Secure data access in Azure Machine Learning
- Connect to storage services on Azure
- Create Azure Machine Learning datasets
- Compute targets in Azure Machine Learning

#### Experiments/Models

- What is Azure Machine Learning designer?
- Deploy a machine learning model with the designer
- Train models with Azure Machine Learning
- Tracking capabilities in the ML SDK
- Monitor and view ML run logs and metrics
- Train and track ML models with MLflow and Azure Machine Learning
- Introduction to pipelines
- Pass data between pipeline steps
- Moving data into and between ML pipeline steps (Python)
- Reuse pipeline steps

#### Optimise & Manage

- What is Automated Machine Learning?
- Create, review, and deploy automated machine learning models with Azure Machine Learning
- Tuning parameters
- Overview: Sampling | Search Spaces | Termination
- Model interpretability
- Permutation Feature Importance
- Assess fairness in machine learning models
- Mitigate unfairness in machine learning models
- Monitor Azure Machine Learning
- Detect data drift

#### Deploy & Consume

- Compute targets for inference
- Enterprise security and governance for Azure Machine Learning
- Build an Azure Machine Learning pipeline for batch scoring
- Define an inference configuration
- Consume an Azure Machine Learning model deployed as a web service
- Deploy a machine learning model with the designer

## Role Based Certification

### Azure Data Scientist

Exam DP-100: Designing and Implementing a Data Science Solution on Azure

#### Skills Measured:

- Design and prepare a machine learning solution (20–25%)
- Explore data and train models (35–40%)
- Prepare a model for deployment (20–25%)
- Deploy and retrain a model (10–15%)

#### Self Guided Learning:

- Create machine learning models
- Explore visual tools for machine learning
- Build and operate machine learning solutions with Azure Machine Learning
- Build and operate machine learning solutions with Azure Databricks

[Exam Study Guide](#)

[Course Page](#)

[Exam Page](#)

[Azure ML Documentation](#)

[Practice Test](#)

## 30 Day Challenge – Azure Data Scientist

Design and implement a data science solution on Azure. In almost 27 hours, you'll learn how to build and operationalize machine learning models using Microsoft Azure in a secure, scalable, and responsible way.





# Azure Database Administrator Learning Pathway

[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Getting started

Gain the knowledge and skills to administer a SQL Server database infrastructure for cloud, on-premises and hybrid relational databases and who work with the Microsoft PaaS relational database offerings. Additionally, it will be of use to individuals who develop applications that deliver content from SQL-based relational databases..

This certification is a good fit if your responsibilities include:

- Database management, availability, and security.
- Performance monitoring and optimization of modern relational database solutions.

### Microsoft Learn:

- New to the Cloud or Azure? Start with [Azure Fundamentals](#)
- New to data solutions on Azure, choose [Data Fundamentals](#)
- Build your Tech resilience
- Cloud storage
- QuickStart – Create SQL Database
- QuickStart – Configure Firewall
- Azure SQL Database Overview (Video)
- What is SQL Database
- Get Started Querying with Transact-SQL

### Other

- Migrate SQL workloads to Azure
- Work with relational data in Azure
- Architect a data platform in Azure
- Architect migration, business continuity, and disaster recovery in Azure

## Additional Study

### Plan and implement resources

- What is Azure SQL?
- Azure SQL deployment options
- Deploy SQL managed instance
- Azure SQL Database
- Elastic Pools
- Deploy SQL Server in a VM
- Deploy SQL database elastic pools
- PowerShell to create a managed instance
- Open-source offerings
- How to deploy PostgreSQL to Azure
- Create Azure Database for MariaDB server
- Features comparison: Azure SQL Database and Azure SQL Managed Instance
- Availability options for VMs in Azure
- Dynamically scale database resources with minimal downtime
- Use PowerShell to monitor and scale a single database in Azure SQL Database
- Perform a SQL Server migration assessment with Data Migration Assistant
- Online vs offline migrations
- Prerequisites for using the Azure DMS
- Migrate SQL Server to Azure SQL Database offline using DMS
- Migrate SQL Server to a single database or pooled database in Azure SQL Database online using DMS

### Implement a Secure environment

- Authentication vs. authorization
- Compare Active Directory to Azure Active Directory
- Authentication and Identities
- Permissions (Database Engine)
- What is Azure RBAC?
- Azure Data Encryption at rest
- Transparent data encryption
- What is Azure Key Vault?

### Implement a Secure environment

- Dynamic Data Masking
- Auditing for Azure SQL Database
- Security for open-source databases
- Always Encrypted Data Encryption
- Configure Always Encrypted by using Azure Key Vault
- Always Encrypted with secure enclaves
- Encrypt a Column of Data
- Firewalls in Azure SQL Database
- What is Azure Private Endpoint?
- SQL Data Discovery and Classification
- Change Tracking Functions (Transact-SQL)
- Introduction to Azure Defender
- SQL injection
- SQL Vulnerability Assessments

### Monitor & Optimise Resources

- Azure Monitor overview | Alerts
- Monitoring and performance tuning
- Azure Intelligent Insights
- Configure streaming export of Azure SQL Database and SQL Managed Instance diagnostic telemetry
- SQL Server Query Store
- Monitoring performance via the Query Store
- Transaction Locking / Row Versioning Guide
- Resolve index fragmentation by reorganizing or rebuilding indexes
- Automate management tasks using database jobs
- Create, configure, and manage elastic jobs
- Automatic tuning | Enablement
- Introduction to Azure managed disks
- SQL Server Resource Governor
- Database scoped configuration
- Intelligent query processing

### Optimise Query Performance

- Execution Plans Overview
- Read execution plans
- [Execution Plans: Compare](#) | Analyse
- Index Tuning
- Hints (Transact-SQL) - Join
- Choose appropriate data types
- Data Compression

### HADR

- High Availability Options
- Disaster Recovery Options
- SQL Server HADR options for Azure VMs
- Azure HADR options for PaaS deployments
- Business continuity and HADR for SQL Server on Azure Virtual Machines
- Windows Server Failover Clustering
- Backup / restore for SQL Server on Azure
- Automated backups - Azure SQL Database & SQL Managed Instance
- Back up and restore a database using Azure SQL Database
- Long Term Retention - Overview
- Manage Azure SQL Database long-term backup retention
- Create an Always On availability group
- Configure active geo-replication and failover in the Azure portal

### Admin using T-SQL

- Monitoring with DMVs
- System Health using DBCC CHECKDB
- Display Data and Log Space Information for a Database
- View or Change Server Properties
- Back up a Database
- Restore SQL database backups
- Create Certificates | Create Credentials
- Configure permissions on database objects

## Role Based Certification

### Azure Database Administrator

#### DP-300: Administering Microsoft Azure SQL Solutions

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Microsoft SQL Documentation

#### Skills Measured:

- Plan and implement data platform resources
- Implement a secure environment
- Monitor, configure, and optimize database resources
- Configure and manage automation of tasks
- Plan and configure a high availability and disaster recovery (HA/DR) environment

#### Self Guided Learning:

- Introduction to Azure database administration
- Plan and implement data platform resources
- Implement a secure environment for a database service
- Monitor and optimize operational resources in Azure SQL
- Optimize query performance in Azure SQL
- Automate database tasks in Azure SQL
- Plan and implement a high availability and disaster recovery environment

## Azure Connected Learning Experience

Microsoft Azure Connected Learning Experience (CLX) is an experiential training program that sets a trajectory for aspiring learners and working professionals to be Azure experts. The CLX program offers a personalized journey that aims to optimize learning experience while maximizing return on time invested.

[Click Here](#)

### 30 Day Challenge – Azure DBA

In about 12 hours, you'll learn how to demonstrate the benefits and processes for moving a SQL Server database to Azure SQL Database, implement tasks for IaaS and PaaS, and plan and implement policy for recovering data.



# Microsoft Cost Management

[www.aka.ms/pathways](http://www.aka.ms/pathways)



## Microsoft Cost Management

### 1 Azure Fundamentals

- New to the Cloud or Azure? Start with Azure Fundamentals

#### More Reading

- What is cost optimization?
- How to optimize your Azure workload costs

### 2 Azure Well-Architected Framework Cost optimization

Learn about the factors that influence cost and tools you can use to help estimate and manage your cloud spend

- Introduction
- Plan and estimate your Azure Costs
- Provision with optimisation
- Use monitoring and analytics to gain cost insights
- Maximise efficiency of cloud spend
- Summary
- Shows: Start optimizing your Azure costs | Cost Optimization: Episode 1 Episode 2

### 3 Plan and Manage your Azure Costs

Learn how to use the cost optimization pillar of the Microsoft Azure Well-Architected Framework.

- Introduction
- Compare costs by using the Total Cost of Ownership Calculator
- Exercise - Compare sample workload costs by using the TCO Calculator
- Purchase Azure Services
- Exercise – Estimate workload cost by using the Pricing Calculator
- Manage and minimize total cost in Azure
- Knowledge Check
- Summary

### 4 Analyse costs and create budgets with Microsoft Cost Management

Learn how to use cost analysis to understand how your costs accrue each month.

