Purpose

This document is for Microsoft Certified Trainers preparing to teach the AZ-303 Microsoft Azure Architect Technologies course. This course is designed for students who are planning to take the associated certification exam, or students who are performing Azure Architect tasks in their day-to-day job.

Azure Architect Role Definition

Both the certification exam and the courseware are based on the Azure Architect role. When students ask why some areas are being covered and other areas are not, refer them to this role definition. Remember there are other roles, such as DevOps and Administrator.

- Solutions Architects translate business requirements into secure and reliable recommendations for infrastructure, governance, high availability, cost optimization, and data integration.
- Skills include recommending solutions for logging, multi-factor authentication, SSO, hybrid identity, backup and recovery, containers, microservices, monitoring, automation, networking, and application infrastructure.

Audience

This course is for IT Professionals with expertise in designing and implementing solutions running on Microsoft Azure. They should have broad knowledge of IT operations, including networking, virtualization, identity, security, business continuity, disaster recovery, data platform, budgeting, and governance. Azure Solution Architects use the Azure Portal and as they become more adept, they use the Command Line Interface.

Candidates must have intermediate-level skills in Azure administration and have experience with Azure development processes and DevOps processes.

Prerequisites

Successful Azure Architect students have prior experience with operating systems, virtualization, cloud infrastructure, storage structures, and networking:

- Understanding of on-premises virtualization technologies, including VMs and virtual networking
- Understanding of network configuration, including TCP/IP, Domain Name System (DNS), virtual private networks (VPNs), firewalls, and encryption technologies

- Understanding of Active Directory concepts, including domains, forests, and domain controllers

If you are new to Azure and cloud computing, consider:

- Free online: Azure Fundamentals (https://docs.microsoft.com/enus/learn/paths/azurefundamentals/)

Certification Exam

Certification exams measure your ability to accomplish certain technical tasks for a job role. The study areas are based on the Job Task Analysis that was conducted for the role in December 2019.

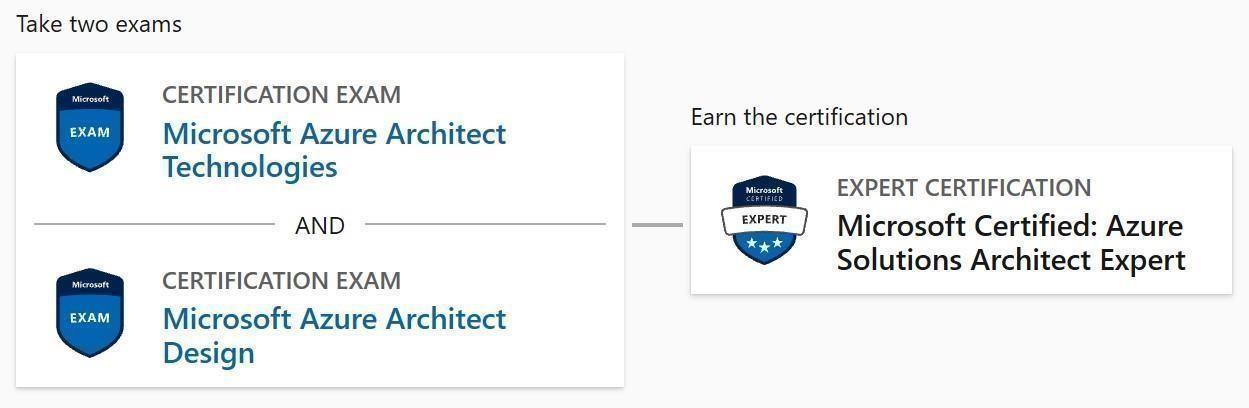
Each study area has a percentage indicating the relative weight of the area on the exam. The higher the percentage, the more questions you are likely to see in that area.

AZ-303 Study Areas	Weights
Implement and Monitor an Azure Infrastructure	50-55%
Implement Management and Security Solutions	25-30%
Implement Solutions for Apps	10-15%
Implement and Manage Data Platforms	10-15%

Candidates should have a minimum of 12 months of hands-on experience with Azure. Candidates should have a strong understanding of core Azure services, Azure workloads, security, monitoring, and governance. Candidates for this exam should have experience in using PowerShell, the Command Line Interface, Azure Portal, and ARM templates.

