Architecting Microsoft Azure Solutions (20535)

Duration: Approximately 35 hours of coursework to be completed within 90 days.

Price: $895

Delivery Option: Attend via MOC On-Demand

Students Will Learn

- Describing Azure architecture components, including infrastructure, tools and portals

- Creating and deploying Azure Resource Manager (ARM) templates for various all-up solutions

- Comparing and contrasting various infrastructure, serverless, database and communication services; such as App Services, Virtual Machine Scale Sets, Azure Cosmos DB, SQL Database, and Container Service in Azure

- Incorporating various Azure platform services, such as Cognitive Services and Media Servicers into an overall Azure solution

- Securing, monitoring and backup solutions deployed to Azure

- Creating automated DevOps solutions using a combination of ARM templates, configuration management utilities, Azure CLI, and the Cloud Shell

Course Description

This is a Microsoft Official Course (MOC) and includes Microsoft courseware and hands-on labs. This course is intended for architects who have experience building infrastructure and applications on the Microsoft Azure platform. Students should have a thorough understanding of most services offered on the Azure platform. The students typically work for organizations that have an active solution on Azure and are planning to enhance existing solutions or deploy more solutions to the Azure platform. This course does not require any direct experience writing application code or configuring server machines. This course also is intended for architects who want to take the Microsoft Certification Exam 70-535: Architecting Microsoft Azure Solutions.

For the interactive component, this course offers students the opportunity to deploy Azure solutions using built-in DevOps tools such as Azure Resource Manager templates, deployments, resource groups, tags and Role-Based Access Control.

Course Prerequisites

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

- Create resources and resource group in Azure

- Manage users, groups, and subscriptions in an Azure Active Directory instance
- Build an Azure Virtual Machine with related resources
- Manage containers and blobs stored in an Azure Storage account
- Create App Service Plans and manage apps related to the plan
- Configure an Azure Virtual Network and enable S2S and P2S connectivity
- Protect networked application components using Network Security Groups
- Automate everyday Azure resource tasks using Azure CLI or Azure PowerShell
- Deploy an Azure SQL, MySQL, Postgres or Cosmos database instance
- Monitor existing Azure solutions using built-in metrics, Application Insights, or Operational Insights

About MOC On-Demand

Microsoft Official Courses On-Demand uses a combination of streaming video, text, lab exercises and assessment checks throughout the course. MOC On-Demand courses are available for 90 days and recommend the following system requirements:

- Browser: Current version of Internet Explorer, Microsoft Edge, Google Chrome or Firefox
- Internet: Broadband Internet connection of over 4Mbps
- Screen Resolution: 1280 x 1024 or higher

Course Overview

Module 1: Application Architecture Patterns in Azure

This module introduces and reviews common Azure patterns and architectures as prescribed by the Microsoft Patterns & Practices team. Each pattern is grouped into performance, resiliency, and scalability categories and described in the context of similar patterns within the category.

Lessons

- Pattern Resources
- Performance Patterns
- Resiliency Patterns
- Scalability Patterns
- Data Patterns

After completing this module, students will be able to:

- Locate and reference the Cloud Design Patterns documentation.
- Locate and reference the Azure Architecture Center.
- Describe various patterns pulled from the Cloud Design Patterns.

Module 2: Deploying Resources with Azure Resource Manager

This module establishes a basic understanding of Azure Resource Manager and the core concepts of deployments, resources, templates, resource groups, and tags. The module will dive deeply into the automated deployment of resources using ARM templates.

Lessons

ARM Templates
- Role-Based Access Control (RBAC)
- Resource Policies
- Security
- Building Blocks

Labs

- Create Resource Groups
- Deploy an Empty Template
- Deploy a Simple Template
- Cleanup Subscription

After completing this module, students will be able to:

- Create a resource group.
- Add resources to a resource group.
- Deploy an ARM template to a resource group.
- Filter resources using tags.
- Author a complex deployment using the Azure Building Blocks tools.