- Introduction
- Cost management principles
- Evaluate your costs using cost analysis
- Determine your most expensive resource and see trends
- Build budgets and alerts
- Exercise – Create your first budget
- Summary

### 5 Azure Reserved Instances

Save money by taking advantage of Azure reservations. Analyse and decide what to purchase and then learn how to make a purchase. Understand the benefits provided through compute purchases and optimize against any under use. Perform basic reporting on your reservations

- Introduction
- Determine what to purchase
- Make a purchase
- View and manage reservations
- Monitor and optimise reservation use
- Analyse and report after reservation purchase
- Knowledge Check
- Summary

### 6 Azure savings for Compute

Reduce compute costs with an easy, flexible savings plan

- Azure savings plan for compute
- Optimize and maximize cloud investment
- Azure Savings Plan – Documentation
- Purchase Azure savings plan for compute
- Introduction to Azure savings plan for compute
- Understanding Azure Savings Plan for Compute

### 7 Optimise Azure costs with data analysis in Power BI

Use Power BI to understand where your money is being spent in Azure so you can help your organization to optimize its costs.

- Introduction
- Analyze costs in the Azure Cost Management Power BI app to optimize costs
- Manage hybrid benefits to reduce the licensing cost of Azure VMs
- Optimize your Azure reservation use to save money
- Import data into Power BI Desktop with the Cost Management data connector to better understand your Azure spending
- Knowledge check
- Summary

### Cloud Economics

Get the most value from your Azure investment. Discover technical and financial flexibility, efficiencies, and capabilities on the cloud that aren't possible with on-premises IT infrastructure. Choose the right short- and long-term cloud solutions for your needs and get greater return on your cloud investment with key financial and technical guidance from Azure and best practices from top organizations.

#### Case Studies:

- Demystifying cloud economics
- Cloud economics
- Preparing for what's next: Financial considerations for cloud migration
- Video: The economic and financial considerations for Azure migration
- Reduced Datacentre Footprint
- OPEX Pricing Models
- Staff Productivity
- Sustainability
- Scalability
- Security/Compliance
- Availability | Optimisation

## Cost Management + Billing- Reference Links

Microsoft Cost Management + Billing helps you understand your Azure invoice (bill), manage your billing account and subscriptions, monitor and control Azure spending and optimize resource use. Learn how to analyse costs, create and manage budgets, export data, and review and act on recommendations. Quick links below or visit the main site [HERE](#).

#### What's new?

#### Get Started

- What is Cost Management and Billing
- Learn at your own pace
- Azure Cost Management Videos
- Start analysing costs

#### How to Guide

- Use cost analysis for common tasks
- Analyse costs with the Power BI template app
- Connect with the Power BI Desktop

#### Tutorial

- Review your individual account bill
- Review your Microsoft Customer Agreement bill
- Review your Enterprise Agreement bill

#### Manage your Costs

- Create and manage budgets
- Export cost and usage data
- Manage costs with automation
- Usage terms explained

#### Optimise your Costs

- Azure Cost Management Best Practice
- Save Money with Azure Reservations
- Act on Recommendations
- Start optimising your costs today

#### Other

- Understand and work with scopes
- Understand cost management data
- Analyse unexpected changes
- Assign access to cost management data

#### Other

- View billing accounts
- Defining roles and responsibilities for cloud cost optimization
- Prevent exceeding Azure budget with forecasted cost alerts
- Evaluating financial considerations during your cloud adoption journey
- Optimizing your storage costs with Azure Blob Storage
- Video: Well-architected series: Start optimising your Azure costs
- Microsoft Azure Well-Architected Framework - Cost optimization



Cost Management



# Azure Security Engineer Learning Pathway

[www aka.ms/pathways](http://www aka.ms/pathways)

## Getting started

Responsibilities for an Azure Security Engineer include managing the security posture, identifying and remediating vulnerabilities, performing threat modelling, implementing threat protection, and responding to security incident escalations. Azure Security Engineers often serve as part of a larger team to plan and implement cloud-based management and security.

### Microsoft Learn

- Build your Tech resilience
- [New to the Cloud or Azure?](#) Start with Azure Fundamentals
- [New to Security?](#) Continue with Microsoft Security, Compliance, and Identity Fundamentals
- Microsoft Trust Centre
- Compliance
- What is Azure Security Center?
- Azure Monitor – Security & Audit Dashboard
- Introduction to Azure security
- Introduction to key Azure network security services
- Microsoft Security Blog
- Microsoft Security YouTube Channel
- Intro to data protection and privacy regulations

### Doing More

- Threat Modeling Security Fundamentals
- Secure your infrastructure with threat modelling
- Protect identity and access with Azure Active Directory
- Implement Windows Server IaaS VM Identity
- Secure your cloud data
- Architect secure infrastructure in Azure
- Azure security best practices and patterns
- Develop a security and compliance plan

## Additional Study

### Manage identity and access:

- What is Azure Active Directory?
- Built-in roles for Azure Resources
- Create and manage users
- Create and manage groups
- Choose the right authentication method for your Azure Active Directory hybrid identity solution
- What is password hash synchronization
- Implement password hash synchronization with Azure AD Connect sync
- Azure Active Directory Pass-through Authentication: Technical deep dive
- Azure Active Directory Pass-through Authentication: Quickstart
- Azure Active Directory pricing
- Create an Azure AD tenant and configure registration for your application
- Azure Active Directory consent framework
- What are managed identities for Azure resources?
- Protect against security threats on Azure
- Delegate access to Privileged Identity Management
- Configure Azure AD role settings in Privileged Identity Management
- Building a Conditional Access policy
- Assign Azure AD roles in Privileged Identity Management
- What is Azure AD Multi-Factor Authentication?
- Create an access review of groups and applications in Azure AD access reviews
- Create an access review of Azure AD roles in Privileged Identity Management
- What is Azure RBAC?
- Understand the difference between Azure roles and Azure AD roles
- Create or update Azure custom roles using the Azure portal
- Use resource locks to protect resources

### Implement Platform Protection:

- Protect against security threats on Azure
- Use network security groups to control network access
- Network security groups
- Create, change, or delete a network security group
- Azure Firewall features
- Deploy and configure Azure Firewall
- What is Azure Web Application Firewall on Azure Application Gateway?
- What is Azure Front Door?
- What is Azure Bastion?
- Tutorial: Configure Bastion and connect to a Windows VM through a browser
- Secure network access to PaaS services with virtual network service endpoints
- Endpoint protection assessment and recommendations in Security Center
- Implement vulnerability management
- Update Management overview
- Add a TLS/SSL certificate in Azure App Service
- Container security in Security Center
- Access and identity options for Azure Kubernetes Service (AKS)
- Authenticate with an Azure container registry
- Network concepts for applications in Azure Kubernetes Service (AKS)

### Manage Security Operations:

- Features of Azure Monitor logs
- Explore the different alert types that Azure Monitor supports
- Create, view, and manage log alerts
- Configuring diagnostic logging and log retention
- Monitor your security status with Security Center recommendations
- Centralized policy management
- Manage security policies

### Vulnerability Scanner

- Exercise - Enable JIT VM access
- Tutorial: Protect your resources with Azure Security Center
- What is Azure Sentinel?
- Tutorial: Detect threats out-of-the-box
- Sentinel - Connect data sources
- Automatically create incidents from Microsoft security alerts
- Tutorial: Investigate incidents with Sentinel
- Use playbooks with automation rules
- What is Azure Policy?
- Tutorial: Create and manage policies to enforce compliance
- Tutorial: Create a custom policy definition
- Tutorial: Create and manage policies to enforce compliance
- What is Azure Blueprints?
- Create and assign blueprints

### Secure Data and Operations:

- Azure Storage Overview
- Authorizing access to data in Azure Storage
- Delegate access with a shared access signature
- Encryption
- What is Azure Key Vault?
- Key rotation
- Azure Key Vault security
- Quickstart: Create a key vault using the Azure portal
- Create an Azure SQL Database baseline
- Server-level vs. database-level auditing policy
- Create an Azure SQL Database baseline
- Azure Defender for SQL
- Authorize database access to SQL Database, SQL Managed Instance, and Azure Synapse Analytics
- Manage transparent data encryption
- Configure Always Encrypted by using Azure Key Vault

## Role Based Certification

### Azure Security Engineer

AZ-500 Microsoft Azure Security Technologies

#### Skills measured:

- Manage identity and access (25–30%)
- Secure networking (20–25%)
- Secure compute, storage, and databases (20–25%)
- Manage security operations (25–30%)

#### Microsoft Learn:

- Manage Identity and Access
- Implement Platform Protection
- Secure your data and applications
- Manage Security Operation

Exam Skills Outline

Course Page

Exam Page

Exam Sandbox

Practice Test

Security Documentation

## Learn Live



### Azure Core IaaS Study Hall

Learn about highly secure, available, and scalable cloud services. Running through to June 2023.

On demand library: Watch all previous shows on demand [HERE](#)



### Microsoft Virtual Training Days

Build the technical skills you need with free Virtual Training Days.

[Click Here](#)



# Microsoft Security Operations Analyst

[www aka.ms/pathways](http://www aka.ms/pathways)

## Getting started

### Microsoft:

- New to the Cloud or Azure? Start with Azure Fundamentals
- New to Security? Continue with Microsoft Security, Compliance, and Identity Fundamentals

### Cloud-native Security Operations with Microsoft Sentinel

Explore basic architecture, core capabilities, and primary use cases of its products.

