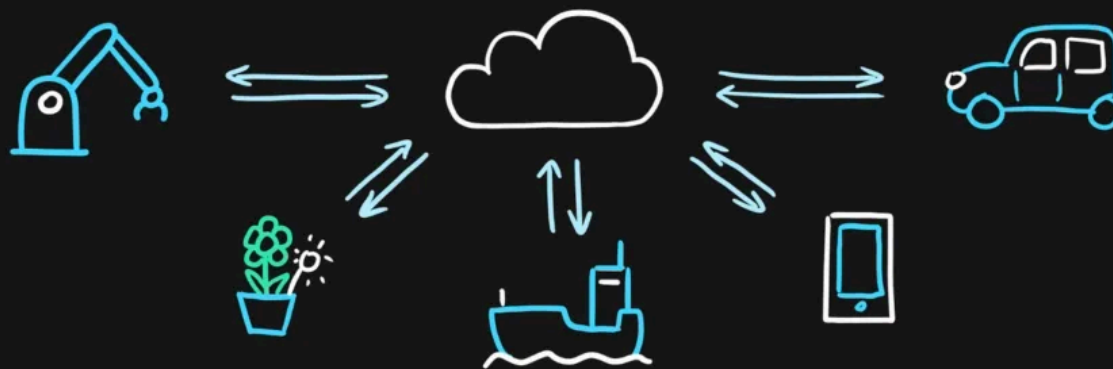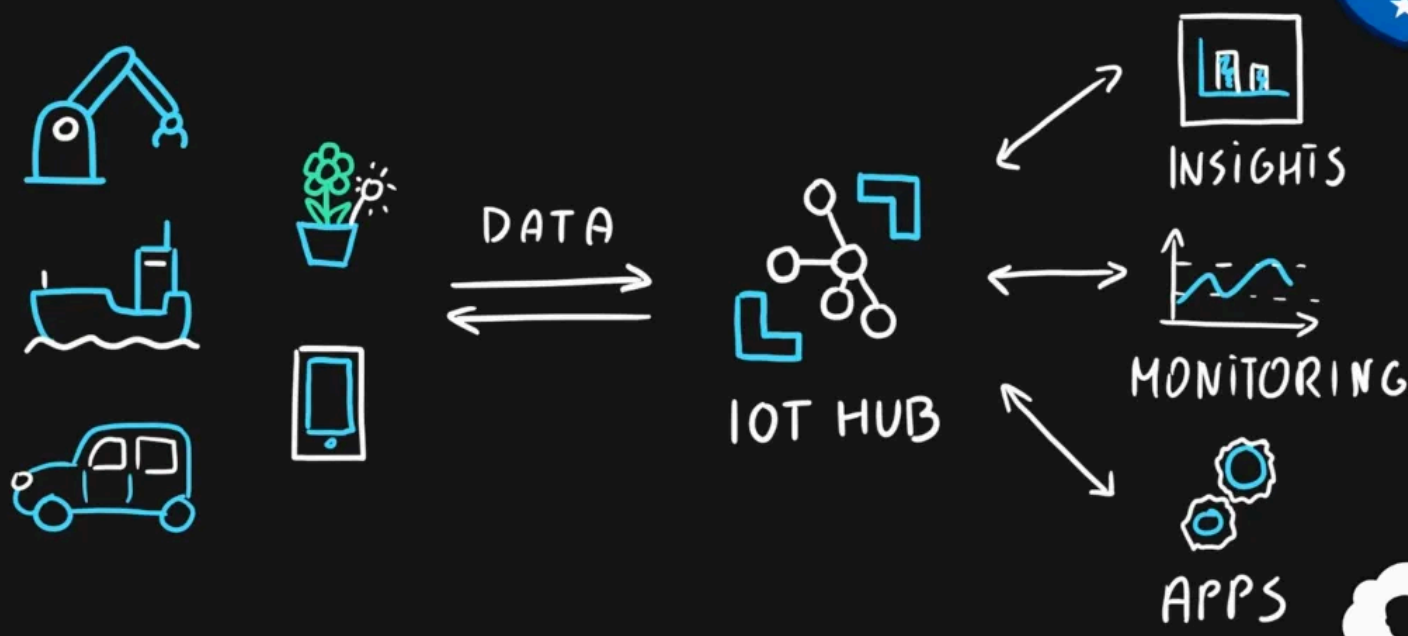# Azure IOT Solutions

