

The IoT Certification training on Azure introduces the delegates with Azure IoT Hub. The delegates will understand how to build both device-side and cloud-side solutions. The IoT training provides in-depth knowledge to the delegates about how Microsoft Azure IoT Hub can help the delegates to build robust and scalable IoT solutions quickly. The delegates will be able to work on the Raspberry Pi, with the help of IoT training. Throughout the IoT training, the delegates will understand the basics of Azure IoT Hub and also learn how it addresses common IoT challenges.

The IoT Certification training on Azure provides complete knowledge about the latest concepts such as IoT Framework, Application Layer protocols, IoT Ecosystem, Networking Protocols and IoT Solution architecture. With the help of training, the delegates will be able to use Microsoft's IoT client SDK to build a .NET Core device application. After that, the delegates will get to know how to send and receive messages on both, device side and the cloud side by using the Azure IoT Hub. Then the delegates can finally see, how they can deploy their solutions in the cloud and advantages from other Azure capabilities. At the end of the IoT Certification training, the delegates will be able to select and use the Azure services for their IoT projects.

## Prerequisites

The delegates are expected to have:

- Experience working in Azure IoT Hub and Azure Storage
- Linux Fundamentals
- Basic Python Programming

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## Course Objectives

- Get insights into IoT Decision Framework and IoT architecture
- Use OpenCV-Python for Face Detection, reorganisation and Sense-HAT board
- Demonstration of Azure IoT Hub APIs
- Understanding of IoT Decision Framework and IoT architecture
- Architect an End-to-End Solution using Azure, Raspberry Pi and Sense HAT
- Develop communication solutions several IoT Networking Protocols are used
- Perform Data Analytics on the collected sensor data

## Introduction to the Internet of Things

- Introduction to IoT and working of IoT
- Understand the difference between IoT device and Embedded device
- IoT device properties
- IoT Ecosystem
- IoT Decision Framework
- Models of IoT Solution Architecture
- How IoT is Transforming Businesses

- Main IoT Boards in Marketplace
- About Raspberry Pi

## **Setting up Raspberry Pi and Sensors (Sense HAT Board)**

- Set up Raspberry Pi
- Showing working of Raspberry Pi using Team Viewer and SSH Client
- Understand Sensing actions
- Understand the MEMS and Actuators

## **Creating Solutions with Sense HAT Board and Raspberry Pi**

- Build weather station by using Python and Sense HAT
- Understand the Preparation of Google Spreadsheet for weather data collection
- Understand OpenCV

## **IoT Communication Protocols**

- Wireless Communication types
- Major wireless Short-range communication devices, properties, comparison of these devices (Bluetooth, WIFI, ZigBee, 6LoWPAN)
- Major wireless Long-range communication devices, properties, comparison of these devices (Cellular IoT, LPWAN)

## **IoT with Microsoft Azure**

- What is Cloud and its Infrastructure
- How IoT and Cloud deployment can create an effective IoT Solution
- Azure IoT Hub components

## **Implementing IoT with Azure**

- Register Raspberry Pi on Azure IoT Hub
- Send and Receive messages from Raspberry Pi over Azure IoT Hub
- Create docker container and Storage account
- View Data On-premise with Azure Storage Explorer
- For Data Visualization, Configure Web App settings

## **Remote Monitoring**

- Plan how to customise a solution to meet specific requirements
- Build a service bus namespace and add a queue to it
- Add an endpoint and a routing rule to your IoT hub
- Create, configure, and test a logic app

## **Edge Computing and Analytics**

- Data Analytics
- Edge Computing
- Azure IoT Edge
- Azure IoT Edge Components
- Azure IoT Edge Architecture
- Real-Time Analytics

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