- Introduction to Microsoft Sentinel
- Deploy Sentinel and connect data sources
- Threat detection with Sentinel analytics
- Security incident management
- Threat hunting with Microsoft Sentinel
- Threat response with Sentinel playbooks
- Query, visualize, and monitor data

### Microsoft Learn Cloud Games Security, Compliance & Identity Management

#### Who Hacked? Trailer

Play

#### Mitigate threats using Microsoft 365 Defender:

- Learn about common threats
- Microsoft 365 Defender Suite
- Introduction to Microsoft Defender for Office 365
- Automate, investigate, and remediate
- Configure, protect, and detect
- Describe data loss prevention alerts
- Investigate data loss prevention alerts in Microsoft 365 compliance
- Investigate data loss prevention alerts in Microsoft Cloud App Security
- Insider risk management overview
- Introduction to managing insider risk policies
- Explain security operations in Microsoft Defender for Endpoint
- Understand attack surface reduction
- Enable attack surface reduction rules
- Configure advanced features
- Configure alert notifications
- Manage custom detections
- Manage and investigate incidents



## Additional Study

- Manage and investigate alerts
- Configure automated investigation and remediation capabilities
- Explore vulnerabilities on your devices
- Understand threat intelligence concepts
- Track emerging threats with threat analytics
- Azure AD Identity Protection overview
- Detect risks with Azure AD Identity Protection policies
- Building a Conditional Access policy
- Investigate and remediate risks detected by Azure AD Identity Protection
- Microsoft Secure Score
- Create an access review of Azure AD roles in Privileged Identity Management
- Azure Active Directory Identity Protection notifications
- Introduction to Microsoft Defender for Identity
- Review compromised accounts or data
- Understand the Cloud App Security Framework
- Classify and protect sensitive information
- Detect Threats
- Microsoft 365 Defender
- Manage incidents
- Use the action centre
- Hunt for threats across devices, emails, apps, and identities

#### Mitigate threats using Azure Sentinel:

- Define the concepts of SIEM, SOAR, XDR
- Describe how Sentinel provides integrated threat protection
- Plan for the Microsoft Sentinel workspace
- Permissions in Microsoft Sentinel
- Archive data from Log Analytics workspace to Azure storage using Logic App
- Log Analytics workspace data export in Azure Monitor
- Azure security baseline for Microsoft Sentinel
- Connect data to Microsoft Sentinel using data connectors
- Collect Syslog data sources with Log Analytics agent
- Collect data from Linux-based sources using syslog
- Configure the log analytics agent
- Common Event Format connector
- Connect your external solution using the Common Event Format connector
- Connect the Microsoft Office 365 connector
- Connect the Azure Active Directory connector
- Connect the Azure Active Directory identity protection connector
- Plan for Windows hosts security events connector
- Threat detection with Sentinel analytics
- Threat response with Sentinel playbooks
- Security incident management in Sentinel
- Monitor and visualize data

- Use default Sentinel Workbooks
- Create a new Sentinel Workbook
- Explain threat hunting concepts in Sentinel
- Explore creation and management of Sentinel threat-hunting queries
- Hunt for threats with Sentinel
- Hunt by using bookmarks

## Role Based Certification

### Security Operations Analyst

#### Exam SC-200: Microsoft Security Operations Analyst

##### Skills Measured:

- Mitigate threats using 365 Defender
- Mitigate threats using Defender for Cloud
- Mitigate threats using Microsoft Sentinel

##### Microsoft Learn

- Mitigate threats using 365 Defender
- Mitigate threats using Defender for Endpoint
- Mitigate threats using Defender for Cloud
- Create queries for Sentinel using Kusto Query Language (KQL)
- Configure your Sentinel environment
- Connect logs to Microsoft Sentinel
- Create detections and perform investigations using Microsoft Sentinel
- Perform threat hunting in Microsoft Sentinel

Exam Study Guide

Course Page

Exam Page

Practice Test

Security Documentation

Azure Security Documentation

# Microsoft Sentinel Learning Companion



[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Getting started

### Microsoft:

- [New to the Cloud or Azure?](#) Start with Azure Fundamentals
- [New to Security? Continue with Microsoft Security, Compliance, and Identity Fundamentals](#)
- What is Sentinel?
- Microsoft Security YouTube Channel
- Azure Sentinel Blog

### Cloud-native Security Operations with Microsoft Sentinel

Explore basic architecture, core capabilities, and primary use cases of its products.

- Introduction to Microsoft Sentinel
- Deploy Sentinel and connect data sources
- Threat detection with Sentinel analytics
- Security incident management
- Threat hunting with Microsoft Sentinel
- Threat response with Sentinel playbooks
- Query, visualize, and monitor data

## QuickStart

- Quickstart: On-board Microsoft Sentinel
- Quickstart: Get visibility into alerts
- Detect threats out-of-the-box
- Create custom analytics rules to detect threats
- Visualize and monitor your data
- Investigate incidents
- Use playbooks with automation rules
- Create queries for Microsoft Sentinel using Kusto Query Language (KQL)

## Microsoft Docs, Microsoft Learn and Reference

### Learn More:

- Microsoft Sentinel and Microsoft Teams
- Manage Sentinel workspaces at scale
- Cyber threat intelligence with Sentinel
- Useful resources for working with Sentinel
- Microsoft Sentinel integration with Microsoft Cloud App Security
- Build a scalable security practice with Azure Lighthouse and Microsoft Sentinel
- Safeguard multi-cloud apps and resources with cloud security solutions from Microsoft
- Defend against threats with Microsoft Threat Protection
- Commonly used Sentinel workbooks
- Workspace architecture best practices
- Design your Sentinel workspace architecture
- Sentinel sample workspace designs

### Concepts:

- Classify and analyse data
- Permissions in Microsoft Sentinel
- Manage access to Sentinel data by resource
- Protecting MSSP intellectual property
- Advanced multistage attack detection
- Security Orchestration, Automation, and Response (SOAR) in Sentinel
- Automation Rules for incident handling
- Advanced automation with playbooks
- Identify advanced threats with User and Entity Behaviour Analytics (UEBA)
- Use SOC-ML anomalies to detect threats
- Import threat intelligence
- Threat intelligence integration
- Bring your own Machine Learning (ML) into Azure Sentinel
- Microsoft 365 Defender integration with Sentinel
- Use external data with watchlists
- Extend Microsoft Sentinel across workspaces and tenants

- Threat response with Sentinel playbooks
- Threat detection with Sentinel analytics
- Security incident management in Sentinel
- Query, visualize, and monitor data in Sentinel
- Identify threats with User and Entity Behavior Analytics in Microsoft Sentinel
- Describe security capabilities of Sentinel
- Introduction to Microsoft Sentinel
- Design a holistic monitoring strategy on Azure
- Configure and monitor Microsoft Sentinel
- Query logs in Microsoft Sentinel
- Threat hunting with Microsoft Sentinel
- Create and manage Sentinel workspaces
- Use watchlists in Microsoft Sentinel
- Hunt for threats using notebooks in Sentinel
- Explain threat hunting concepts in Sentinel
- Connect Microsoft services to Sentinel
- Construct KQL statements for Sentinel
- Build multi-table statements using KQL
- Work with data in Microsoft Sentinel using Kusto Query Language
- Deploy Sentinel and connect data sources
- Connect Common Event Format logs
- Connect data using data connectors
- Connect threat indicators to Sentinel
- Connect Microsoft 365 Defender to Sentinel
- Connect syslog data sources to Sentinel
- Connect Windows hosts to Sentinel
- Improve your cloud security posture with Microsoft Defender for Cloud

### KQL:

- Write your first query with KQL
- Work with data in Sentinel using KQL
- Write multi-table queries by using KQL
- Gain insights from your data by using KQL
- Analyze query results using KQL
- Data analysis in Azure Data Explorer with KQL
- Guided project - Analyze logs in Azure Monitor with KQL

## Microsoft Sentinel Level 400 Ninja Training

Work through level 400 training to help you skill up on Microsoft Sentinel. The training comprises 21 modules that present relevant product documentation, blog posts, and other resources. The modules listed here are split into five parts following the life cycle of a Security Operation Center (SOC).

- Part 1: Overview
- Part 2: Architecting and deploying
- Part 3: Creating content
- Part 4: Operating
- Part 5: Advanced
- Next Steps
- Recommended Content

### Microsoft Sentinel Documentation

[YouTube](#) [Microsoft Security](#)

### Microsoft Learn Cloud Games Security, Compliance & Identity Management

### Who Hacked? Trailer

[Play](#)

## Doing More

- [Sentinel](#) : Keep track of what's new
- Ask, or answer others on the [Sentinel Tech Community](#)
- Contribute or enhance rules, queries, workbooks, connectors and more to the community on the [Sentinel GitHub](#)
- Becoming a [Sentinel Notebooks ninja](#)
- [Migrating](#) - Check out [Sentinel Migration Fundamentals](#)

## Role Based Certification Security Operations Analyst

Interested in certification. Check out exam SC-200: Microsoft Security Operations Analyst and the associated learning pathway



In the Crosshairs



Keeping up Appearances



# Microsoft Identity and Access Administrator

[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Getting started

The Microsoft Identity and Access Administrator designs, implements, and operates an organization's identity and access management systems by using Azure Active Directory (Azure AD).

