Course duration

- 4 days

Course Benefits

- Create, configure, and manage an Azure IoT hub.
- Provision devices by using IoT Hub and DPS, including provisioning at scale.
- Establish secure 2-way communication between devices and IoT Hub.
- Implement message processing by using IoT Hub routing and Azure Stream Analytics.
- Configure the connection to Time Series Insights and support business integration requirements.
- Implement IoT Edge scenarios using marketplace modules and various edge gateway patterns.
- Implement IoT Edge scenarios that require developing and deploying custom modules and containers.
- Implement device management using device twins and direct methods.
- Implement solution monitoring, logging, and diagnostics testing.
- Recognize and address security concerns and implement Azure Security Center for IoT.
- Build an IoT Solution by using Azure IoT Central and recongize SaaS opportunities for IoT.

Microsoft Certified Partner

Webucator is a Microsoft Certified Partner for Learning Solutions (CPLS). This class uses official Microsoft courseware and will be delivered by a Microsoft Certified Trainer (MCT).

Course Outline

1. Introduction to IoT and Azure IoT Services
    1. Business Opportunities for IoT
    2. Introduction to IoT Solution Architecture
    3. IoT Hardware and Cloud Services
    4. Lab Scenarios for this Course
    5. Lab: Getting Started with Azure
    6. Lab: Setting Started with Azure IoT Services
2. Devices and Device Communication
    1. IoT Hub and Devices
    2. IoT Developer Tools
    3. Device Configuration and Communication

4. Lab: Setup the Development Environment
5. Lab: Connect IoT Device to Azure
3. Device Provisioning at Scale
   1. Device Provisioning Service Terms and Concepts
   2. Configure and Manage the Device Provisioning Service
   3. Device Provisioning Tasks
   4. Lab: Individual Enrollment of Devices in DPS
   5. Lab: Automatic Enrollment of Devices in DPS
4. Message Processing and Analytics
   1. Messages and Message Processing
   2. Data Storage Options
   3. Azure Stream Analytics
   4. Lab: Device Message Routing
   5. Lab: Filtering and Aggregating Message Data
5. Insights and Business Integrations
   1. Business Integration for IoT Solutions
   2. Data Visualization with Time Series Insights
   3. Data Visualization with Power BI
   4. Lab: Integrate IoT Hub with Event Grid
   5. Lab: Explore and Analyze Time Stamped Data with Time Series Insights
6. Azure IoT Edge Deployment Process
   1. Introduction to Azure IoT Edge
   2. Edge Deployment Process
   3. Edge Gateway Devices
   4. Lab: Introduction to IoT Edge
   5. Lab: Set Up an IoT Edge Gateway
7. Azure IoT Edge Modules and Containers
   1. Develop Custom Edge Modules
   2. Offline and Local Storage
   3. Lab: Develop, Deploy, and Debug a Custom Module on Azure IoT Edge
   4. Lab: Run an IoT Edge Device in Restricted Network and Offline
8. Device Management
   1. Introduction to IoT Device Management
   2. Manage IoT and IoT Edge Devices
   3. Device Management at Scale
   4. Lab: Remotely Monitor and Control Devices with Azure IoT Hub
   5. Lab: Automatic Device Management
9. Solution Testing, Diagnostics, and Logging
   1. Monitoring and Logging
   2. Troubleshooting
   3. Lab: Configure Metrics and Logs in Azure IoT Hub
   4. Lab: Monitor and Debug Connection Failures
10. Azure Security Center and IoT Security Considerations
    1. Security Fundamentals for IoT Solutions
    2. Introduction to Azure Security Center for IoT
    3. Enhance Protection with Azure Security Center for IoT Agents
    4. Lab: Implementing Azure Security Center for IoT

11. Build an IoT Solution with IoT Central
    1. Introduction to IoT Central
    2. Create and Manage Device Templates
    3. Manage Devices in Azure IoT Central
    4. Lab: Get Started with Azure IoT Central
    5. Lab: Implementing IoT Solutions with Azure IoT Central

Class Materials

Each student will receive a comprehensive set of materials, including course notes and all the class examples.

Class Prerequisites

Experience in the following *is required* for this Azure class:

- Software Development Experience: Software development experience is a prerequisite for this course, but no specific software language is required, and the experience does not need to be at a professional level.
- Data Processing Experience: General understanding of data storage and data processing is a recommended but not required.
- Cloud Solution Awareness: Students should have a basic understanding of PaaS, SaaS, and IaaS implementations. Microsoft Azure Fundamentals (AZ-900), or equivalent skills, is recommended.