Installation Guide *Release*

Linux Mint

Download

1	Choose the right edition	3
2	Verify your ISO image	7
3	Create the bootable media	9
4	Boot Linux Mint	11
5	Install Linux Mint	13
6	Hardware drivers	21
7	Multimedia codecs	23
8	Language support	25
9	System snapshots	27
10	EFI	33
11	Boot options	37
12	Multi-boot	41
13	Partitioning	45
14	Pre-installing Linux Mint (OEM Installation)	47
15	Where to find help	49

Linux Mint comes in the form of an ISO image (an .iso file) which can be used to make a bootable DVD or a bootable USB stick.

This guide will help you download the right ISO image, create your bootable media and install Linux Mint on your computer.



Download 1

2 Download

Choose the right edition

You can download Linux Mint from the Linux Mint website.

Read below to choose which edition and architecture are right for you.

1.1 Cinnamon, MATE or Xfce?

Linux Mint comes in 3 different flavours, each featuring a different desktop environment.

Cinnamon	The most modern, innovative and full-featured desktop
MATE	A more stable, and faster desktop
Xfce	The most lightweight and the most stable

The most popular version of Linux Mint is the Cinnamon edition. Cinnamon is primarily developed for and by Linux Mint. It is slick, beautiful, and full of new features.

Linux Mint is also involved in the development of MATE, a classic desktop environment which is the continuation of GNOME 2, Linux Mint's default desktop between 2006 and 2011. Although it misses a few features and its development is slower than Cinnamon's, MATE runs faster, uses less resources and is more stable than Cinnamon.

Xfce is a lightweight desktop environment. It doesn't support as many features as Cinnamon or MATE, but it's extremely stable and very light on resource usage.

Of course, all three desktops are great and Linux Mint is extremely proud of each edition. Although there are more features and better support in some editions than others, and some do run faster and use less resources than others, they're all great alternatives and choosing the right edition is largely a matter of taste.

Other than their features and performance, Cinnamon, MATE and Xfce also represent three different desktop environments, with different menus, different panels and configuration tools. The right one for you is the one where you feel at home.

If you are unsure which desktop to choose start with the Cinnamon edition. Try them all eventually when you have the time. All three of them have their own audience within the Linux Mint community and they're all very popular.



Fig. 1.1: Cinnamon



Fig. 1.2: MATE



Fig. 1.3: Xfce

1.2 32-bit or 64-bit?

64-bit is recommended.

The 32-bit ISO images are provided for compatibility with older computers. 32-bit processors are extremely rare nowadays and most computers are able to run in 64-bit. If your computer was manufactured after 2007, you probably have a 64-bit processor.

If you have an old computer and you are unsure whether or not it can run in 64-bit, read X86 Chronology.

Tip: You can try to boot Linux Mint 64-bit on your computer. If it isn't compatible, nothing bad will happen. You will just get an error message.

1.2. 32-bit or 64-bit? 5

Verify your ISO image

It is important to verify the integrity and authenticity of your ISO image.

The integrity check confirms that your ISO image was properly downloaded and that your local file is an exact copy of the file present on the download servers. An error during the download could result in a corrupted file and trigger random issues during the installation.

The authenticity check confirms that the ISO image you downloaded was signed by Linux Mint, and thus that it isn't a modified or malicious copy made by somebody else.

2.1 Download the SHA256 sums provided by Linux Mint

All download mirrors provide the ISO images, a sha256sum.txt file and a sha256sum.txt.gpg file. You should be able to find these files in the same place you downloaded the ISO image from.

If you can't find them, browse the Heanet download mirror and click the version of the Linux Mint release you downloaded.

Download both sha256sum.txt and sha256sum.txt.gpg.

2.2 Integrity check

To check the integrity of your local ISO file, generate its SHA256 sum and compare it with the sum present in sha256sum.txt.

sha256sum -b yourfile.iso

Hint: If you are using Windows you can get the sha256sum (and gpg) command utility by installing Cygwin.

If the sums match, your ISO image was successfully downloaded. If they don't, download it again.

2.3 Authenticity check

To verify the authenticity of sha256sum.txt, check the signature of sha256sum.txt.gpg by following the steps below.

2.3.1 Import the Linux Mint signing key:

```
gpg --keyserver keyserver.ubuntu.com --recv-key "27DE B156 44C6 B3CF 3BD7 D291 300F_{\sim}846B A25B AE09"
```

Note: If gpg complains about the key ID, try the following commands instead:

```
gpg --keyserver keyserver.ubuntu.com --recv-key A25BAE09
gpg --list-key --with-fingerprint A25BAE09
```

Check the output of the last command, to make sure the fingerprint is 27DE B156 44C6 B3CF 3BD7 D291 300F 846B A25B AE09.