### Overview:

- Microsoft Security, Compliance, and Identity Fundamentals
- Microsoft Security Site
- Manage Identity and Access in Azure AD

Zero Trust: Principals and Overview



- Playlist: Configuration and Management
- Playlist: Secure Remote Work
- Playlist: Manage and Integrate Apps Securely
- Playlist: Identity and Access Management
- Azure AD Authentication Fundamentals
- Finding the Right Identity Strategy for Your Organization with Azure AD

## Microsoft Security Technical Content Library

Microsoft is committed to helping build a safer world for all. Explore this library to find learning content relevant to your needs

[ACCESS](#)

## Additional Study

### Implement an identity management solution:

- Understand roles in Azure Active Directory
- Configure and manage Azure Active Directory roles
- Add custom domain name to Azure Active Directory
- Configure and manage custom domains
- Configure and manage device registration
- Administrative units in Azure Active Directory
- Configure delegation by using administrative units
- Configuration in a tenant
- Configure tenant-wide setting
- Create, configure, and manage users
- Create and manage users
- Create, configure, and manage groups
- Create and manage groups
- Manage licenses

### Implement and Manage External Identities:

- Manage external collaboration
- Manage external collaboration settings
- Invite external users
- Manage external user accounts
- Configure identity providers

### Implement and Manage Hybrid Identity:

- Plan, design, and implement Azure Active Directory Connect (AADC)
- Getting started with Azure AD Connect using express settings
- What is password hash synchronization with Azure AD?
- Implement manage password hash synchronization (PHS)

- What is Azure Active Directory Pass-through Authentication?
- Implement manage pass-through authentication (PTA)
- Azure Active Directory Seamless Single Sign-On
- Implement and manage federation

### Implement an Authentication and Access Management Solution:

- What is Azure AD Multi-Factor Authentication?
- Plan your multi-factor authentication deployment
- Configure Azure AD Multi-Factor Authentication settings
- Manage user authentication methods for Azure AD Multi-Factor Authentication

### Manage User Authentication:

- Passwordless authentication options
- Administer FIDO2 and passwordless authentication methods
- Windows Hello for Business and Authentication
- Implement an authentication solution based on Windows Hello for Business
- Deploy SSPR (Self-Service Password Reset)
- Plan and deploy on-premises Azure Active Directory Password Protection
- Deploy and manage password protection
- Use tenant restrictions to manage access to SaaS cloud applications
- Implement and manage tenant restrictions

### Manage Azure AD Identity Protection:

- Implement and manage user risk policy
- Enable user risk policy
- How To: Configure the Azure AD Multi-Factor Authentication registration policy
- Monitor, investigate, and remediate elevated risky users

### Implement access management for apps:

- Configure how end-users consent to applications
- Implement and configure consent settings
- Discover apps via MCAS and ADFS app report
- Design and implement app management roles

- Monitor and audit access to Azure Active Directory integrated applications
- Implement token customizations
- Integrate on-premises apps by using Azure Active Directory application proxy
- Integrate custom SaaS apps for single sign-on
- Configure pre-integrated gallery SaaS apps
- What is app provisioning in Azure Active Directory?
- Implement application user provisioning

### Plan and Implement an Identity Governance Strategy:

- Define a privileged access strategy for administrative users
- Configure PIM for Azure Resources
- Approve or deny requests for AAD roles in PIM
- View audit history for Azure AD roles
- Manage emergency access accounts in AAD

### Monitor and Maintain Azure Active Directory:

- Analyze and investigate sign-in logs
- Analyze Azure AD activity logs with Azure Monitor logs
- How to use Azure Monitor workbooks for Azure Active Directory reports
- Configure email notifications

## Role Based Certification

### Identity & Access Administrator

#### Exam SC-300: Microsoft Identity and Access Administrator

##### Skills measured:

- Implement identities in Azure AD
- Implement authentication and access management
- Implement access management for applications
- Plan and implement identity governance in Azure AD

##### Self Guided Learning:

- Implement an identity management solution
- Implement an Authentication and Access Management solution
- Implement Access Management for Apps
- Plan and implement an identity governance strategy

[Exam Study Guide](#)

[Course Page](#)

[Exam Page](#)

[Practice Test](#)

[Azure Security Documentation](#)



[Microsoft Security](#)

[Azure AD Documentation](#)



# Microsoft Information Protection Administrator

[www aka.ms/pathways](http://www aka.ms/pathways)

## Getting started

The Information Protection Administrator plans and implements controls that meet organizational compliance needs. This person is responsible for translating requirements and compliance controls into technical implementation. They assist organizational control owners to become and stay compliant).

### Overview:

- Microsoft Security, Compliance, and Identity Fundamentals
- Be a Risk Management Hero
- Supercharge Information Protection and Governance
- Don't Lose Sleep Over Insider Risks
- Simplify and Extend Compliance Beyond Microsoft 365
- Explore data governance in Microsoft 365
- Learn How Microsoft Safeguards Customer Data

### Videos:

- Microsoft Security YouTube Channel
- Playlist: Information Protection and Governance
- Playlist: Compliance Management
- Playlist: Discover & Respond
- Playlist: Insider Risk Management

### Microsoft Security Technical Content Library

Microsoft is committed to helping build a safer world for all. Explore this library to find learning content relevant to your needs

[ACCESS](#)

Purview Documentation

## Additional Study

### Implement Information Protection

- Data classification overview
- Classify data using sensitive information types
- Review sensitive information and label usage
- Compare built-in versus custom sensitive information types
- Exact data match-based (EDM-based) classification
- Implement document fingerprinting
- Create keyword dictionary
- Classify data using trainable classifiers
- Types of classifiers
- Configure a custom trainable classifier
- Configure sensitivity labels
- Configure sensitivity label policies
- Configuring secure document collaboration by using Azure Information Protection
- Configure auto-labelling policies
- Apply sensitivity labels to Microsoft Teams, Microsoft 365 groups, and SharePoint sites
- Tutorial: Preventing oversharing in Outlook using Azure Information Protection (AIP)
- Apply protections and restrictions to email and files
- Monitor label performance using label analytics
- Plan on-premises labelling
- Message encryption
- Implement Office 365 message encryption
- Implement Office 365 advanced message encryption

### Blogs:

- Microsoft Security Blog
- Microsoft 365 Blog
- Microsoft Azure Blog

### Implement Data Loss Prevention

- Data loss prevention overview
- Configure data loss prevention for policy precedence
- Azure Information Protection integration
- Configure file policies in Microsoft Cloud App Security
- Implement data loss prevention policies in test mode
- Define policy settings for your DLP policy
- Review and analyse data loss prevention reports
- Manage permissions for data loss prevention reports
- Manage and respond to data loss prevention policy violations
- Manage DLP violations in Microsoft Cloud App Security
- Manage device security with endpoint security policies in Microsoft Intune
- Using Endpoint data loss prevention
- Get started with Endpoint data loss prevention
- Learn about Microsoft 365 Endpoint data loss prevention

### Doing More:

- Manage Information Protection & Governance
- Intro to Microsoft data classification and data protection
- Manage data governance in Microsoft 365
- Reduce Risk with Microsoft Compliance Manager
- Implement compliance solutions
- Advanced eDiscovery and Advanced Audit
- Manage Insider Risk in Microsoft 365
- 3 ways to build a strong security culture to reduce insider risk

### Implement Information Governance:

- Information governance overview
- Configure retention policies
- Create and configure retention policies
- Configure retention labels
- Configure auto-apply retention label policies
- Explain retention in Exchange Online
- Explain retention in SharePoint Online and OneDrive for Business
- Explain retention in Microsoft Teams
- Recover content in Microsoft 365 workloads
- Implement retention policies and tags in Microsoft Exchange
- Apply mailbox holds in Microsoft Exchange
- Recover content in Microsoft Exchange
- Records management overview
- Use file plan to manage retention labels
- Create retention labels and apply them in apps
- Import a file plan
- Start retention when an event occurs

## Role Based Certification

Information Protection Administrator

Exam SC-400: Microsoft Information Protection Administrator

### Skills measured

- Implement information protection
- Implement data loss prevention
- Implement information governance

### Microsoft Learn

- Implement Information Protection in Microsoft 365
- Implement Data Loss Prevention
- Implement Data Lifecycle and Records Management

[Exam Study Guide](#)

[Course Page](#)

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[Practice Test](#)

Microsoft Learn Cloud Games  
Security, Compliance & Identity Management

Who Hacked? Trailer

Play



In the Crosshairs



Keeping up Appearances

# Azure Stack Hub Operator Learning Pathway

[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Getting started

Candidates for the Azure Stack Hub Operator Associate certification are Azure administrators or Azure Stack Hub operators who provide cloud services to end users or customers from within their own datacentre using Azure Stack Hub.

Their responsibilities are to plan, deploy, package, update, and maintain the Azure Stack Hub infrastructure. They also offer hybrid cloud resources and requested services and manage infrastructure as a service (IaaS) and platform as a service (PaaS).

### Provide Services

- Azure Stack Hub Marketplace overview
- Download Marketplace items to Azure Stack Hub
- Create and publish a custom Marketplace item
- Azure Stack Hub Marketplace FAQ
- Azure App Service and Azure Functions on Azure Stack Hub overview
- Capacity planning for App Service server roles
- Deploy App Service in Azure Stack Hub
- Update Azure App Service on Azure Stack Hub
- Add workers and infrastructure in Azure App Service
- Rotate App Service on Azure Stack Hub secrets and certificates
- Back up App Service on Azure Stack Hub
- App Service recovery on Azure Stack Hub

### Azure Stack HCI on Microsoft Learn

Looking for content on Azure Stack HCI and want to understand the differences?

