Azure Development Course

About This Course

This section provides a brief description of the course, audience, suggested prerequisites, and course objectives.

COURSE DESCRIPTION

This course is intended for students who have experience building vertically scaled applications. Students will also have experience with the Microsoft Azure platform and a basic understanding of the services offered.

This course offers students the opportunity to take an existing ASP.NET MVC application and expand its functionality as part of moving it to Azure. This course focuses on the considerations necessary when building a highly available solution in the cloud. This course also prepares the students for the 70-532: Developing Microsoft Azure Solutions certification exam.

AUDIENCE

The candidates targeted by this training have basic experience in implementing and monitoring Microsoft Azure solutions. Candidates are also proficient with the development tools, techniques, and approaches used to build application solutions.

STUDENT PREREQUISITES

In addition to their professional experience, students must have experience working with the Azure platform. They will also have a general understanding of C# concepts for the lab scenario. Candidates experience can include:

- Compare the services available in the Azure platform
- Configure and deploy web applications
- Creating Azure Websites from the gallery
- Deploying and monitoring Azure Websites
- Creating and configuring Azure Virtual Machines
- Describe the relationship between Cloud Services and Virtual Machines
- Deploy existing Cloud Service packages
- Create and manage a storage account
- Manage blobs and containers in a storage account
- Create, configure, and connect to a SQL Databases instance
- Identify the implications of importing a SQL standalone database
- Manage users, groups, and subscriptions in an Azure Active Directory instance
- Create a virtual network

- Implement a point-to-site network

COURSE OBJECTIVES

After completing this course, students will be able to:

- Compare the services available in the Azure platform.

- Configure and deploy web applications.

- Creating Azure Websites from the gallery.

- Deploying and monitoring Azure Websites.

- Creating and configuring Azure Virtual Machines.

- Describe the relationship between Cloud Services and Virtual Machines.

- Deploy existing Cloud Service packages.

- Create and manage a storage account.

- Manage blobs and containers in a storage account.

- Create, configure and connect to a SQL Databases instance.

- Identify the implications of importing a SQL standalone database.

- Manage users, groups and subscriptions in an Azure Active Directory instance.

- Create a virtual network.

- Implement a point-to-site network.

Course Outline

Module 1: "Overview of the Microsoft Azure Platform"

- Microsoft Azure provides a collection of services that can be used as building blocks for your cloud applications. Lesson 1, "Azure Services", provides a recap of services you may have worked with when using the Azure platform in the past. Lesson 2, "Management Portals", describes the two current portals available for managing Azure subscriptions and services. Lesson 3, "Lab Overview", provides a walkthrough of the lab application that you will be working on throughout the course.

Module 2: "Establishing a Development Environment using Azure Virtual Machines"

- While many of the Azure services use virtualized machines, sometimes your application has a unique enough need that you would like a Virtual Machine (VM) that is completely unmanaged. As part of its Infrastructure as a Service (IaaS) offerings, Azure provides networking, backup and virtualization services. Lesson 1, "Azure Virtual Machines", introduces the Virtual Machines service and described the options for creating a virtual machine. Lesson 2, "Azure Virtual Machine Workloads", details the types of workloads that can be deployed to a Virtual Machine. Lesson 3,

"Migrating Azure Virtual Machine Instances", discusses the options for migrating VMs to and from Azure.

Module 3: "Hosting Web Applications on the Azure Platform"

- This module provides an overview of the Azure Web Apps service. Lesson 1, "Azure Web Apps", introduces the Azure App Service platform-as-a-service offering available in Azure and specifically focuses on the Web Apps feature of App service. Lesson 2, "Azure Logic and Function Apps", explore two of the types of apps available in Azure App Service. Lesson 3, "Configuring an App Service App", discusses the various configuration options available to change the behavior of your app. Lesson 4, "Publishing an App Service App", describes the process for publishing a web application to an app. Lesson 5, "Supplemental Services", introduces additional service offerings for web applications in Azure such as the intelligent service offerings and the API Management service that can be used as a proxy to an App Service app.

