

Switch to Linux Mint !

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1. Why you should install Linux Mint ?

1. Microsoft windows and its softwares costs heavily. Free anti-virus software and other free utilities irritate by constantly reminding to buy their professional version. In due course, installed free version might disable certain features or may deliberately malfunction. In the end either you have a very unstable system or you spend money for their professional versions.

2. People download pirated Microsoft windows softwares free from torrent sites. If a common person can easily have access to these sites or their proxies, how can Microsoft and other software companies be ignorant of them ? They could have stopped piracy by blocking these sites or by applying other technical measures. But these software companies do not want to stop piracy completely because if piracy is totally stopped computer users will immediately switch to Linux which is totally free including its application softwares. Hardware manufacturers will start building hardware compatible with Linux. Thus Microsoft and windows software companies will face danger of bankruptcy.

Downloading pirated softwares costs heavily in many ways :- a) At random few persons are booked under piracy laws and are severely punished. (Because of this fear enough people buy genuine software to make software companies rich). b) Google keeps record of every web activity and knows who have illegally downloaded softwares. People downloading software illegally unconsciously become prone to be morally corrupted.

3. Because source code of windows and its applications is closed, they only can solve their software issues. They may be unwilling to do so, because “problem will be resolved with the next version” or the product may be no longer supported.

4. Whenever windows applications are installed software dependencies (other programs needed to run the software) are also installed by default. As a result, same dependencies with different names are likely to be installed. Thus lot of junk is created and system becomes slow or unstable.

5. A music player is permitted to use only music files, a word processor only text files, video player only video files and so on. But, anti-virus softwares are given many permissions to scan whole computer file system therefore, Installing an anti-virus software is inviting risks. Anti-virus software can itself become victim of viruses or may have inherent weak spots which can infect an anti-virus program. There is no check on them. They can easily hide their own failure by blaming recently released viruses, because there is always a big time gap between release of new viruses and finding their solution and incorporating that solutions in updates. Windows need anti-virus software as necessary evil because applications comes from variety of unpredictable sources.

6. Windows systems have proprietary hardware. The biggest issue with proprietary drivers is bug fixing. Using a proprietary driver is to be at the mercy of the hardware manufacturer’s own release schedule. If the driver has a serious bug, you’ll either have to work around it or put up with troubling issues until the manufacturer offers an update. Linux system is a bit different.

2. Benefits of Linux Mint.

1. Linux operating system as well as all Linux applications are free of cost. Libre office is a complete office suite. You have GIMP as photo editing software. Blender is 3D animation software. You

have OpenShot video editor. uGet is very good download manager. Handbrake is video converter. VLC is top media player. Firefox is best web browser. Transmission is torrent down loader. Rhythmbox is a software to play and organize your music. Kde Marble is an interactive globe. Artha is an English dictionary . There are KAlgebra and many other educational softwares and hundreds of games. You find every type of application in Linux.

2. Linux Mint is very similar to windows therefore one should not experience any problem from switching to Linux mint. Other Linux distros such as Ubuntu, Red Hat etc are not as user friendly as Linux Mint is.

3. Linux is very stable and safe computer system because it is an open code platform i.e. any person knowing programming can read it's source code. Thousands of programmers out of their hobby and dedication to Linux community, as well as paid programmers daily scrutinize the Linux OS and every application created for Linux to find out weak spots for virus attack and find ways of improving it. Thus, Linux is not a company but a community dedicated to develop free software.

You do not find Linux applications in Google search because all Linux softwares have to be downloaded from "[Linux repositories](#)" a website that contain all tested and verified Linux softwares. If any weak spot is revealed, it is immediately reported and solved with an update. Updates are released almost daily.

Whenever you download any software from Linux repository, you automatically download dependency softwares needed to run the program. If your Linux system already has those dependency softwares, Software manager / synaptic package manager will download only application software and discard dependencies. This does not overload Linux system with junk software.