Skills Learned

- Describe the benefits and usage of
    - IoT Hub
    - IoT Central
    - Azure Sphere

Internet of Things

Internet of Things (IoT) is a network of internet connected devices (IoT Devices) embedded in everyday objects enabling sending and receiving data such as settings and telemetry.
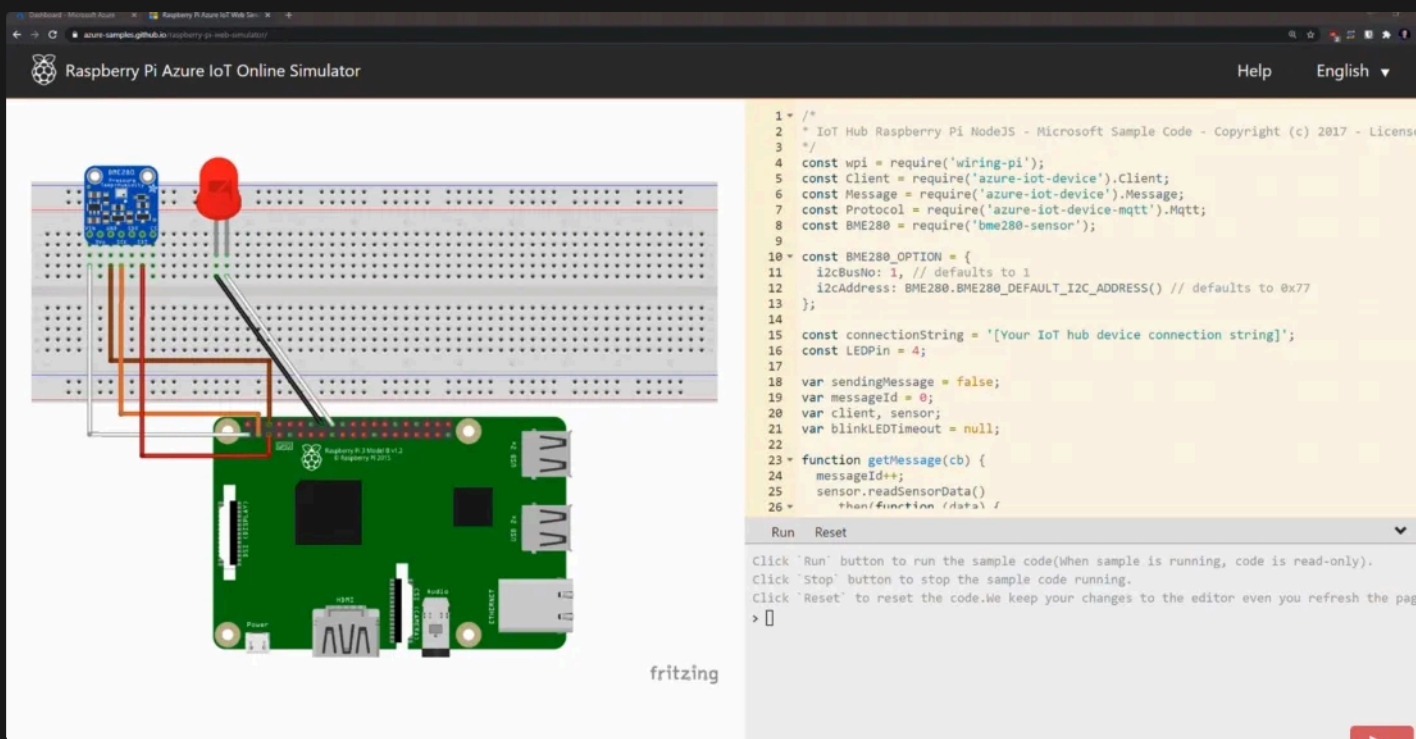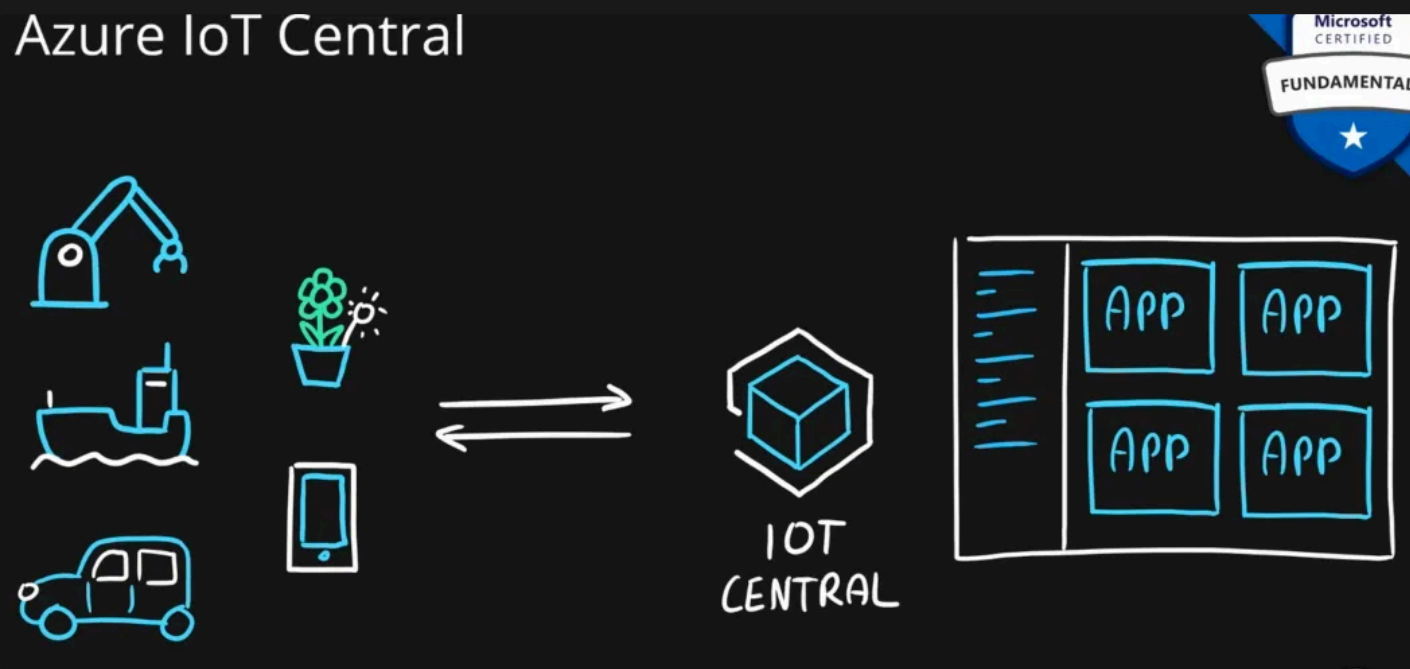