[Click here](#)

## Additional Study

### Provide Services - continued

- Event Hubs on Azure Stack Hub operator overview
  - How to do capacity planning for Event Hubs
  - Prerequisites for installing Event Hubs
  - How to install Event Hubs
  - How to update an Azure Stack Hub resource provider
  - How to rotate secrets for Event Hubs
  - Quota types in Azure Stack Hub
  - Create a plan in Azure Stack Hub
  - Create add-on plans in Azure Stack Hub
  - Azure Stack Hub services, plans, offers, subscriptions overview
  - Create a service offering for users
  - Create subscriptions to offers
  - Usage and billing in Azure Stack Hub
  - Report Azure Stack Hub usage data to Azure
  - Usage reporting infrastructure for Cloud Solution Providers
  - Provider resource usage API
  - Tenant resource usage API reference
  - Manage usage and billing for Azure Stack Hub as a Cloud Solution Provider
  - Add tenant for usage and billing
  - Register tenants for usage tracking
- Implement Data Center Integration**
- Azure Stack Hub datacenter DNS integration
  - Update the DNS forwarder in Azure Stack Hub
  - Network integration planning for Azure Stack
  - Border connectivity
  - Azure Stack Hub firewall integration
  - Publish Azure Stack Hub services in your datacentre
  - Validate AD FS integration
  - Validate graph integration
  - Validate Azure identity
  - Azure Stack Hub public key infrastructure (PKI) certificate requirements
  - Generate certificate signing requests
  - Prepare Azure Stack Hub PKI certificates for deployment or rotation
  - Validate Azure Stack Hub PKI certificates
  - Rotate secrets in Azure Stack Hub

### Implement Data Center Integration - continued

- Datacenter integration planning considerations for Azure Stack Hub integrated systems
  - Azure Stack Hub integrated systems connection models
  - Register Azure Stack Hub with Azure
  - Azure disconnected deployment planning decisions for Azure Stack Hub integrated systems
- Manage Identity and Access**
- Overview of identity providers
  - Identity architecture for Azure Stack Hub
  - Set access permissions using role-based access control
  - Use an app identity to access Azure Stack Hub resources
  - Tutorial: Create an Azure custom role using Azure PowerShell
- Manage Infrastructure**
- Monitor health and alerts in Azure Stack Hub
  - Monitor Azure Stack Hub hardware components
  - Integrate external monitoring solutions
  - Diagnostic log collection
  - Scale unit node actions in Azure Stack Hub
  - Replace a scale unit node on an Azure Stack Hub integrated system
  - Replace a physical disk in Azure Stack Hub
  - Replace a hardware component on an Azure Stack Hub scale unit node
  - Azure Stack Hub help and support
  - Integrate Azure Stack Hub with monitoring solutions using syslog forwarding
  - Send Azure Stack Hub diagnostic logs by using the privileged endpoint (PEP)
  - Infrastructure Backup Service best practices
  - Replicate Azure Stack VMs to Azure
  - Azure Site Recovery fallback tool
  - Back up files and applications on Azure Stack
  - Recover from catastrophic data loss
  - Infrastructure Backup Service reference
  - Enable backup for Azure Stack Hub from the administrator portal

### Manage Infrastructure -continued

- Enable Backup for Azure Stack Hub with PowerShell
- Back up Azure Stack Hub
- Capacity planning for Azure Stack Hub overview
- Azure Stack Hub compute capacity
- Azure Stack Hub storage capacity planning
- Azure Stack Hub storage infrastructure overview
- Azure Stack Hub Capacity Planner
- Graphics processing unit (GPU) virtual machine (VM) on Azure Stack Hub
- Add additional scale unit nodes in Azure Stack Hub
- Manage storage capacity
- Manage storage infrastructure
- Add public IP addresses
- Manage updates in Azure Stack Hub
- Azure Stack Hub servicing policy
- Install Azure Stack Hub Updates
- Apply Azure Stack Hub original equipment manufacturer (OEM) updates
- Identity architecture for Azure Stack Hub
- Use the privileged endpoint in Azure Stack Hub
- Azure Stack Hub privileged endpoint reference
- New-CloudAdminUser

## Role Based Certification

### Azure Stack Hub Operator

#### Exam: AZ-600 Configuring and Operating a Hybrid Cloud with Microsoft Azure Stack Hub

[Course Page](#)

[Practice Test](#)

[Exam Page](#)

[Exam Study Guide](#)

Azure Stack Hub – Documentation/Reference



# GitHub Learning Companion

[www.aka.ms/pathways](http://www.aka.ms/pathways)



## Microsoft Learn / Documentation

### GitHub fundamentals - Administration basics and product features

Learn the basics of GitHub administration and discover the products that GitHub offers.

- Introduction to GitHub
- Introduction to GitHub administration
- Introduction to GitHub's Products

#### Learning More:

- Introduction to GitHub in Visual Studio Code
- Want to get Started learning GitHub and DevOps?

### Automate workflow with GitHub Actions

Learn how GitHub Actions enables you to automate your software development cycle and deploy applications to Azure

[START](#)

### Collaborate with others with Markdown and GitHub Pages

Learn how to use Markdown to effectively communicate with others in your GitHub issues, pull requests, comments, and documentation.

[START](#)



GitHub



GitHub Training & Guides

### Deploy Azure resources by using Bicep and GitHub Actions

Gain all of the benefits of infrastructure as code by using an automated workflow to deploy your Bicep templates and integrate other deployment activities with your workflows. You'll build workflows using GitHub Actions.

[START](#)

### Manage Source Control

Learn how GitHub enables you to build a modern source control strategy that fosters collaboration and enables you to automate your build and deployment processes.

[START](#)

### Build Community-Driven Software Projects

Whether you manage enterprise or open-source software projects, learn how GitHub enables you to build communities that foster communication and collaboration while reinforcing recommended guidelines, codes of conduct, and security best practices.

[START](#)

### Manage the lifecycle of your products

Take full control of your GitHub projects. Through work planning and tracking, effective branching strategies, and extending GitHub through its API, manage releases all the way from idea to working software in the hands of your users.

[START](#)

### Work with Azure Repos and GitHub

This module introduces you to Azure Repos and GitHub and explores ways to migrate from TFVC to Git, and work with GitHub Codespaces for development.

[START](#)

### Plan Agile with GitHub Projects

This module introduces you to GitHub Projects, GitHub Project Boards and Azure Boards.

[START](#)

### Introduction to GitHub Packages

Explore ways to control permissions and visibility, publish, install, delete and restore packages using GitHub

[START](#)

### Doing More

- GitHub administration for enterprise support and adoption
- Deploy a cloud-native ASP.NET Core microservice with GitHub Actions
- Azure Kubernetes Service deployment pipeline and GitHub Actions
- Create and publish custom GitHub actions
- Manage GitHub Actions in the enterprise
- Deploy and maintain cloud-native apps with GitHub actions and Azure Pipelines
- Learn how Microsoft supports secure software development as part of a cybersecurity solution
- Introduction to GitHub Advanced Security
- Configure and use secret scanning in your GitHub repository
- Authenticate and authorize user identities on GitHub
- Manage sensitive data and security policies within GitHub
- GitHub administration for GitHub Advanced Security
- Introduction to GitHub in Visual Studio Code
- Architect full-stack applications and automate deployments with GitHub
- Configure Dependabot security updates on your GitHub repo
- Configure code scanning on GitHub
- Code scanning with GitHub CodeQL

## GitHub Guides

[guides.github.com](https://guides.github.com)

Expand your knowledge with GitHub Guides  
Explore feature demos, tips, and workflow essentials for effective daily GitHub use.

1 GitHub Flow

2 Hello World

3 GitHub Pages

4 Git Handbook

5 Forking Projects

6 Be Social

7 Making your code Citable

8 Mastering Issues

9 Mastering Markdown

10 Documenting your Projects

## GitHub Docs

[Click Here](#)



## Microsoft Learn Official Collections

GitHub Administration

GitHub Advanced Security

# Power Platform – Learning & Certification Pathway Overview (1/6)



[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Citizen Developer



We all work for our company, regardless of our job or hierarchical position and wish to automate our daily activities through Power Platform.

## Fundamentals

Exam PL-900: Power Platform Fundamentals  
[">>> Exam Study Guide <<](#)  
[">>> Take a free practice assessment <<](#)

### Microsoft Learn:

- Power Platform Fundamentals

## Microsoft Power Platform

### Certification Overview

## Power Platform App Maker

- Document and test your Power Apps application
- Get started with Dataverse for Teams
- Build your first app with Power Apps and Dataverse for Teams
- Create a canvass app in Power Apps
- Navigation in a canvas app in Power Apps
- How to build the UI in a canvas app in Power Apps
- Use and understand Controls in a canvas app
- Get started with Power Automate
- Use the Admin centre to manage environments and data policies in Power Automate
- Introduction to Power Platform security and governance
- Build your first workflow with Power Automate and Dataverse for Teams
- Get started building with Power BI
- Get data with Power BI Desktop
- Create reports with Power BI and Dataverse for Teams
- Get started with AI Builder
- Create a chatbot with Power Virtual Agents and Dataverse for Teams

## Professional Developer



We are professional teams or individuals developing solutions every day, as part of our activities.

## Functional

Exam PL-200: Power Platform Functional Consultant  
[">>> Exam Study Guide <<](#)

### Microsoft Learn:

- Get started using Dataverse
- Dataverse permissions and administration
- Create a canvas app in Power Apps
- Create a model-driven application
- Automate a business process
- Start using buttons in Power Automate
- Use best practices to secure and govern Power Platform environments
- Create and use analytics reports with Power BI
- Create relationships, business rules, calculations, and rollups in Dataverse
- Create bots with Power Virtual Agents
- Bring AI to your business with AI Builder
- Improve business performance with AI Builder

## Developer

Exam PL-400: Power Platform Developer  
[">>> Exam Study Guide <<](#)

### Microsoft Learn:

- Create a canvas app in Power Apps
- Create a model-driven application
- Work with Power Platform tenants, environments, subscriptions, and Dynamics 365 apps
- Automate a business process
- Create and use analytics reports with Power BI
- Integrate with Power Platform and Dataverse
- Create components with Power Apps Component Framework
- Administer Power Apps portals
- Extend Power Apps portals

## [optional] RPA

Exam PL-500: Microsoft Power Platform RPA Developer  
[">>> Exam Study Guide <<](#)

### Microsoft Learn:

- Automate processes with Robotic Process Automation and Power Automate for desktop
- Get started with Power Automate for desktop
- Work with Power Automate for desktop
- Work with different technologies in Power Automate for desktop
- Implement advanced logic
- Build expertise with Power Automate
- Get started with custom connectors
- Configure custom connectors with authenticated APIs in Power Automate
- Introduction to Microsoft Power Platform security and governance

## Architect

Exam PL-600: Microsoft Power Platform Solution Architect  
[">>> Exam Study Guide <<](#)

This certification has a prerequisite of PL-200 or PL-400

### Microsoft Learn:

- Architect solutions for Dynamics 365 and Microsoft Power Platform
- Solution Architect: Design Microsoft Power Platform solutions



Navigation >>>>>



Power Automate



Power Apps



Power BI



Power Pages/PVA



Governance & Enablement

# Power Automate (2/6)

[www.aka.ms/pathways](http://www.aka.ms/pathways)



## Microsoft Learn / Documentation

Note: This content is additional to the content shown on the certification overview page.

