The Concise Windows 10 IoT LTSC Guide

A concise, straight-to-the-point guide on installing Windows 10 IoT LTSC and optimizing both its performance, privacy, and customization.
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1. PREPARATION
    1. REQUIRED SOFTWARE
    2. REQUIRED HARDWARE
2. INSTALLATION
    1. RUFUS
    2. BIOS
    3. WINDOWS SETUP
    4. ACTIVATION
        1. FOR ENGLISH INSTALLATIONS
        2. FOR FOREIGN LANGUAGE INSTALLATIONS
3. INITIALIZATION
4. OPTIMIZATION
    1. DRIVERS
        1. GRAPHICS
            1. FOR NVIDIA GPU
            2. FOR AMD GPU
            3. FOR INTEL DEDICATED/ INTEGRATED GPU
        2. OTHER DRIVERS
    2. CONFIGURATION
        1. Settings App
        2. Control Panel
        3. Windows Features
    3. DEBOTNETTING
        1. O&O ShutUp10++
        2. privacy.sexy
    4. DEBLOATING
5. CUSTOMIZATION
    1. MOUSE CURSOR
6. END NOTES

PREPARATION

REQUIRED SOFTWARE

- ISO file for Windows 10 IoT Enterprise LTSC 2021. (Download)
    - If you want to install in a different language, get the ISO file for Windows 10 Enterprise LTSC 2021 (**non-IoT version**) in the language you want (use the same link above), then proceed normally below until the activation part (step 18).
- Rufus (Download)
- (**EXTERNAL DRIVE**) Installer for the appropriate Wi-Fi driver (if you use Wi-Fi) or LAN driver (if you use LAN) for your system.

- (**EXTERNAL DRIVE**) A backup copy of anything else you want to save (installing 10 IoT LTSC will wipe the whole drive).

REQUIRED HARDWARE

- An empty USB drive of at least 8 GB.
- Another external drive for the driver installers and the backups you made.
- PC must only have one physical drive.
    - If there are multiple drives, leave one connected, disconnect the others for the meantime, and just reconnect them once the installation is done.

INSTALLATION

RUFUS

1. Plug-in USB drive.
2. Open Rufus.
3. Press `SELECT`.
4. Locate and choose the ISO file for Windows 10 IoT Enterprise LTSC 2021 you downloaded.
5. Press `START`.
6. When `Status` bar shows 100%, close Rufus.

BIOS

NOTE 1: If you're reading this guide on your PC, open this guide on another device and read it there from this point on until installation is complete.
NOTE 2: Make sure your BIOS is up-to-date to lessen the risk of running into complications.

7. Search online on:
    - How to boot to your BIOS in your system
    - How to boot from external USB drive in the BIOS
8. Restart your computer.
9. Boot to your BIOS.
10. Set to boot from external USB drive.
11. Exit BIOS — your computer should now boot from the USB drive and open Windows Setup.

WINDOWS SETUP

12. Proceed with installation as directed
13. When asked to choose what operating system to install, choose `Windows 10 IoT Enterprise LTSC`.
14. When asked for license key, choose `I don't have a product key`.
15. When asked to sign in to Microsoft account, choose `Domain join instead` and create your local admin account.
16. Wait for installation to finish.
17. Once you reach the desktop, check if Wi-Fi/LAN is working.
    - If working, proceed to next step.
    - If not working, connect your other external drive and run the Wi-Fi/LAN driver installer you downloaded earlier.

ACTIVATION

FOR ENGLISH INSTALLATIONS

18. On your desktop, hold *Shift* then press right-click, then click `Open PowerShell window here`.
19. Copy and paste the code: `irm https://get.activated.win | iex`, then press *Enter*.
20. When asked for administrator permission, click `Yes`.
21. When a menu appears in the Command Prompt, press `1` on your keyboard.
22. Wait for it to activate your Windows 10 installation.
23. When finished, exit by pressing `0` on your keyboard.

FOR FOREIGN LANGUAGE INSTALLATIONS

18. On your desktop, press `Win + I` to open Settings.
19. Go to the corresponding "Update & Security" page (marked with two arrows in a circle).
20. Go to the activation page (marked with a circled checkmark).
21. Enter the following activation code: `QPM6N-7J2WJ-P88HH-P3YRH-YY74H`
22. Press Enter, then agree to the prompt, and your Windows 10 Enterprise LTSC 2021 system should now turn into a Windows 10 **IoT** Enterprise LTSC 2021 installation.

