



## AZ-900T00: Microsoft Azure Fundamentals Course Datasheet

# Course description

The AZ-900T00 Azure Fundamentals course will provide foundational-level knowledge of cloud services and how those services are provided with Microsoft Azure. The course can be taken as an optional first step in learning about cloud services and Microsoft Azure, before taking further Microsoft Azure or Microsoft cloud services courses.

The course will cover general cloud computing concepts as well as general cloud computing models and services such as Public, Private and Hybrid cloud, and infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS).

It will also cover some core Azure services and solutions, and key Azure pillar services concerning security, privacy, compliance, and trust. Finally, it will cover pricing and support services available with Azure.

# Learning objectives

On course completion, students will be able to:

- Describe cloud services and their benefits.
- Recognize key terms they will encounter when working with cloud services.
- Understand public, private, and hybrid cloud models.
- Describe infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS).
- Identify core Azure architectural components, services, and products.
- Describe Azure solutions.
- Describe Azure management tools.
- Explain how to secure network connectivity in Microsoft Azure.

- Describe core Azure identity services.
- Describe security tools and features.
- Describe Azure governance methodologies.
- Describe monitoring and reporting in Azure.
- Describe privacy, compliance, and data protection standards in Azure.
- Describe Microsoft Azure subscriptions and management groups.
- Recognize ways to plan and manage Azure costs.
- Identify Azure support options.
- Understand and describe features of Azure service-level agreements (SLAs).
- Explain the service lifecycle in Azure.

## Exam relationship

This course is directly mapped to and supports learning for the [AZ-900 Microsoft Azure Fundamentals exam](#).

The table below outlines the relative weight percentages for each area of the exam. The higher the percentage, the more questions students are likely to see in that area.

Study Areas	Weights
Understand Cloud Concepts	15-20%
Understand Core Azure Services	30-35%
Understand Security, Privacy, Compliance, and Trust	25-30%
Understand Azure Pricing and Support	25-30%

## Audience

The course is for anyone who wants to learn more about Microsoft Azure and is just beginning that process. There are no prerequisites for taking this course, however some understanding of general computing and business concepts would be beneficial.

# Module structure and elements

Each module contains some or all of the following elements:

- **Topics:** Text-based, lecture-style content.
- **Walkthroughs:** Hands-on activities that provide step-by-step guidance to completing a particular task in Azure.
- **Module Review Questions:** Questions to help reinforce learning and review the main learning objectives covered in the module. They occur at the end of each module.

Note: The course contains no video or recorded demo-based elements.

## High-level course outline

### Module 1: Cloud Concepts

- Lesson 1: Learning objectives
- Lesson 2: Why Cloud Services?
- Lesson 3: Types of cloud models
- Lesson 4: Types of cloud services
- Lesson 5: Module 1 review questions

### Module 2: Core Azure Services

- Lesson 1: Learning objectives
- Lesson 2: Core Azure Architectural components
- Lesson 3: Core Azure Services and Products
- Lesson 4: Azure Solutions
- Lesson 5: Azure Management Tools
- Lesson 6: Module 2 review questions

### Module 3: Security, Privacy, Compliance and Trust

- Lesson 1: Learning objectives
- Lesson 2: Securing network connectivity
- Lesson 3: Core Azure Identity services

- Lesson 4: Security tools and features
- Lesson 5: Azure Governance methodologies
- Lesson 6: Monitoring and reporting
- Lesson 7: Privacy, Compliance and data protection standards
- Lesson 8: Module 3 review questions

## Module 4: Azure Pricing and Support

- Lesson 1: Learning objectives
- Lesson 2: Azure Subscriptions
- Lesson 3: Planning and managing costs
- Lesson 4: Azure support options
- Lesson 5: Azure Service lifecycle Agreements (SLAs)
- Lesson 6: Service Lifecycle
- Lesson 7: Module 4 review questions

# Detailed course outline

## Module 1: Cloud Concepts

In this module, you will learn about cloud services, and the types of cloud models and services.