### Automate a Business Process

This learning path introduces you to Power Automate, teaches you how to build workflows, and how to administer flows

[START](#)

### Custom Connectors

Custom connectors and how to configure and use them with Power Apps, Microsoft Power Automate, and Microsoft Azure Logic Apps.

[START](#)

### Build RPA Expertise

Explore Robotic Process Automation with advanced subjects of working with Power Automate, OCR technologies, and scripting.

[START](#)

## Reference

[Get Started](#)

[Flows](#)

[Process Advisor](#)

[Connect to Data](#)

[Administer](#)

[Guidance](#)

[Troubleshooting](#)

[Community](#)

### Integrate Flows and Dataverse

Work with triggers and actions to extend Power Automate and Dataverse. Explore how to use these features with your flows.

[START](#)

### Get started with RPA

Learn about the process, creating automated steps, and getting an introduction to development and processes.

[START](#)

### Advanced Logic with RPA

Learn how to work with system processes, flow control, mimic mouse actions, and manipulate text, date, and time operations.

[START](#)

### Integrate SharePoint

Explore approvals in SharePoint and Power Automate, best practices, connectors, and error handling within flows.

[START](#)

### Robotic Process Automation (RPA)

Learn how to automate email handling, Excel, user interface, and system services in this path.

[START](#)

## Power Platform Documentation / Resources

Power Automate is a service that helps you create automated workflows between your favourite apps and services to synchronize files, get notifications, collect data, and more.

[Documentation](#)

[Power Automate](#)

[What's new?](#)

[Templates](#)

[Connectors](#)

[Power Automate Blog](#)

## Persona Skilling Recommended Learning

### Business and Technical Decision Makers

Do you decide whether to invest in new technologies?

- Power Platform Fundamentals
- Automate a business process using Power Automate
- Get started with Power Automate

### App Maker

Are you interested in quickly creating custom business apps without writing code?

- Get started with Power Automate (Learning)
- Get started with Power Automate (Docs)
- Automate a business process using Power Automate
- Get started with Power Automate Buttons
- Introduction to business process flows in Power Automate
- Power Automate documentation
- Power Automate FAQ
- Optimise your business process with process advisor

### Developers

Do you need to write code to integrate with other data sources, extend core system functionality, or build a complex application?

- Extending the Microsoft Dataverse
- Extending the Power Platform user experience in Model Driven apps

### Administrators

Do you need to keep systems and data flowing, provisioned, and secure round-the-clock?

- Use the Admin centre to manage environments and data policies
- Use best practices to secure and govern environments

### Quick Links (above and more):

[BDM/TDM](#)

[APP MAKER](#)

[DEVELOPER](#)

[ADMINISTRATOR](#)

[FUNCTIONAL](#)

[PARTNER](#)



Navigation >>>>

Power Automate

Power Apps

Power BI

Power Pages/PVA



Governance & Enablement



# Power Apps (3/6)

[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Microsoft Learn / Documentation

Note: This content is additional to the content shown on the certification overview page

### Introduction to developing with Power Platform



Learn about the platform, tools, and the ecosystem of Microsoft Power Platform.

[START](#)

### Work with data in a canvas app



Learn how to connect to data sources and how to use filtering, conditions, and other functions to shape your data and write data to your data source.

[START](#)

### Design an accident tracking app



Learn how to build an employee accident tracking app from start to finish.

[START](#)

### Validate your app maker skills



Prepare to complete the app maker challenge project and validate your skills as an app maker.

[START](#)

### Advanced data options / connectors



Do you want to improve the user's experience in your canvas app? Do you want to use custom connectors to connect to data?

[START](#)

### Create an expense report app



Learn how to build an expense report app from start to finish.

[START](#)

### Use basic formulas to make better Power Apps canvas apps



Learn how to use formulas to improve functionality and change a behaviour in your Power Apps canvas app.

[START](#)

### Performance Troubleshooting



Identify your apps performance and ways to troubleshoot your Power Apps canvas app

[START](#)

### Think like a Maker series: Plan and deploy your Power App



This learning path will guide you through the key decisions that are made throughout the entire app development process.

[START](#)

### Use advanced formula techniques and custom updates



Learn how to use formulas in a more advanced way and perform custom updates.

[START](#)

### Use the UI and controls in a canvas app in Power Apps



Learn how to provide the best app navigation, and build the best UI using themes, icons, images, personalization, different form factors, and controls.

[START](#)

### Customise the command bar



Learn how to customize the command bar. We also cover common scenarios and advanced concepts.

[START](#)

## Reference

[Get Started](#)

[Create apps](#)

[Manage data and ALM](#)

[Administer](#)

[Develop / Extend](#)

[Guidance](#)

[Troubleshooting](#)

[Community](#)

### Documentation & Resources

[YouTube Power Apps](#)

[Documentation](#)

[Power Apps Blog](#)

[Connectors](#)

[Power Apps Webinars](#)

## Persona Skilling Recommended Learning

### Business and Technical Decision Makers

Do you decide whether to invest in new technologies?

- Introduction to Power Apps
- Automate a business process using Power Automate
- Tutorial: Create a business process flow

### App Maker

Interested in quickly creating custom business apps without writing code?

- Introduction to Power Apps
- Introduction to Power Automate
- Tutorial: Create a business process flow
- Create a canvas app in Power Apps
- Power Apps Top Innovation Areas
- Manage permissions and administration for Dataverse
- Master advanced techniques for Power Apps canvas apps
- Use advanced data options and connectors
- Use basic formulas to make better Power Apps canvas apps
- Use the UI and controls in a canvas app
- Work with data in a Power Apps canvas app
- Power Fx formula reference for Power Apps
- Automate a business process using Power Automate
- Introducing Button Flows

### Administrators

Do you need to keep systems and data flowing, provisioned, and secure round-the-clock?

- Manage permissions and administration for Dataverse
- Use the Admin centre to manage environments and data policies
- Work with Microsoft Power Platform tenants, environments, subscriptions
- Admin in a day – lab

### Quick Links (above and more):

BDM/TDM

APP MAKER

DEVELOPER

ADMINISTRATOR

FUNCTIONAL

ARCHITECT



Navigation >>>>

Power Automate



Power Apps



Power BI



Power Pages/PVA



Governance & Enablement





# Power BI (4/6)

[www.aka.ms/pathways](http://www aka.ms/pathways)

## Microsoft Learn / Documentation

### Getting Started

#### Microsoft Learn:

- New to the Cloud or Azure? Start with Azure Fundamentals
- New to data solutions on Azure? Build your knowledge with Data Fundamentals
- Build your Tech resilience
- Empower modern analytics and business intelligence data cultures with Excel, Power BI, MS Teams, and SharePoint
- How to build a simple dashboard
- Microsoft Power BI Blog

### Get Started with Power BI



Understand how your business can use Power BI and how you can get started building with it yourself!

- Introduction to Power BI
- Explore what Power BI can do for you
- Get started with building Power BI

### Create and use analytics reports with Power BI



This learning path introduces you to Power BI and teaches you to use and build business intelligence reports.

- Get started building with Power BI
- Get data with Power BI Desktop
- Model data in Power BI
- Use visuals in Power BI
- Explore data in Power BI
- Publish and share in Power BI

### Design Effective Reports in Power BI



Learn the process to design and deliver compelling Power BI reports.

- Scope report design requirements
- Structure analytical report designs in Power BI
- Design Power BI reports
- Configure Power BI report filters
- Enhance Power BI report designs for the user experience
- Enhance Power BI report designs for the user interface

### Consume data with Power BI



Do you want to make business decisions backed by data? Learn how to do that in Power BI.

- Explore what Power BI can do for you
- Analyse data with Power BI
- Data on the go with the Power BI mobile apps

### Design and build tabular models



This learning path introduces the foundational components of designing scalable tabular models using Power BI.

- Create Power BI model relationships
- Use DAX time intelligence functions
- Create calculation groups
- Enforce Power BI model security
- Use tools to optimise Power BI performance

### Distribute Power BI insights



Publish and share Power BI reports to enable data driven decision making.

