Course Description

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

Audience

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.

Prerequisites

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

- Azure Active Directory
- 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.

Learning Outcomes

After completing this course, you will be able to:

- Design a governance solution.
- Design a compute solution.
- Design a data storage solution.
- Design a data integration solution.
- Design an app architecture solution.
- Design authentication, authorization, and identity solutions.
- Design monitoring solutions.
- Design a networking solution.
- Design backup and disaster recovery solutions.
- Design migration solutions.

Certification exam

The AZ-305, Designing Microsoft Azure Infrastructure Solutions, certification exam is designed for Azure Solution Architects.

The exam includes four study areas. The percentages indicate the relative weight of each area on the exam. The higher the percentage, the more questions the exam will contain.

AZ-305 Study Areas	Weights
Design identity, governance, and monitoring solutions	25-30%
Design data storage solutions	25-30%
Design business continuity solutions	10-15%
Design infrastructure solutions	25-30%

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Day 1: Design governance and compute solutions

Module 0: Welcome

- Introductions
- Classroom experience
- Azure Solution Architects
- Certification
- Class schedule
- Student content
- Case studies
- Cloud Adoption Framework
- Well-Architected Framework

Module 1: Design governance and compute solutions

- **Lesson 1: Design for governance**
  - Introduction
  - Design for governance
  - Design for management groups
  - Design for subscriptions
  - Design for resource groups
  - Design for resource tagging
  - Design for Azure Policy and Azure RBAC
  - Design with Azure Blueprints
  - Case study - Design a governance solution
  - Knowledge check
  - Summary and resources
  - Optional hands-on exercise- List access using Azure RBAC and the Azure portal - Learn | Microsoft Docs

- **Lesson 2: Design a compute solution**
  - Introduction
  - Choose a compute service
  - Design for Azure virtual machine solutions
  - Design for Azure Batch solutions
  - Design for Azure Container Instances solutions
  - Design for Azure App Services solutions

- Design for Azure Kubernetes solutions
- Design for Azure Functions solutions
- Design for Logic App solutions
- Case study - Design a compute solution
- Knowledge check
- Summary and resources
- Optional hands-on exercise- Create a web app in the Azure portal - Learn | Microsoft Docs
- Optional hands-on exercise- Create a Windows virtual machine - Learn | Microsoft Docs
- Optional hands-on exercise- Create the social media tracker Logic App - Learn | Microsoft Docs

Day 2: Module 2: Design storage and data integration solutions

- **Lesson 1: Design a data storage solution for non-relational data**
  - Introduction
  - 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 disk solutions
  - Design for storage security
  - Case study – Design a non-relational storage solution
  - Knowledge check
  - Summary and resources
  - Optional hands-on exercise - Create a storage account using the Azure portal - Learn | Microsoft Docs

- **Lesson 2: Design a data storage solution for relational data**
  - Introduction
  - Design for data storage
  - Design for Azure SQL databases
  - Recommend a solution for database scalability
  - Recommend a solution for database availability
  - Design security for data at rest, data in transmission, and data in use
  - Design for Azure SQL Edge
  - Design for Azure Cosmos DB and tables
  - Case study - Design a relational storage solution
  - Knowledge check
  - Summary and resources
  - Optional hands-on exercise- Create a SQL database - Learn | Microsoft Docs

- **Lesson 3: Design data integration**
  - Introduction
  - Design for Azure Data Factory
  - Design for Data Lake
  - Design for Azure Databricks
  - Design for Azure Synapse Analytics
  - Design a strategy for hot, warm, and cold data paths

- Design Azure Stream Analytics solution for Data Analysis
- Knowledge check
- Summary and resources

Day 3: Module 3: Design app architecture and monitoring

- **Lesson 1: Design an application architecture**
  - Describe message and event scenarios
  - Design a messaging solution
  - Design an event solution (Event Hub and Event Grid)
  - Design an application automation solution
  - Design application lifecycle
  - Case study – Design an app architecture solution
  - Summary and resources
  - Optional hands-on exercise- Implement a Service Bus topic and queue - Learn | Microsoft Docs

- **Lesson 2: Design authentication and authorization solutions**
  - Design for identity and access management
  - Design for Active Directory (B2B and B2C)
  - Design for conditional access
  - Design for identity protection
  - Design for access reviews
  - Design service principals for applications
  - Design for Azure key vault
  - Case study - Design authentication and authorization solutions
  - Summary and resources
  - Optional hands-on exercise - Add and delete users in Azure Active Directory - Learn | Microsoft Docs

- **Lesson 3: Design a solution to log and monitor Azure resources**
  - Introduction
  - Design for Azure Monitor data sources
  - Design for Log Analytics
  - Design for Azure Workbooks and Insights
  - Design for Azure Data Explorer
  - Case study – Fabrikam Residences
  - Knowledge check
  - Summary and resources
  - Optional hands-on exercise- Monitor, diagnose, and troubleshoot your Azure storage - Learn | Microsoft Docs

Day 4: Module 4: Design for networks and business continuity solutions

- **Lesson 1: Design network solutions**
  - Introduction
  - Recommend a network architecture solution based on workload requirements
  - Design for on-premises connectivity to Azure Virtual Networks
  - Design for Azure network connectivity services
  - Design for application delivery services
  - Design for application protection services
  - Case study – Design a network solution
  - Knowledge check
  - Summary and resources
  - Optional hands-on exercise- Distribute your services across Azure virtual networks and integrate them by using virtual network peering - Learn | Microsoft Docs
  - Optional hands-on exercise- Secure and isolate access to Azure resources by using network security groups and service endpoints - Learn | Microsoft Docs

- **Lesson 2: Design a solution for backup and disaster recovery**
  - Introduction
  - 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
  - Knowledge check
  - Summary and resources
  - Optional hands-on exercise- Backup and restore your Azure SQL database - Learn | Microsoft Docs

- **Lesson 3: Design migrations**
  - Introduction
  - Evaluate migration with the Cloud Adoption Framework
  - Describe Azure Migration Framework
  - Assess your workloads
  - Compare migration tools

- Migrate your databases
- Select an online storage migration solution
- Select an offline storage migration solution
- Knowledge check
- Summary and resources