Azure IoT Hub

Azure IoT Hub

Key Characteristics

- Managed service for bi-directional communication

- Platform as a Service (PaaS)

- Highly secure, scalable and reliable

- Integrates with a lot of Azure Services

- Programmable SDKs for popular languages (C, C#, Java, Python, Node.js)

- Multiple protocols (HTTPS, AMQP, MQTT)

Raspberry Pi Azure IoT Online Simulator — Raspberry Pi Azure IoT Web Simulator

```
1  /*
2   * IoT Hub Raspberry Pi NodeJS - Microsoft Sample Code - Copyright (c) 2017 - License
3   */
4  const wpi = require('wiring-pi');
5  const Client = require('azure-iot-device').Client;
6  const Message = require('azure-iot-device').Message;
7  const Protocol = require('azure-iot-device-mqtt').Mqtt;
8  const BME280 = require('bme280-sensor');
9
10 const BME280_OPTION = {
11     i2cBusNo: 1, // defaults to 1
12     i2cAddress: BME280.BME280_DEFAULT_I2C_ADDRESS() // defaults to 0x77
13 };
14
15 const connectionString = '[Your IoT hub device connection string]';
16 const LEDPin = 4;
17
18 var sendingMessage = false;
19 var messageId = 0;
20 var client, sensor;
21 var blinkLEDTimeout = null;
22
23 function getMessage(cb) {
24     messageId++;
25     sensor.readSensorData()
26         .then(function (data) {
```

