Fedora 45 Workstation on a Framework Laptop 16

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INTRODUCTION

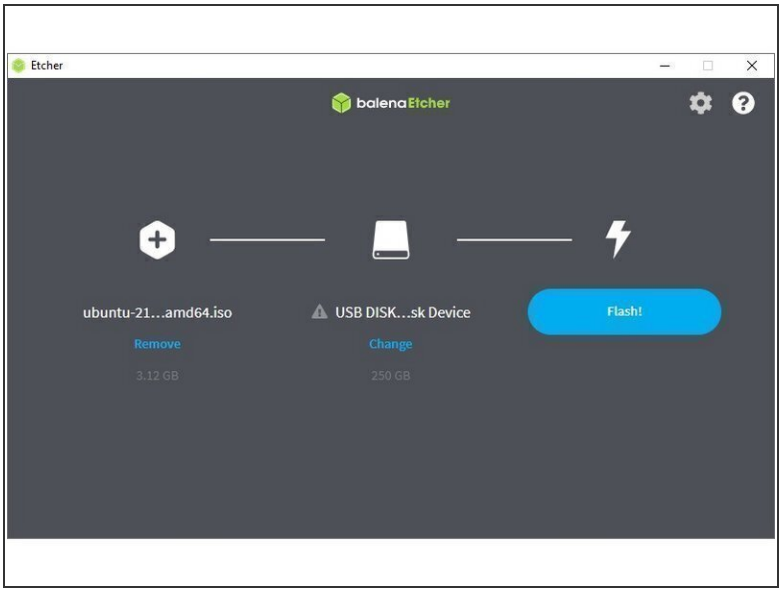
Once you have your Framework Laptop 16 set up following the Quick Start Guide, you're ready to install your preferred OS. The Framework Laptop 16 is running some very recent hardware, and we've worked with the team at Fedora to improve support. Fedora 45 is one of the Linux distributions we recommend, as it has full hardware support with very little setup required, and it offers a great user experience overall.

One note on Fedora is that the distro follows a fairly aggressive update policy on new kernels. This means that if you have the most recent generation of hardware, there is a higher risk that a kernel update could have a driver regression. On older platforms, this is less of a risk. To avoid this risk altogether, you can use a more conservative distro like Ubuntu LTS.

This is an Officially Supported Linux Distribution. Learn more here.