2.3.2 Verify the authenticity of sha256sum.txt:

```
gpg --verify sha256sum.txt.gpg sha256sum.txt
```

The output of the last command should tell you that the file signature is good and that it was signed with the A25BAE09 key.

Note: GPG might warn you that the Linux Mint signature is not trusted by your computer. This is expected and perfectly normal.

Hint: For more information on ISO verification, or to verify BETA, LMDE or old releases, read How to Verify ISO images.

Create the bootable media

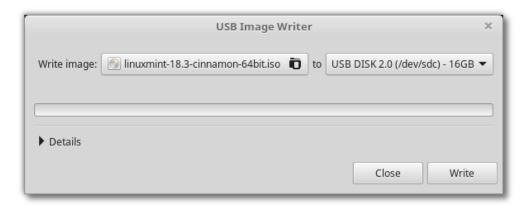
The easiest way to install Linux Mint is with a USB stick.

If you cannot boot from USB, you can use a blank DVD.

3.1 How to make a bootable USB stick

3.1.1 In Linux Mint

Right-click the ISO file and select Make Bootable USB Stick, or launch Menu -> Accessories -> USB Image Writer.



Select your USB device and click Write.

3.1.2 In Windows, Mac OS, or other Linux distributions

Download Etcher, install it and run it.

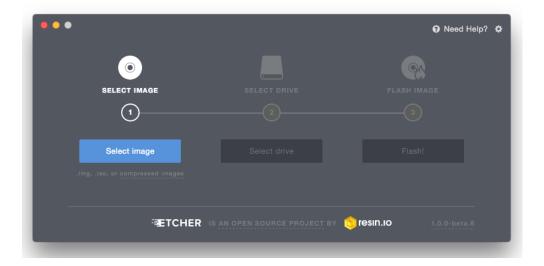


Fig. 3.1: Using Etcher

Click Select image and select your ISO file.

Click Select drive and select your USB stick.

Click Flash!.

3.2 How to make a bootable DVD

Optical discs are slow and burning to disc is prone to errors.

Note: To prevent issues, burn at the lowest possible speed.

Warning: Burn the content of the ISO onto the DVD, not the ISO file itself. When finished, your DVD should contain directories such as boot and casper, it shouldn't be an empty DVD containing an .iso file.

3.2.1 In Linux

Install and use xfburn.

3.2.2 In Windows

Right-click the ISO file and select Burn disk image.

To make sure the ISO was burned without any errors, select Verify disc after burning.

3.2.3 In Mac OS

Right-click the ISO file and select Burn Disk Image to Disc.

Boot Linux Mint

Now that you have Linux Mint on a USB stick (or DVD) boot the computer from it.

- 1. Insert your USB stick (or DVD) into the computer.
- 2. Restart the computer.
- 3. Before your computer boots your current operating system (Windows, Mac, Linux) you should see your BIOS loading screen. Check the screen or your computer's documentation to know which key to press and instruct your computer to boot on USB (or DVD).

Note: Most BIOS have a special key you can press to select the boot device and all of them have a special key to enter the BIOS configuration screen (from which you can define the boot order). Depending on the BIOS, these special keys can be Escape, F1, F2, F8, F10, F11, F12, or Delete. That information is usually briefly written on the screen during the boot sequence.

Hint: On Macs, keep your finger pressed on the Alt or Option key after hearing the boot sound.

- 4. The Linux Mint ISO can be booted both in EFI or BIOS mode. In EFI mode it shows a grub menu. In BIOS mode it shows an isolinux menu.
- 5. From one of these menu, press Enter to start Linux Mint from your USB stick (or DVD).



Fig. 4.1: The isolinux menu in BIOS mode



Fig. 4.2: The grub menu in EFI mode

Install Linux Mint

5.1 The live session

When you boot the computer from the USB stick (or DVD), Linux Mint starts a live session. It logs you in automatically as a user called mint and shows you a desktop with the installer on it:



Fig. 5.1: The Linux Mint live session

The live session is similar to a normal session (i.e. to Linux Mint once it is permanently installed on the computer), but with the following exceptions:

• The Live session is slower (it is loaded from a USB stick or DVD as opposed to a SSD or HDD).