For more information on the skills measured in the exam, please visit the AZ-303: Microsoft Azure Architect Technologies certification page.

The AZ-303 Microsoft Azure Architect Technologies certification combined with the AZ304 Microsoft Azure Architect Design certification result in the Microsoft Certified: Azure Solutions Architect Expert certification.



For more information, see the AZ-304 Microsoft Azure Architect Design page.

Preparing to Teach

In the next sections we will cover the main course components and how they can used in class. There is a lot of flexibility in how you use this content to create the best learning experience for your students.

Feedback from students indicates that instructor demonstrations, hands-on labs, and Q&A sessions help to enliven the classroom experience, whether live or online.

Content Outline

The content for your course is organized into Modules, Lessons, and Topics. There are 15 modules. A syllabus is provided in the Welcome section.

Module 1: Implement Azure Active Directory

- Lesson 1: Azure AD and Resource Organization
- Lesson 2: Users and Groups
- Lesson 3: Managing Azure AD Tenants
- Lesson 4: Implement Conditional Access
- Lesson 5: Configure MFA
- Lesson 6: Identity Protection
- Lesson 7: Module 1 Review Questions

Module 2: Implement and Manage Hybrid Identities

- Lesson 1: Azure AD Connect
- Lesson 2: Self-Service Password Reset
- Lesson 3: Azure AD Connect Health
- Lesson 4: Module 2 Review Questions

Module 3: Implement Virtual Networking

- Lesson 1: Virtual Networking

- Lesson 2: Virtual Network Peering
- Lesson 3: Extending the Virtual Network
- Lesson 4: Module 3 Review Questions

Module 4: Implement VMs for Windows and Linux

- Lesson 1: Running Linux and Windows Virtual Machines on Azure
- Lesson 2: Configure High Availability
- Lesson 3: Deploy Virtual Machine Scale Sets
- Lesson 4: Implement Azure Dedicated Hosts
- Lesson 5: Deploy Azure Disk Encryption
- Lesson 6: Module 4 Review Questions

Module 5: Implement Load Balancing and Network Security

- Lesson 1: Implement Azure Load Balancer
- Lesson 2: Implement Application Gateway with WAF
- Lesson 3: Implement Azure Front Door
- Lesson 4: Implement Azure Traffic Manager
- Lesson 5: Implement Azure Firewall
- Lesson 6: Security Groups
- Lesson 7: Implement Azure Bastion
- Lesson 8: Module 5 Review Questions
- Lab 05: Implementing Highly Available Azure IaaS Compute Architecture

Module 6: Implement Storage Accounts

- Lesson 1: Storage Accounts
- Lesson 2: Blob Storage
- Lesson 3: Azure Files
- Lesson 4: Storage Security
- Lesson 5: Azure Storage Firewalls and Virtual Networks
- Lesson 6: Module 6 Review Questions
- Lab 06: Implementing and Configuring Azure Storage File and Blob Services

Module 7: Implement NoSQL Databases

- Lesson 1: Configure Storage Account Tables
- Lesson 2: Select Appropriate Cosmos DB APIs
- Lesson 3: Module 7 Review Questions

Module 8: Implement Azure SQL Databases

- Lesson 1: Configure Azure SQL Database Settings
- Lesson 2: High-Availability and Azure SQL Database
- Lesson 3: Module 8 Review Questions

Module 9: Automate Deployment and Configuration of Resources

- Lesson 1: Azure Resource Manager Templates
- Lesson 2: Save a Template for a VM
- Lesson 3: Configure a Virtual Hard Disk Template
- Lesson 4: Deploy from a Template
- Lesson 5: Automation Runbooks
- Lesson 6: Module 9 Review Questions