Step 1 — (From macOS) Preparing USB Fedora Installation Media



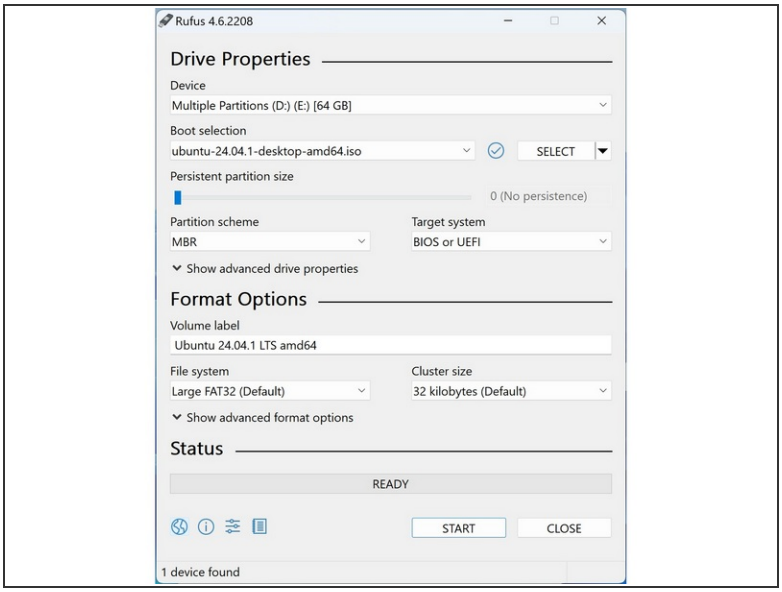


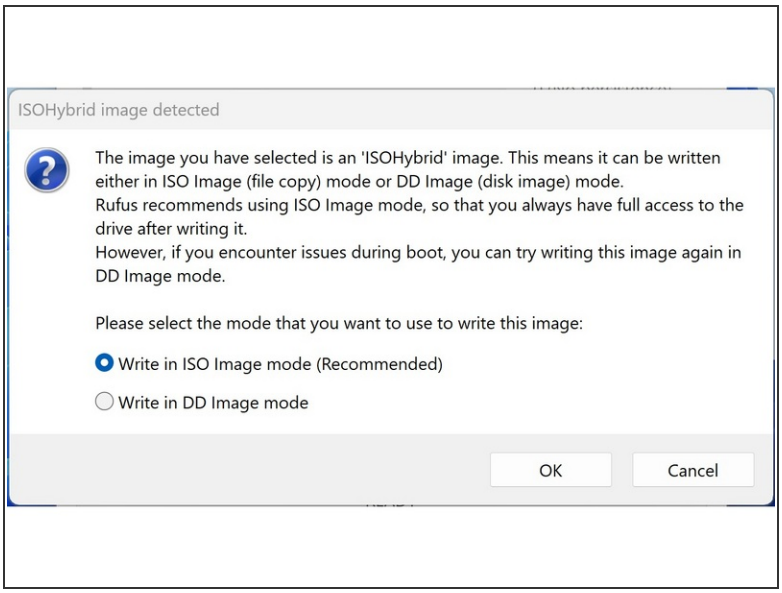
- First, download the latest Fedora release from the Fedora website. We'll go through the steps in this Guide assuming you have a simple installation scenario of a fresh install on a blank drive.
- Download balenaEtcher as a tool to create the USB installer from the ISO. balenaEtcher is available for MacOS. Install it.

  ⚠ **If upgrading from Fedora 44**, we recommend backing up your home directory and doing a clean installation. If you decide you prefer to upgrade from 44, make absolutely sure your 44 installation is fully up to date first. Should you wish to instead, the DNF System Plugin method remains an option.

- Launch balenaEtcher. Insert your USB drive (8GB or larger). Click on "Flash from file" and select the Fedora iso that you downloaded. Click on "Select target" and choose your USB drive. Click "Flash" and wait a minute or two for it to complete.
- Once the USB drive creation is complete, you can close balenaEtcher and eject the USB drive from your OS.

Step 2 — (From Windows) Preparing USB Fedora Installation Media





- First, download the latest Fedora release from the Fedora website. This guide will walk through installing Fedora by automatically using an entire disk.

  ⚠ **If upgrading from Fedora 44**, we recommend backing up the home directory and doing a clean installation. To minimize risk when upgrading from 44, make absolutely sure everything is fully up to date first.

  ⚠ **Possible Upgrade Bugs**: Additionally, there are some upgrade notes to be aware of. Systems with WINE installed cannot be updated and Systems with <=1 GB /boot partition may see "need more space" error during system update. See links for workarounds. Clean installs will be the easiest path for some.

- Download Rufus as a tool to create the USB installer from the ISO. The first item in this list will be a link to install installer for the latest version. Install Rufus using this. Open Rufus, from the Device drop-down, select the USB flash drive stick.

  ⚠ In order to use devices like external hard drives, external solid state drives, or the Framework Storage Expansion Card to create a live USB, *List USB Hard Drives* must be enabled under *Show advanced drive properties*.

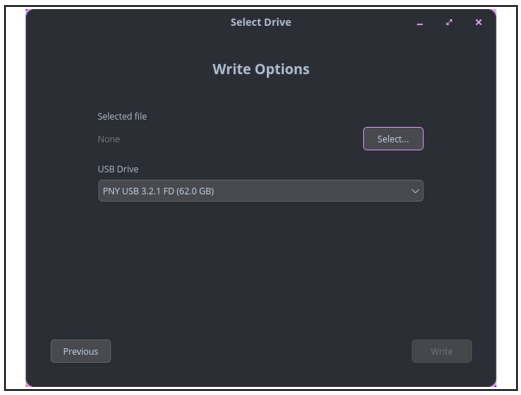
- Use the *Select* Button next to *Boot selection* to choose the downloaded Fedora ISO.