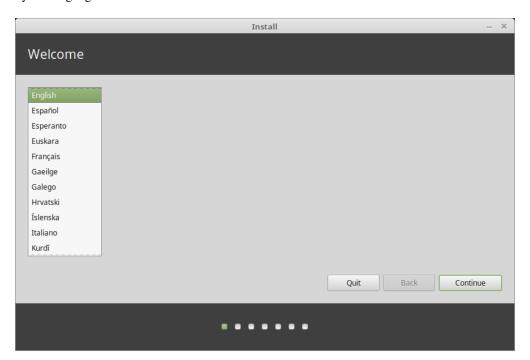
- Changes you make in the live session are not permanent. They are not written to the USB stick (or DVD) and they do not impact the system installed by the installer.
- Some applications work differently (or not at all) in the live session (Timeshift, Flatpak, Update Manager, Welcome Screen..etc.).

Hint: The username for the live session is mint. If asked for a password press Enter.

5.2 Installing Linux Mint on the computer

To permanently install Linux Mint on your computer:

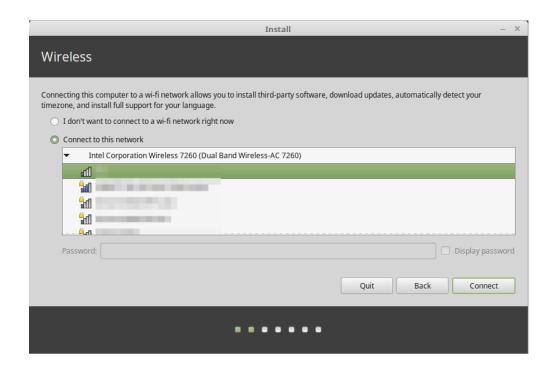
- 1. Double-click Install Linux Mint.
- 2. Select your language.



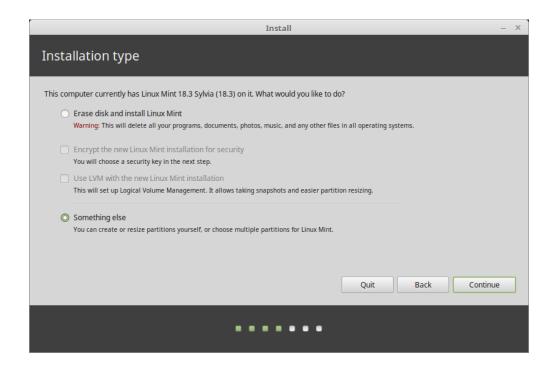
- 3. Connect to the Internet.
- 4. If you are connected to the Internet, tick the box to install the multimedia codecs.
- 5. Choose an installation type.

If Linux Mint is the only operating system you want to run on this computer and all data can be lost on the hard drive, choose *Erase disk and install Linux Mint*.

Warning: Encrypt the new Linux Mint installation for security refers to full disk encryption. At this stage of the installation your keyboard layout wasn't yet selected so it is set to en_US. If you decide to use this option, keep this in mind when entering a password. Note that there are issues with this option and some NVIDIA drivers. If you are new to Linux use home directory encryption instead (you can select it later during the installation).







If another operating system is present on the computer, the installer shows you an option to install Linux Mint alongside it. If you choose this option, the installer automatically resizes your existing operating system, makes room and installs Linux Mint beside it. A boot menu is set up to choose between the two operating systems each time you start your computer.

Note: If you want to manage the partitions or specify which partitions to use, select Something else.

Linux Mint requires one partition to be mounted on the root / directory.

The Linux Mint operating system (without additional software or personal data) takes roughly 15GB, so give this partition a decent size (100GB or more).

ext4 is recommended. It is the most popular Linux filesystem.

Also create a swap partition. This partition is used for hibernation and as a safety buffer in case your computer runs out of RAM. Give this partition a size equal to the amount of RAM in your computer.

- 6. Select your timezone
- 7. Select your keyboard layout
- 8. Enter your user details

Your name can be your real name, but it doesn't have to be. It is only used locally, in the screensaver and on the login screen.

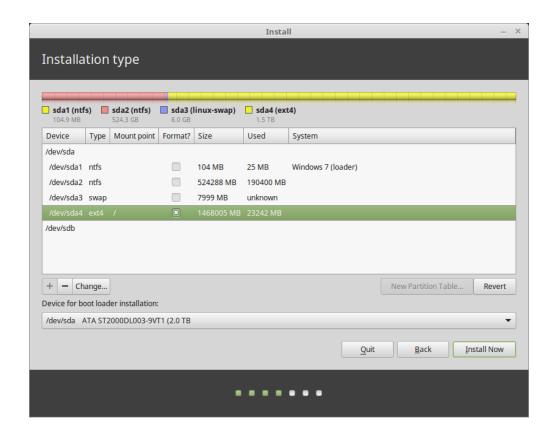
Your username is what you log in as, and your hostname is the name of your computer on the network.

