



# Implementing Microsoft Azure Infrastructure Solutions

**Course 20533B: 4 days; Instructor-Led**

## Introduction

This course is intended for IT professionals who are familiar with managing on-premises IT deployments that include AD DS, virtualization technologies, and applications. The students typically work for organizations that are planning to locate some or all of their infrastructure services on Azure. This course also is intended for IT professionals who want to take the Microsoft Certification exam, 70-533, Implementing Azure Infrastructure Solutions.

## At Course Completion

After completing this course, students will be able to:

- Describe Azure architecture components including infrastructure, tools, and portals.
- Implement and manage virtual networking within Azure and to connect to on-premises environments.
- Plan and create Azure virtual machines.
- Configure, manage, and monitor Azure virtual machines to optimize availability and reliability.
- Implement, manage, backup and monitor storage solutions.
- Plan and implement data services based on SQL Database to support applications.
- Deploy and configure websites.
- Deploy, configure, monitor, and diagnose cloud services.
- Publish content through CDNs and publish videos by using Media Services.
- Create and manage Azure AD directories, and configure application integration with Azure AD.
- Integrate on-premises Windows AD with Azure AD.
- Automate operations in Azure management by using PowerShell runbooks.

## Audience

This course is intended for IT professionals who have some knowledge of cloud technologies and want to learn more about Azure:

- IT professionals who want to deploy, configure, and administer services and virtual machines (VMs) in Azure.
- IT professional who use Microsoft System Center to manage and orchestrate server infrastructure.
- Windows Server administrators who are looking to evaluate and migrate on-premises Active Directory roles and services to the cloud.
- IT professionals who want to use Windows Azure to host websites and mobile app backend services.
- IT professionals who are experienced in other non-Microsoft cloud technologies, meet the course prerequisites, and want to cross-train on Azure.
- IT professionals who want to take the Microsoft Certification exam, 70-533, Implementing Azure Infrastructure Solutions

## Prerequisites

Before attending this course, students must have the following technical knowledge:

- Completed the Microsoft Certified Systems Administrator (MCSA) certification in Windows Server 2012.

- Understanding of on-premises virtualization technologies, including: virtual machines, virtual networking, and virtual hard disks (VHDs).
- Understanding of network configuration, including: TCP/IP, Domain Name System (DNS), virtual private networks (VPNs), firewalls, and encryption technologies.
- Understanding of websites, including: how to create, configure, monitor and deploy a website on Internet Information Services (IIS).
- Understanding of Active Directory concepts, including: domains, forests, domain controllers, replication, Kerberos protocol, and Lightweight Directory Access Protocol (LDAP).
- Understanding of database concepts, including: tables, queries, Structured Query Language (SQL), and database schemas.
- Understanding of resilience and disaster recovery, including backup and restore operations.

## Course Outline

### Module 1: Introduction to Azure

This module explains cloud computing, and compares cloud computing and on-premises. It also lists the advantages of cloud computing including, scalability, availability, and elasticity. Finally, this module compares public, private, and hybrid clouds.

#### Lessons

- Overview of cloud technology
- Overview of Azure
- Managing Azure with Azure portals
- Managing Azure with Windows PowerShell
- Overview of Azure Resource Manager
- Azure management services

#### Lab : Using Azure Resource Manager to manage Azure

- Using Azure portals
- Using Azure Resource Manager features via Azure portal
- Using Azure PowerShell

After completing this module, students will be able to:

- Describe cloud technology.
- Describe Azure.
- Manage Azure with Azure portals.
- Manage Azure with Windows PowerShell.
- Describe Azure Resource Manager.
- Describe Azure management services..

### Module 2: Implementing and managing Azure networking

This module explains how to implement and manage Azure networking.

#### Lessons

- Overview of Azure networking
- Implementing and managing Azure virtual networks
- Configuring Azure virtual networks
- Configuring Azure virtual network connectivity
- Overview of Azure networking in an infrastructure as a service (IaaS) version 1 (v1)

#### Lab : Using a deployment template to implement Azure virtual networks

- Using GitHub to deploy the Azure Resource Manager template from the Azure portal
- Deploying the Azure Resource Manager template from Microsoft Visual Studio

#### Lab : Configuring connectivity between the IaaS v1 and IaaS version 2 (v2) virtual networks

- Using a PowerShell script to Connect IaaS v1 and IaaS v2 virtual networks
- Validating virtual network connectivity

After completing this module, students will be able to:

- Describe Azure networking.
- Implement and manage Azure virtual networks.
- Configure Azure virtual networks.
- Configure Azure virtual network connectivity.
- Understand Azure networking in IaaS v1..

### **Module 3: Implementing virtual machines**

This module explains how to implement virtual machines.

#### **Lessons**

- Overview of IaaS v2 virtual machines
- Planning for Azure virtual machines
- Deploying Azure IaaS v2 virtual machines
- Authoring Azure Resource Manager virtual machine templates
- Overview of IaaS v1 virtual machines

#### **Lab : Deploying Azure IaaS v2 virtual machines via Windows PowerShell and Azure portal**

- Using Azure portal and a Windows PowerShell script to deploy an IaaS v2 virtual machine
- Validating the outcome of the deployment

After completing this module, students will be able to:

- Describe IaaS v2 virtual machines.
- Plan for Azure virtual machines.
- Deploy Azure IaaS v2 virtual machines.
- Author Azure Resource Manager virtual machine templates.
- Describe IaaS v1 virtual machines.