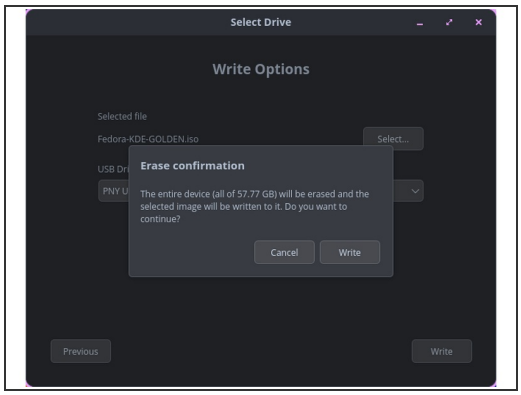
⚠ Set *Partition scheme* to *GPT* to ensure the live USB is properly recognized at boot.

- Click Start. A window will pop up to prompt for a choice between *dd image mode* and *ISOHybrid image mode*. Select *ISOHybrid image mode* then *OK*.

Step 3 — (From Linux) Preparing USB Fedora Installation Media

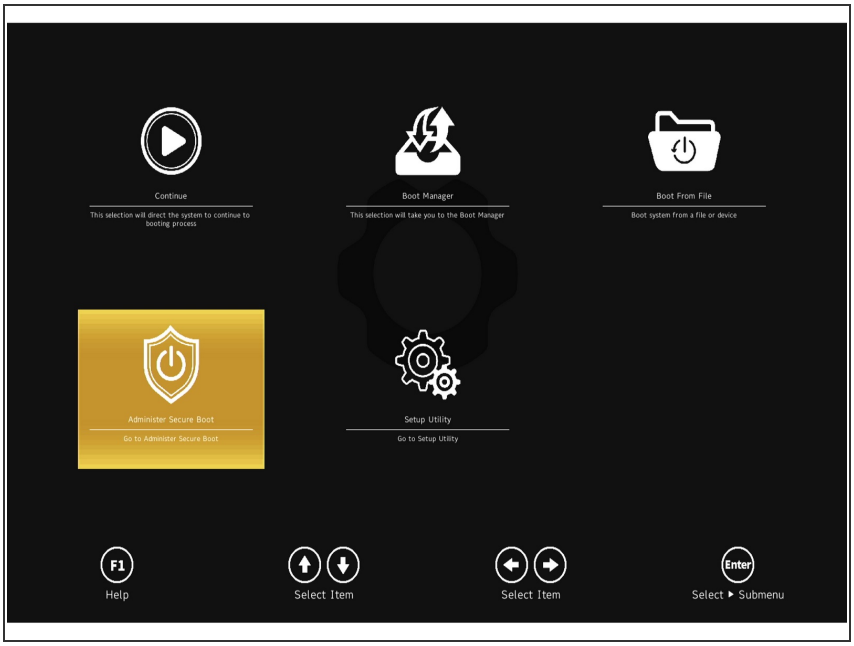






- First, download the latest Fedora Workstation release https://fedoraproject.org/workstation/ from the Fedora website. This Guide assumes a simple installation scenario of a fresh install on a blank drive.
- **Fedora:** Media Writer is already installed on Workstation, so just launch it from the app menu.
- **Other distro, Flatpak installed:** Run flatpak install flathub org.fedoraproject.MediaWriter, then launch it from the app menu or with flatpak run org.fedoraproject.MediaWriter.
- **Other distro, no Flatpak:** Install Flatpak and add Flathub per https://flathub.org/setup
- Insert an 8 GB+ USB key. Back up its contents first, since this erases the entire drive.
- Open Fedora Media Writer, choose **Select .iso file**, and pick the Fedora Workstation ISO you downloaded.
- Select your USB drive from the device list, double-checking the name and size so you don't wipe the wrong disk.
- **Click Write**, enter your password if prompted, wait for it to finish, then **click Finish** and safely eject the USB.