- Publish and share in Power BI
- Explore data in Power BI

### Build Power BI visuals and reports



Turn data into interactive, actionable insights with Power BI Desktop visuals and reports

- Explore what Power BI can do for you
- Analyse data with Power BI
- Get to your data on the go with the Power BI mobile apps

### Additional Study

- Create reports and dashboards
- Collaborate and share
- Power BI for consumers
- Power BI in the mobile apps
- Getting started with the Azure Maps Power BI visual
- Administer Power BI
- Best practices guidance
- Develop in Power BI
- Embed Power BI analytics
- Implement advanced data visualization techniques by using Power BI
- Performance / Optimisation
- Power Query | Shaping Data
- Conditional Formatting in Tables
- Design Power BI reports for accessibility
- Data Alerts
- Data Refresh in Power BI
- Monitor Usage and Performance
- Many-to-many relationship guidance
- Prepare data for tabular models in Power BI
- Introduction to Power BI administration
- Administer Power BI: Part 1 Part 2
- Power BI for Tableau users

### Role Based Certification

Power BI Data Analyst



PL-300: Microsoft Power BI Data Analyst

#### Skills Measured:

- Prepare the data (25–30%)
- Model the data (25–30%)
- Visualize and analyze the data (25–30%)
- Deploy and maintain assets (15–20%)

#### Microsoft Learn:

- Get started with Microsoft data analytics
- Prepare data for analysis
- Model data in Power BI
- Visualize data in Power BI
- Data analysis in Power BI
- Manage workspaces and datasets in Power BI

Exam Study Guide

Course Page

Practice Test

Exam Page

Power BI Community Content Gallery

'Get Started' Documentation

Power BI Documentation

YouTube Microsoft Power BI



Navigation >>>>

Power Automate



Power Apps



Power BI



Power Pages/PVA



Governance & Enablement





# Power Pages & Power Virtual Agents (5/6)

[www.aka.ms/pathways](http://www.aka.ms/pathways)



## Power Pages > Microsoft Learn / Documentation

Note: This content is additional to any content shown on the certification overview page

### Get started with Power Pages



Learn about Power Pages that can be quickly provisioned to serve a variety of different audiences and workloads.

[START](#)

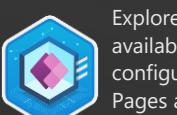
### Work with Power Pages



Explore how they work within the context of Dynamics 365 to deliver content and Dataverse data to external and internal audiences

[START](#)

### Administer Power Pages



Explore the tools and techniques available for administrators to configure and maintain Power Pages as well as efficiently troubleshooting issues.

[START](#)

### Extend Power Pages



Learn how to transform a content portal into a full web app interacting with Dataverse.

[START](#)

### Documentation & Resources

Use Power Pages to create external-facing websites that allow users outside their organizations to sign in with a wide variety of identities, create and view data in Dataverse, or even browse content anonymously.

#### Documentation

##### What is Power Pages?

##### Try Power Pages

##### Getting Started Videos

##### Power Pages Community

##### Power Platform

##### Power Pages tutorials

#### Getting started:

- What is Power Pages
- Power Pages capabilities
- Create/manage Power Pages sites
- How Power Pages security works
- Architecture and security white papers

#### Step-by-step tutorials with videos to learn about Power Pages:

- Tutorials and training videos overview
- Design your home page
- Set up your brand kit
- Create a page with a list
- Create a page with a simple form
- Configure site authentication



## Power Virtual Agents > Microsoft Learn / Documentation

Note: This content is additional to any content shown on the certification overview page.

### Introduction to Power Virtual Agents



Learn the value and capabilities of Power Virtual Agents and ways organisations can leverage this technology.

[START](#)

### How to build a basic chatbot



Learn how to create powerful bots using a guided, no-code graphical experience.

[START](#)

### Create bots with PVA



Get started creating bots with Power Virtual Agents.

[START](#)

### Extend and manage PVA bots



Explore bot enhancements and management. Topics include managing permissions, working with environments, and importing and exporting bots.

[START](#)

### Documentation & Resources

Build chatbots easily with Power Virtual Agents.

#### Documentation

##### What is Power Virtual Agents?

##### What's new?

##### Power Virtual Agents

##### PVA Community

#### Getting started:

- Sign up for free
- Web app
- App in Microsoft Teams

#### Enhance and improve your bots:

- Use entities and slot filling
- Use end-user authentication
- Use Microsoft Bot Framework Skills

#### Monitor and diagnose

- Use analytics to improve your bot
- Analyze bot performance and usage
- Analyze topic usage

#### Create intelligent bots:

- Create and delete bots
- Create and edit topics
- Test your bot

#### Publish and integrate

- Configure demo and live sites
- Publish to Microsoft Teams
- Publish to Facebook

#### Administer and manage

- Assign licenses
- Working with environments
- Export and import bots using solutions

# Platform Governance & Enablement (6/6)

[www.aka.ms/pathways](http://www aka.ms/pathways)



## Microsoft Learn / Documentation



### Adoption Best Practices



#### Adoption Best Practices

- Overview
- Adoption Maturity Model**
- Overview
- Goals and Opportunities
- Details Capabilities

#### Strategy and Vision

- Overview
- Establish a Center of Excellence
- Roles and Responsibilities
- Delivery Models

#### Admin and governance

- Best Practice Checklist
- Nurture and Educate**
- Best Practice Checklist

### Center of Excellence (CoE) Kit



#### Power Platform Center of Excellence (CoE) Kit

- CoE Starter Kit
- Overview
- Establishing Tenant Hygiene
- Set up the CoE starter Kit
- What's in the CoE Starter Kit
- How to use the CoE Starter Kit
- CoE Command line interface
- FAQ and Tips
- Limitations
- Release notes
- Feedback and support

### Real-World Architecture Examples

- Overview
- Using the SharePoint connector with canvas apps
- Using Dataverse with canvas apps
- Using Azure Functions to extend a canvas app
- Using REST APIs through custom connectors with canvas apps
- Using business process flows, Dataverse, custom connectors, and Power Automate with canvas apps
- Using on-premises SQL Server with canvas apps
- Using Power Apps component framework with canvas apps

### Reference

- Administrator
- Licensing
- New storage model
- Understand Environments
- Create an environment
- Manage environment settings
- Manage environment updates
- Security Overview
- Security roles and privileges
- Create and manage users
- Create and manage security roles
- Get Help + Support
- Check online service health

### Introduction to Microsoft Power Platform security and governance



Learn about how to help secure and govern Microsoft Power Platform.

[START](#)

### Get started with Microsoft Power Platform Center of Excellence



Focuses on getting started with the initial setup & configuration of Power Platform Center of Excellence (CoE) kit in your tenant.

[START](#)

### Plan and Manage your Power Platform environment



Learn about considerations that impact how an organization chooses to secure and govern the Power Platform environments

[START](#)

### Manage solutions in Power Apps and Power Automate



Microsoft Power Platform includes features such as apps, site maps, flows, entities, connectors, and more. Learn how to manage solutions with Power Automate

[START](#)

### Implementation recommendations



Do you want prescriptive recommendations for how organizations should choose to implement security and governance?

[START](#)

### Manage Power Virtual Agents



Power Virtual Agents allows organizations to quickly create bots based on business scenarios their customers and employees can easily interact with as needed.

[START](#)

### Manage environmental changes in Microsoft Power Platform



Best practices for communicating changes to Data Loss Prevention (DLP) policies , find out about how people are using Microsoft Power Platform

[START](#)

### Use templates to enforce governance policies



Microsoft provides many templates in Microsoft Power Platform that administrators can use to enforce governance policies and increase visibility of assets that are being created

[START](#)



Navigation >>>>

Power Automate



Power Apps



Power BI



Power Pages/PVA



Governance & Enablement



# Azure Administration for AWS SysOps



[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Compare Azure and AWS core components

Microsoft offers a comprehensive collection of learning resources that empower AWS technical professionals to learn Microsoft Azure. Build practical job skills with online step-by-step training that can also help provide with a learning path to certification.

Explore how Microsoft Azure varies from AWS while becoming proficient administrating the Azure environment.

Many Azure and AWS core components have similar functionality. The following articles compare the platforms' capabilities in these core areas.

### Microsoft Learn:

- Azure and AWS accounts and subscriptions
- Compute services on Azure and AWS
- Relational database technologies on Azure & AWS
- Messaging services on Azure and AWS
- Networking on Azure and AWS
- Regions and zones on Azure and AWS
- Resource management on Azure and AWS
- Multi-cloud security and identity with Azure and Amazon Web Services (AWS)
- Compare storage on Azure and AWS
- AWS to Azure services comparison
- Azure AD Identity Management for AWS
- Tutorial: Amazon Managed Grafana
- Tutorial: AWS Single-Account Access
- Tutorial: Azure AD integration with AWS
- Tutorial: AWS ClientVPN
- Tutorial: Integration with AWS Single Sign-on
- Tutorial: Azure AD SSO with AWS SAA
- Tutorial: Configure AWS Single Sign-on
- Azure Security for AWS
- Connect AWS to Microsoft Sentinel
- Protect AWS with Microsoft Defender
- Connect AWS to Microsoft Defender

## Additional Study

### Azure Skills Navigator



### System Administrator

Looking to develop your Microsoft Azure knowledge and skills? You're on the right path!

[DOWNLOAD](#)

This guide maps out your itinerary for deepening your Azure knowledge, drawing on a wide array of Microsoft resources. You'll begin by diving into the fundamental concepts of cloud computing and Azure core infrastructure services, then move on to management, monitoring, security, and compliance. These modules are designed to be completed in order, step by step, as outlined in this guide.