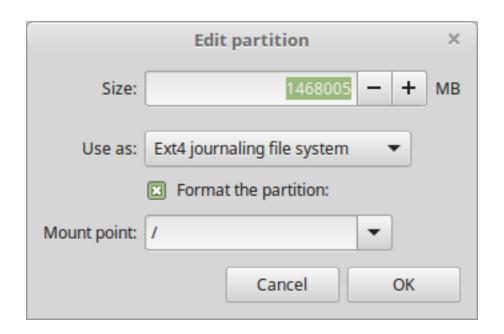
To prevent bugs only use lowercase characters, with no punctuation or accentuation.

To protect your personal data against local attacks (people around you, or in case your computer gets stolen), tick *Encrypt my home folder*.

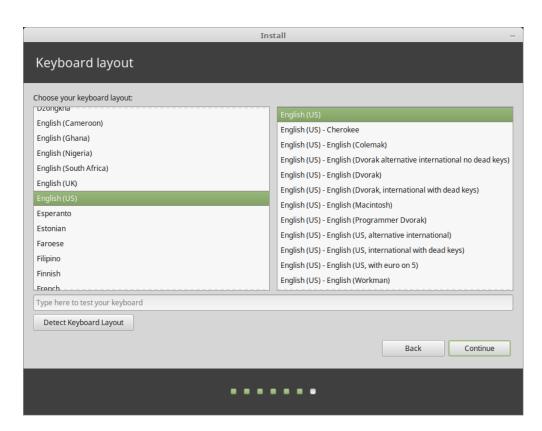
Choose a strong password.

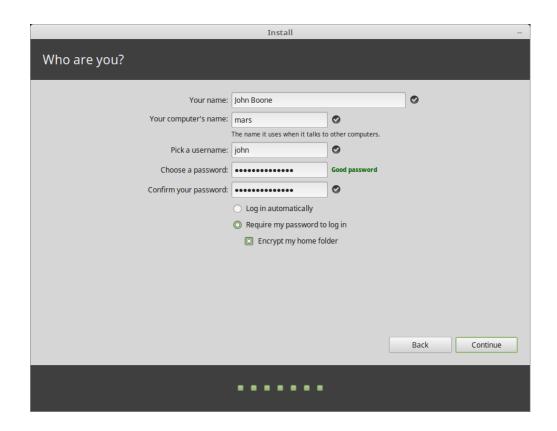
9. Enjoy the slideshow while Linux Mint is installed on your computer.













When the installation is finished, click Restart Now.

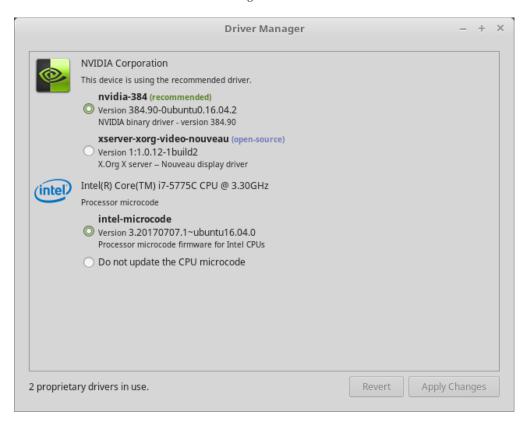


The computer will then start to shut down and ask you to remove the USB disk (or DVD). Upon reboot, your computer should show you a boot menu or start your newly installed Linux Mint operating system.

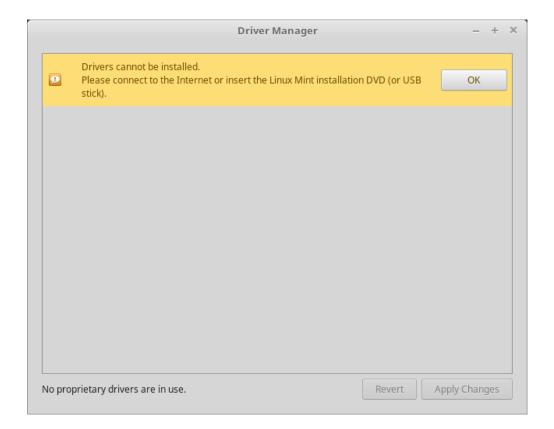
Hardware drivers

One of the first things to do after installing Linux Mint is to check for available hardware drivers.

1. Launch $Menu \rightarrow Administration \rightarrow Driver Manager$.



Hint: If you are offline, the Driver Manager will complain that it cannot connect to the Internet.



Insert your bootable Linux Mint USB stick (or DVD), wait for it to be mounted, and click OK.