4. You do not have to install any anti-virus program for Linux. An anti-virus program does not appear in any authentic Linux repository. Any virus attack, is quickly noticed by Linux community,

solved and fixed through security updates which are released almost daily. Linux system in reality does not need any anti-virus software because no virus can enter into Linux Kernel unless it has obtained your root password. Any company that develops anti-virus software for Linux, exploits fear of persons who have shifted from windows to Linux and are conditioned to use an anti-virus program.

5. When you install Linux, you join Linux community. You realize that the most stable and reliable Linux computer system that you are enjoying is the fruit of continuous efforts of thousands of people dedicated to create free software. Therefore, you develop sense of community belonging. Unknowingly you develop mentality of helping others. Thus you march towards morality, trust, and cooperation.

3. Switching to Linux Smoothly

1. Choosing Right Hardware :- Linux community strongly support free and open source software, they realize proprietary drivers need to be used in certain situations. Because of this, Ubuntu automatically installs proprietary drivers by default if no open source alternative exists or if the open source version is not yet good enough. In such cases, the use of proprietary drivers is considered as a necessary evil.

When you buy computer hardware such as motherboard, CPU, modem, Printer, etc ensure that it is Linux compatible and comes with drivers for Linux. Do not buy any hardware that does not support Linux. Do little research on web, visit hardware manufacturers sites to find proper Linux compatible computer hardware.

2. Choosing Right Linux Disto :- For those who are migrating from windows to Linux, Linux mint is best option. It is very similar to windows. Ubuntu etc are for users who have earned sufficient experience in operating user friendly Linux distros.

4. Installing Linux Mint

1. Downloading Linux Mint and creating Bootable media

:- You can download latest version of Linux mint from Linux mint website and create a bootable DVD by burning a disk image with the help of softwares such as Burnaware free. If you do not have a DVD drive, you can create a bootable pen-drive with the help of program called as Rufus. Insert DVD / pen-drive.

2. Understanding BIOS, UEFI and Hard Disk Partitions :-

BIOS : The traditional BIOS is found on old computers which has serious limitations. It can only boot from drives of 2.1 TB or less. BIOS uses MBR (master boot record) partitioning scheme. The MBR (also known as DOS or MS-DOS partition table) is not located in a partition; it is located at the first sector of the device (physical offset 0), preceding the first partition. It is the first 512 bytes of a storage device. It contains an operating system boot-loader and the storage device's partition table. The BIOS runs in 16-bit processor mode, and only has 1 MB of space to execute in. Therefore, multiple hardware devices can not be initialized at once. This leads to a slower boot process.

Hard Disk Partitions :- In the MBR partition table there are 3 types of partitions : Primary, Extended and Logical. Primary partitions can be bootable and are limited to four partitions per disk volume. If the MBR partition table requires more than four partitions, then one of the primary partitions needs to be replaced by an extended partition containing logical partitions within it. Extended partitions can be thought of as containers for logical partitions. A hard disk can contain no more than one extended partition. The extended partition is counted as a primary partition so if the disk has an extended partition, only three additional primary partitions are possible. The number of logical partitions in an extended partition is unlimited.

In Linux, primary partitions are sda1, sda2 and sda3. An

extended partition is sda4 and logical partitions on sda4 are numbered sda5, sda6 and so on.

UEFI : is a modern solution, supporting larger hard drives. The UEFI can boot from drives of 2.2 TB or larger. Its the theoretical limit is 9.4 zettabytes, three times the estimated size of all the data on the Internet. UEFI has faster boot time, more security features, graphics and mouse cursors.

UEFI uses GUID Partition Table (GPT) :- UEFI is a tiny operating system that runs on top of the PC's firmware. It boots by launching EFI executables. UEFI can run in 32-bit or 64-bit mode and has more addressable address space, therefore, boot process is faster. UEFI supports Secure Boot, which means the operating system can be checked for validity to ensure no malware has tampered with the boot process. GPT is must if you are partitioning a disk of 2 TiB or larger. By default the GPT table contains space for defining 128 partitions. Therefore, there is no need for extended and logical partitions. Newer PCs with UEFI still refer to it as the "BIOS" to avoid confusion among people used to a traditional PC BIOS.

