

20487 Developing Windows Azure and Web Services

Overview

In this course, students will learn how to design and develop services that access local and remote data from various data sources and how to develop and deploy services to hybrid environments, including on-premises servers and Windows Azure.

Prerequisite Comments

Before attending this course, students must have:

- Experience with C# programming, and concepts such as Lambda expressions, LINQ, and anonymous types.
- Understanding the concepts of n-tier applications.
- Experience with querying and manipulating data with ADO.NET.
- Knowledge of XML data structures.

Target Audience

This course is intended for both novice and experienced .NET developers who have a minimum of six months programming experience, and want to learn how to develop services and deploy them to hybrid environments.

Course Objectives

After completing this course, students will be able to:

- Query and manipulate data with Entity Framework
- Use ASP.NET Web API to create HTTP-based services and consume them from .NET and non-.NET clients
- Extend ASP.NET Web API services using message handlers, model binders, action filters, and media type formatters
- Create SOAP-based services with the Windows Communication Foundation (WCF) and consume them from .NET clients
- Apply design principles to service contracts and extend WCF services using custom runtime components and behaviors
- Secure WCF services using transport and message security
- Use Windows Azure Service Bus for relayed messaging and brokered messaging using queues and topics
- Host services on on-premises servers, and on various Windows Azure environments, such as Web Roles, Worker Roles, and Web Sites
- Deploy services to both on-premises servers and Windows Azure
- Store and access data in Windows Azure Storage, and configure storage access rights
- Monitor and log services, both on-premises and in Windows Azure
- Implement federated authentication by using ACS with ASP.NET Web API services
- Create scalable, load-balanced services

Course Outline

1 - Overview of service and cloud technologies

Key Components of Distributed Applications
Data and Data Access Technologies
Service Technologies
Cloud Computing
Exploring Blue Yonder Airlines' Travel Companion Application
Lab : Exploring the work environment

2 - Querying and Manipulating Data Using Entity Framework

ADO.NET Overview
Creating an Entity Data Model
Querying Data
Manipulating Data
Lab : Creating a Data Access Layer by Using Entity Framework

3 - Creating and Consuming ASP.NET Web API Services

HTTP Services
Creating an ASP.NET Web API Service
Handling HTTP Requests and Responses
Hosting and Consuming ASP.NET Web API Services
Lab : Creating the Travel Reservation ASP.NET Web API Service

4 - Extending and Securing ASP.NET Web API Services

The ASP.NET Web API Pipeline
Creating OData Services
Implementing Security in ASP.NET Web API Services
Injecting Dependencies into Controllers
Lab : Extending Travel Companion's ASP.NET Web API Services

5 - Creating WCF Services

Advantages of Creating Services with WCF
Creating and Implementing a Contract
Configuring and Hosting WCF Services
Consuming WCF Services
Lab : Creating and Consuming the WCF Booking Service

6 - Hosting Services

Hosting Services On-Premises
Hosting Services in Windows Azure
Lab : Hosting Services

7 - Windows Azure Service Bus

What Are Windows Azure Service Bus Relays?
Windows Azure Service Bus Queues
Windows Azure Service Bus Topics
Lab : Windows Azure Service Bus

8 - Deploying Services

Web Deployment with Visual Studio 2012
Creating and Deploying Web Application Packages
Command-Line Tools for Web Deploy
Deploying Web and Service Applications to Windows Azure
Continuous Delivery with TFS and Git
Best Practices for Production Deployment
Lab : Deploying Services

9 - Windows Azure Storage

Introduction to Windows Azure Storage
Windows Azure Blob Storage
Windows Azure Table Storage
Windows Azure Queue Storage
Restricting Access to Windows Azure Storage
Lab : Windows Azure Storage

10 - Monitoring and Diagnostics

Performing Diagnostics by Using Tracing
Configuring Service Diagnostics
Monitoring Services Using Windows Azure Diagnostics
Collecting Windows Azure Metrics
Lab : Monitoring and Diagnostics

11 - Identity Management and Access Control

Claims-based Identity Concepts
Using the Windows Azure Access Control Service
Configuring Services to Use Federated Identities
Handling Federated Identities on the Client Side
Lab : Identity Management and Access Control

12 - Scaling Services

Introduction to Scalability
Load Balancing
Scaling On-Premises Services with Distributed Cache
Windows Azure Caching
Caveats of Scaling Services
Scaling Globally
Lab : Scalability

13 - Appendix A: Designing and Extending WCF Services

Applying Design Principles to Service Contracts
Handling Distributed Transactions
Extending the WCF Pipeline
Lab : Designing and Extending WCF Services

14 - Appendix B: Implementing Security in WCF Services

Introduction to Web Services Security
Transport Security
Message Security
Configuring Service Authentication and Authorization
Lab : Securing a WCF Service