INITIALIZATION

Your fresh Windows 10 installation may not be able to run a lot of modern apps and games (including some that you will need below) without these requirements, so make sure to install them first before proceeding:

- AIO Microsoft Visual C++ Redistributable Runtimes
- .NET **Desktop** Runtime 8.0
- DirectX 12

OPTIMIZATION

NOTE: As indicated at the top of this page, this guide aims to optimize your Windows 10 IoT LTSC installation in terms of performance, privacy, and customization. The optimization we will do below will be focused around those three metrics.

> Programs you'll need (install them first before proceeding):
>
> - Display Driver Uninstaller
> - NVCleanstall (*For NVIDIA GPUs*)
> - Snappy Driver Installer Origin
> - O&O ShutUp10++
> - privacy.sexy

DRIVERS

GRAPHICS

1. Boot into Safe Mode.
   a. Press `Win + X` > `Shut down or sign out` > Hold *Shift* > Click `Restart`.
   b. Select `Troubleshoot` > `Advanced options` > `Startup Settings` > `Restart`.
   c. After the system restarts, there is a list of options. Select `4` or `F4` (following the on-screen instructions) to start the system in `Safe Mode` (**not** `Safe Mode with Networking`).
2. Run *Display Driver Uninstaller*.
3. Open `---Select device type---` dropdown menu.
4. Click `GPU`.

5. Open `---Select device---` dropdown menu.
6. Choose your GPU, or one of your GPUs that still has an old or generic driver.
7. Click `Clean and restart`.
8. Repeat for your other GPUs that still has an old or generic driver.
9. Exit Safe Mode.

FOR NVIDIA GPU

10. Run *NVCleanstall*.
11. Read and take note any warnings that pop up regarding installation of latest driver version.
12. Choose `Install best driver for my hardware`.
    - **NOTE**: If you are doing digital creative work (e.g., photo editing, video editing, 3D rendering, etc.), take note of the driver version shown besides `Install best driver for my hardware`, then choose `Manually select a driver version` and select the `Studio` version of the driver instead.
13. In `Select Components To Install`, Display Driver is selected by default. Choose other additional components you might need (read their description on the right side), then click `Next`.
14. In `Installation Tweaks`, check the following options:
    - `Disable Installer Telemetry & Advertising`
    - `Perform a Clean Installation`
    - (Any other options that the pop-up warning told you to do earlier when you started the program)
15. Click `Next`, then proceed with the installation.

FOR AMD GPU

10. Go to AMD's Drivers and Support for Processors and Graphics page.
11. Scroll down to `Search or Browse Drivers and Support by Product`.
12. Manually search for your AMD GPU (as well as CPU), then click `Submit`.
13. Download the given drivers and manually install them.
    - **NOTE:** Adrenalin Edition is designed for general consumers. Pro Edition is designed for digital creative work.

FOR INTEL DEDICATED/ INTEGRATED GPU

NOTE: It is highly recommended that you also update your integrated GPU drivers alongside your dedicated (main) GPU drivers.

10. Go to Intel's Download Drivers & Software page.
11. Search for your dedicated/integrated GPU.
12. Download and run the driver setup file.

OTHER DRIVERS

- If you are using a branded computer (a PC or laptop coming from an OEM), go to their respective driver page, search for your computer, and download all the other drivers that your computer might need.
  - **WARNING**: A lot of OEMs label their own bloatware (like Lenovo Vantage) as drivers. Be sure to double check what you download (search the internet!) and **avoid** these programs (unless you intentionally plan on using them, but they often prove to be an unnecessarily heavy load on your system resources, and some of their features can be done by other programs that are free and more lightweight, so do your own research and weigh your choices carefully).
- If you are **not** using a branded computer, simply run *Snappy Driver Installer Origin* and update the whatever drivers you might need.
  NOTE: As a general rule of thumb, with the exception of CPU, GPU, Wi-Fi/LAN, motherboard, and peripheral drivers, never update a driver for some other component **unless** you encounter a problem with it, or you are confident from your knowledge (not feelings) that updating so would improve your system's performance.

CONFIGURATION

Settings App

- Install Windows Updates (IoT LTSC edition will only install cumulative and security updates).
- Configure Time & Language settings.
- Configure Privacy settings.
- Set monitor refresh rate.
- Disable Game Bar and Game Mode.
- Disable Core Isolation, Memory Integrity.
- Disable Hardware-accelerated GPU Scheduling.