3. Changes in Motherboard Bois :- If there is no boot options when you power on a newer computer then Disable Fastboot - Enable Launch CSM. Go to Security tab and disable Safe boot. Then save and exit. Computer will restart.

Press F1 key while in BIOS menu it will indicate which key to be pressed for boot options (hard drive / pen drive / DVD drive). Accordingly choose appropriate boot option such as DVD drive or pen-drive whichever has bootable Linux Mint.

Installation Process :- Installing Linux mint alongside the windows (dual boot system) causes problems sooner or later. Therefore, one should have a dedicated computer for Linux. When computer is powered on, Linux Mint will be automatically loaded from the inserted Linux mint bootable drive media. On the desk top itself there will appear an icon to install Linux Mint. Double click on

the icon and installation process will begin.

In the first Screen you will have to choose language such as English and click on continue tab. In next window you are asked whether to install third party softwares. Select this option and click on continue tab. In installation type first option is "erase disk and install Linux Mint". If you choose this option Linux mint will automatically create necessary partitions (efi partition and Linux Mint Partition) and install Linux Mint. But choosing this option has one drawback. Since your data is in home folder in Linux partition itself, if for any reasons Linux is not loading, you may not be able to recover your data. Therefore the best approach is to choose last option "**Something else**" and click on install now tab.

You will be shown partitioning screen. - (minus sign) tab means delete the selected hard disk area. Using minus sign tab you can delete pre existing partitions on the hard disk. + (plus sign) tab means create partition from selected hard disk area.

Minimum UEFI / GPT partitioning layout :-

1. EFI system partition of at least 550 MB (Note : If you specify efi partition size as 551 MB, there will a partition of 1 MB and efi partition of 550 MB).

2. Linux root partition (/) , at least 23-32 GiB. Choose / (forward slash) and extension 4 as file system. In the Root Partition (/) all Linux system files and directories are stored.

3. Swap area or partition, at least 1 GiB. A swap area provides space that can be used as virtual RAM.

4. Remaining disk area for **"/home"** partition and extension 4 file system. In home partition your data is stored which you create using various applications; and files that you download.

There are two drop down menus, one for swap, efi, etc and another for file system such as fat 32, ntfs, extension 4 and so on. Choose from these menus an appropriate option for each partition

mentioned above. (Note : In a BIOS/MBR layout you do not have efi partition. You should have only root (/), Swap area and a "/home" partition).

Once you create your partitions and click on install, you will be asked to choose your location, keyboard location, and finally computer name and password. After that installation process will start. it may take 10-15 minutes for installation.

Connecting internet:- D-Link DWR-710 usb modem supports Linux. It automatically connects internet. There are modems that do not support Linux. When you insert such USB modem, Linux gets confused whether it is USB modem or a storage media. This happens because most of the USB modems contain a micro SD card slot to copy data on it. When you first time insert your USB modem it is detected as mass storage media. When you eject it and reinsert, it is detected as modem. But unfortunately in most cases it does not activate proprietary modems. Therefore, connecting internet through non supporting USB modem may fail. Linux developers should solve this problem because internet connection is basic requirement for a Linux system to install and update packages. Linux websites should provide list of modems that support Linux.

Another option is to attach your cell phone to computer and connect to internet by activating necessary commands in cell phone.

5. Customizing Linux Mint

1. Enabling firewall :- You can find firewall by Menu > system setting (icon) > firewall (icon). Simply enable firewall.

2. Enabling Timeshift / Snapshot :- In Linux Mint 19 timeshift is a default feature. Launch "Menu -> Administration -> Timeshift". Follow the wizard to select a destination for your snapshots. In the toolbar, click on the "Create" button to make a manual snapshot of your operating system. OR :- Click update manager icon at task bar at bottom right side. Go to files > snapshot. Choose location,

duration etc from the tabs and finally press "create". Linux Mint will create snapshot of your system. With the help of these snapshot you can restore your previous system.

