

Guide to install and optimize Windows 10 LTSC

Last update: 1 Nov 2025

! PAY ATTENTION ! :

Previously there was an ISO debloating section in this guide which I have now **REMOVED** as it's causing too many problems for people following it that shouldn't be following it. This guide should be removed from the /fwf/ paste to be honest.

Note: Some of the optimizations here might not work for you or they might not be useful for the kind of usage you do with your computer. Simply take them as inspiration for your optimization and pick what's useful for your particular case.

! This guide loads screenshot images from a third-party site: [Imgbb](#).

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! Backup your important files (browser configs, photos, documents, passwords etc) in a safe place before installing a new Windows!

A note on Windows versions

You might still be wondering which version of Windows 10 LTSC you should install.

The answer is always **Windows 10 IoT Enterprise LTSC** and the reason why is because LTSC *IoT* has longer servicing support, ending in **2032** versus **2027** for *non-IoT* LTSC. There are no other differences between the two versions, outside of the activation methods.

Although the tweaks will work for other versions of Windows, they require more work and debloating.

LTSC is the *best* base to start because it doesn't come with a lot of the annoying "features" and Microsoft integration of Windows 10 Home/Pro.

I want to install X language instead of English.

Always get the *en-US* image, we can install other language packs during optimization or after we're done installing the system.
LTSC *IoT* only has an English ISO, *non-IoT* has other languages.

Can LTSC IoT play vidya?

Yes, it can. There are no compatibility differences between versions.

Is LTSC slower than other versions of Windows?

No, and not since version 20H2 (guessing you're talking about the Windows 10 thread scheduler and Ryzen CPUs?).

! Tip: Update your BIOS to the latest version your manufacturer provides so you can make full use of new Intel and AMD improvements. If you bought XMP RAM make sure the XMP profile is enabled in your BIOS to get the full benefits of your hardware.

Verify the image

This step is one of the *most important* when we're installing critical software on our system, yet a lot of people skip this.

⚠ Do not download weird Windows images off the internet, get your image straight from Microsoft!

After acquiring your LTSC IoT ISO you need to compare the hashes.

If you didn't download from Microsoft then go [here](#) and select your ISO version.

Look at the **SHA-256** and compare it to the hash of the ISO you downloaded.

How to get hashes on Windows?

It's very simple, there are a few methods:

- Open Powershell and type:

```
get-filehash "C:\PATH\TO\MY-WINDOWS-IMAGE.iso" -Algorithm SHA256
```

- Get a tiny program called [HashCheck](#) or [OpenHashTab](#) that nests itself inside the Properties menu of files, giving you an extra tab to easily calculate hashes.
- Programs like 7-Zip are also able to generate hashes.

Create a bootable USB disk

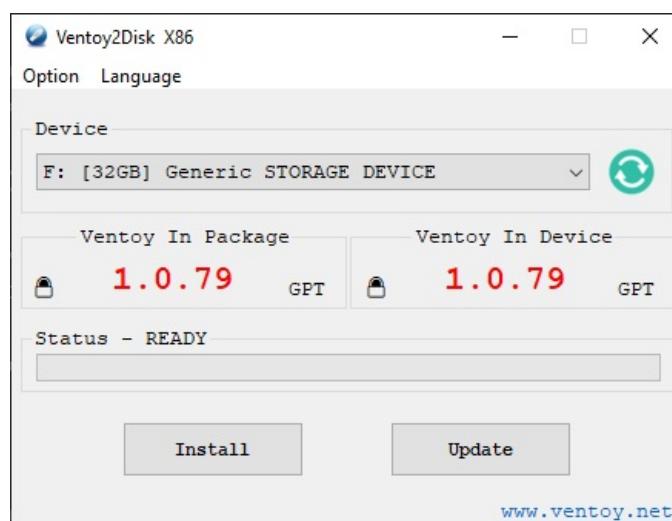
💡 Required: Some form of bootable media with more than 4 GB of disk space

To create a bootable USB disk and install our Windows image, we will use a tool called [Ventoy](#).

