Designing Microsoft Azure Infrastructure Solutions

Course AZ-305 4 days Instructor-led

Introduction

This course teaches Azure Solution Architects how to design infrastructure solutions. Course topics cover governance, compute, application architecture, storage, data integration, authentication, networks, business continuity, and migrations. The course combines lecture with case studies to demonstrate basic architect design principles.

Who Should Attend?

Successful students have experience and knowledge in IT operations, including networking, virtualization, identity, security, business continuity, disaster recovery, data platforms, and governance. Students also have experience designing and architecting solutions.

At Course Completion

After completing this course, students will be able to:

- Describe the core architectural components of Azure
- Describe Azure compute and networking services
- Describe Azure storage services
- Describe Azure identity, access, and security
- Introduction to the Microsoft Cloud Adoption Framework
- Introduction to the Microsoft Azure Well-Architected Framework
- Design governance
- Design authentication and authorization solutions
- Design a solution to log and monitor Azure resources
- Describe high availability and disaster recovery strategies
- Design a solution for backup and disaster recovery
- Design a data storage solution for non-relational data
- Design a data storage solution for relational data
- Design data integration
- Design an Azure compute solution
- Design an application architecture
- Design network solutions
- Design migrations
- Introduction to the Microsoft Azure Well-Architected Framework
- Microsoft Azure Well-Architected Framework - Reliability

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- Microsoft Azure Well-Architected Framework - Security
- Microsoft Azure Well-Architected Framework - Cost Optimization
- Microsoft Azure Well-Architected Framework - Operational Excellence
- Microsoft Azure Well-Architected Framework - Performance Efficiency

Prerequisites

Before attending this course, students must have previous experience deploying or administering Azure resources and strong conceptual knowledge of:

- Azure compute technologies such as VMs, containers and serverless solutions
- Azure virtual networking to include load balancers
- Azure Storage technologies (unstructured and databases)
- General application design concepts such as messaging and high availability

Course Outline

Module 1: Describe the core architectural components of Azure

- What is Microsoft Azure
- Get started with Azure accounts
- Describe Azure physical infrastructure
- Describe Azure management infrastructure
- Module assessment

Module 2: Describe Azure compute and networking services

- Describe Azure virtual machines
- Describe Azure virtual desktop
- Describe Azure containers
- Describe Azure functions
- Describe application hosting options
- Describe Azure virtual networking
- Describe Azure virtual private networks
- Describe Azure ExpressRoute
- Describe Azure DNS
- Module assessment

Module 3: Describe Azure storage services

- Describe Azure storage accounts
- Describe Azure storage redundancy
- Describe Azure storage services

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- Identify Azure data migration options
- Identify Azure file movement options
- Module assessment

Module 4: Describe Azure identity, access, and security

- Describe Azure directory services
- Describe Azure authentication methods
- Describe Azure external identities
- Describe Azure conditional access
- Describe Azure role-based access control
- Describe Zero Trust model
- Describe defense-in-depth
- Describe Microsoft Defender for Cloud
- Module assessment

Module 5: Introduction to the Microsoft Cloud Adoption Framework

- Strategy
- Plan
- Ready
- Migrate
- Modernize
- Cloud-native
- Govern
- Manage
- Secure
- Module assessment

Module 6: Introduction to the Microsoft Azure Well-Architected Framework

- Azure Well-Architected Framework pillars

Module 7: Design governance

- Design for governance
- Design for management groups
- Design for subscriptions
- Design for resource groups
- Design for resource tags
- Design for Azure Policy
- Design for role-based access control (RBAC)
- Design for Azure landing zones
- Module assessment

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Module 8: Design authentication and authorization solutions

- Design for identity and access management (IAM)
- Design for Microsoft Entra ID
- Design for Microsoft Entra business-to-business (B2B)
- Design for Azure Active Directory B2C (business-to-customer)
- Design for conditional access
- Design for identity protection
- Design for access reviews
- Design service principals for applications
- Design managed identities
- Design for Azure Key Vault
- Module assessment

Module 9: Design a solution to log and monitor Azure resources

- Design for Azure Monitor data sources
- Design for Azure Monitor Logs (Log Analytics) workspaces
- Design for Azure Workbooks and Azure insights
- Design for Azure Data Explorer
- Module assessment