After completing this module, students will be able to:

- Describe and understand cloud services and their benefits.
- Understand key terms they will encounter when working with cloud services.
- Understand public, private, and hybrid cloud models.
- Understand infrastructure as a service (IaaS).
- Understand platform as a service (PaaS).
- Understand software as a service (SaaS).

### **Module 1 estimated timing:**

- Time for topic lecture: 14 topics  $\approx$  70 mins
- Time for walkthroughs: no walkthroughs in this module = 0 mins
- Time for module review questions  $\approx$  10 mins
- Total time taken for full module delivery  $\approx$  80 mins

### **Lesson 1: Learning objectives**

This lesson outlines the learning objectives covered in this module.

### **Lesson 2: Why cloud services?**

This lesson covers key concepts and terms surrounding cloud services such as availability, scalability, elasticity and it outlines the key drivers for cloud adoption such as economies of scale, capital expenditure versus operational expenditure, and the consumption-based model.

- Topic 1: Cloud computing
- Topic 2: Key Concepts
- Topic 3: Economies of Scale
- Topic 4: CapEx vs OpEx
- Topic 5: Consumption-based model

### **Lesson 3: Types of cloud models**

This lesson covers the different cloud models such as public, private and hybrid models as well as the benefits and usage scenarios for each different cloud model type.

- Topic 1: Public Cloud
- Topic 2: Private Cloud
- Topic 3: Hybrid Cloud
- Topic 4: Cloud model comparison

### **Lesson 4: Types of cloud services**

This lesson covers different cloud service types such as Infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS), and compares and contrasts the use cases for each service type. It also outlines the management responsibilities associated with each service type.

- Topic 1: Shared responsibility model
- Topic 2: IaaS
- Topic 3: PaaS
- Topic 4: SaaS
- Topic 5: Cloud service comparison

## Lesson 5: Module 1 review questions

This lesson provides questions to facilitate reinforcement of the learnings in this module.

## Module 2: Core Azure services

This module covers Azure core cloud architectural components, Azure services and products, Azure solutions, and Azure management tools.

After completing this module, students will be able to:

- Understand and describe core Azure architectural components.
- Understand and describe core Azure services and products.
- Understand and describe Azure solutions.
- Understand and describe Azure management tools.

### Module 2 estimated timings:

- Time for topic lecture: 24 Topics  $\approx$  120 mins
- Time for walkthroughs: 11 walkthroughs  $\approx$  215 mins
- Time for module review questions  $\approx$  10 mins
- Total time for full Module 2 delivery  $\approx$  345 mins

## Lesson 1: Learning objectives

This lesson outlines the learning objectives covered in this module.

## Lesson 2: Core Azure architectural components

This lesson covers core architectural components in Azure such as Regions, Availability options, Resource groups and Azure Resource Manager, as well as others.

- Topic 1: Regions
- Topic 2: Region Pairs
- Topic 3: Geographies

- Topic 4: Availability options
- Topic 5: Availability Sets
- Topic 6: Availability Zones
- Topic 7: Resource Groups
- Topic 8: Azure Resource Manager

### **Lesson 3: Core Azure services and products**

This lesson covers core services available in Azure such as Azure Compute, networking, storage, databases, and Azure Marketplace.

- Topic 1: Azure compute
- Topic 2: Azure compute services
- Walkthrough-Create a virtual machine
- Topic 3: Container services
- Walkthrough-Deploy Azure Container Instances
- Topic 4: Azure network services
- Walkthrough-Create a virtual network
- Topic 5: Azure data categories
- Topic 6: Azure storage services
- Walkthrough-Create Blob storage
- Topic 7: Azure database services
- Walkthrough-Create a SQL database
- Topic 8: Azure Marketplace

### **Lesson 4: Azure solutions**

This lesson covers some of the PaaS-based Azure solutions such as Internet of Things (IoT), Data and Analytics, Artificial Intelligence (AI), Serverless computing, Azure DevOps and Azure App Service.