Step 4 — Secure Boot



- Fedora works with Secure Boot out of the box. Fedora Live USBs will boot regardless of whether or not it is disabled. Users who intend to dual-boot with Windows should not disable Secure Boot!

ⓘ If a user has a reason to disable Secure Boot, such as specialized third party devices that require unsigned drivers:

- Boot into BIOS by tapping F2 just before the Framework splash screen.
- Arrow down to Administer Secure Boot. Press enter.
- Arrow down to Enforce Secure Boot. Press enter, select Disabled, and press enter.
- Press F10 to save and reboot. With Yes selected, press Enter.

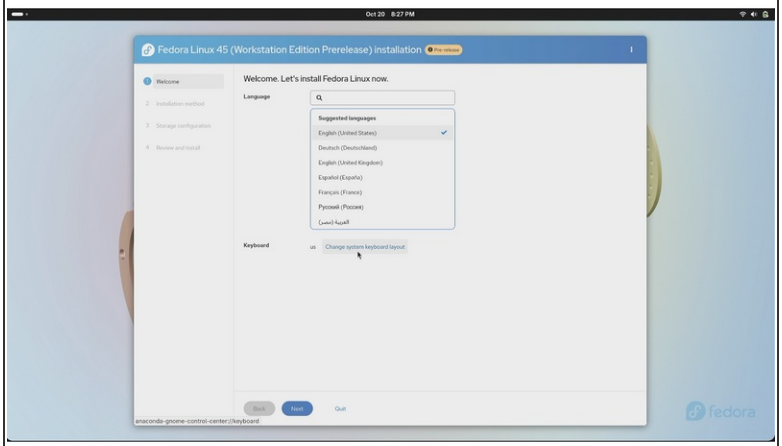
To enable Secure Boot again, repeat the above steps but select Enable this time.

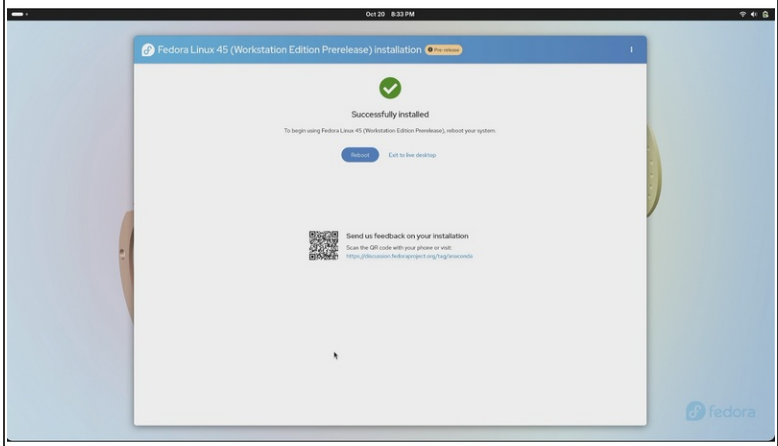
Step 5 — Booting to Live Fedora USB



- Boot to Fedora Live USB: Insert the USB drive into the powered-off machine, then power it on.
- If an OS is already installed, immediately begin tapping F12 as soon as the power light comes on. Start tapping before the Framework logo appears.
- At the Boot Option Menu, use arrow keys to select your USB drive (shown as "EFI USB Device (USB Disk)" or similar) and press Enter. On the black GRUB menu, confirm "Try or Install Ubuntu" is highlighted and press Enter.
  - ⚠ If Windows is currently installed, trying to boot a Linux Live USB can result in the "Device is Active" error. This will provide guidance to overcome this error.
- Next select Start Fedora Workstation-Live. Hit the enter key.
- The installer will start automatically after some time. How long depends on the speed of the USB drive.