Module 10: Describe high availability and disaster recovery strategies

- Describe recovery time objective and recovery point objective
- Explore high availability and disaster recovery options
- Describe Azure high availability and disaster recovery features for Azure Virtual Machines
- Describe high availability and disaster recovery for PaaS deployments
- Explore high availability and disaster recovery solution for IaaS
- Describe hybrid solutions
- Module assessment

Module 11: Design a solution for backup and disaster recovery

- Design for backup and recovery
- Design for Azure Backup
- Design for Azure blob backup and recovery
- Design for Azure files backup and recovery
- Design for Azure virtual machine backup and recovery
- Design for Azure SQL backup and recovery
- Design for Azure Site Recovery
- Module assessment

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Module 12: Design a data storage solution for non-relational data

- Design for data storage
- Design for Azure storage accounts
- Design for data redundancy
- Design for Azure Blob Storage
- Design for Azure Files
- Design for Azure managed disks
- Design for storage security
- Module assessment

Module 13: Design a data storage solution for relational data

- Design for Azure SQL Database
- Design for Azure SQL Managed Instance
- Design for SQL Server on Azure Virtual Machines
- Recommend a solution for database scalability
- Recommend a solution for database availability
- Design security for data at rest, data in motion, and data in use
- Design for Azure SQL Edge
- Design for Azure Cosmos DB and Table Storage
- Module assessment

Module 14: Design data integration

- Design a data integration solution with Azure Data Factory
- Design a data integration solution with Azure Data Lake
- Design a data integration and analytic solution with Azure Databricks
- Design a data integration and analytic solution with Azure Synapse Analytics
- Design strategies for hot, warm, and cold data paths
- Design an Azure Stream Analytics solution for data analysis
- Module assessment

Module 15: Design an Azure compute solution

- Choose an Azure compute service
- Design for Azure Virtual Machines solutions
- Design for Azure Batch solutions
- Design for Azure App Service solutions
- Design for Azure Container Instances solutions
- Design for Azure Kubernetes Service solutions
- Design for Azure Functions solutions
- Design for Azure Logic Apps solutions
- Module assessment

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Module 16: Design an application architecture

- Describe message and event scenarios
- Design a messaging solution
- Design an Azure Event Hubs messaging solution
- Design an event-driven solution
- Design a caching solution
- Design API integration
- Design an automated app deployment solution
- Design an app configuration management solution
- Module assessment

Module 17: Design network solutions

- Recommend a network architecture solution based on workload requirements
- Design patterns for Azure network connectivity services
- Design outbound connectivity and routing
- Design for on-premises connectivity to Azure Virtual Network
- Choose an application delivery service
- Design for application delivery services
- Design for application protection services
- Module assessment

Module 18: Design migrations

- Evaluate migration with the Cloud Adoption Framework
- Describe the Azure migration framework
- Assess your on-premises workloads
- Select a migration tool
- Migrate your structured data in databases
- Select an online storage migration tool for unstructured data
- Migrate offline data
- Module assessment

Module 19: Introduction to the Microsoft Azure Well-Architected Framework

- Azure Well-Architected Framework pillars

Module 20: Microsoft Azure Well-Architected Framework - Reliability

- Design for business requirements
- Design for resilience
- Design for recovery
- Design for operations

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- Keep it simple

Module 21: Microsoft Azure Well-Architected Framework - Security

- Plan your security readiness
- Design to protect confidentiality
- Design to protect integrity
- Design to protect availability
- Sustain and evolve your security posture

Module 22: Microsoft Azure Well-Architected Framework - Cost Optimization

- Develop cost-management discipline
- Design with a cost-efficiency mindset
- Design for usage optimization
- Design for rate optimization
- Monitor and optimize over time

Module 23: Microsoft Azure Well-Architected Framework - Operational Excellence

- Embrace DevOps culture
- Establish development standards
- Evolve operations with observability
- Automate for efficiency
- Adopt safe deployment practices

Module 24: Microsoft Azure Well-Architected Framework - Performance Efficiency

- Negotiate realistic performance targets
- Design to meet capacity requirements
- Achieve and sustain performance
- Improve efficiency through optimization