Installing the Tools to Develop for the HoloLens

I'm glad you have joined us here at Learn HoloLens! This quick guide will get you going quickly so you can install all the tools you need to start developing for the HoloLens – even if you don't have a device!

Required Operating System and RAM

All of the tooling you need to get started developing for the HoloLens is free as long as you have a 64-bit Windows 10 Pro, Enterprise, or Education machine. Windows 10 Home does not support Hyper-V. The 64-bit machine should have at least 8GB of RAM.

Hyper-V is Required

Hyper-V is 64-bit only and requires a 64-bit (x64) processor. Hyper-V requires Hardware Data Execution Prevention. Any modern PC will have this protection. Intel refers to this protection as Execute Disable (XD). AMD refers to the protection as No Execute (NX). The feature must be enabled in the BIOS.

Second Level Address Translation (SLAT) is required since the HoloLens Emulator uses RemoteFX. Intel refers to this as Extended Page Tables (EPT). AMD refers to this as Nested Page Tables (NPT) or Rapid Virtualization Indexing (RVI). These options are usually on by default in the BIOS.

Hyper-V does not utilize some hardware features and enabling them will prevent Hyper-V from loading. In particular, Intel VT-d must be disabled and Trusted Execution must be disabled. Otherwise, Hyper-V won't launch and you will find errors in the system's Event Log.

Finally, Hyper-V requires hardware Data Execution Prevention (DEP). DEP is a system-level memory protection feature that is built into the operating system. It prevents code from being run from data pages such as the default heap, stacks, and memory pools. More information on DEP can be found on MSDN.

GPU Requirements

The GPU on the computer must support DirectX 11.0 or later. It must have a Windows Display Driver Model (WDDM) of 1.2 or higher. The HoloLens emulator may work with an unsupported GPU, but it will run very slow.

To check the version of DirectX installed on your computer, type "dxdiag" in the search to run that application. At the bottom you will see the version of DirectX you have. Information on installing the latest version can be found at https://support.microsoft.com/en-us/kb/179113.

Enable Hyper-V in Windows

Besides making sure hardware supports Hyper-V and setting the appropriate BIOS settings for your system, you will need to enable Hyper-V inside of Windows itself. Open the Turn Windows Features On or Off section by hitting the Windows key on your keyboard and starting to type "Turn Windows Features".
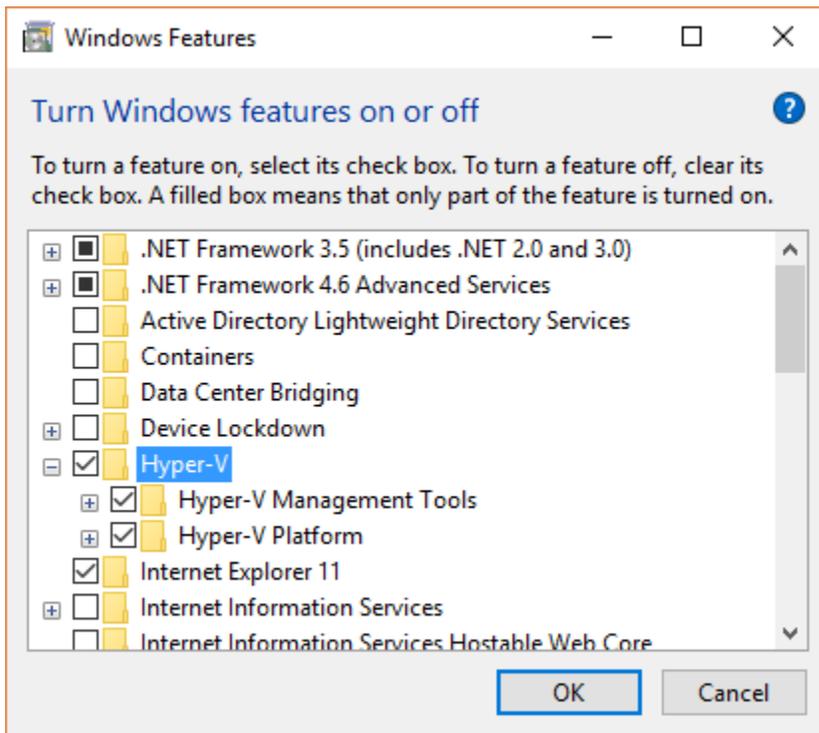
Make sure to check the box beside Hyper-V to enable it on Windows.