Module 4: "Storing SQL Data in Azure"

- Dynamic web applications must store the data that is being managed and manipulated by end users. ASP.NET technologies such as ADO.NET and Entity Framework provide a way for accessing data in SQL Server. In the cloud, the Microsoft Azure platform provides a database as a service offering that allows developers to use SQL in the same way as they would in an on-premises location. Lesson 1, Azure SQL Database Overview, describes the Azure SQL Database service and reasons you would consider using it. Lesson 2, Managing SQL Databases in Azure, describes the familiar and new management tools that are available for use with a SQL database that is hosted in Azure. Lesson 3, Azure SQL Database Tools, describes the SQL Server Data Tools (SSDT) templates, panes, and projects that are available in Microsoft Visual Studio 2013. Lesson 4, Securing and Recovering an Azure SQL Database Instance, describes the recovery scenarios relevant in Azure SQL Database. Lesson 5, "Azure Database for MySQL and PostgreSQL", introduces the two managed database options for PostgreSQL and MySQL hosting.

Module 5: "Designing Cloud Applications for Resiliency"

- As a developer, you should keep in mind certain considerations while designing applications for the cloud. Although there are many platform improvements available in the ASP.NET ecosystem, you need to rethink the way you design your applications, and the patterns that are used, with respect to the scalability and reliability metrics present for the cloud applications. Lesson 1, "Application Design Practices for Highly Available Applications", discusses some of the considerations that are needed when you design applications that are hosted in the cloud such that they result in minimal downtime. Lesson 2, "Application Analytics", demonstrates the Application Insights service. Lesson 3, "Building High Performance Applications using ASP.NET", describes the changes in the ASP.NET stack in .NET 4.5 that improve the framework's performance in web applications. Lesson 4, "Common Cloud Application Patterns", introduces a

small set of example patterns from the MSDN cloud patterns reference. Lesson 5, "Caching Application Data", compares the Microsoft Azure Cache and Microsoft Azure Redis Cache services.

Module 6: "Storing Unstructured Data in Azure"

- Many new application workloads require new databases that offer scale and flexibility far beyond the capabilities of a traditional relational database. In Azure, there is a wide variety of NoSQL database services available for applications to store unstructured data in a flexible, schema-free and scalable fashion. Lesson 1, "Azure Storage", introduces the Azure Storage service and details some of the storage types available to applications using Azure Storage. Lesson 2, "Azure Storage Tables", details the Table key-value store available as a NoSQL database in Azure Storage. Lesson 3, "Redis Cache", introduces the Redis Cache key-value based NoSQL store and details how it can be used as a cache database. Lesson 4, "Azure Search", describes the Azure Search service offering that indexes and provides rich-search capabilities for documents stored in structured and unstructured storage. Lesson 5, "Azure Cosmos DB", explores the Azure Cosmos DB service as a flexible NoSQL database that supports a large variety of APIs and models.

Module 7: "Storing Tabular Data in Azure"

- Dynamic web applications have always had a need to store the data that is being managed and manipulated by end users. For as long as ASP.NET has been around, technologies like ADO.NET and Entity Framework have provided a way for accessing data in SQL Server. In the cloud, the Azure platform provides a SQL as a Service offering that allows developers to use SQL in much the same manner as they would on premise. Lesson 1, "What is Azure SQL Databases", defines the Azure SQL Databases service and reasons you would consider using it. Lesson 2, "Managing SQL Databases in Azure", describes the familiar and new management tools available for use with a SQL database hosted in Azure. Lesson 3, "Using Azure SQL Databases with SQL Server Data Tools", deeply describes the SSDT templates, panes and projects available in Visual Studio 2013. Lesson 4, "Migrating Data to Azure SQL Databases", describes a couple of simple methods for migrating an existing schema and data from on premise to the cloud. Lesson 5, "Using Azure SQL Databases with Entity Framework", details some of the ways you can leverage Entity Framework Code First to your advantage when working with a database hosted in the cloud.