Control Panel

- Configure power and battery settings (if on laptop).
- Configure File Explorer options.

Windows Features

- In start menu, search for `Turn Windows features on or off`.
- Turn off everything except the ones you might need.

DEBOTNETTING

O&O ShutUp10++

1. Download and open the program.
2. Go to `Actions` > select `Apply only recommended settings`.
3. Make sure to agree in creating a system restoration point, just to keep things safe.

privacy.sexy

1. Download the setup file and install the program.
    - **NOTE**: You can use their website version if you don't want to install their program, but you would need to manually copy the generated code on the right side and paste it on PowerShell everytime you change a setting. If you don't want this hassle, use the program instead.
2. On the left side, below the search bar, there is a `Select` part that lists the presets you can use. Choose `Standard` or `Strict`.
3. Click the `Run` button (the one with the play icon).
   NOTE: You can revert most of the stuff you set here later by selecting the preset you used and, on the `Revert` part below `Select`, click `Selected`, then clicking the `Run` button.

DEBLOATING

> Things you need to know:
>
> - All default Windows 10 Microsoft apps are **not** included in your IoT LTSC installation (except for Edge, WebView, Media Player, Paint, and Snipping Tool).
> - Microsoft Store is **not** included in your IoT LTSC installation.
>   - If you need something from it, you can do one of the following:
>   1. Use rg adguard (use a VPN if it's blocked).
>   2. Use winget.
>   3. Restore it to your system by opening PowerShell as admin and entering this command: `wsreset -i`

"Meet Now" icon from taskbar: Use *privacy.sexy*. Go to `REMOVE BLOATWARE` > `Remove "Meet Now" icon from taskbar`.

Microsoft Edge and WebView:
OPTION 1: Use *privacy.sexy*. Go to `REMOVE BLOATWARE` > `Remove Edge`.
OPTION 2: Use *ShadowWhisperer's MS Edge Uninstallers*. Go to the repo, read the warnings, and follow the instructions.

- **WARNING:** Some programs like Microsoft PowerToys and Seelen UI will **not** work when Edge is removed. Check the programs you use and verify that none of them depends on either Edge or WebView before uninstalling.

Paint and Snipping Tool: Go to `Settings` > `Apps`, then find them in the `Apps & Features` list, click on them, and click `Uninstall`.

Windows Defender: Use *privacy.sexy*. Go to `PRIVACY OVER SECURITY` > `Disable Defender`.

Windows Media Player: Turn off `Media Features` in the `Turn Windows features on or off` menu (you can search for it in Start Menu search bar).

Windows Update: Use *privacy.sexy*. Go to `PRIVACY OVER SECURITY` > `Disable automatic updates`.

- **WARNING**: It is highly recommended that you first get the latest updates from Windows Update before disabling it altogether.

CUSTOMIZATION

Below is a list of useful tools and programs that offer capabilities of customizing the UI aspects of your Windows 10 installation. Most of these tend to be pretty lightweight on system resources. Most of these should also be free and open-source. Each tool is tagged with a few bullet points to give you a quick gist of what they are and what stuff they can do.

Make sure to read the proper usage of each tool.

> Things you need to know:
>
> - Modifications made to the same UI aspect of the OS (e.g., two programs modifying the taskbar) would generally be incompatible with each other.
>   - Not that you can't have two or more programs modifying the same UI aspect, but that you might encounter some unexpected behavior with the stuff they are modifying.
> - Some programs modify multiple UI aspects of the OS, but they can be toggled on and off, so be wary of incompatibilities when using them.
> - It is recommended that you go through each option and feature a tool offers so you'll be aware of what they offer and open up more customization options for you.

LIST OF CUSTOMIZATION TOOLS AND PROGRAMS

- 7TSP
  - Free. Closed-source.
  - Modifies: Default Windows Icons (allows for custom icons).
- Advanced System Font Changer
  - Paid (but with free 30-day trial). Closed-source.
  - Modifies: System Font (allows for custom fonts to be used).
- ExplorerPatcher
  - Free. Open-source.
  - Modifies: Taskbar, System Tray, File Explorer, Start Menu, Window Switcher, Weather, and others.
- Flow Launcher
  - Free. Open-source.
  - Adds: Search Bars and App Launchers (customizable with user plugins).
- GlazeWM
  - Free. Open-source.
  - Adds: Tiling Window Manager (like *i3wm* for Linux).
- komorebi
  - Free. Open-source.