Step 6 — Installing Fedora to a drive





- Select the keyboard language you'd like to use. On the next screen, click on the Installation Destination button to choose the disk.

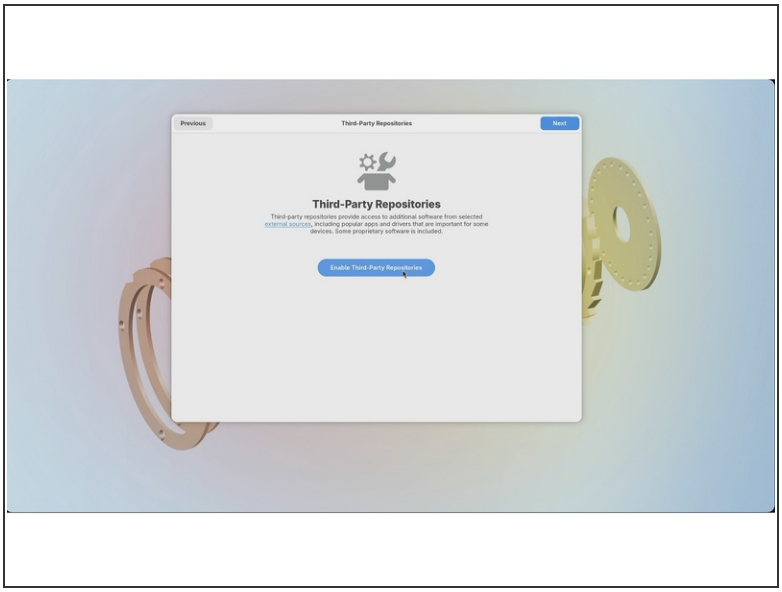
  ⓘ If there is an OS already installed on the target drive, you'll need to follow the guided steps in the installer to resize partitions or delete the existing partitions. This is out of scope of this guide, but Fedora has very detailed documentation: https://docs.fedoraproject.org/en-US/qui...

- Click Finish Installation and then reboot into your new Fedora install!

- The installer will close the window, but not reboot. You can click on the power icon in the top right, click Power Off / Log Out, and click Restart.

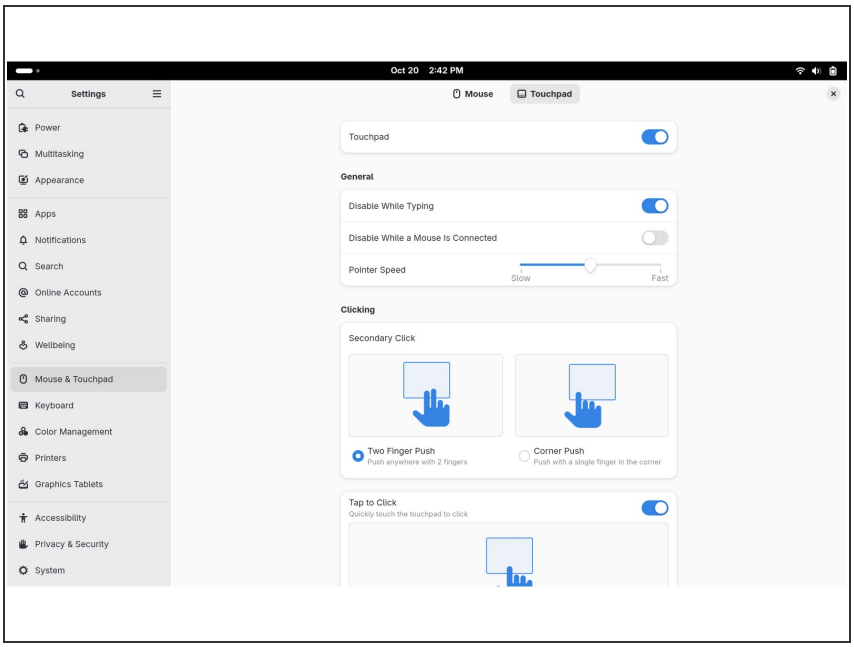
Step 7 — Welcome to Fedora Screen - Setting Up