- Topic 1: Internet of Things
- Walkthrough-Implement the Azure IoT Hub
- Topic 2: Big Data and analytics
- Topic 3: Artificial intelligence

- Topic 4: Serverless computing
- Walkthrough-Implementing Azure Functions
- Topic 5: DevOps
- Topic 6: Azure App Service
- Walkthrough-Create a web app

## **Lesson 5: Azure management tools**

This lesson covers Azure management tools including the Azure Portal, Azure CLI, Azure PowerShell and the Azure Cloud shell, as well as Azure Advisor.

- Topic 1: Azure Management Tools
- Topic 2: Azure Advisor
- Walkthrough-Create a VM with a template
- Walkthrough-Create a VM with PowerShell
- Walkthrough-Create a VM with the CLI

## **Lesson 6: Module 2 review questions**

This lesson provides questions to facilitate reinforcement of the learnings in this module.

# **Module 3: Security, Privacy, Compliance and Trust**

In this module, you learn about Azure security, identity, governance, monitoring, reporting, and standards.

After completing this module, students will be able to:

- Understand and describe how to secure network connectivity in Microsoft Azure.
- Understand and describe core Azure identity services.
- Understand and describe security tools and features.
- Understand and describe Azure governance methodologies.
- Understand and describe monitoring and reporting in Azure.
- Understand and describe privacy, compliance, and data protection standards in Azure.

### **Module 3 estimated timings:**

- Time for topic lecture: 34 topics  $\approx$  170 mins
- Time for walkthroughs: 7 walkthroughs  $\approx$  140 mins
- Time for module review questions  $\approx$  10 mins
- Total time for full Module 3 delivery  $\approx$  320 mins

### **Lesson 1: Learning objectives**

This lesson outlines the learning objectives covered in this module.

### **Lesson 2: Securing network connectivity**

This lesson covers securing network connectivity in Azure with Azure Firewall, Azure Distributed Denial of Service (DDoS), Network security groups and other services, as well as how to recommendations on approaches and considerations for securing networks in Azure.

- Topic 1: Defense in depth
- Topic 2: Shared security
- Topic 3: Azure Firewall
- Topic 4: Azure DDoS Protection
- Topic 5: Network Security Groups (NSG)
- Topic 6: Application Security Groups (ASG)
- Topic 7: Choosing Azure network security solutions
- Walkthrough-Secure network traffic
- Topic 8: Choosing Azure network security solutions

### **Lesson 3: Core Azure identity services**

This lesson covers basic identity concepts such as Authentication and Authorization as well as identity services in Azure such as Azure Active Directory and Azure Multi-Factor Authentication.

- Topic 1: Authentication and Authorization
- Topic 2: Azure Active Directory
- Topic 3: Azure Multi-Factor Authentication

## Lesson 4: Security tools and features

This lesson covers security with Azure using Azure services such as Azure Security Center, key Vault, Azure Information Protection (AIP) and Azure Threat Protection (ATP).

- Topic 1: Azure Security Center
- Topic 2: Azure Security Center usage scenarios
- Topic 3: Key Vault
- Walkthrough-Implement Azure Key Vault
- Topic 4: Azure Information Protection (AIP)
- Topic 5: Azure Advanced Threat Protection (ATP)

## Lesson 5: Azure Governance methodologies

This lesson covers governance methodologies and services available with Azure such as Azure Policy, and policies and initiatives within that, the use of Role-based access control and resource locks, as well as Azure Blueprint and the use of subscriptions for governance purposes.