Go ahead and reboot your computer now to avoid any issues down the line.

Install Visual Studio

HoloLens development will work with all editions of Visual Studio 2015. This includes the Community edition, which is free in certain situations.

Make sure you obtain the latest Update. As of this writing, it is Update 3. You can download Visual Studio at https://developer.microsoft.com/en-us/windows/downloads.

Make sure that Tools (1.4) and Windows 10 SDK (10.0.10586) is enabled under the Universal Windows App Development Tools node.

Go ahead and reboot your computer after Visual Studio is installed to avoid any issues down in the future.

Install the HoloLens Emulator

The emulator must be downloaded separately. The latest version as of this writing is 10.0.14393.0. You can download the latest version at https://developer.microsoft.com/en-us/windows/holographic/install_the_tools.

If you do not have Hyper-V enabled or if your computer does not support the emulator, you will get an error.

After the emulator is installed, you should restart your computer before continuing.

Install Unity

This is optional, but it is the quickest way to create 3D apps and games for the HoloLens. As of this writing, the latest HoloLens compatible version of Unity is 5.5.0B7 (beta release). The latest beta version of Unity can be found at https://unity3d.com/unity/beta.

You can install either the 64-bit or 32-bit version of the Unity Editor. This installation of Unity can be installed side-by-side with any other version of Unity you may already have installed.
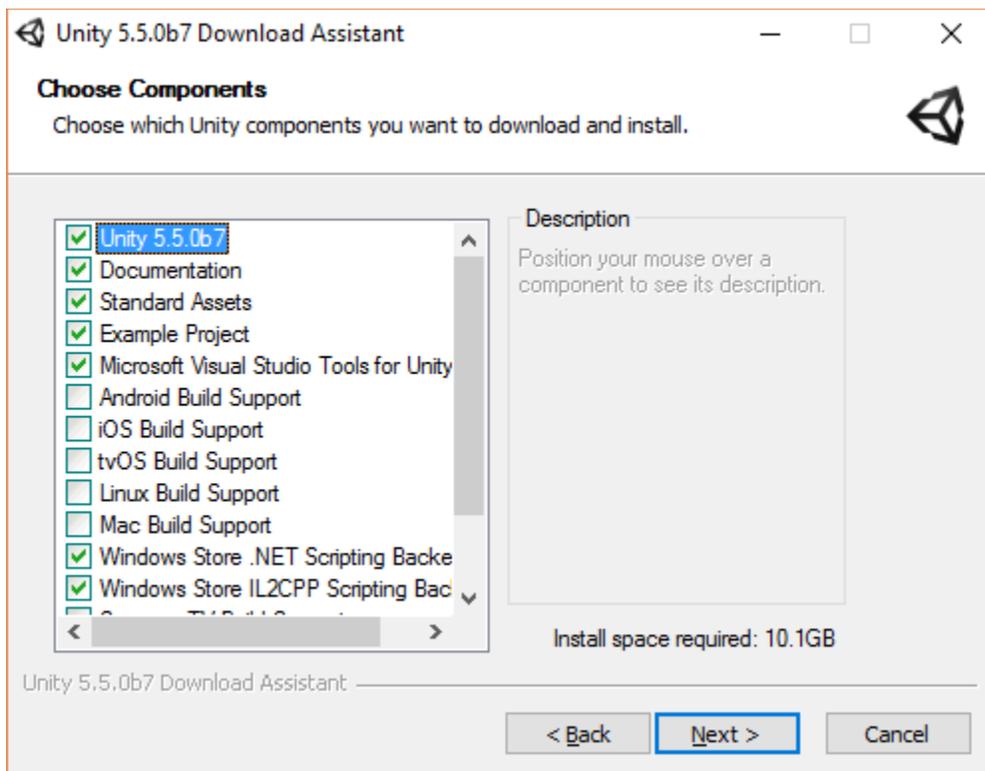
Notice that the defaults of Windows Store .NET Scripting Backend and Windows Store IL2CPP Scripting Backend and Microsoft Visual Studio Tools for Unity are all selected. Make sure they are selected when you install Unity.