Ventoy is extremely easy to use and most interestingly is re-usable: you don't need to reformat the disk every time you want to try a new image.

It's as simple as dragging and dropping an image into the Ventoy partition and Ventoy will do all the heavy-lifting for you, you can even keep multiple images if you have the space for it.

Download the latest [Ventoy release](#) and unzip it, then launch **Ventoy2Disk.exe**.



Select your USB device, click *Install* and we're done!

Ventoy is now installed on the USB key and a large partition named "Ventoy" is ready for us to put our ISO images in.

❗ ATTENTION: If you're installing a custom Windows image on your main and only machine, I HIGHLY (!!!) recommend you keep an untouched, original Windows 10 ISO in your Ventoy partition as well. Trust me on this one, it'll save your ass if you need to re-install Windows and the custom image doesn't work correctly.

Before installing Windows

It's important to do some preparation before we boot into the Windows install process.

After **backing up** all our configs, drivers and files into a safe place, we should download a few **tools** we will need to configure our system **without an internet connection**.

Tools you should have:

- Graphics card drivers and driver trimming utility like [NvCleanstall](#) for Nvidia or [Radeon Software Slimmer](#) for AMD cards
- An archive file utility like [7-Zip](#), [WinRAR](#), [PeaZip](#) etc.
- A software firewall for WFP (Windows Filtering Platform) such as [SimpleWall](#), [TinyWall](#) or one to control the native Windows Firewall more easily e.g. [Windows Firewall Control](#)
- Your favorite tool to tweak Windows settings: e.g. [Winaero Tweaker](#), [Autoruns](#)
- A full package (i.e. not the net installer) browser like Firefox or Chrom* flavor if you fully removed IE and Edge
- Other software you commonly install and registry tweaks you like to apply
- This guide!

💡 Tip: If you have the space for it, you can put these files in a separate folder in the Ventoy partition.

Boot into USB

After rebooting simply press F10, F12, Delete, Esc or the equivalent for your BIOS to boot into the Ventoy USB key.

I can't boot into my USB.

Disable **Secure Boot** in your BIOS settings.

Check if you're booting in **UEFI** mode, alternatively that **CSM support** is disabled or configured for **UEFI**.

Install Windows

The installation process should be pretty straight-forward.

⚠ Please double, triple check where you are installing Windows and which partitions you are deleting if any.

💡 At this point of the install, I recommend you disconnect your device from the Internet so Windows won't be able to connect just yet.

Pick **Custom Install** and delete any partitions on the disk, let Windows fill the whole disk.

We can deal with shrinking or making new partitions later as Windows likes to install a 500 MB recovery partition right after the Windows partition and this complicates disk management.