- Topic 1: Azure Policy
- Topic 2: Implementing Azure Policy
- Topic 3: Policy Initiatives
- Walkthrough-Create an Azure Policy
- Topic 4: Role-Based Access Control (RBAC)
- Walkthrough-Manage access with RBAC
- Topic 5: Resource Locks
- Walkthrough-Manage resource Locks
- Topic 6: Azure Blueprints
- Topic 7: Subscription governance

## Lesson 6: Monitoring and reporting

This lesson covers how to monitor and report on Azure services using resources and services such as Tags, Azure Monitor, and Azure Service Health, as well as general best practices and approaches to consider when monitoring applications and services.

- Topic 1: Tags
- Walkthrough-Implement resource tagging

- Topic 2: Azure Monitor
- Topic 3: Azure Service Health
- Topic 4: Monitoring Applications and Services

## **Lesson 7: Privacy, compliance and data protection standards**

This lesson covers considerations and services that are available as part of Azure concerning privacy, compliance and data protection, such as the Microsoft Privacy statement, Trust center, Service trust Portal, Compliance Manager as well as sovereign regions such as Azure government.

- Topic 1: Compliance terms and requirements
- Topic 2: Microsoft Privacy Statement
- Topic 3: Trust Center
- Topic 4: Service Trust Portal
- Topic 5: Compliance Manager
- Walkthrough-Exploring the Trust Center STP
- Topic 6: Azure Government services
- Topic 7: Azure China 21Vianet

## **Lesson 8: Module 3 review questions**

This lesson provides questions to facilitate reinforcement of the learnings in this module.

## **Module 4: Azure Pricing and Support**

In this module, you will learn about Azure subscriptions, planning and managing costs, support options, SLAs, and service lifecycles.

After completing this module, students will be able to:

- Understand and describe Microsoft Azure subscriptions and management groups.
- Recognize ways to plan and manage Azure costs.
- Identify Azure support options.
- Understand and describe features of Azure service-level agreements (SLAs).
- Understand and describe the service lifecycle in Azure.

## **Module 4 estimated timings:**

- Time for topic lecture: 23 topics  $\approx$  115 mins
- Time for walkthroughs: 5 walkthroughs  $\approx$  100 mins
- Time for module review questions  $\approx$  10 mins
- Total time taken for full Module 4 delivery  $\approx$  225 mins

## **Lesson 1: Learning objectives**

This lesson outlines the learning objectives covered in this module.

## **Lesson 2: Azure subscriptions**

This lesson covers Azure subscriptions, options available with subscriptions, how they can be used to assist management of resources as well as how they relate to other resources structures in Azure.

- Topic 1: Azure Subscriptions
- Topic 2: Subscription offers
- Topic 3: Azure free accounts
- Topic 4: Management Groups

## **Lesson 3: Planning and managing costs**

This lesson covers how to plan and manage costs in Azure as well as how to forecast and calculate costs using tools such as the Pricing calculator and the Azure Total Cost of Ownership calculator, as well as considerations on how to minimize costs in Azure.

- Topic 1: Purchasing Azure products and services
- Topic 2: Factors affecting costs
- Topic 3: Zones for billing purposes
- Topic 4: Pricing Calculator
- Walkthrough-Use the Azure Pricing Calculator
- Topic 5: Total Cost of Ownership Calculator
- Walkthrough-Use the Azure TCO Calculator
- Topic 6: Minimizing costs
- Topic 7: Azure Cost Management

## Lesson 4: Azure support options

This lesson covers the various support options available in Azure and alternative support channels such as Azure Forums, and Knowledge center as well as how to open and track a support request.

- Topic 1: Support plan options
- Topic 2: Alternative support channels
- Topic 3: Knowledge Center
- Walkthrough-Open a Support Request

## Lesson 5: Azure Service Level Agreements (SLAs)

This lesson covers Service Level Agreements (SLAs) with Azure. How to interpret them and determine appropriate levels of service for your particular requirements.

- Topic 1: Service Level Agreements (SLAs)
- Topic 2: SLAs for Azure products or services
- Topic 3: Composite SLAs
- Topic 4: Application SLAs
- Walkthrough-Calculate Composite SLAs

## Lesson 6: Service Lifecycle in Azure

This lesson covers the lifecycle of services as they become available and updated in Azure. The various stages of that lifecycle such as public and private preview, and General Availability, as well as how to monitor and access service and feature updates.