You will also want to all Unity to communicate on your private and public networks. You will get a Windows Security Alert from Windows Firewall that it has blocked some features. Make sure you allow the Unity Editor to communicate on these networks.
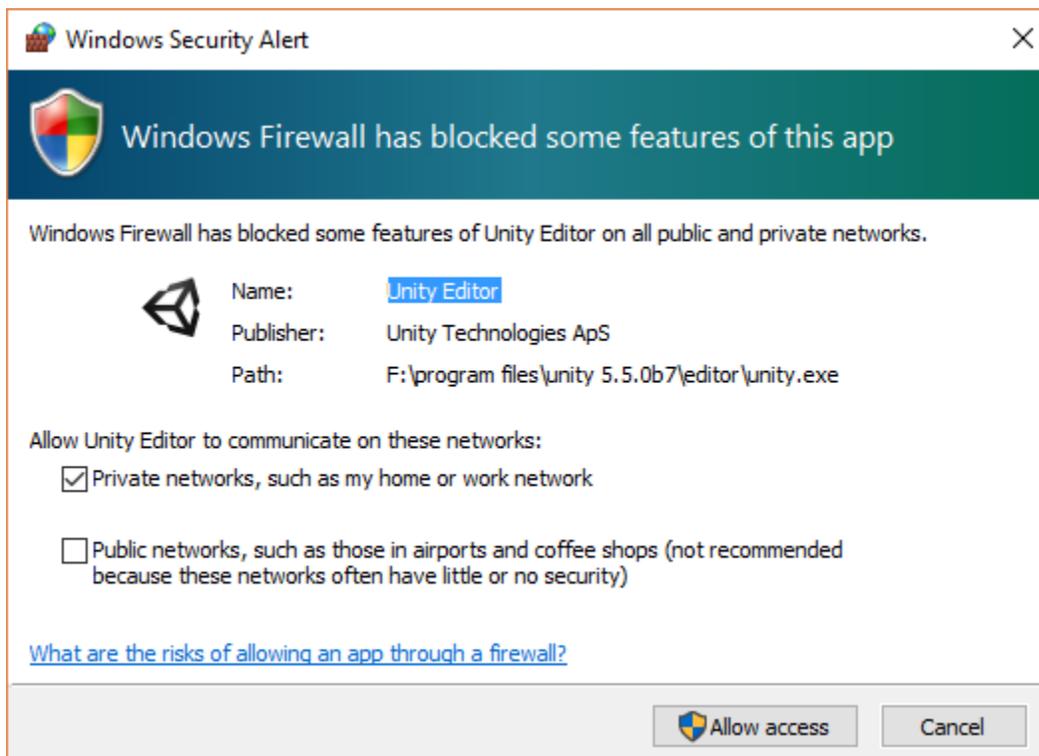
Conclusion

Besides the many reboots, getting your development environment setup for HoloLens development is pretty straight forward.

As long as you have the right machine, operating system, with Hyper-V enabled you should have no problems installing the tools. Again, take the time to reboot the machine between each install. It will save you headaches down the road.

Enjoy HoloLens development! The future is here and it is pretty awesome.