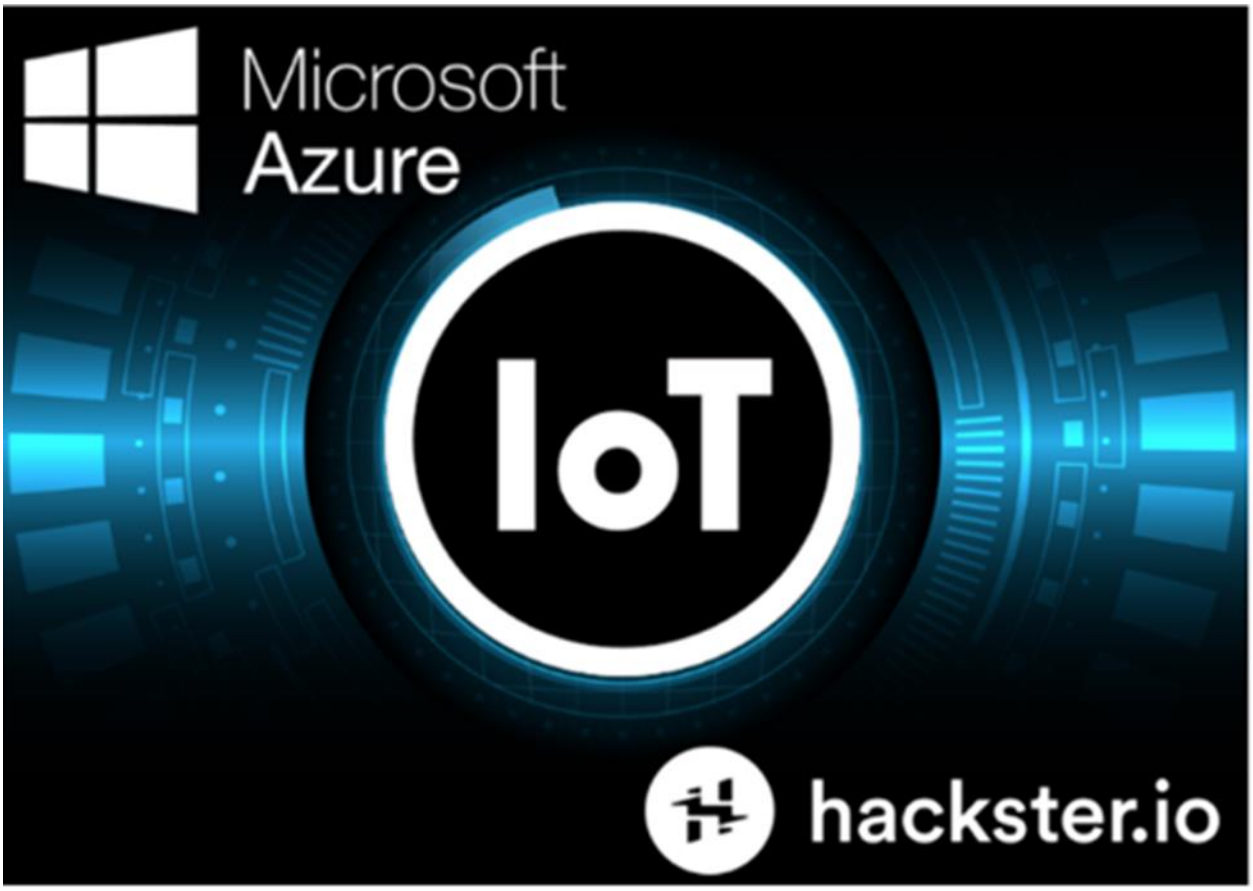

Azure IoT for the Enterprise Maker

Laptop Setup and Road Map

Abstract: This workshop is part of the joint Microsoft and Hackster LIVE event series. This workshop introduces the "enterprise maker" to the Azure IoT portfolio and provides a hands on experience with the Azure IoT Hub, Azure Functions, Azure Web Apps and Power BI. At the end of this workshop, the student will have created a simple, end-to-end IoT platform.