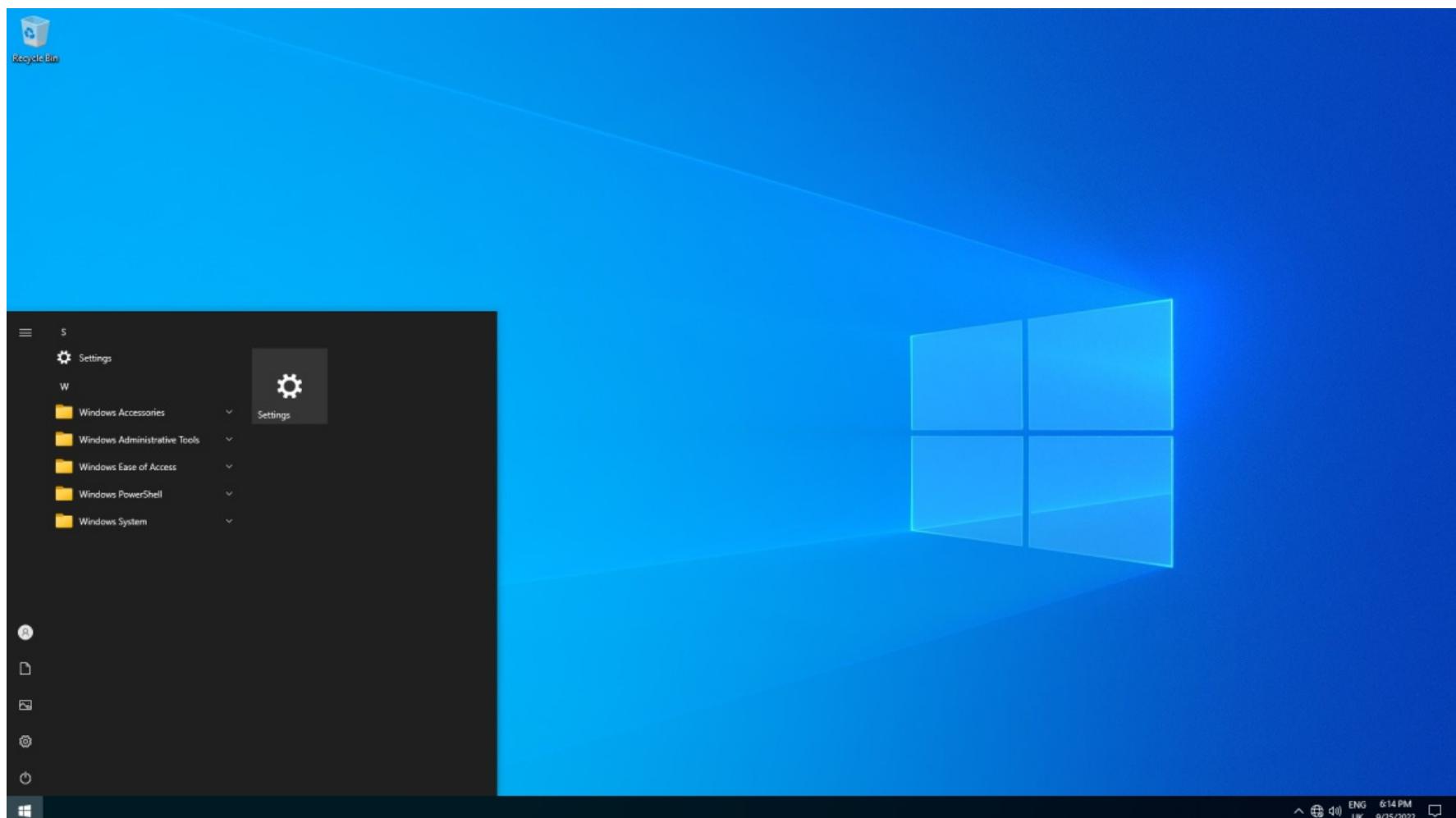
Out Of Box Experience

After Windows installs, the system will boot into **Out Of Box Experience (OOBE)** where you get to select your language, keyboard, user name and privacy settings.

- When it asks you to connect to the Internet (if you're offline), pick **Continue with limited setup** at the bottom.
- When it asks you for a Microsoft account, pick **Domain join instead** or **Use Local Account** at the bottom.
- **Disable everything** when it asks you to "Choose your privacy settings".

Proceed with the configuration, let it reboot and you should finally set foot in your shiny new Windows system.

If you did everything correctly, this is how barebones it should look:



Perfection, now on to configuring everything...

Common questions and problems

The initial setup is asking me for a product key.

Choose "I don't have a product key", if you have a genuine key stored on your system it will activate Windows automatically. If not, then you'll have to use HWID activation with [MAS](#) once you login into Windows.

Which operating system should I install?

If you did things right in the guides before it wouldn't be asking that question, but always pick *IoT Enterprise LTSC*.

The installation crashes during setup (OOBE).

You removed essential Windows install components and the setup can't proceed. Start over.

The installation crashes after setup (OOBE) and doesn't boot into Windows (Why did my PC restart?).

Let it connect to the internet and try to repair itself, if it doesn't and gets stuck in a boot loop you likely removed some essential Windows component and will need to start over.

That usually means the ISO is bad, but sometimes the solution is to disconnect all drives except the one you want to install Windows on. Check your USB settings in the BIOS and try other USB ports.

⚠ Everything below is done at your own risk!