Module 3: Building Azure IaaS-Based Server Applications

This module identifies workloads that are ideally deployed using Infrastructure-as-a-Service services in Azure. The module focuses on the VM Scale Sets and Virtual Machine services in Azure and how to best deploy workloads to these services using best practices and features such as Availability Sets.

Lessons

- High Availability
- Templated Infrastructure
- Domain-Connected Machines

Labs

- Deploy a Virtual Machine using PowerShell DSC
- Deploy a Virtual Machine Scale Set using PowerShell DSC
- Cleanup Subscription

After completing this module, students will be able to:

- Design an availability set for one or more virtual machines
- Describe the differences between fault and update domains.
- Author a VM Scale Set ARM template.
- Join a virtualized machine to a domain either in Azure or on a hybrid network.

Module 4: Creating Managed Server Applications in Azure

This module describes services that use infrastructure but manage the infrastructure on behalf of the user instead of obfuscating the infrastructure resources. The module focuses on infrastructure-backed PaaS options such as Azure Service Fabric, Container Service, and App Service Environments. The module will explore how to deploy custom workloads to these services such as an HPC batch processing task.

Lessons

- Infrastructure-Backed Platform-as-a-Service (PaaS)
- High-Performance Compute (HPC)
- Migration

Labs

- Create Azure Container Service Cluster
- Deploy Docker Image
- Cleanup Subscription

After completing this module, students will be able to:

- Describe the differences between App Service Environments, Service Fabric and Container Service.
- Use Azure Batch to manage an HPC workload.
- Migrate to an Infrastructure-backed PaaS service from another IaaS service or a legacy Cloud Service.

Module 5: Authoring Serverless Applications in Azure

This module describes how solutions can leverage serverless application hosting services in Azure to host web applications, REST APIs, integration workflows and HPC workloads without the requirement to manage specific server resources. The module focuses on App Services-related components such as Web Apps, API Apps, Mobile Apps, Logic Apps, and Functions.

Lessons

- Azure Web App
- Azure Functions
- Integration
- High Performance

Labs

- Create Web App
- Deploy Web App Code
- Deploy Function App and Code
- Cleanup Subscription

After completing this module, students will be able to:

- Select between hosting application code or containers in an App Service instance.
- Describe the differences between API, Mobile, and Web Apps.
- Integrate an API or Logic App with the API Management service.
- Design an App Service Plan or multi-region deployment for high performance and scale.

Module 6: Backing Azure Solutions with Azure Storage

This module describes how many Azure services use the Azure Storage service as a backing store for other application solution in Azure. The module dives into critical considerations when using Azure Storage as a supplemental service for an all-up Azure solution.

Lessons

- Pricing
- Blob Storage
- Files
- StorSimple

Labs

- Create Required Resources for a Virtual Machine
- Create a VM With a Storage Account
- Create a VM With a Managed Disk
- Cleanup Subscription

After completing this module, students will be able to:

- Determine the ideal pricing option for Azure Storage based on a solution's requirements.
- Identify performance thresholds for the Azure Storage service.
- Determine the type of Storage blobs to use for specific solution components.
- Use the Azure Files service for SMB operations.
- Identify solutions that could benefit from the use of StorSimple physical or virtual devices.

Module 7: Comparing Database Options in Azure

This module compares the various relational and non-relational data storage options available in Azure. Options are explored as groups such as relational databases (Azure SQL Database, MySQL, and PostgreSQL on Azure), non-relational (Azure Cosmos DB, Storage Tables), streaming (Stream Analytics) and storage (Data Factory, Data Warehouse, Data Lake).

Lessons

- Relational
- NoSQL Services
- Azure Cosmos DB
- Data Storage
- Data Analysis

Labs

- Deploy a CosmosDB Database Instance
- Validate the REST API
- Cleanup Subscription

After completing this module, students will be able to:

- Compare and contrast various database options on Azure.
- Identify data streaming options for large-scale data ingest.
- Identify longer-term data storage options.

Module 8: Networking Azure Application Components

This module describes the various networking and connectivity options available for solutions deployed on Azure. The module explores connectivity options ranging from ad-

hoc connections to long-term hybrid connectivity scenarios. The module also discusses some of the performance and security concerns related to balancing workloads across multiple compute instances, connecting on-premise infrastructure to the cloud and creating gateways for on-premise data.