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Microsoft

CONTENTS

1 LAB PREREQUISITES

Before starting the labs, the student laptop must be setup with a few software tools.

The steps in this section must be done **PRIOR** to arrival at the workshop.

1.1 WINDOWS 10 (REQUIRED)

This lab uses features that are only found in Windows 10 and so, a Windows 10 operating system is required. Additionally, other Microsoft IoT workshops also require Windows 10. For example, use of IoT Dashboard required Windows 10 – if your using Azure and learning IoT; then you must be on Windows 10.

You may download and install Windows 10 for free and then have 30-days to register. If you are not able to install or re-image your current computer/laptop; consider using a fast USB 3.0 external drive and create an external, dual-boot configuration for your learning.

Your PC must be running (at a minimum) a 64-bit version of Windows 10 Anniversary Update.

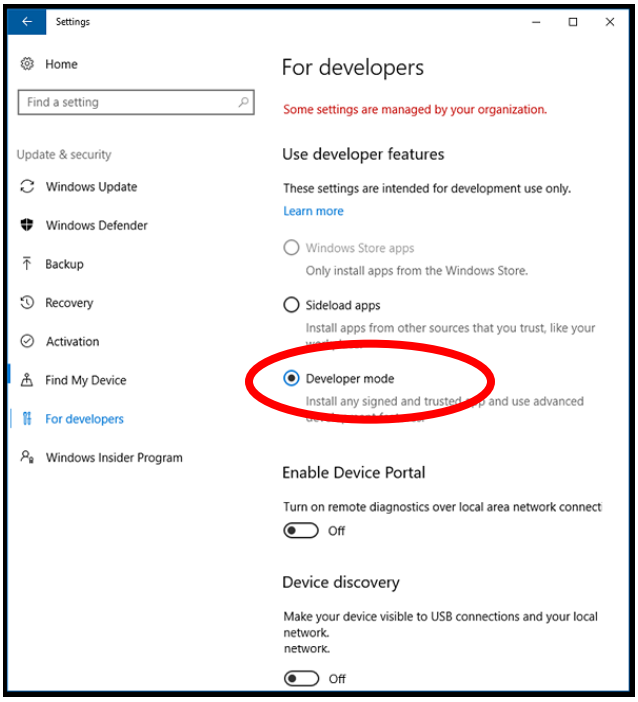
1.1.1 Developer Mode (Required)

When using a Windows 10 computer with Visual Studio, it is necessary to enable Developer Mode. Developer Mode replaces the Windows 8.1 requirements for a developer license.

To enable Developer mode, or access other settings:

1. Open the **Settings app > Update & Security**.
2. Click on For developers in the left side.
1. From the For developers settings dialog, choose the level of access that you need.
2. Read the disclaimer for the setting you chose, then click Yes to accept the change.

   Here's the settings page on the desktop device family:



1.2 Chrome Browser (Required)

This lab relies heavily upon JavaScript and Node.js. At the time of this writing, the Edge browser was experiencing some intermittent issues (known issues and slated to be fixed in an upcoming update) with some of the lab code so please install the Chrome browser prior to arriving at the workshop.

1. Visit **google.com/chrome**
2. Install the latest version of the browser.

Chrome is the browser to use with this workshop today.

1.3 Wi-Fi Hotspot (Recommended)

Students are **STRONGLY URGED** to provide their own Wi-Fi hotspot for this workshop. While every attempt to provide a free, public wireless (Wi-Fi) connection will be made; there is no guarantee of availability or reliability. Test your laptop and wi-fi hotspot prior to arriving at the workshop and remember to bring additional power cables for your hotspot device.

1.4 VISUAL STUDIO 2017 COMMUNITY (REQUIRED)

Visual Studio provides many benefits to the developer, cloud operator and IoT device developer. Students will need Visual Studio 2017 Community version.

If you already have another version installed and, licensed, then this step may be skipped.

The packages below should cover this and all other Azure IoT workshops and projects you may encounter as you learn.

1. Visit **visualstudio.com** to sign up for a free copy and install
    a. Universal Windows Platform development
    b. .NET desktop development
    c. Azure development
    d. Node.js development
    e. Data storage and processing
    f. Data science and analytical applications
2. The total download for these options in around 16GB and installation takes a bit of time to complete, so please do this prior to arrival.