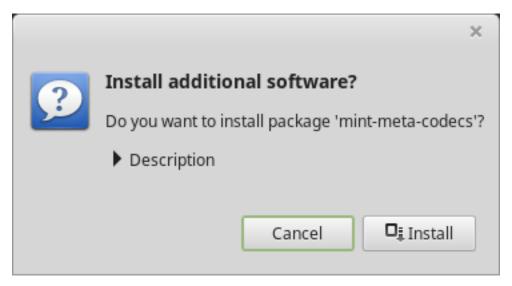
- 2. Tick the appropriate checkboxes to select the available drivers and click *Apply Changes*.
- 3. Restart the computer.

Multimedia codecs

Some multimedia content requires additional codecs to be installed.

Note: If you were online when installing Linux Mint and you ticked the option to install these codecs, they are already installed.

1. Launch $Menu \rightarrow Sound \& Video \rightarrow Install Multimedia Codecs.$

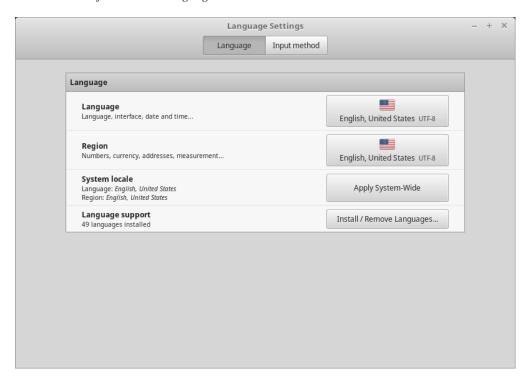


- 2. Click Install.
- 3. Enter your password and wait for the codecs to be installed on your computer.

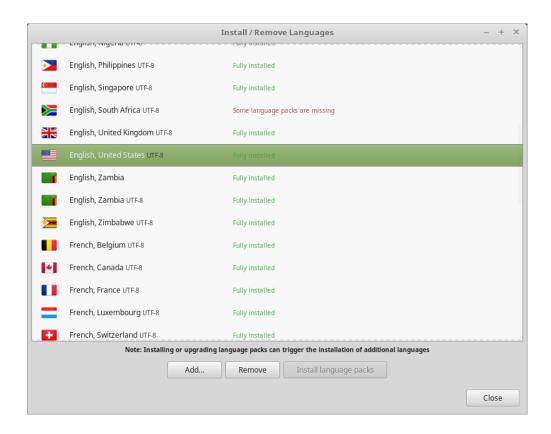
Language support

Language support includes translations but also packages related to spell-checking, synonyms, hyphenation and dictionnaries which enhance your experience in software applications such as LibreOffice.

1. Launch $Menu \rightarrow Preferences \rightarrow Languages$.



- 2. Click Install / Remove Language.
- 3. If beside your locale, you see a label saying Some language packs are missing, select your locale and click *Install language packs*.



System snapshots

Before you start using your operating system, set up system snapshots. Then if anything goes wrong, you can restore your system from an earlier backup.

- 1. Launch $Menu \rightarrow Administration \rightarrow Timeshift$.
- 2. Select RSYNC and click Next.
- 3. Select the device where you want system snapshots to be saved and click Next.

Note: The selected device is not formatted and no data is lost. System snapshots are saved into a newly created timeshift directory on the root of the selected device.

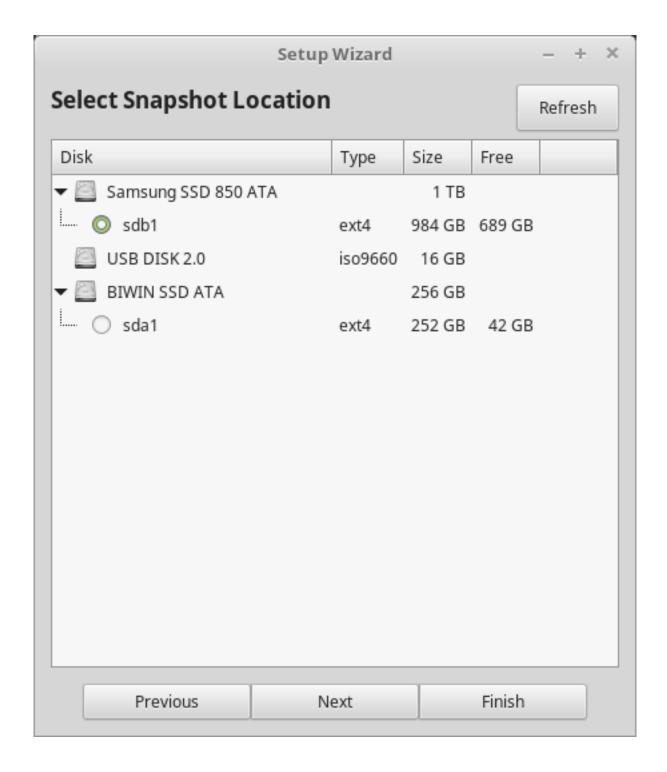
4. Select when system snapshots are saved.

