

Software Development

OPERATING SYSTEMS

HOW TO INSTALL A FRESH WINDOWS 10 BOOTED FROM UEFI SECURE BOOT USING A BOOTABLE USB

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Motivation:

Most of Windows machines are delivered with a limited Windows version and unnecessary preinstalled software.

You want to format the hard drive and install a fresh Windows that can be booted from UEFI secure boot to improve machine performance and stability.

Prerequisites:

You need to have a **8Gb** USB stick and an ISO file of **Windows 10, version 20h2**.

Solution:

Step 1: Backup your machine and create an USB recovery by entering “**Create a recovery drive**” text to the search box on the task bar and follow the instructions.

Step 2: Create a bootable USB with Windows installation files.

Right click Windows logo, click **Command Prompt (Admin)**.

Enter **diskpart.exe**, press **Enter**.

```
DISKPART> list disk
```

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```
DISKPART> select disk 1 -- the USB disk should be selected, the number may be different in your machine.
```

```
DISKPART> clean
```

```
DISKPART> create partition primary size=1024
```

```
DISKPART> select partition 1
```

```
DISKPART> active
```

```
DISKPART> format quick fs=fat32
```

```
DISKPART> assign
```

```
DISKPART> create partition primary
```

```
DISKPART> select partition 2
```

```
DISKPART> format quick fs=ntfs
```

```
DISKPART> assign
```

```
DISKPART> exit
```

Double click on the ISO file of **Windows 10, version 20h2** to create a virtual drive.

```
xcopy f:\sources\boot.wim d:\sources\ /s /e
```

where

f: the virtual drive and

d: the USB **fat32** partition.

We copy only the **f:\sources\boot.wim** file to **d:\sources**.

```
robocopy f:\ d:\ /IS /S /XD sources
```

where

f: the virtual drive and

d: the USB **fat32** partition.

We copy everything from **f:** to **d:** except the **sources** folder.

```
xcopy f:* e:\ /s /e
```

where

f: the virtual drive and

e: the USB **ntfs** partition.

Step 3: Install Windows.

1. Plug the USB to a machine.
2. For a Dell laptop, power on the machine, press F12 until a one-time boot up menu appears. Select the option to boot the machine from the USB. (You may need to access BIOS to enable the option to boot the machine from an USB).
3. For a Sony VAIO laptop, power off the machine, then press the Assist button to enter VAIOCare. Select the option to boot the machine from the USB. (You may need to access BIOS to enable the option to boot the machine from an USB).
4. For a ThinkPad laptop, power on the machine, press F12 until a one-time boot up menu appears. Select the option to boot the machine from the USB. Alternatively go to **Settings > Update & Security > Recovery**, click the **Restart now** button under the **Advanced setup** section and follow the instructions to boot the machine from a USB.

5. Follow the instructions to install Windows. Set Windows partition size to **512622Mb** for DellPrecision if you want to have **500Gb** C drive, or **262789Mb** for DellXPS if you want to have a **255Gb** C drive, or **819815Mb** for ThinkPad if you want to have a **800Gb** C drive.
6. You can delete all the partitions, including **MRP** (Microsoft Reserved Partition – this is just a reserved partition for Windows later use if needed), **ESP** (EFI System Partition – this is where UEFI firmware files are stored to boot Windows), **WINRETOOLS** (Windows Recovery Environment (WinRE) Tools – this is where files for repairing or recovering Windows are stored), and **PBR** image (this is where original the manufacture Windows installation file are stored) because you already created an USB recovery in the Step 1.

Step 4: Configure Windows for Developer's needs.

1. Change Computer Name, turn off System Restore, enable Remote Desktop.
2. Add Wireless LAN Service feature for Windows Server 2019.
3. For a Dell laptop, install [Dell Wireless 1820A 1830 WiFi Driver](#). Set battery charge threshold value to 50% in BIOS.
4. Change Time Zone.
5. Turn on **Network discovery and file sharing** by clicking on Network icon on the left side of Explorer.
6. Activate Windows.
7. Disable Hibernation (*powercfg.exe /h off*), configure Power options (Hard disk >> Turn of hard disk after: 0, Wireless Adapter Settings >> Power Saving Mode: Maximum Performance, Sleep >> Sleep after: 0).
8. Uninstall unnecessary applications.
9. Use the **manage-bde -status** command to show BitLocker status (There is a space between bde and status). Use the **manage-bde -off C:** command to turn off BitLocker for the C drive.
10. For a Dell laptop, install Dell Command Update and use it to install necessary drivers.
11. For Windows Server 2019, install Chipset Device, Graphics, Audio, Ethernet, Bluetooth, Memory Card Reader, Dynamic Platform and Thermal Framework driver.
12. For a ThinkPad laptop, install Lenovo Vantage. Set battery charge threshold value to 40% using Lenovo Vantage.
13. Turn the following Windows features on: .NET 3.5, ASP.NET 4.8, Internet Information Services, Telnet Client.
14. Install Total Commander, MS Office 2007 SP3, MS Project 2016, MS Visio 2016, MS SQL Server 2008 R2, Visual Studio 2015, Adobe Acrobat Pro DC v15.8, Adobe Photoshop CC 2015, [TortoiseSVN 1.14.0](#)
15. Install [Remote Desktop Connection Manager](#), [PuTTY 0.7.3](#), [WinSCP 5.17](#).
16. Create a VPN connection. Configure the VPN connection.

Go to **Control Panel >> Network and Sharing Center >> Change adapter settings**
Right click >> VPN Connection's Properties >> Select the **Networking** tab:
- Disable Internet Protocol Version 6 (TCP/IPv6).

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- Select Internet Protocol Version 4 (TCP/IPv4) >> Properties >> Advanced... >> select the **IP Settings** tab: Uncheck the **Use default gateway on remote network** option.

17. Install [Python 3.6.8](#), TensorFlow, Keras
18. Install [Firefox](#), [MPC-HC.1.7.13](#). (Go to **View** >> **Options** >> **Player** and turn off all options under the **History** section. Go to **View** >> **Options** >> **Playback** and disable the **Auto-zoom** feature.)
19. [Turn on Automatic Logon](#).
20. Configure secure protocols using [IIS Crypto GUI](#) (Select Best Practices, disable TLS 1.0, TLS 1.1, MD5, SHA).
21. Install Hyper-V, create an external Virtual Switch for Internet access, [set Scheduler Type to Core](#).
22. Apply Windows updates to the machine.

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