Module 10: Implement and Manage Azure Governance Solutions

- Lesson 1: Role-Based Access Control (RBAC)
- Lesson 2: Azure AD Access Reviews
- Lesson 3: Implement and Configure an Azure Policy
- Lesson 4: Azure Blueprints
- Lesson 5: Module 10 Review Questions
- Lab 10: Managing Azure Role-Based Access Control

Module 11: Manage Security for Applications

- Lesson 1: Azure Managed Identity
- Lesson 2: Key Vault
- Lesson 3: Module 11 Review Questions

Module 12: Manage Workloads in Azure

- Lesson 1: Migrate Workloads using Azure Migrate
- Lesson 2: VMware Agentless Migration
- Lesson 3: VMware Agent-Based Migration
- Lesson 4: Implement Azure Backup
- Lesson 5: Azure to Azure Site Recovery
- Lesson 6: Module 12 Review Questions
- Lab 12: Protecting Hyper-V VMs by using Azure Site Recovery

Module 13: Implement Container-Based Applications

- Lesson 1: Azure Container Instances
- Lesson 2: Configure Azure Kubernetes Service
- Lesson 3: Module 13 Review Questions

Module 14: Implement an Application Infrastructure

- Lesson 1: Create and Configure Azure App Service
- Lesson 2: Create an App Service Web App for Containers
- Lesson 3: Create and Configure an App Service Plan
- Lesson 4: Configure Networking for an App Service
- Lesson 5: Create and Manage Deployment Slots
- Lesson 6: Implement Azure Functions
- Lesson 7: Implement Logic Apps
- Lesson 8: Module 14 Review Questions
- Lab 14A: Implementing an Azure App Service Web App with a Staging Slot
- Lab 14B: Configuring a Message-Based Integration Architecture

Module 15: Implement Cloud Infrastructure Monitoring

- Lesson 1: Azure Monitor
- Lesson 2: Azure Workbooks
- Lesson 3: Azure Alerts
- Lesson 4: Log Analytics
- Lesson 5: Network Watcher
- Lesson 6: Azure Service Health
- Lesson 7: Azure Application Insights
- Lesson 8: Unified Monitoring in Azure

- Lesson 9: Monitor Azure Costs
- Lesson 10: Module 15 Review Questions

This is a suggested order and aligns with the learning objectives described on the AZ-303: Microsoft Azure Architect Technologies certification page. To teach all the objectives for this course is challenging, so ensure you are covering the content most applicable to your audience. This is an expert level course and students are expected to already have experience in many of the topic areas.

PowerPoint Slides

Each module has a PowerPoint deck. Each course topic has a PowerPoint slide. Module overview and lesson overview slides are included so you can introduce the content to your students.

✔ The Module 00 PowerPoint provides a course overview.

Azure Subscriptions

To complete the labs and any additional demonstration exercises in this course, students will need an Azure Subscription. The current recommended way to give students access to Azure is by requesting Microsoft Learning Azure Passes.

You can request Microsoft Learning Azure Passes for yourself and your students. Ensure that you request these passes at least two weeks before the class starts. After receiving the passes each student will need to activate their pass.

The Azure pass effectively functions in the same way as the publicly available Microsoft Azure Trial Subscription. This means there are limitations on what you can do with the pass.

Labs

The lab instructions are in the AZ-303 Microsoft Learning GitHub repository. Supplemental files, like scripts and templates, are also provided.

Module 5 Lab

- Lab title: Implementing Highly Available Azure IaaS Compute Architecture
- GitHub file name: Module_05_Lab.md

Module 6 Lab

- Lab title: Implementing and Configuring Azure Storage File and Blob Services
- GitHub file name Module_06_Lab.md

Module 10 Lab

- Lab title: Managing Azure Role-Based Access Control
- GitHub file name: Module_10_Lab.md

Module 12 lab

- Lab title: Protecting Hyper-V VMs by using Azure Site Recovery
- GitHub file name: Module_12_Lab.md

Module 14a lab

- Lab title: Implementing an Azure App Service Web App with a Staging Slot
- GitHub file name: Module_14_Lab_a.md

Module 14b lab

- Lab title: Configuring a Message-Based Integration Architecture
- GitHub file name: Module_14_Lab_b.md

To complete the labs, you will need:

- An internet connection to the Azure portal.
- An Azure subscription.