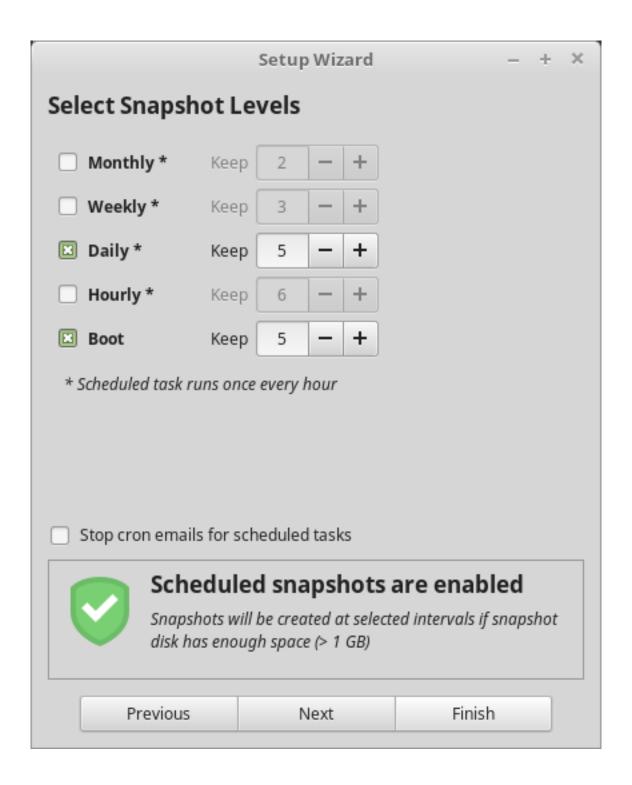
Note: System snapshots are incremental so although the first snapshot takes a significant amount of spaces, new snapshots only take additional space for files which have changed.

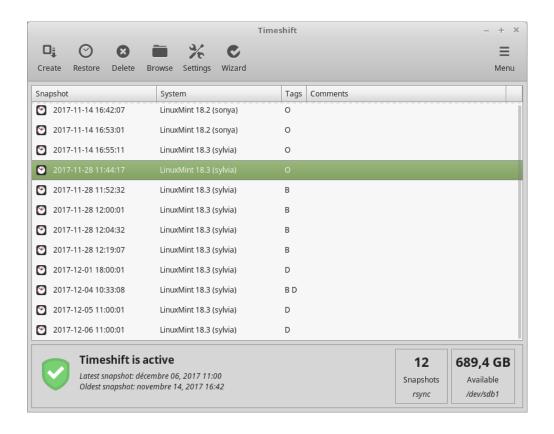
Note: Boot snapshots are performed in the background and do not impact the speed of the boot sequence.

5. Click Finish.

Setup Wizard Select Snapshot Type RSYNC BTRFS RSYNC Snapshots Snapshots are created by creating copies of system files using rsync, and hard-linking unchanged files from previous snapshot. All files are copied when first snapshot is created. Subsequent snapshots are incremental. Unchanged files will be hard-linked from the previous snapshot if available. Snapshots can be saved to any disk formatted with a Linux file system. Saving snapshots to non-system or external disk allows the system to be restored even if system disk is damaged or re-formatted. Files and directories can be excluded to save disk space. Previous Finish Next







EFI

10.1 SecureBoot

If after installing Linux Mint in EFI mode, you are unable to boot due to a Secure Boot Violation, you can try one of the following solutions:



• Restart the installation:

- Connect to the Internet before the installation
- Do not select Install third-party software for graphics and Wi-Fi hardware, Flash, MP3 and other media.
- Disable SecureBoot in the BIOS settings of your computer.

10.2 EFI boot order

If after installing Linux Mint in EFI mode, your computer skips the boot menu and boots straight into Windows (or another operating system), you probably have an issue with the boot order.

To modify the boot order:

- 1. Boot Linux Mint in live mode (with your USB stick or DVD).
- 2. Open a terminal.
- 3. Type sudo efibootmgr.

