

## AZ-220T00 Microsoft Azure IoT Developer

### Overview

---

This course empowers you with the knowledge and skills required to successfully create and maintain the cloud and edge portions of an Azure IoT solution. You will learn the core Azure IoT services, such as IoT Hub, Device Provisioning Services, Azure Stream Analytics, Time Series Insights, and much more. With a focus on Azure PaaS services, this course expands into IoT Edge, device management, monitoring and troubleshooting, security concerns, and Azure IoT Central.

### Prerequisite Comments

---

**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.

### Target Audience

---

IoT Developer is responsible for implementing and then maintaining the cloud and edge portions of an Azure IoT solution. In addition to configuring and maintaining devices by using Azure IoT services and other Microsoft tools, the IoT Developer also sets up the physical devices and is responsible for maintaining the devices throughout the life cycle. The IoT Developer implements designs for IoT solutions, including device topology, connectivity, debugging and security. For Edge device scenarios, the IoT Developer also deploys compute/containers and configures device networking, which could include various edge gateway implementations. The IoT Developer implements designs for solutions to manage data pipelines, including monitoring and data transformation as it relates to IoT. The IoT Developer works with data engineers and other stakeholders to ensure successful business integration.

### Course Objectives

---

After completing this course, you will be able to:

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 recognize SaaS opportunities for IoT.

### Course Outline

---

## 1 - Introduction to IoT and Azure IoT Services

Business Opportunities for IoT  
Introduction to IoT Solution Architecture  
IoT Hardware and Cloud Services  
Lab Scenarios for this Course

## 2 - Devices and Device Communication

IoT Hub and Devices  
IoT Developer Tools  
Device Configuration and Communication  
Lab : Setup the Development Environment

## 3 - Device Provisioning at Scale

Device Provisioning Service Terms and Concepts  
Configure and Manage the Device Provisioning Service  
Device Provisioning Tasks  
Lab : Individual Enrollment of Devices in DPS

## 4 - Message Processing and Analytics

Messages and Message Processing  
Data Storage Options  
Azure Stream Analytics  
Lab : Device Message Routing

## 5 - Insights and Business Integration

Business Integration for IoT Solutions  
Data Visualization with Time Series Insights  
Data Visualization with Power BI  
Lab : Integrate IoT Hub with Event Grid

## 6 - Azure IoT Edge Deployment Process

Introduction to Azure IoT Edge  
Edge Deployment Process  
Edge Gateway Devices  
Lab : Introduction to IoT Edge

## 7 - Azure IoT Edge Modules and Containers

Develop Custom Edge Modules  
Offline and Local Storage  
Lab : Develop, Deploy, and Debug a Custom Module on Azure IoT Edge

## 8 - Device Management

Introduction to IoT Device Management  
Manage IoT and IoT Edge Devices  
Device Management at Scale  
Lab : Remotely Monitor and Control Devices with Azure IoT Hub

## 9 - Solution Testing, Diagnostics, and Logging

Monitoring and Logging  
Troubleshooting  
Lab : Configure Metrics and Logs in Azure IoT Hub

## 10 - Azure Security Center and IoT Security Considerations

Security Fundamentals for IoT Solutions  
Introduction to Azure Security Center for IoT  
Enhance Protection with Azure Security Center for IoT Agents  
Lab : Implementing Azure Security Center for IoT

## 11 - Build an IoT Solution with IoT Central

Introduction to IoT Central  
Create and Manage Device Templates  
Manage Devices in Azure IoT Central  
Lab : Get Started with Azure IoT Central

## Related Courses, Certifications, Exams

---

- AZ-900T00 Microsoft Azure Fundamentals
-