- This begins the process of completing the initial setup of your Fedora installation.
- Connect to Wi-Fi or Skip. If you wish not to connect to wireless just yet, you can skip this and return to connecting to Wi-Fi later on.
- Choose your Privacy settings. Here you can decide if you would like to allow Location Services using Mozilla Location Service or not.
- Click on Enable Third-Party Repositories. Unless you have a specific reason for not doing so, it's recommended that these repositories are enabled for access to additional drivers and applications.
- Set up your user password.

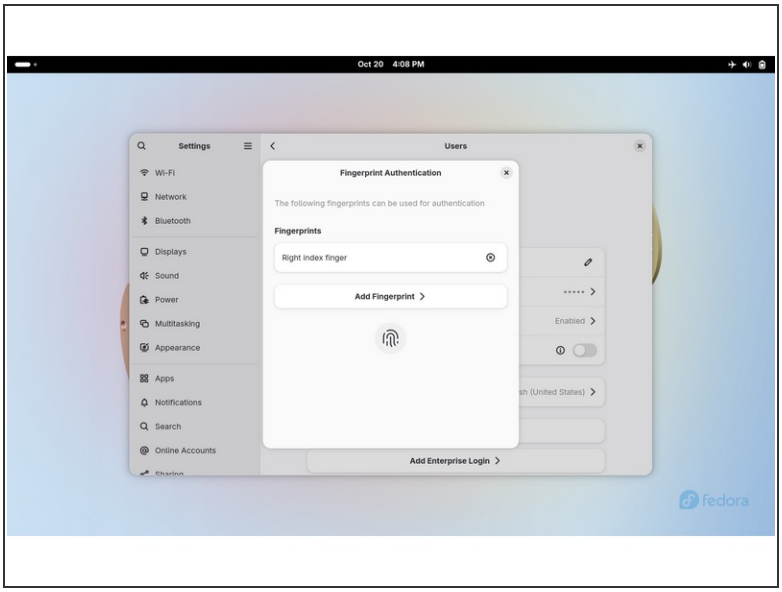
Step 8 — Touchpad Settings

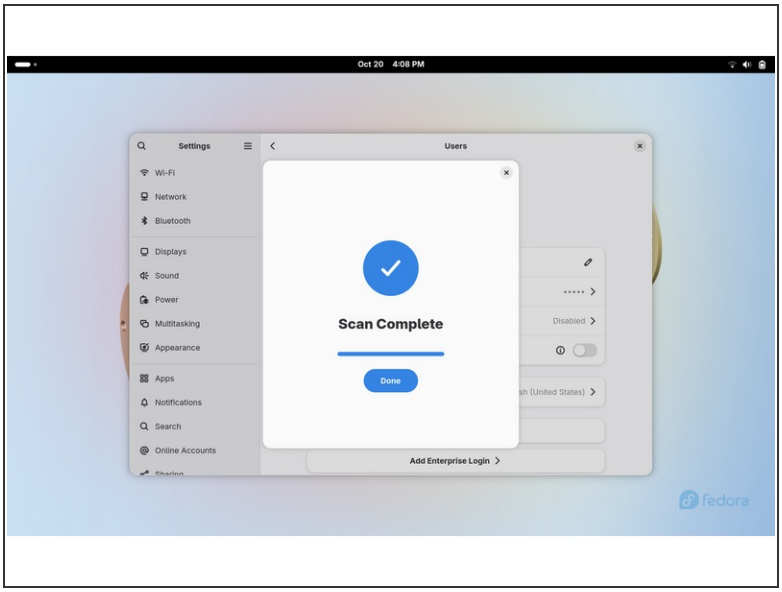


To configure the touchpad to meet your needs:

- Go to Settings>Mouse and Touchpad.
- Select the Touchpad tile/button at the top of displayed window.
- There you can control Touchpad while typing behavior, pointer speed, secondary click options, tap to click, scrolling method, and scroll direction.