    - Adds: Tiling Window Manager.
- Lively
    - Free. Open-source.
    - Modifies: Wallpaper (allows for animated wallpapers).
    - **NOTE**: Performance impact depends on the type and quality of the animated wallpaper being used.
- No!! MeiryoUI
    - Free. Open-source.
    - Modifies: System Font (allows for custom fonts to be used).
- OldNewExplorer
    - Free. Closed-source.
    - Modifies: File Explorer.
- Open-Shell
    - Free. Open-source.
    - Modifies: Start menu (allows theming), Taskbar.
- Open with++
    - Free. Open-source.
    - Adds: A replacement for the `Open with` feature in the context menu (right-click menu).
- Rainmeter
    - Free. Open-source.
    - Adds: Desktop Widgets.
    - You must manually search online for widgets made by others.
- SecureUxTheme
    - Free. Open-source.
    - Modifies: System themes/skins (allows for custom themes).
    - You must manually search online for custom themes/skins (term used interchangeably) made by others.
        - Recommended sources: 7themes.su, Versus Themes, SkinPack, and niivu's Windows 10 themes repository.
    - **WARNING 1**: Custom system themes modify a lot of UI aspects. Beware of incompatibilities when used with other tools.
    - **WARNING 2**: Ensure that the custom system theme you want to install is compatible with your Windows 10 version. If you have the latest Windows updates (regardless of whether you are using IoT LTSC or not), your version should be **21H2** (build 19044).
- Seelen UI
    - Free. Open-source.
    - Modifies: A lot.
    - Adds: Desktop Widgets, Desktop Docks, App Launchers, Window Managers, Shortcuts, and more.
    - **WARNING**: Based on WebView. Not lightweight. Requires Microsoft Edge and WebView.
- Stardock Products
    - Paid. Closed-source.
    - Modifies: A lot (each of their product modifies a different UI aspect).
- Starship
    - Free. Open-source.
    - Modifies: Shell Prompt (i.e., Command Prompt, PowerShell prompt, etc.).
- StartIsBack++
    - Paid (but with free 30-day trial). Closed-source.
    - Modifies: Start menu, Taskbar.
    - Free trial can be reset by doing a simple registry change. Tutorial here.
    - **WARNING**: The modifications this program makes cannot be toggled on and off. Beware of incompatibilities when used with other tools.
- TaskbarX
    - Free. Open-source.
    - Modifies: Taskbar.

- Winaero Tweaker
  - Free. Closed-source.
  - Modifies: A lot (as well as many other non-UI aspects of the OS).
- Windhawk
  - Free. Open-source.
  - Modifies: A lot (the program is a repository of UI and non-UI modifications made by other users).
- Windows Terminal
  - Free. Open-source.
  - Modifies: Shell Prompt.
  - This is now the default shell prompt for Windows 11.
- WinDynamicDesktop
  - Free. Open-source.
  - Modifies: Wallpaper (changes desktop wallpaper depending on time of day, similar to MacOS Mojave Dynamic Desktop feature).
- Winstep Nexus
  - Free. Closed-source.
  - Adds: Desktop Docks.
- Wox
  - Free. Open-source.
  - Adds: Search Bars and App Launchers.
- Zebar
  - Free. Open-source.
  - Adds: Desktop Widgets.
  - **WARNING**: Based on WebView. Not lightweight. Requires Microsoft Edge and WebView.

MOUSE CURSOR

Changing your mouse cursor/pointer (term used interchangeably) is as easy as downloading a custom cursor pack online, unzipping it, and double-clicking the `.inf` file and clicking `Install` in the context menu that opened. The `Mouse Properties` setting window should open. Click `Save As...` then click `Apply`.

If the custom pointer pack you downloaded didn't come with an `.inf` file, then you must manually set the graphic for each state of the pointer:

- Open the `Mouse Properties` setting window and go to the `Pointers` tab.
- Inside the `Customize` box, set the graphic for each state of the pointer to the custom pointer graphic you downloaded.
- Click `Save As...` then click `Apply`.

A simple online search would give you a lot of places to download custom cursor packs from. Versus Themes includes a lot of free (as well as paid) packs.

END NOTES

This paste will be updated from time to time. New information from /fwt/, /g/, and other online places and resources the author stumbles upon may be considered and added to the paste.

For suggestions, simply leave a reply to the current /fwt/ thread, and hopefully the author will manage to catch your feedback.