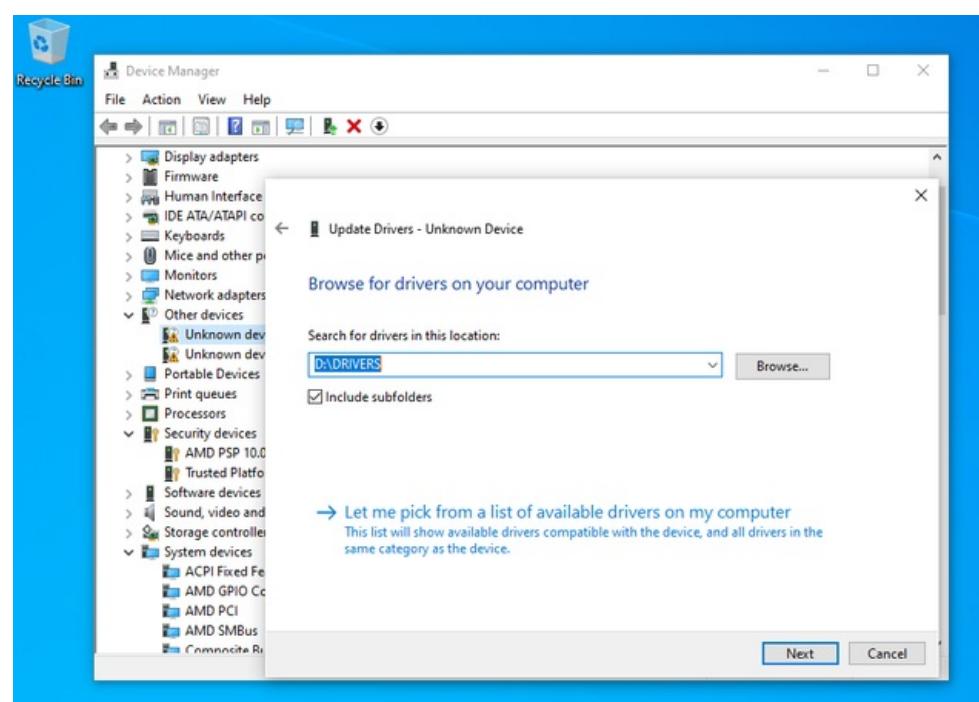
Post-install tweaking

Before connecting to the Internet and launching Windows Update, we have a few tasks to do.

Install drivers

Right after installing we should look for any missing drivers in our system.

Point Windows to the backup folder of your drivers if you have any.



Install and debloat graphics card drivers

Both **AMD** and **Nvidia** driver packages have increased tremendously in features and **telemetry** over the past years, but we don't want any of that on our system. Using tools like [NvCleanstall](#) for Nvidia and [Radeon Software Slimmer](#) for AMD cards, we can seriously trim down the drivers to the bare minimum we need and remove all the phoning home.

AMD:

- Disable all packages except for AMD Catalyst Settings and the drivers
- Disable all Scheduled Tasks

Nvidia:

- Keep only the required display driver components
- Depending on your needs keep PhysX, HD Audio via HDMI, Optimus (for laptops)
- Disable all types of telemetry
- Enable MSI (leave at default) and any patches

Once installed launch their respective control panels and configure everything.

You should disable their **background services** after so they don't run in the background doing nothing.