- Topic 1: Public and private preview features
- Topic 2: Accessing preview features
- Topic 3: Accessing Azure Portal Preview
- Topic 4: General Availability (GA)
- Topic 5: Monitoring service and feature updates
- Walkthrough-Access Azure Preview features

## Lesson 7: Module 4 review questions

This lesson provides questions to facilitate retention and reinforcement of the learnings in this module.

# Walkthroughs, detailed outline

There are 23 walkthroughs in the course. The following list shows where they occur within the course and provides a brief description of each. [A full list of the walkthroughs containing detailed steps](#) is available on GitHub. The Azure platform is continuously changing and as changes occur, the walkthrough steps on GitHub are updated to maintain the accuracy of the walkthrough steps and remain in sync with Azure.

## Module 1

No walkthroughs or hands-on activities.

## Module 2

### Lesson 03: Core Azure Services and Products

- Walkthrough-Create a virtual machine
  - Create a virtual machine in the Azure portal, connect to the virtual machine, install the web server role and test.
- Walkthrough-Deploy Azure Container Instances:
  - Create, configure, and deploy a Docker container by using Azure Container Instances (ACI) in the Azure Portal. The container is a Welcome to ACI web application that displays a static HTML page.
- Walkthrough-Create a virtual network
  - Create a virtual network, deploy two virtual machines onto that virtual network and then configure them to allow one virtual machine to ping the other within that virtual network.
- Walkthrough-Create Blob storage
  - Create a storage account and work with blob storage files.
- Walkthrough-Create a SQL database
  - Create a SQL database in Azure and then query the data in that database.

### Lesson 04: Azure Solutions

- Walkthrough-Implement the Azure IoT Hub
  - Configure a new Azure IoT Hub in Azure Portal and authenticate a connection to an IoT device using the online Raspberry Pi device simulator. Sensor data and

messages are passed from the Raspberry Pi simulator to your Azure IoT Hub, and you view metrics for the messaging activity in Azure Portal.

- Walkthrough-Implement Azure Functions
  - Create a Function App to display a Hello message when there is an HTTP request.
- Walkthrough-Create a Web App
  - Create a new web app that runs a Docker container. The container displays a Welcome message.

## Lesson 05: Azure Management Tools

- Walkthrough-Create a VM with a template
  - Deploy a virtual machine with a QuickStart template and examine monitoring capabilities.
- Walkthrough-Create a VM with PowerShell
  - Install an Azure PowerShell module, use it to create a resource group and virtual machine, configure and use the Cloud Shell, and review Azure Advisor recommendations.
- Walkthrough-Create a VM with the Azure CLI
  - Install the Azure CLI locally, create a resource group and virtual machine, use the Cloud Shell, and review Azure Advisor recommendations.

## Module 3

### Lesson 02: Securing network connectivity

- Walkthrough-Secure network traffic
  - Configure a network security group.

### Lesson 04: Security Tools and Features

- Walkthrough-Implement Azure Key Vault
  - Create an Azure Key vault and create a password secret within that key vault, providing a securely stored, centrally managed password for use with applications.

## Lesson 05: Azure Governance methodologies

- Walkthrough-Create an Azure Policy
  - Create an Azure Policy to restrict deployment of Azure resources to a specific location.
- Walkthrough-Manage access with RBAC
  - Assign roles and view activity logs.
- Walkthrough-Manage resources locks
  - Create a resource group, add a lock to the resource group and test it, test deleting a resource in the resource group, and remove the resource lock.

## Lesson 06: Monitoring and Reporting

- Walkthrough-Implement resources tagging
  - Create a policy assignment that requires tagging, create a storage account and test tagging, view resources with a specified tag, and remove the tagging policy.