This command lists the available boot options and the boot order.

```
File Edit View Search Terminal Help

mint@mint ~ $ sudo efibootmgr
BootCurrent: 0000
Timeout: 5 seconds
Boot0000* ubuntu
Boot0001* linuxmint
Boot0081* Mac OS X
Boot0082*
mint@mint ~ $ ■
```

In the screenshot above, there are three boot options:

- ubuntu at 0000
- linuxmint at 0001
- Mac OS X at 0081

The boot order is 0081. This indicates that the computer only tries to boot Mac OS and not Linux Mint.

Important: For technical reasons Linux Mint uses ubuntu as its EFI boot name.

4. To fix the boot order, type sudo efibootmgr --bootorder XXXX, YYYY (where XXXX and YYYY are the operating system boot options you want to boot).

In the screenshot above, sudo efibootmgr —bootorder 0000,0081 instructs the computer to first try to boot Linux Mint (ubuntu being the EFI boot name for Linux Mint), and then Mac OS.

5. Restart the computer.

34 Chapter 10. EFI

```
File Edit View Search Terminal Help

mint@mint ~ $ sudo efibootmgr --bootorder 0000,0081

BootCurrent: 0000

Timeout: 5 seconds

Boot0000* ubuntu

Boot00001* linuxmint

Boot0081* Mac OS X

Boot0082*

mint@mint ~ $ ■
```

Note: In the screenshot above 0000 is the first boot option so the computer boots on the Linux Mint grub menu. If grub fails (or if it is dismissed with the exit command), the computer follows the boot order and then tries to boot 0081, which corresponds to Mac OS.

10.2. EFI boot order 35

36 Chapter 10. EFI

Boot options

Some graphics cards and motherboards don't work well with the open-source drivers present in Linux Mint by default.

11.1 Compatibility mode

The easiest option is to select compatibility mode from the USB stick (or DVD) boot menu.

If that doesn't work, you can try the nomodeset boot option.

11.2 Nomodeset boot option

In EFI mode, highlight the Start Linux Mint option and press e to modify the boot options.

Replace quiet splash with nomodeset and press F10 to boot.

In BIOS mode, highlight Start Linux Mint and press Tab to modify the boot options.

Replace quiet splash with nomodeset and press Enter to boot.

Repeat this operation post-install in your grub boot menu and read *Hardware drivers* to install additional drivers.

11.3 Other boot options

If you still cannot boot try one of the following solutions:

- Try nouveau.noaccel=1 instead of nomodeset.
- After the installation, use *Advanced Options* → *Recovery mode* from the boot menu and choose resume.

```
Start Linux Mint 18:3 Cinnamon 64-bit
Start Linux Mint 18:3 Cinnamon 64-bit
Start Linux Mint 18:3 Cinnamon 64-bit
(compatibility mode)

Check the Integrity of the medium

Use the | and | keys to select which entry is highlighted.

Press enter to boot the selected OS, 'e' to edit the commands before booting or 'c' for a command-line. ESC to return previous menu.
```

Fig. 11.1: Grub menu (EFI mode)



Fig. 11.2: Isolinux menu (BIOS mode)

```
Setparams 'Start Linux Mint 18.3 Cinnamon 64-bit'

set gfxpayloadskeep
linux /casper/vmlinuz file=/cdrom/preseed/linuxmint.seed boot=casper iso-scan/filename=${iso_path} nomod\
eset_--
initrd /casper/lnitrd.lz

Minimum Emacs-like screen editing is supported. TAB lists completions. Press Ctrl-x or F10 to boot, Ctrl-c or F2 for a command-line or ESC to discard edits and return to the GRUB menu.
```



11.4 Install an older release

If your computer has compatibility issues with the latest Linux Mint release, install a previous release from the same Linux Mint series.

For instance, if you can't install Linux Mint 18.3 (which comes with a 4.10 kernel), install Linux Mint 18 (which comes with a 4.4 kernel) and upgrade to 18.3.

Note: The first release in each series uses an LTS (Long Term Support) kernel. Upgrading from this release to the latest one in the series does not change your kernel.

Multi-boot

12.1 Always install Windows first

Windows does not detect other operating systems and does not feature a boot menu. When you install it, it overwrites your boot sequence and your computer then boots straight into Windows.

Linux Mint (and most Linux distributions) detects other operating systems and builds a menu from which you can choose which system to boot.

For this reason, if you want to dual-boot or multi-boot with Windows, it is easier and recommended to install Windows first, before you install Linux Mint.

12.2 Fix the boot sequence

If Windows overwrites your boot sequence:

- 1. Boot Linux Mint in live mode (with your USB stick or DVD).
- 2. Open a terminal.
- 3. To list your partitions, type lsblk -f.

Find the partition where Linux Mint is installed. On most systems this should be the only ext4 partition.