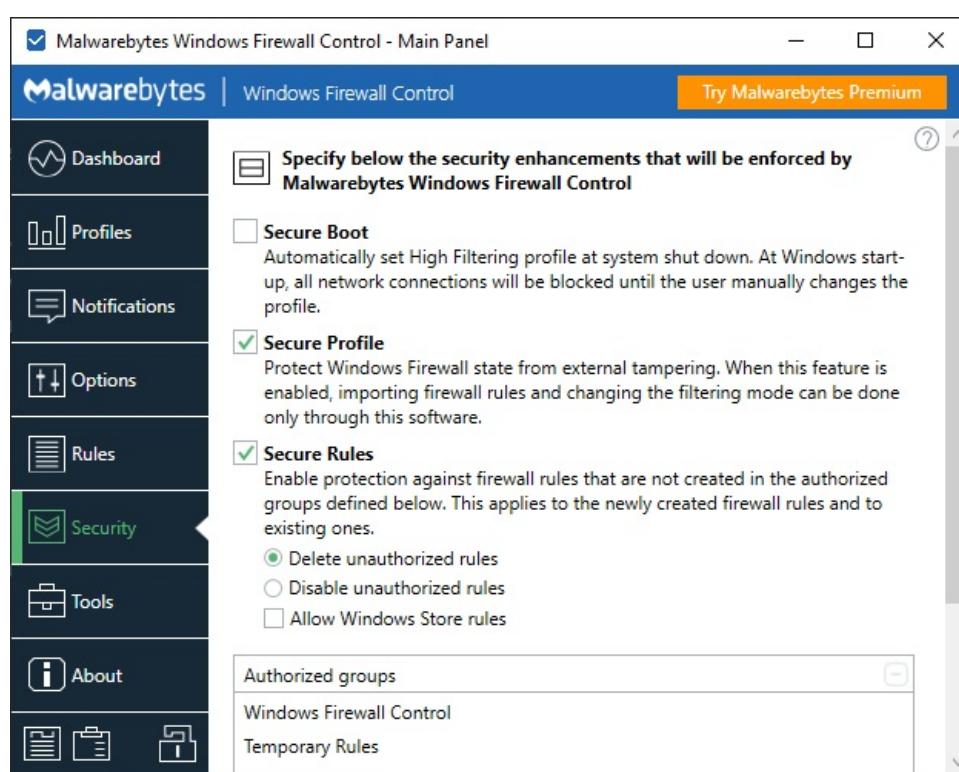
Install a firewall

Nowadays, almost all malware tries to phone home so we don't want anything connecting to the internet without our consent, I highly recommend you install one of the firewalls mentioned [above](#) and familiarize yourself with the one that suits you best. They are all lightweight, fairly easy to use and will be your first line of defense.

About Windows Firewall

Even though they can both work together, you don't need **Windows Firewall** to be enabled to use firewalls like Simplewall or Tinywall because they use the [Windows Filtering Platform \(WFP\)](#) which is the underlying technology the Windows Firewall rests upon.

You should note however that if you still have **Windows Firewall** enabled that it can take precedence over the other firewalls, and most importantly that in its default configuration pretty much any software can introduce and remove rules from it, sometimes even without your knowledge. **Windows Filtering Platform** has several layers that traffic goes through and some layers have higher priority over others as shown in the [documentation](#) ("Network traffic traverses sub-layers from the highest priority to the lowest priority. "). This is a complicated technical topic, I recommend you read these simplewall issues [here](#) and [here](#) if you're interested.



If you find the native Windows Firewall too complicated to configure then I can recommend [Windows Firewall Control](#), it's what I personally use (not a shill, it's been bought out by Malwarebytes recently but it's still excellent software!). This program has the ability to protect Windows Firewall from external tampering and only firewall rules made through the program are allowed to be set. If you use use this, don't use Simplewall or TinyWall at the same time of course.

Antivirus & Security

I don't recommend you use an active antivirus (including Windows Defender) unless you're permanently downloading and using files from dodgy places. They can slow down your computer and introduce **stutters and latency** when you're doing CPU/GPU intensive tasks.

Anti-viruses continually run in the background and scan your every move, most commercial ones also like to **phone home** frequently.

How to scan for viruses

If you suspect something is wrong, Windows has a native virus scanner for most common infections called [Windows Malicious Software Removal Tool \(MRT\)](#) that gets updated every month through Windows Update.

You can launch it by simply searching for **MRT** from the Start menu.

Use an online scan service like [VirusTotal](#) before you open a suspicious file or archive.

Keep a portable instance of [ClamAV](#) for whenever you need it.

User Account Control

Keep this enabled at the Default setting, it's good to have and keeps you alert even if it can be annoying.

Configure Windows

Services

This is where we can reduce the footprint and resource usage of our system quite a bit. Check the official [Microsoft documentation](#) on disabling services if you want a more safe guide.