Lessons

- VNETs
- Load Balancing
- External Connectivity
- Hybrid Connectivity

Labs

- Create an ARM Template for a Linux VM
- Duplicate the VM Resources
- Create a Load Balancer Resource
- Cleanup Subscription

After completing this module, students will be able to:

- Describe DNS and IP strategies for VNETs in Azure.
- Compare connectivity options for ad-hoc and hybrid connectivity.
- Distribute network traffic across multiple loads using load balancers.
- Design a hybrid connectivity scenario between cloud and on-premise.

Module 9: Managing Security and Identity for Azure Solutions

This module discusses both security and identity within the context of Azure. For security, this module reviews the various options for monitoring security, the options available for securing data and the options for securing application secrets. For identity, this module focuses specifically on Azure Active Directory (Azure AD) and the various features available such as Multi-Factor Authentication (MFA), Managed Service Identity, Azure AD Connect, ADFS and Azure AD B2B/B2C.

Lessons

- Security Monitoring
- Data Security
- Application Security Azure Active Directory (Azure AD)
- Hybrid Identity
- Azure AD Application Integration

Labs

- Deploy Key Vault using ARM Template
- Deploy Virtual Machine using Key Vault Secret
- Cleanup Subscription

After completing this module, students will be able to:

- Integrate their existing solutions with external identity providers using Azure AD B2B or B2C.
- Design a hybrid identity solution.
- Determine when to use advanced features of Azure AD such as Managed Service Identity, MFA and Privileged Identity Management.

Secure application secrets using Key Vault.
- Secure application data using SQL Database and Azure Storage features.

Module 10: Integrating SaaS Services Available on the Azure Platform

This module introduces multiple SaaS services available in Azure that are available for integration into existing Azure solutions. These services include Cognitive Services, Bot Service, Machine Learning and Media Services.

Lessons

- Cognitive Services
- Bot Services
- Machine Learning
- Media Services

Labs

- Deploy Function App and Cognitive Service using ARM Template
- Cleanup Subscription

After completing this module, students will be able to:

- Identify when Cognitive Services, Bot Service or Machine Learning is appropriate for their solution.
- Compare the various features available in Media Services and determine the appropriate features for their solution.

Module 11: Integrating Azure Solution Components using Messaging Services

This module describes and compares the integration and messaging services available for solutions hosted on the Azure platform. Messaging services described include Azure Storage Queues, Service Bus Queues, Service Bus Relay, IoT Hubs, Event Hubs, and Notification Hubs. Integration services include Azure Functions and Logic Apps.

Lessons

- Event Messaging
- Integration
- IoT

Labs

- Deploy Service Bus Namespace
- Deploy Logic App
- Cleanup Subscription

After completing this module, students will be able to:

- Compare Storage Queues to Service Bus Queues.
- Identify when to use Azure Functions or Logic Apps for integration components in a solution.
- Describe the differences between IoT Hubs, Event Hubs and Time Series Insights.

Module 12: Monitoring and Automating Azure Solutions

This module covers the monitoring and automation solutions available after an Azure solution has been architected, designed and possibly deployed. The module reviews services that are used to monitor individual applications, the Azure platform, and networked components. This module also covers automation and backup options to enable business-continuity scenarios for solutions hosted in Azure.

Lessons

- Application Monitoring
- Platform Monitoring
- Network Monitoring
- Alerting
- Backup
- Azure Automation
- Config Management
- Auto-Scale

Labs

- Deploy a Chef Management Server using ARM
- Configure Management Server
- Deploy a VM Scale Set using Chef-Configured VMs
- Cleanup Subscription

After completing this module, students will be able to:

- Compare and contrast monitoring services for applications, the Azure platform, and networking.
- Design an alert scheme for a solution hosted in Azure.
- Select the appropriate backup option for infrastructure and data hosted in Azure.
- Automate the deployment of future resources for backup recovery or scaling purposes.