## Lesson 07: Privacy, Compliance and data protection standards

- Walkthrough-Exploring the Trust Center
  - Access the Trust Center, Service Trust Portal (STP), and Compliance Manager.

# Module 4

## Lesson 03: Planning and Managing costs

- Walkthrough-Use the Azure Pricing Calculator
  - Use the Azure Pricing Calculator to generate a cost estimate for an Azure virtual machine and related network resources.
- Walkthrough-Use the Azure TCO Calculator
  - Use the Total Cost of Ownership (TCO) Calculator to generate cost comparison report for an on-premises environment.

## Lesson 04: Azure support options

- Walkthrough-Open a support request
  - View available support plan options and then practice creating and monitoring a new support request.

## Lesson 05: Azure Service Level Agreements (SLAs)

- Walkthrough-Calculate composite SLAs
  - Determine availability SLA of Azure services and then calculate application composite SLA-based expected availability.

## Lesson 06: Service Lifecycle in Azure

- Walkthrough-Access Azure Preview features
  - Access and identify Azure preview services and features, and view information about the latest Azure updates.

# Detailed course timings

The values in this table are approximations that will help you plan your course delivery.

	Topics duration (mins)	Walkthroughs duration (mins)	Review questions duration (mins)	Total lesson time (mins)	Total lesson time (hrs)
<b>Module 1: Cloud Concepts</b>					
Lesson 1: Learning Objectives					
Lesson 2: Why cloud services	25			25	0.42
Lesson 3: Types of cloud models	20			20	0.33
Lesson 4: Types of cloud services	25			25	0.42
Lesson 5: Module 1 review questions			10	10	0.17
<b>Module 1: Totals</b>	<b>70</b>	<b>0</b>	<b>10</b>	<b>80</b>	<b>1.33</b>
<b>Module 2: Core Azure services</b>					
Lesson 1: Learning Objectives					
Lesson 2: Core Azure Architectural components	40			40	0.67
Lesson 3: Core Azure Services and Products	40	100		140	2.33
Lesson 4: Azure solutions	30	55		85	1.42
Lesson 5: Azure management tools	10	60		70	1.17
Lesson 6: Module 2 review questions			10	10	0.17
<b>Module 2: Totals</b>	<b>120</b>	<b>215</b>	<b>10</b>	<b>345</b>	<b>5.75</b>

<b>Module 3: Security, Privacy, Compliance and Trust</b>					
Lesson 1: Learning objectives					
Lesson 2: Securing network connectivity	40	20		60	1.00
Lesson 3: Core Azure identity services	15			15	0.25
Lesson 4: Security tools and features	25	20		45	0.75
Lesson 5: Azure Governance methodologies	35	60		95	1.58
Lesson 6: Monitoring and reporting	20	20		40	0.67
Lesson 7: Privacy, compliance, and data protection standards	35	20		55	0.92
Lesson 8: Module 3 review questions			10	10	0.17
<b>Module 3: Totals</b>	<b>170</b>	<b>140</b>	<b>10</b>	<b>320</b>	<b>5.33</b>
<b>Module 4: Azure Pricing and Support</b>					
Lesson 1: Learning objectives					
Lesson 2: Azure subscriptions	20	0		20	0.33
Lesson 3: Planning and managing costs	35	40		75	1.25
Lesson 4: Azure support options	15	20		35	0.58
Lesson 5: Azure Service Level Agreements (SLAs)	20	20		40	0.67
Lesson 6: Service Lifecycle in Azure	25	20		45	0.75
Lesson 7: Module 4 review questions			10	10	0.17
<b>Module 4: Totals</b>	<b>115</b>	<b>100</b>	<b>10</b>	<b>225</b>	<b>3.75</b>
	<b>mins</b>	<b>hrs</b>			
Course total lecture time	475	7.92			
Course total walkthrough time	455	7.58			
Course total review question time	40	0.67			
<b>Course totals</b>	<b>970</b>	<b>16.17</b>			