### YouTube

- Azure Administration for AWS SysOps
- Security best practices for Azure Blob Storage
- Protect from ransomware with Azure Backup
- Optimize costs of your backups with Azure Backup
- Azure Virtual Desktop
- Azure Private Link
- Ask the product experts live: Azure Monitor
- Securing Azure Stack HCI with Azure Defender and Secured-core
- SAP on Azure and Azure VMware Solution
- Cloud Services walkthrough for Extended support
- Microsoft Azure Spot Virtual Machines overview
- Microsoft Azure Reservations deep dive

### Videos

## Role based certification

### Azure Administrator

AZ-104: Microsoft Azure Administrator

#### Skills Measured:

- Manage Azure identities and governance
- Implement and manage storage
- Deploy and manage Azure compute resources
- Configure and manage virtual networking
- Monitor and back up Azure resources

[See the Azure Administrator pathway for more information](#)

## Role based certification

### Azure Network Engineer

AZ-700: Designing and Implementing Microsoft Azure Networking Solutions

#### Skills measured:

- Design & implement core networking infrastructure
- Design, implement & manage connectivity services
- Design and implement application delivery services
- Design & implement private access to Azure services
- Secure network connectivity to Azure resources

[See the Azure Network Engineer pathway for more information](#)

## Microsoft Learn Collections

### Azure VMware Solution

### Azure Virtual Desktop

### Azure Compute

### Azure Arc

### Azure Storage

### Azure Monitor

### BCDR

### Automanage

### Modernise your Infrastructure

### Azure Infrastructure Official Collection

## Azure Connected Learning Experience

Microsoft Azure Connected Learning Experience (CLX) is an experiential training program that sets a trajectory for aspiring learners and working professionals to be Azure experts. The CLX program offers a personalized journey that aims to optimize learning experience while maximizing return on time invested.

[Here](#)

## Microsoft Virtual Training Days

Build the technical skills you need with free Virtual Training Days.

[Here](#)

## Microsoft

# TECHNICAL QUEST

[Here](#)

# Azure for AWS Developers



[www.aka.ms/pathways](http://www.aka.ms/pathways)

## Compare Azure and AWS core components

Microsoft offers a comprehensive collection of learning resources that empower AWS technical professionals to learn Microsoft Azure. Build practical job skills with online step-by-step training that can also help provide with a learning path to certification.

Many Azure and AWS core components have similar functionality. Start by comparing the platforms' capabilities in core areas.

### Microsoft Learn:

- Azure and AWS accounts and subscriptions
- Compute services on Azure and AWS
- Relational database technologies on Azure & AWS
- Compare storage on Azure and AWS
- AWS to Azure services comparison
- Azure for developers overview
- Key Azure services for developers
- Hosting applications on Azure
- Connect your app to Azure Services
- Create and manage resources in Azure
- Key concepts for building Azure apps
- How am I billed?

## Developer Resources



Python



JavaScript



Java



.NET



GO



PowerShell



Azure CLI



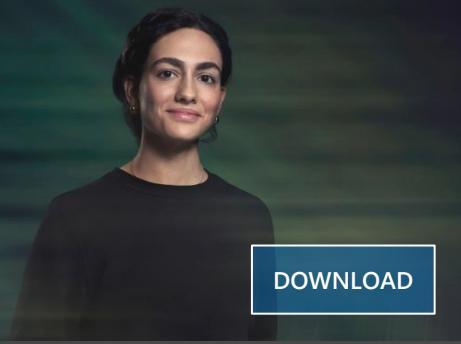
Mobile

## Additional Study

### Azure Skills Navigator

#### Developers

Looking to develop your Microsoft knowledge and skills? You're on the right path!



DOWNLOAD

This Microsoft learning journey is designed for developers who build apps with low-code techniques to simplify, automate, and transform business tasks and processes. This guide maps out your itinerary for deepening your knowledge, drawing on a wide array of Microsoft resources, divided into three phases:

**Ramp up** - Discover core skills and language fundamentals.

**App development** Learn how to build cloud-native apps with various cloud architectures, frameworks for web, mobile apps, and relevant Azure services.

**In production** Explore services for monitoring, logging, instrumentation, and authorization



YouTube

Videos

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>- Deploy Node.js web apps to Azure App Service</li> <li>- Azure Developer Streams</li> <li>- Azure App Service</li> <li>- Kubernetes on Azure</li> <li>- Service Fabric</li> <li>- Identity for Developers</li> <li>- Visual Studio Toolbox</li> <li>- Python for Beginners</li> <li>- Python on Azure</li> </ul> | <ul style="list-style-type: none"> <li>- Kubernetes Basics</li> <li>- Kubernetes Learning</li> <li>- Cloud Native Applications on Azure</li> <li>- Azure Open Source</li> <li>- Open-Source Success Stories</li> <li>- Microsoft Azure YouTube Channel</li> </ul> |
|--|---|

## Role Based Certification

### Azure Developer

AZ-204: Developing Solutions for Microsoft Azure

#### Skills measured:

- Develop Azure compute solutions
- Develop for Azure storage
- Implement Azure security
- Monitor, troubleshoot/optimize Azure solutions
- Connect to and consume Azure services and third-party services

[See the Azure Developer pathway for more information](#)

## Role Based Certification

### Azure DevOps Engineer

AZ-400: Designing and Implementing Microsoft DevOps Solutions

#### Skills measured:

- Configure processes and communications
- Design and implement source control
- Design and implement build and release pipelines
- Develop a security and compliance plan
- Implement an instrumentation strategy

[See the DevOps Engineer pathway for more information](#)

## Challenges and other events



### Java on Azure Developer

In about 15 hours, learn how to build and scale Java applications on Azure with a range of Azure services and popular Java tools and frameworks.

### Azure Developer

In under 30 hours, you'll learn about storing data in Azure, creating serverless applications, connecting your services together, and more.



It's right there in the name: We present Microsoft Learn content Live. Every episode we'll choose a Learn module and work through it. We'll pull in guests to give you extra commentary from experts and sometimes even the engineers who built it. Join us and ask questions, live!



### Azure Core IaaS Study Hall

Learn about highly secure, available, and scalable cloud services. Modernize your IT with an enterprise-grade cloud infrastructure and migrate your apps with confidence. Running through to June 2023.

**On demand library:** Watch all previous shows on demand [HERE](#)

# Azure Technologies for AWS Architects



[www.aka.ms/pathways](http://www aka.ms/pathways)

## Compare Azure and AWS core components

Microsoft offers a comprehensive collection of learning resources that empower AWS technical professionals to learn Microsoft Azure. Build practical job skills with online step-by-step training that can also help provide with a learning path to certification.

Explore how Microsoft Azure varies from AWS while becoming proficient administrating the Azure environment. Many Azure and AWS core components have similar functionality. The following articles compare the platforms' capabilities in these core areas:

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- Tutorial: AWS Single-Account Access
- Tutorial: Azure AD integration with AWS
- Tutorial: AWS ClientVPN
- Tutorial: Integration with AWS Single Sign-on
- Tutorial: Azure AD SSO with AWS SAA
- Tutorial: Configure AWS Single Sign-on
- Azure Security for AWS
- Connect AWS to Microsoft Sentinel
- Protect AWS with Microsoft Defender
- Connect AWS to Microsoft Defender

## Additional Study

### Azure Skills Navigator

#### Solution Architect

Looking to develop your Microsoft Azure knowledge and skills? You're on the right path!



[DOWNLOAD](#)

This Azure learning journey is designed for Solution Architects defining the design and implementation of technology solutions in Microsoft Azure. Using the understanding of an organization's business requirements and developer capabilities, these IT professionals use building blocks of different technology components to create robust, optimized architectures.

### Microsoft Learn:

- Architect secure infrastructure in Azure
- Architect network infrastructure in Azure
- Architect infrastructure operations in Azure
- Architect compute infrastructure in Azure
- Architect storage infrastructure in Azure
- Architect migration, business continuity, and disaster recovery in Azure
- Architect a data platform in Azure
- Architect modern applications in Azure
- Architect API integration in Azure
- Explore Cloud Best Practices
- Assess, optimise and review your workload
- Best Practices and patterns for building applications on Azure
- Explore Architectures and guides for different technologies

### Videos:

- Azure Administration for AWS SysOps
- Security best practices for Azure Blob Storage
- Protect from ransomware with Azure Backup
- Optimize costs of your backups with Azure Backup
- Azure Virtual Desktop
- Azure Private Link
- Azure Spot Virtual Machines overview
- Azure Reservations deep dive

## Role Based Certification

### Azure Administrator

AZ-104: Microsoft Azure Administrator

#### Skills Measured:

- Manage Azure identities and governance
- Implement and manage storage
- Deploy and manage Azure compute resources
- Configure and manage virtual networking
- Monitor and back up Azure resources



[See the Azure Administrator pathway for more information](#)

## Role Based Certification

### Solution Architect

AZ-305: Designing Microsoft Azure Infrastructure Solutions

#### Skills measured:

- Design identity, governance, and monitoring solutions
- Design data storage solutions
- Design business continuity solutions
- Design infrastructure solutions

[See the Solution Architect pathway for more information](#)

## Learn Live

### Azure Core IaaS Study Hall

Learn about highly secure, available, and scalable cloud services. Modernize your IT with an enterprise-grade cloud infrastructure and migrate your apps with confidence. Running through to June 2023.

**On demand library:** Watch all previous shows on demand [HERE](#)



### Designing Infrastructure Solutions

In about 21 hours, you'll learn about advising stakeholders and translating business requirements into designs for secure, scalable, and reliable Azure solutions.

### Azure Connected Learning Experience

Microsoft Azure Connected Learning Experience (CLX) is an experiential training program that sets a trajectory for aspiring learners and working professionals to be Azure experts. The CLX program offers a personalized journey that aims to optimize learning experience while maximizing return on time invested.

[Click Here](#)



### Microsoft Virtual Training Days

Build the technical skills you need with free Virtual Training Days.

[Click Here](#)



[Here](#)