Hosted machines may be available for an additional charge.
If you have lab feedback, create an Issue on the lab GitHub repository.

Portal, Cloud Shell, PowerShell, and the CLI

The lab instructions are written to use the Cloud Shell. The Cloud Shell automatically connects to Azure and provides access to PowerShell and the CLI.

If you would rather have students use PowerShell or the CLI locally, you can use these links.

- Install Azure PowerShell on Windows with PowerShellGet
- Install Azure CLI on Windows

Demonstrations

This course has numerous demonstrations. Take the time to work through each one and decide which to use. Some of the demonstrations are simple show and tell walkthroughs of the Azure portal; others require some scripting skills. Consider having the students do the demonstrations themselves, or walk-through as a group. You may also consider using the demonstration instead of the slides. Lastly, consider the overlap with the formal labs and make the best use of your time.

Module Review Questions

Module review questions are provided at the end of each module. These are multiple choice and multiple answer questions. You can use these review questions in several ways:

- Have the student's pre-test before the course starts and then at the end to see what they have learned.
- As a group, go through the questions before moving on to another section.
- Sprinkle the questions into the content as you cover the appropriate material.

Note these questions are not at the level of the certification exam. You may wish to supplement with questions of your own choosing.

Microsoft Learn - Additional Study Resources

Microsoft Learn provides self-paced skills training on a variety of topics. You can also search for additional content that might be helpful. A list of relevant Learn modules is provided in the Welcome section.

References

There are a lot of resources to help you and the student learn about Azure. We recommend you bookmark these pages. The list is included in the Welcome section of the student materials.

- Azure forums . The Azure forums are very active. You can search the threads for a specific area of interest. You can also browse categories like Azure Storage, Pricing and Billing, Azure Virtual Machines, and Azure Migrate.
- Microsoft Learning Community Blog . Get the latest information about the certification tests and exam study groups.
- Channel 9 . Channel 9 provides a wealth of informational videos, shows, and events.
- Azure Tuesdays with Corey . Corey Sanders answers your questions about Microsoft Azure - Virtual Machines, Web Sites, Mobile Services, Dev/Test etc.
- Azure Fridays . Join Scott Hanselman as he engages one-on-one with the engineers who build the services that power Microsoft Azure, as they demo capabilities, answer Scott's questions, and share their insights.

  Microsoft Azure Blog . Keep current on what's happening in Azure, including what's now in preview, generally available, news & updates, and more.
- Azure Documentation . Stay informed on the latest products, tools, and features. Get information on pricing, partners, support, and solutions.

- Azure Architecture Center . The Azure Architecture Center provides best practices for running your workloads on Azure.
- Azure Reference Architectures . Architecture diagrams, reference architectures, example scenarios, and solutions for common workloads on Azure.
- Cloud Design Patterns . Cloud design patterns for building reliable, scalable, secure applications in the cloud.
- Tailwind Traders . A three-tier legacy app re-written for modern cloud app ARM Solution]
- IoT Scenario Reference Architecture . Recommendations for architecture for IoT applications on Azure using PaaS (platform-as-a-service) components.
- Bot Framework Reference Architecture . An architecture that describes how to build an enterprise-grade conversational bot (chatbot) using the Azure Bot Framework.

Connect with Others

- MCT Central. Your one stop for all things MCT. Stay up to date with the latest MCT news, learn about upcoming events, find job opportunities, or connect with other MCTs around the world. You can also ask questions and discuss a variety of topics including courseware and certification with Microsoft and other MCTs through the MCT Central Forums.
- MOC Courseware Support. If there are problems with a course or you need to log a support ticket, contact the Official Support channel for MOC courses. This channel is monitored by support agents and is the quickest way to log your course support issue.

Feedback

In this course we have provided a framework for you to work with. Take time to prepare and think about the value that only an instructor can bring to training. We hope to partner with you to provide an exceptional student experience and we welcome your feedback.

Happy learning!
Azure Architecture Courseware Development Team