⚠ This part is a lot more experimental and highly dependent on the usage you make of your system. Disabling the wrong services for things you need WILL lead to breakage!

The simplest way to disable services is through **services.msc** tool.

Go into Start Menu and search for the "**Services**" App.

Expand the *Name* column and then order everything by *Status* "Running", you'll see some 80 or more services running.

Name	Description	Status	Startup Type	Log On As
Application Information	Facilitates t...	Running	Manual (Trigger Start)	Local System
AVCTP service	This is Audi...	Running	Manual (Trigger Start)	Local Service
Background Tasks Infrastructure Service	Windows in...	Running	Automatic	Local System
Base Filtering Engine	The Base Fil...	Running	Automatic	Local Service
Bluetooth Audio Gateway Service	Service sup...	Running	Manual (Trigger Start)	Local Service
Bluetooth Support Service	The Bluetoo...	Running	Manual (Trigger Start)	Local Service
Clipboard User Service_1d34fc	This user ser...	Running	Manual	Local System
CNG Key Isolation	The CNG ke...	Running	Manual (Trigger Start)	Local System
COM+ Event System	Supports Sy...	Running	Automatic	Local Service
Connected Devices Platform Service	This service ...	Running	Automatic (Delayed Start,...)	Local Service
Connected Devices Platform User Service_1d34fc	This user ser...	Running	Automatic	Local System
Connected User Experiences and Telemetry	The Connec...	Running	Automatic	Local System
Contact Data_1d34fc	Indexes con...	Running	Manual	Local System
CoreMessaging	Manages co...	Running	Automatic	Local Service
Credential Manager	Provides se...	Running	Manual	Local System
Cryptographic Services	Provides thr...	Running	Automatic	Network Service
Data Usage	Network da...	Running	Automatic	Local Service
DCOM Server Process Launcher	The DCOML...	Running	Automatic	Local System
Device Association Service	Enables pair...	Running	Manual (Trigger Start)	Local System
DevicesFlow_1d34fc	Allows Con...	Running	Manual	Local System
DHCP Client	Registers an...	Running	Automatic	Local Service
Diagnostic Policy Service	The Diagnos...	Running	Automatic	Local Service
Diagnostic Service Host	The Diagnos...	Running	Manual	Local Service
Display Policy Service	Manages th...	Running	Automatic (Delayed Start)	Local Service
Distributed Link Tracking Client	Maintains li...	Running	Automatic	Local System
DNS Client	The DNS Cli...	Running	Automatic (Trigger Start)	Network Service
Human Interface Device Service	Activates an...	Running	Manual (Trigger Start)	Local System
IKE and AuthIP IPsec Keying Modules	The IKEEXT ...	Running	Automatic (Trigger Start)	Local System
IP Helper	Provides tu...	Running	Automatic	Local System
Local Session Manager	Core Windo...	Running	Automatic	Local System
Network Connection Broker	Brokers con...	Running	Manual (Trigger Start)	Local System
Network List Service	Identifies th...	Running	Manual	Local Service
Network Location Awareness	Collects an...	Running	Automatic	Network Service
Network Store Interface Service	This service ...	Running	Automatic	Local Service
NVIDIA Display Container LS	Container s...	Running	Automatic	Local System
Phone Service	Manages th...	Running	Manual (Trigger Start)	Local Service
Plug and Play	Enables a c...	Running	Manual	Local System
Power	Manages p...	Running	Automatic	Local System
Print Spooler	This service ...	Running	Automatic	Local System
PrintWorkflow_1d34fc	Provides su...	Running	Manual (Trigger Start)	Local System
Program Compatibility Assistant Service	This service ...	Running	Manual	Local System
Radio Management Service	Radio Mana...	Running	Manual	Local Service
Realtek Audio Universal Service	Realtek Aud...	Running	Automatic	Local System
Remote Access Connection Manager	Manages di...	Running	Automatic	Local System
Remote Procedure Call (RPC)	The RPCSS s...	Running	Automatic	Network Service
RPC Endpoint Mapper	Resolves RP...	Running	Automatic	Network Service

We're going to reduce this to less than 50 services (ymmv).