In the screenshot above:

- sdb is the USB stick (recognizable by its iso9660 type which corresponds to an ISO image).
- sda is the hard drive.
- sda4 is the partition on the sda hard drive, where Linux Mint is installed.

To list partition sizes, type lsblk:

To list partition labels, type blkid:

3. Mount the Linux Mint partition and reinstall the grub menu with the following commands:

```
sudo mount /dev/sda4 /mnt
sudo grub-install --root-directory=/mnt /dev/sda
```

Warning: In the commands above, replace /dev/sda4 and /dev/sda with the appropriate names for your Linux Mint partition and your hard drive device.

Partitioning

13.1 Disks and partitions under Linux

If you are not familiar with the Linux naming scheme for devices and partitions, or the concept of filesystems and mount points, read:

- A beginner's guide to disks and disk partitions in Linux
- Device Names in Linux
- Understanding the Linux File System

13.2 Dedicated /home partition

In Linux, the /home directory is used to store user data and preferences.

This directory contains one subdirectoy for each user account. Say your username is john, your home directory is / home/john, your downloads are in /home/john/Downloads, your documents in /home/john/Documents, your Firefox bookmarks somewhere in /home/john/.mozilla and so on...

By giving /home its own dedicated partition, you separate the user data from the rest of the operating system.

The advantage is that you can wipe the operating system and replace it without affecting the user data.

When installing Linux Mint:

- 1. Assign the / mount point to the partition dedicated to the operating system, and tell the installer to format it.
- 2. Assign the /home mount point to the partition dedicated to the user data, and if it contains user data already, make sure to tell the installer **not to format it**.

Warning: This is not recommended for novice users. A misstep during the installation could wipe all your data. Always make backups, make sure to select the right partitions and to carefully review formatting options.

Note: A Linux Mint operating system takes about 15GB and grows as you install additional software. If you can spare the size, give it 100GB. Keep most of your free space for the home partition. User data (downloads, videos, pictures) takes a lot more space.

Pre-installing Linux Mint (OEM Installation)

In the ISO boot menu, OEM install is used to preinstall Linux Mint.

This option is useful to:

- Manufacturers and resellers who want to install Linux Mint on computers they sell to their customers.
- People who want to sell or give their computer to somebody else.

When you install Linux Mint in OEM mode, the operating system is installed with a temporary user account and prepared for the computer's future owner.

The user account is set up by the new owner.

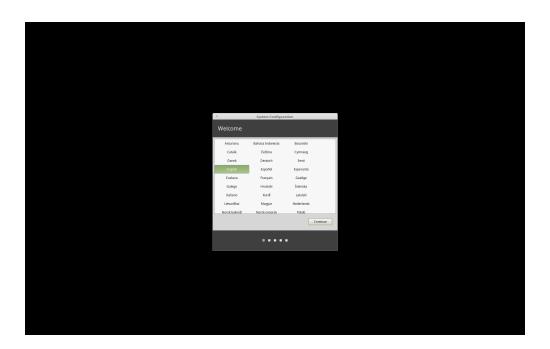
To perform an OEM installation follow the steps below:

- 1. Select OEM Install from the USB stick (or DVD) menu.
- 2. Launch the installer and follow the installation instructions.
- 3. Restart the computer.
- 4. Change any system settings or install additional software if you want.
- 5. When ready, click *Prepare for shipping to end user*, enter the password you chose during the installation, click *OK* and shut down the computer.

When the new owner of the computer boots the computer the following screen appears:

The new owner selects his or her username, password, keyboard layout, language, timezone and all the details relevant to create his or her user account.





Where to find help

Many users will be glad to help you and guide you through your first steps with Linux if you are nice and patient with them and if you give them the information they require to understand the issues you are facing.

15.1 The forums

The best place to find help is on the Linux Mint Forums.

Hint: Search the forums before asking, in case someone else already asked the same question.

15.2 The chat room

Another great place to find help is in the IRC chat room.

To reach the chat room from within Linux Mint, launch $Menu \rightarrow Internet \rightarrow HexChat$.

If you are using another operating system, you can use Kiwiirc to connect to the chat room.

Hint: Many people are connected to the chat room but only look at it now and then. Be patient after asking a question. Don't repeat it and stay connected until you get an answer. It can sometimes take a few hours for somebody to see your question and reply to you. Don't quit after a few minutes. It is frustrating to you, but also to others who later see your question and are unable to reply because you already left.

Hint: If you are using Hexchat, you can minimize it to tray by clicking its status icon. People will often mention your nickname when replying to you. When they do, your Hexchat status icon will blink to catch your attention.

15.3 Community resources

The tutorials section is useful to find tutorials about Linux Mint.

The hardware database is useful to find compatible hardware.