### **Module 4: Managing virtual machines**

This module explains how to manage virtual machines.

#### **Lessons**

- Configuring virtual machines
- Configuring virtual machine disks
- Managing and monitoring Azure virtual machines
- Managing IaaS v1 virtual machines

#### **Lab : Managing virtual machines**

- Configuring availability
- Implementing desired state configuration
- Implementing storage space-based volumes

After completing this module, students will be able to:

- Configure virtual machines.
- Configure virtual machine disks.
- Manage and monitor Azure virtual machines
- Manage IaaS v1 virtual machines.

### **Module 5: Implementing Azure Web App services**

This module explains how to implement Azure Web App services.

#### **Lessons**

- Introduction to the Azure App Service
- Planning for Azure Web App deployment
- Implementing and maintaining web apps
- Configuring web apps
- Monitoring web apps and WebJobs
- Implementing mobile apps
- Overview of Azure Traffic Manager

#### **Lab : Implementing websites**

- Creating web apps
- Deploying a web app
- Managing web apps
- Implementing Azure Traffic Manager

After completing this module, students will be able to:

- Describe Azure App Service.
- Plan for Azure Web App deployment.
- Implement and maintain web apps.
- Configure web apps.
- Monitor web apps and WebJobs.
- Implement mobile apps.
- Describe Azure Traffic Manager.

### **Module 6: Planning and implementing storage, backup, and recovery services**

This module explains how to plan and implement storage, backup, and recovery services.

#### **Lessons**

- Planning storage
- Implementing and managing storage
- Implementing Azure Content Delivery Networks
- Implementing Azure Backup
- Planning for and implementing Azure Site Recovery

#### **Lab : Planning and implementing storage**

- Creating and configuring storage
- Using Azure file storage
- Protecting data with Microsoft Azure Backup
- Protecting infrastructure as a service (IaaS) virtual machines with Azure Backup

After completing this module, students will be able to:

- Plan for storage.
- Implement and manage storage.
- Implement Azure Content Delivery Networks.
- Implement Azure Backup.
- Plan for and implement Azure Site Recovery.

### **Module 7: Planning and implementing Azure SQL Database**

This module explains how to plan and implement Azure SQL Database.

#### **Lessons**

- Planning for storing relational data in Azure
- Implementing Azure SQL Database
- Managing Azure SQL Database security
- Monitoring Azure SQL Database
- Managing Azure SQL Database business continuity

#### **Lab : Planning and implementing data services**

- Creating, securing, and monitoring a Microsoft Azure SQL Database
- Migrating a Microsoft SQL Server database to the Azure SQL Database

After completing this module, students will be able to:

- Plan for storing relational data in Azure.
- Implement Azure SQL Database.
- Manage Azure SQL Database security.
- Monitor Azure SQL Database.
- Manage Azure SQL Database business continuity.

### **Module 8: Implementing PaaS cloud services**

This module explains how to implement platform as a service (PaaS) cloud services.

#### **Lessons**

- Planning, creating, and deploying PaaS cloud services
- Managing cloud services

#### **Lab : Implementing PaaS cloud services**

- Deploying a platform as a service (PaaS) cloud service
- Configuring deployment slots and Remote Desktop Protocol (RDP)
- Monitoring cloud services

After completing this module, students will be able to:

- Plan, create, and deploy PaaS cloud services.
- Manage cloud services.

### **Module 9: Implementing Azure Active Directory**

This module explains how to implement Azure AD.

#### **Lessons**

- Creating and managing Azure AD tenants
- Configuring application and resource access with Azure AD
- Overview of Azure AD Premium Storage

#### **Lab : Implementing Azure AD**

- Administering Active Directory AD DS
- Configuring single sign-on (SSO)
- Configuring multifactor authentication
- Configuring SSO from a Windows 10 computer

After completing this module, students will be able to:

- Create and manage Azure AD tenants.
- Configure application and resource access with Azure AD.
- Describe Azure AD Premium Storage.

### **Module 10: Managing Active Directory in a hybrid environment**

This module explains how to manage Active Directory in a hybrid environment.

#### **Lessons**

- Extending on-premises Active Directory into Azure
- Implementing directory synchronization (Azure AD Connect)
- Implementing federation with Active Directory Federation Services (AD FS) and Web Application Proxy

#### **Lab : Implementing and managing Microsoft Azure Active Directory synchronization**

- Configuring directory synchronization
- Synchronizing directories

After completing this module, students will be able to:

- Extend on-premises Active Directory into Azure.
- Implement Azure AD Connect.
- Implement federation with AD FS and Web Application Proxy.

### **Module 11: Implementing Azure-based management and Automation**

This module explains how to implement Azure-based management and Automation.

#### **Lessons**

- Implementing Microsoft Operations Management Suite
- Implementing Azure Automation
- Implementing Automation Runbooks
- Managing Automation

#### **Lab : Implementing Automation**

- Configuring Automation accounts
- Creating runbooks

After completing this module, students will be able to:

- Implement Operations Management Suite.
- Implement Automation.
- Implement Automation Runbooks.
- Manage Automation.