Certain services can only be disabled via the registry due to permissions restrictions.

In the Registry (**regedit**), navigate to:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services and look for the **Start** DWORD entry.

From there, you can change their startup configuration with:

- 1 = System (drivers)
- 2 = Automatic
- 3 = Manual
- 4 = Disabled

If you use **Bluetooth** enable:

- AVCTP service
- Bluetooth Audio Gateway Service
- Bluetooth Support Service
- Bluetooth User Service
- Device Association Service
- DevicesFlow
- DevicePicker
- Radio Management Service

If you use **Night Light** enable:

- Display Policy Service
- Connected Devices Platform User Service (CDPUserSvc)
- Connected Devices Platform Service (CDPSvc)
- Network Connection Broker

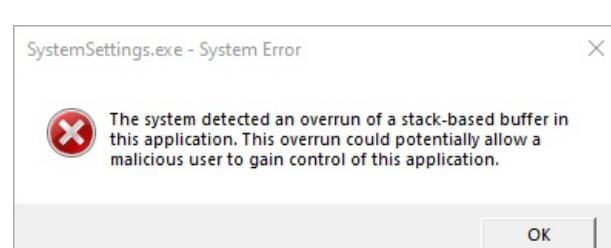
If you use **WiFi / Mobile Hotspot** enable:

- CNG Key Isolation
- Extensible Authentication Protocol
- Internet Connection Sharing (ICS)
- Windows Mobile Hotspot Service
- WLAN AutoConfig

If you use **Windows Update** enable:

- Storage Service
- Update Orchestrator Service
- Windows Modules Installer
- Windows Update
- Windows Update Medic Service

Fix for **Network** and **System settings** pages error, enable:



- Connected Devices Platform User Service

- Windows Push Notifications System Service
- Windows Push Notifications User Service

Services required to manually install **Store apps (Appx)**, enable:

- Application Information
- AppX Deployment Service (AppXSVC)
- Capability Access Manager Service
- Client License Service (ClipSVC)
- Microsoft Store Install Service
- Storage Service
- Windows Modules Installer
- Windows Update

Task Scheduler

There are few interesting tasks we can take a look at disabling, they mostly involve sending telemetry to Microsoft.

Do a Start menu search for "Task Scheduler" or open Run and type **taskschd.msc**.

Navigate to **Task Scheduler Library > Microsoft > Windows** then under each of the following folders disable a task by right-clicking then selecting **Disable**:

- Application Experience Microsoft Compatibility Appraiser
- Autochk Proxy
- Customer Experience Improvement Program Consolidator, UsbCeip
- Diagnosis RecommendedTroubleshootingScanner
- Disk Diagnostic Microsoft-Windows-DiskDiagnosticDataCollector
- International Synchronize Language Settings
- Windows Error Reporting QueueReporting

Group Policy

To minimize the damage once we connect to the internet and launch Windows Update, we will configure a few Group Policy Object (GPO) settings.

Search the Start Menu for "**Group Policy**" or open Run and launch **gpedit.msc**.

Navigate to **Computer Configuration > Administrative Templates > All Settings**.

Press the first column of the list that appears to **order** everything alphabetically, go through the list and:

Disable the following:

Allow Clipboard synchronization across devices	Disabled
Allow Cortana	Disabled
Allow device name to be sent in Windows diagnostic data	Disabled
Allow publishing of User Activities	Disabled
Allow search and Cortana to use location	Disabled
Allow the use of biometrics	Disabled
Allow upload of User Activities	Disabled
Allow users to enable online speech recognition services	Disabled
Configure Automatic Updates	Disabled
Configure Windows Defender SmartScreen	Disabled
Enable/Disable PerfTrack	Disabled
Enables Activity Feed	Disabled
Enables or disables Windows Game Recording and Broadcasting	Disabled
Improve inking and typing recognition	Disabled
Microsoft Support Diagnostic Tool: Turn on MSDT interactive communica...	Disabled

Disabling **Windows Updates** here makes it so Windows will only check for updates manually when we press the button to do so.