Run   Reset

Click 'Run' button to run the sample code(When sample is running, code is read-only).
Click 'Stop' button to stop the sample code running.
Click 'Reset' to reset the code.We keep your changes to the editor even you refresh the page
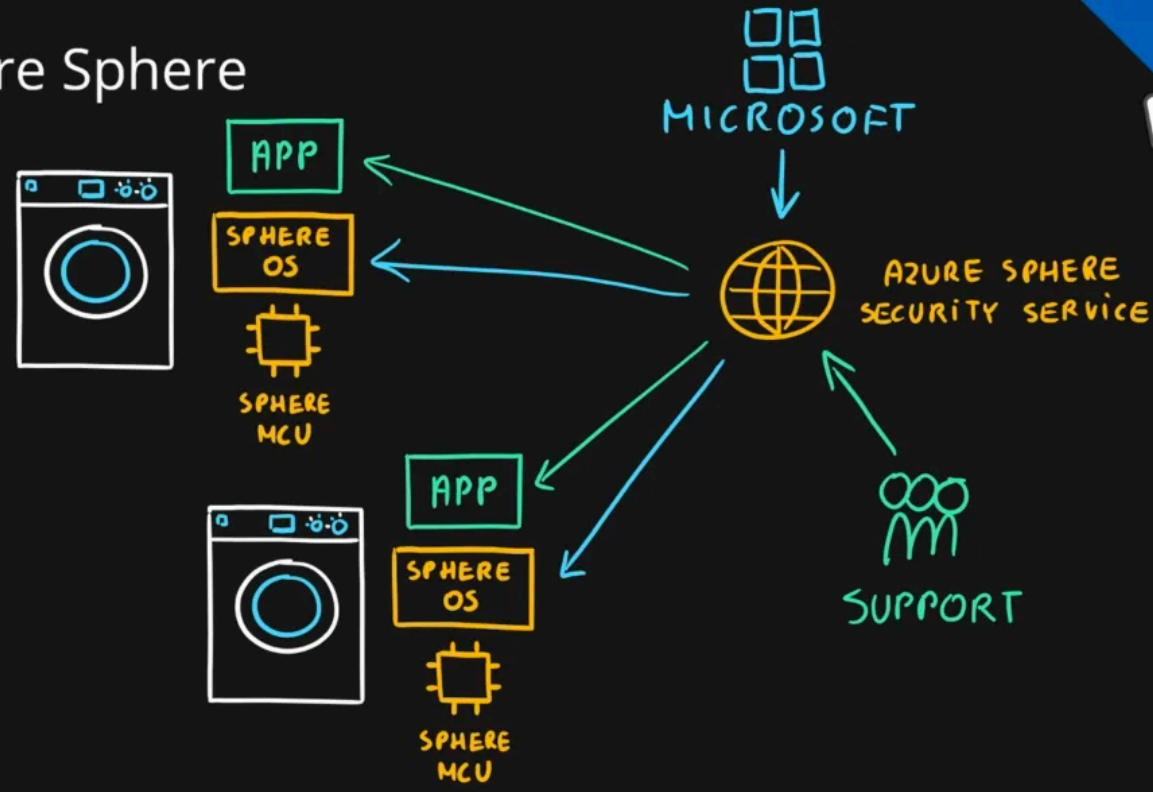
> []

Azure IoT Central

Key Characteristics

- IoT App Platform - Software as a Service (SaaS)
- Industry specific app templates
- No deep technical knowledge required
- Service for connecting, management and monitoring IoT devices
- Highly secure, scalable and reliable

Azure Sphere

Key Characteristics

- Secure end-2-end IoT Solutions
    - Azure Sphere certified chips (microcontroller units - MCUs)
    - Azure Sphere OS based on Linux
    - Azure Security Service trusted device-to-cloud communication

Summary

- IoT Hub – managed service for bi-directional communication with IoT devices, PaaS

- IoT Central – IoT application platform, dozen of functionalities, SaaS

- Azure Sphere – end-2-end approach for building secure IoT solutions