3. Increasing font size for clear look :- Click Menu > System Setting icon > Fonts icon and then in fonts setting click on + sign to increase font size. 1.2 is best choice for better view.

4. Installing language fonts manually :- First, create a font directory newfonts by Issuing the command **sudo mkdir /usr/share/fonts/truetype/newfonts** You will have to enter your sudo password to complete this task. Once this directory is created, paste all your *.ttf or *.TTF font files in the newfonts directory. You will have to open newfonts folder as a root user. You will be asked to enter password. Then you need to issue the command **fc-cache -f -v** to make the system aware of the new fonts. Once this is done, the system knows about the new fonts and all the system users will have access to them.

6. Updating Software Packages

Updating software packages is very easy. At the bottom of your taskbar there is update manager icon. Click on this icon. In edit menu choose preferences. In its options tab in updates choose only "include updates which require the installation of new packages". All other choices in this update should be unchecked. In level tab select only level 1 and 2 updates to be visible because installing level 3 and 4 updates may be some what risky. Choosing above options update manager will show you only level 1 and level 2 updates. Thus you will be installing only safe updates. Click apply and close the update manager.

Connect to internet and then click update manager icon. Click on refresh option. Update manager will show you only level 1 and level 2 updates. Click on "install updates". You will be asked to enter your password. Then updates will be installed.

7. Installing Applications

Click Menu > Administration > Software manager. There are large number of softwares available with each software category shown below. You can choose from editor's pick which are most popular softwares. In the find window type the name of software such as vlc and the program description will be shown. Click on install tab and the vlc will be installed. If the software is not available with software manager it will look in to repository through your internet connection and then will install it for you. You may be asked to enter your password.

Always keep default Ubuntu as your main repository. Make sure you trust the other software source before adding any repository to your computer as one of the repositories. Because, when you add a software repository as a source to Linux Mint, you are giving it full control of your computer because the setup scripts in the packaging run with superuser rights and malicious software could be masquerading as something useful.

8. Learn step by step, one thing at a time

One should not try to learn many things at once. Get acquainted with each program. Take sufficient time to research and learn.

The best approach is to use only graphic interface than the command line (terminal window). Use command line (terminal Window) occasionally when you are 100% sure that whatever command you are using as a super user will not harm your system. Because root password has unlimited power, one can destroy the whole Linux system if not used carefully.

9. Upgrading to Linux Mint

Upgrading is not reasonable if you're already happy and everything is working fine. Read the release notes to know whether the new features are worthy to you. Each new version of Linux Mint

comes with a new kernel. It handles hardware differently. Therefore, it may not recognize a particular hardware. You can try the newer release on your computer with the help of DVD or usb stick to see if your hardware is recognized before you upgrade.

1. Fresh upgrade / Installation

If you find upgrading is worthy then use the live DVD / pen drive consisting the new release to perform a new installation on your existing Linux partitions. **Remember that during selecting partitions do not select format partition for your /home partition since this partition contains all your data. Otherwise you will loose your data if it is not backed up.** A "Fresh" upgrade consists of the following steps : 1. Making a backup of the data. 2. Making a backup of the software selection. 3. Performing a fresh installation using the live DVD / pen drive of the new release. 4. Restoring the data. 5. Restoring the software selection. A fresh installation is :- a) It is safe since your data is backed up externally. Whatever mistake you make or whatever bug happens during the installation cannot affect it. b) It is fast. Downloading the ISO and upgrading from the DVD pen drive is much faster than upgrading the system from the repositories. c) It is reliable. You get the opportunity to test your hardware detection in the new release using the live DVD / pen drive. If anything is wrong you can simply decide not to upgrade, it's not too late. Second, you end up with a fresh installation of Linux Mint, i.e. a system that was fully tested by the development team and the community. d) It is Easy as things go as planned.

2. Package upgrade

A "package" upgrade using APT command is tedious and has several disadvantages therefore it is strongly recommended that one should not go for it.