Enable the following:

Pay attention that for some of the options you have to select the correct setting in the drop-down menu after enabling them such as "Prevent Pre-Launching" for Microsoft Edge or "[0] Security [Enterprise Only]" for **Allow Telemetry**.

Allow Microsoft Edge to pre-launch at Windows startup, when the system...	Enabled
Allow Microsoft Edge to start and load the Start and New Tab page at Win...	Enabled
Allow Telemetry	Enabled
Disable logging	Enabled
Disable MDM Enrollment	Enabled
Disable OneSettings Downloads	Enabled
Disable Windows Error Reporting	Enabled
Do not connect to any Windows Update Internet locations	Enabled
Do not include drivers with Windows Updates	Enabled
Do not send additional data	Enabled
Do not show Windows tips	Enabled
Do not sync	Enabled
Let Windows apps run in the background	Enabled
Prevent access to 16-bit applications	Enabled
Prevent participation in the Customer Experience Improvement Program	Enabled
Prevent the usage of OneDrive for file storage	Enabled
Turn off Active Help	Enabled
Turn off Application Compatibility Engine	Enabled
Turn off Application Telemetry	Enabled
Turn off Automatic Download and Install of updates	Enabled
Turn off Automatic Download and Update of Map Data	Enabled
Turn off Automatic Download of updates on Win8 machines	Enabled
Turn off automatic learning	Enabled
Turn off Autoplay	Enabled
Turn off auto-restart notifications for update installations	Enabled
Turn off cloud optimized content	Enabled
Turn off File History	Enabled
Turn off Inventory Collector	Enabled
Turn off location	Enabled
Turn off location scripting	Enabled
Turn off Microsoft consumer experiences	Enabled
Turn off Microsoft Defender Antivirus	Enabled
Turn off Program Compatibility Assistant	Enabled
Turn off Push To Install service	Enabled
Turn off routine remediation	Enabled
Turn off Search Companion content file updates	Enabled
Turn off sensors	Enabled
Turn off Steps Recorder	Enabled
Turn off SwitchBack Compatibility Engine	Enabled
Turn off the advertising ID	Enabled
Turn off the offer to update to the latest version of Windows	Enabled
Turn off the Store application	Enabled
Turn off the Windows Messenger Customer Experience Improvement Pro...	Enabled
Turn off unsolicited network traffic on the Offline Maps settings page	Enabled
Turn off Windows Customer Experience Improvement Program	Enabled

Remove Edge

If after updating and rebooting you run into the unpleasant surprise of **Microsoft Edge** being installed on your machine and nagging you right away, then I suggest you run this [handy script](#) to nuke it. Microsoft seems to be ignoring all the registry tweaks to NOT install Edge, as usual.

Various Tweaks

Here I'll be adding various tweaks as I remember or find them.

As always, use at your own discretion.

Disable 8dot3 filenames

Run cmd with admin privileges and enter:

(1 = all volumes / 3 = all but system volume):

```
fsutil behavior set disable8dot3 1
```

OR

```
fsutil behavior set disable8dot3 3
```

Strip all 8dot3 files from C: (repeat for other drives if wanted/needed):

```
fsutil 8dot3name strip /f /s C:
```

Reboot.

To remove 8dot3 filenames during Windows install, read up on [Schneegan's website](#).

Disable Microsoft Sync Center

If you don't use Offline Files and don't sync your Windows settings you should disable and prevent Sync (mobsync.exe) to launch at logon.

Even if you disable Offline Files services and Settings sync in Group Policy, *mobsync.exe* will still launch at logon, here's how to fix it without having to rename the executable.

Run Powershell with admin privileges and enter:

```
New-Item -Path "HKLM:\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Image File Execution Options\mobsync.exe" | New-ItemProperty -Name Debugger -PropertyType String -Value "%windir%\System32\systray.exe" -Force
```

Explanation:

This trick adds a registry string key to *HKLM:\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Image File Execution Options* for the *mobsync.exe* executable, preventing it from launching. Can also be used for other executables you don't want launching.

That's it for this guide, you should now have a fairly minimal Windows installation, ready to customize to your needs.

Hope it was helpful! 