Course Outline

MOC 20535A: Architecting Microsoft Azure Solutions

Course Summary

Description

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 also is intended for architects who want to take the Microsoft Certification exam, 70-535, Architecting Microsoft Azure Solutions.

Objectives

After taking this course, students will be able to:

- Describe Azure architecture components, including infrastructure, tools, and portals.
- Create and deploy Azure Resource Manager (ARM) templates for various all-up solutions.
- Compare and contrast 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.
- Incorporate various Azure platform services, such as Cognitive Services and Media Servicers into an overall Azure solution.
- Secure, monitor and backup solutions deployed to Azure.
- Create automated DevOps solutions using a combination of ARM templates, configuration management utilities, Azure CLI, and the Cloud Shell.
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Topics

- Application Architecture Patterns in Azure
- Deploying Resources with Azure Resource Manager
- Building Azure IaaS-Based Server Applications
- Creating Managed Server Applications in Azure
- Authoring Serverless Applications in Azure
- Backing Azure Solutions with Azure Storage
- Comparing Database Options in Azure
- Networking Azure Application Components
- Managing Security and Identity for Azure Solutions
- Integrating SaaS Services Available on the Azure Platform
- Integrating Azure Solution Components using Messaging Services
- Monitoring and Automating Azure Solutions

Course Outline

MOC 20535A: Architecting Microsoft Azure Solutions

Course Summary (cont.)

Audience

This course is intended for students 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.

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.

This course does not require any direct experience writing application code or configuring server machines. This course focuses on the architectural comparisons between services and technical decision making needed to deploy well-designed solutions on the Azure platform. This course also prepares the students for the 70-535: Architecting Microsoft Azure Solutions certification exam.

The candidates targeted by this training have intermediate experience in designing, implementing and monitoring Azure solutions. Candidates are also proficient with the tools, techniques, and approaches used to build solutions on the Azure platform.

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.
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Duration

Five days

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I. 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.

A. Pattern Resources
B. Performance Patterns
C. Resiliency Patterns
D. Scalability Patterns
E. Data Patterns

II. 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.

A. ARM Templates
B. Role-Based Access Control (RBAC)
C. Resource Policies
D. Security
E. Building Blocks

Lab: Getting Started with Azure Resource Manager

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

III. 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.

A. High Availability
B. Templated Infrastructure
C. Domain-Connected Machines

Lab: Deploying Infrastructure Workloads to Azure

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

IV. 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.

A. Infrastructure-Backed Platform-as-a-Service (PaaS)
B. High-Performance Compute (HPC)
C. Migration

Lab: Deploying Managed Server Workloads to Azure

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

V. 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.

A. Azure Web App
B. Azure Functions
C. Integration
D. High Performance

Lab: Deploying Serverless Workloads to Azure

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

MOC 20535A: Architecting Microsoft Azure Solutions

Course Outline(cont.)

VI. 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.

A. Pricing
B. Blob Storage
C. Files
D. StorSimple

Lab: Deploying Azure Storage to Support Other Workloads in Azure

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

VII. 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).

A. Relational
B. NoSQL Services
C. Azure Cosmos DB
D. Data Storage
E. Data Analysis

Lab: Deploying Database Instances in Azure

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

VIII. 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.

A. VNETs
B. Load Balancing
C. External Connectivity
D. Hybrid Connectivity

Lab: Deploying Network Components for Use in Azure Solutions

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

IX. 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.

A. Security Monitoring
B. Data Security
C. Application Security Azure Active Directory (Azure AD)
D. Hybrid Identity
E. Azure AD Application Integration

Lab: Deploying Services to Secure Secrets in Azure

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

MOC 20535A: Architecting Microsoft Azure Solutions

Course Outline(cont.)

X. 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.

A. Cognitive Services
B. Bot Services
C. Machine Learning
D. Media Services

Lab: Deploying Service Instances as Components of Overall Azure Solutions

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

XI. 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.

A. Event Messaging
B. Integration
C. IoT

Lab: Deploying Messaging Components to Facilitate Communication Between Azure Resources

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

XII. 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.

A. Application Monitoring
B. Platform Monitoring
C. Network Monitoring
D. Alerting
E. Backup
F. Azure Automation
G. Config Management
H. Auto-Scale

Lab: Deploying Configuration Management Solutions to Azure

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