Step 9 — Configure the fingerprint reader

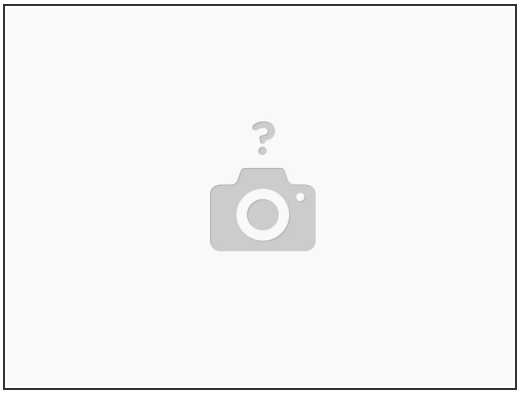




- Let's setup fingerprint login. Click on Activities menu marked as ---- in the upper left corner of your screen, search for user.
- Choose Fingerprint Login. Then select Scan new fingerprint. Select your desired fingerprint. Carefully tap your finger tip on the sensor (power button). You may need to try a few attempts as everyone's prints are different.
- Once it's successful, you will see the word Complete.

⚠ If you're experiencing issues getting your fingerprint reader working, please follow our help guide to get your reader working for you on Fedora.

Step 10 — Completing Setup



- We're almost done. Please follow the links to your Framework Laptop 16.
  - Click here for the completion guide for Framework Laptop 16 (AMD Ryzen™ 7040 Series).
  - Click here for the completion guide for Framework Laptop 16 (AMD Ryzen™ AI 300 Series) .
    - ⚠ NVIDIA dGPU users: The above steps for the Framework Laptop 16 (AMD Ryzen™ AI 300 Series) also provide steps needed for NVIDIA/CUDA configuration - please do not skip this if using the NVIDIA dGPU.

- Our recommendations for Optimizing Fedora Battery Life. This includes **important** expansion card behavior.

Step 11 — NVIDIA Hybrid Mode BIOS settings



Your Framework Laptop 16 with the NVIDIA dGPU module can operate in two primary graphics modes you will want to explore. You can switch between them in your laptop's BIOS settings.

⚠ To access this section of your BIOS: Tap F2 when you boot and see your Framework Splash screen (Framework logo). Arrow over to Setup utility. Click enter. Down arrow to Advanced on the left side. Right arrow to NVIDIA Mux. Enter key. Make your selection, press enter. Press F10 and press enter again to save changes and reboot.

⚠ The third option, Advanced Optimus, behaves like NVIDIA Hybrid Mode on Linux. So we will forgo it for this guide.

ⓘ NVIDIA Hybrid Mode (Traditional Optimus): This is the default mode.

- Display Path: The integrated AMD GPU (iGPU) is always connected to the display. When the NVIDIA GPU (dGPU) is used for a demanding task, it renders the frames and copies them to the iGPU to be shown on the screen.

- Switching: Applications run on the power-saving iGPU by default. Steam uses dGPU this automatically for games.
- Performance: Small but measurable latency and FPS penalty compared to direct dGPU output because every frame must traverse the iGPU.

Step 12 — NVIDIA GPU-Only (Discrete Mode)



- Your Framework Laptop 16 with the NVIDIA dGPU module can operate in two primary graphics modes you will want to explore. You can switch between them in your laptop's BIOS settings.