1.5 MICROSOFT AZURE (REQUIRED)

A Microsoft Azure account and active subscription are needed for this lab.

1.5.1 Microsoft Azure Account

If you already have an Azure account, you may skip this section. But consider setting up a new account using a new MSA, so you may enjoy the free 30-days and $200 credit (subject to change).

1. Open a browser and navigate to **azure.microsoft.com**
2. Click **FREE ACCOUNT**
    a. Get a free credit, try many of the services and pay nothing at the end
3. Click Start FREE
    a. Login using the MSA just created, or use an existing MSA
    b. You will be required to use a credit card to validate identity
4. After completing, login in to the new Azure account.

1.5.2 Azure Subscription

In the case of a new account, Microsoft provides the first 30 days free along with a $250 credit. If you already have an account and the free trial period has ended, then you will need to setup a paid subscription. This lab is only 4 hours long and will use typically less than $5 of usage and you may delete all the lab assets after completing the labs. Creating a Pay-As-You-Go subscription is the good option in this case.

1.6 Microsoft Azure Storage Explorer (Required)

Microsoft Azure Storage Explorer (Preview) is a standalone app from Microsoft that allows you to easily work with Azure Storage data on Windows, macOS and Linux.

1. Visit **storageexplorer.com**
2. Install the latest Windows version
    a. At the time of this writing, the current version was 0.8.13 dated May 12, 2017

1.7 Node.js for Windows (Required)

Node.js is a JavaScript runtime built on Chrome's V8 JavaScript engine. Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient.

Node.js' package ecosystem, npm, is the largest ecosystem of open source libraries in the world.

1. Visit **nodejs.org**
2. Install v6.10.3 (most recent) LTS

1.8 Other Recommendations

This is a large and long event, so plan and bring a few extra items:

1. HotSpot, as mention before, this is a strong recommendation
2. Sweater or light jacket, room temperatures can vary
3. Power supplies for laptop, cellular device and/or hotspot device
4. An extension cord with multiple outlets, be a good neighbor and share the power
5. Water and a snack, air conditioned rooms can dehydrate a body more quickly and while there will be soft drinks provide in most cases, be prepared just in case

2 MAC OS X

Yes, Mac users, you can participate. You need a virtual machine with Windows 10.

- You may down Windows for 10 for free, and use it for 30 days before it will require registration.
    - https://www.microsoft.com/en-us/software-download/windows10
- You may download and install VMware Fusion for free and get 30 days before requiring registration.
- Other VM products have been reported to work as well; students in previous labs have successfully run Windows 10 on a Max using Parallels and VirtualBox.

Whichever virtualization products you may choose, create a virtual machine with at least 2 vCPU and 2GB of vRAM and 60GB of vHDD is recommended. What we tested

A Mac mini was tested for being able to support this workshop, please be mindful your experience may be different.

- Mac mini (Late 2012)
    - 2.3 GHz Intel iCore 7
    - 16 GB 1600 MHz DDR3
- macOS Sierra (10.12.5)
- VMware Fusion 8 Pro (v8.5.7)

Create a new virtual machine:

- Guest OS: Windows 10 x64
- Option: New Hard Disk
- Capacity: 60 GB
- CPU: 2
- Memory 2 GB

Installed Windows 10 Pro (from USB)

- Windows 10 Pro
    - Version: 1703
    - OS Build: 15063.XXX

To test, the Mac mini was wiped clean and loaded with a fresh copy of the operating system, then all Apple updates applied. VMWare Fusion as then installed and all updates applied. Windows 10 was installed and all updates applied. The rest of the steps found in this section where then successfully applied and the entire lab performed.

3 ROADMAP VISUAL

This workshop touches upon all the basic Azure components used to build a simple IoT solution. Students often benefit from taking the time before the workshop to at read the **Overview** section on azure.microsoft.com for these products.

In the lab, students will build this end-to-end solution with inputs being driven by two virtual devices.

This workshop is very much about what happens AFTER a device sends data "to someplace in the cloud".