Module 8: "Storing and Consuming Files from Azure Storage"

- When you want to scale to different cloud instances, storing files to a local disk becomes a difficult process to maintain and eventually an unreliable method of storage. Azure provides a Blob storage mechanism that not only offers high performance but also supports integration to Microsoft Azure Content Delivery Network (CDN) for low latency downloads. Lesson 1, Storage Blobs, describes the Blob service and the types of blobs supported. Lesson 2, Controlling Access to Storage Blobs, provides details on the ways that you can secure and grant temporary access to blobs or containers. Lesson 3, Configuring Azure Storage Accounts, looks at some of the unique

configuration options available for Storage blobs. Lesson 4, Azure Files, introduces briefly the Azure Files service.

Module 9: "Designing a Communication Strategy by Using Queues and Service Bus"

- With web applications presenting content and worker roles processing logic, there needs to be a mechanism to communicate between these different entities. Azure provides two queuing mechanisms that can be used for this purpose. Lesson 1, "Queue Mechanisms in Azure" introduces the Azure Storage Queues and Service Bus Queues. Lesson 2, "Azure Storage Queues", introduces the queue mechanism available in Azure Storage accounts. Lesson 3, "Using the Azure Storage SDK to Manage Storage Queues", describes the classes and methods that can be used to interact with queues. Lesson 4, "Monitoring Queue Storage", details how you can use Visual Studio to view queue data in an Azure Storage account. Lesson 5, "What is Azure Service Bus?", introduces the Service Bus offering in Azure. Lesson 6, "Azure Service Bus Queues", describes the queuing mechanism available in Service Bus and the difference between that and Azure Storage Queues. Lesson 7, "Using the Azure Service Bus SDK to Manage Service Bus Queues", details how you can use the classes and methods available in the SDK to manage Service Bus Queues.

Module 10: "DevOps in Azure"

- Although you can deploy your cloud applications manually, it is in your best interest to begin automating cloud-based deployments. Automation creates many benefits including the ability to trace past actions, easier repetition of deployment tasks and reduced possibility of human error. Lesson 1, "Continuous Integration", discusses strategies for integrating source control repositories with running cloud service instances for automatic deployment scenarios. Lesson 2, "DevTest Labs", introduces the DevTest service which is useful for automating the creation of machine-specific environments and lab scenarios. Lesson 3, "Azure Resource Manager Templates", discusses the capability to deploy entire workloads in Azure from a JSON template. Lesson 4, "Managed Solution Hosting", introduces Service Fabric, Azure Container Service and Azure Container Instances as methods used to host solutions using a fully-managed service.

Module 11: "Automating Integration with Azure Resources"

- Although you can manage most of the Azure services by using both of the Azure portals or Microsoft Visual Studio, you can use scripting to completely automate the management of the same resources. This module will look at automating the lifecycle of the services by using client libraries, Windows PowerShell, REST, and the Resource Manager. Lesson 1, "Resource Manager", discusses the Resource Manager architecture in Azure and the concepts associated with this method of managing resources and groups. Lesson 2, "Creating Azure Scripts using Azure PowerShell", describes the modules that are available for managing Azure resources using Azure PowerShell. Lesson 3, "Creating Azure Scripts using Azure CLI", describes the cross-platform command-line interface used to manage Azure resources. Lesson 4, "Azure REST Interface",

introduces and describes the REST API used to manage all resources in Azure. Lesson 5, "Azure Cloud Shell", describes the Cloud Shell and how it is used to execute scripts within the Azure Portal and context of an Azure subscription.

Module 12: "Securing Azure Web Applications"

- Just like on-premises applications, applications in the cloud need streamlined security mechanisms that are flexible. Azure Active Directory is an identity provider that can provide identity and access functionality for your custom applications or SaaS applications. Lesson 1, "Azure Active Directory", introduces the Azure AD service. Lesson 2, "Azure AD Directories", details how to create a directory in Azure AD. Lesson 3, "Azure AD Offerings", describes the various offerings available in Azure AD such as B2B, B2C, and multi-factor authentication. Lesson 4, "Azure Key Vault", introduces the Azure Key Vault service designed to manage secrets for workloads and applications.

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