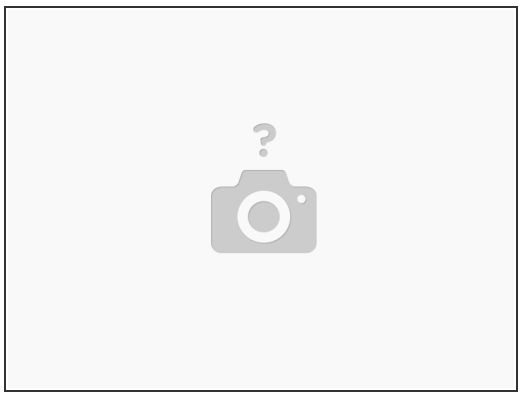
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ⓘ The third option, Advanced Optimus, behaves like NVIDIA Hybrid Mode on Linux. So we will forgo it for this guide.

NVIDIA GPU-Only (Discrete Mode)

- Display Path The dGPU drives the panel 100% of the time. The iGPU is fully disabled.
- Switching: No switching possible without reboot — you must go back into BIOS or flip the MUX manually to return to Hybrid mode.
- Performance: Maximum performance and lowest latency, because there is no iGPU in the pipeline.

Step 13 — Recommended: Updating to the latest firmware



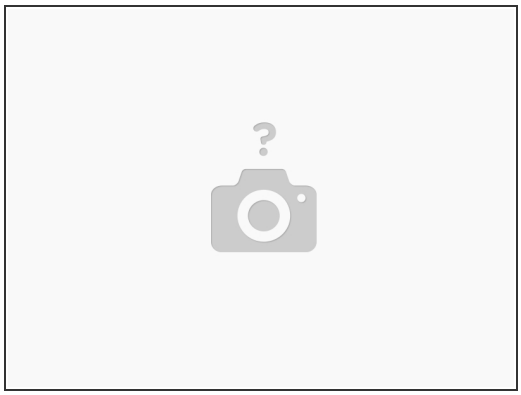
- How to check the BIOS version. Go to and click upper left corner where you see the horizontal line, search terminal and launch it. Please follow this link to copy and paste the code into your terminal, then press enter. The output will tell you which Framework Laptop 16 you have and also which BIOS version you're using.

⚠ For Framework Laptop 16 AMD Ryzen 7040 Series, you can check here for the latest firmware.

⚠ For Framework Laptop 16 AMD Ryzen AI 300 Series, you can check herefor the latest firmware.

⚠ **IMPORTANT**: Per the instructions above, we do NOT recommend updating BIOS and firmware using various GUIs. We recommend using fwupdmgr as provided in the step above. Using GUIs can potentially create issues that would not be present using fwupdmgr directly.

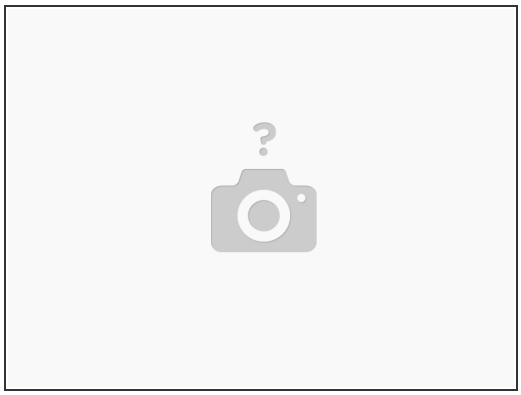
Step 14 — Using Discrete Graphics with Steam



- **Framework Laptop (7040 Series)**: If you are looking to run Steam games, please follow our guide links below.
  - Gaming on Steam with Fedora: One NVMe Drive Guide.
  - Gaming on Steam with Fedora: Two NVMe Drives Guide.
  - With the proprietary NVIDIA driver installed, Steam games work with the dGPU without any extra work.

⚠ If you are unsure if something is using the dGPU, install and run nvtop. Look to the GPU section to see which is running during game play. You can alt-tab key to access this from within a game.

Step 15 — Fedora Troubleshooting



- Expecting different touchpad behavior? The touchpad help guide is here.
- Need help? Please visit our troubleshooting guide first.
- If you need additional help, feel free to visit our active support community.