Retrofitting Linux on Computers for Maximising Business Productivity

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We first came across this issue when we decided to retrofit some of the older computers in our office with Linux. It is well known that Microsoft Windows does not run very well on older computers. Linux is a viable alternative in such a scenario. Older computers, that is hardware, are marked by three major limitations: Processor architecture, memory and free disk space. Of these three attributes, architecture matters most. Most modern operating systems default to a 64-bit processor. Much older computers only offer a 32-bit processor, which therefore requires a 32-bit operating system. Interestingly, Windows 10's minimum system requirements cover machines that are sourced from a decade ago:
Processor: 1 gigahertz (GHz) or faster processor or SoC.
1 gigabyte (GB) for 32-bit or 2 GB for 64-bit.
Hard disk space: 16 GB for 32-bit OS 20 GB for 64-bit OS.
Graphics card: DirectX 9 or later with WDDM 1.0 driver.
Display: 800 x 600.
However, although computers with 4 GB of RAM and 30 GB of disk space can, in theory, support any modern operating system, the newest operating systems work best with 8 GB of RAM and 100 GB or more of open disk space. Older computers at the lower end of the tier work well with specific Linux configurations.
Part of the richness of the Linux ecosystem derives from a robust offering of variants — called distributions — that focus specific combinations of under-the-hood architecture with defined sets of tools. Different distributions offer different blends of features. Although all Linux distributions are based on the Linux kernel, each offers a set of major differentiating criteria that distinguishes it:
Architecture: The type of chips that the distribution supports through the included kernel.
Init Software: The underlying approach to launching and managing processes.

Package Manager: The default package-management tool for the distribution.
Desktop Manager: The graphical user interface for the distribution.

Architecture

Architecture matters because not all Linux distributions support every possible configuration of processors in the world. The reason you cannot run Microsoft Windows on an Android tablet, for example, is because Windows only supports Intel- or AMD-based desktop processors or ARM-based processors on mobile. Linux supports a wide variety of architectures. If you run a standard desktop computer or a laptop, you are likely to find that nearly every distribution works well on your machine. However, if you are retrofitting Linux on a very old computer, the processor matters much more. A distribution that only offers 64-bit processor support, for example, will not work on a 32-bit processor.

The most common architectures you will need to consider include:

x86 (or i586/i686): A 32-bit Intel- and AMD-compatible chipset.
x86_64: A 64-bit Intel- and AMD-compatible chipset.
ARM: A mobile-optimised chipset common in tablets and smartphones.
PowerPC: The "old" chipset for Apple's hardware.

Your distribution must be compatible with your chipset, but there is no "better or worse" distribution based on chipset alone. It is an all-or-nothing compatibility question.

Init Software

Strictly speaking, init software is the very first process that launches when the Linux-based computer boots. It is a daemon that runs for the entire duration of the system's uptime; it is the parent process of every subsequent process that launches on the machine. The choice of init software is controversial in the sense that different power users argue for-and-against SysV versus systemd. The choice is not trivial; this software governs how the system manages processes.

SysV: A "traditional" init system with roots in Unix SystemV. It is considered stable but arguably less-featured than systemd.
systemd: A more modern, highly integrated init system.

Other forms of init software also dot the market but SysV and systemd are the heavy hitters. Your choice of init software is largely irrelevant unless you are a power user who favours one over the other. Most modern distributions have come to rely on systemd, so SysV and alternative inits are increasingly harder to find.

Package Manager

All Linux software ships in the form of a package. Different package managers manage the archiving and management of these packages. Most packages are not interchangeable, although utilities like alien convert among some package types. Different distributions rely on specific package managers. Although you are free to pick the specific tool for managing

packages, the package type is hard-coded into the distribution. Different distributions maintain different repositories for available software. Some software authored by independent developers may appear in only one or two package formats.

Desktop Environment

When people think about the major differences between Linux distributions, they tend to think of the desktop environment — but the irony is that most distributions support the installation of most desktop environments. The "best" desktop environments balance configurability with the relative resource consumption of the DE itself. A brand-new computer, or a computer with high-end specifications, can run any desktop environment with the smoothness of melted butter. But on lower-end or older hardware, particularly in the netbook space, the selection of DE can make-or-break the usability of the entire system.

How to Install Linux

Installing Linux follows a similar pathway regardless of the distribution. All you need to install Linux is a computer with available hard-drive space, a flash drive and a copy of the installer for a specific Linux distribution.

Linux runs on almost any hardware, including very old desktop and laptop computers that otherwise struggle to run modern Windows or macOS hardware. Before you get started, check your hardware specifications. Every operating system supports a limited number of processor types. Microsoft Windows, for example, supports Intel and AMD processors by default and can support ARM processors in special Windows 10 variants. Linux supports many different processors but each individual distribution only supports a subset of them. Thus, the scope of distributions available to you is dependent on your processor. If your computer uses Intel or AMD processors, you are generally safe in almost all circumstances. More obscure processors are hit-or-miss in terms of distribution support.

Select a Linux Distribution and Select a Desktop Environment

Of all the choices you must make, the selection of a DE, or a distribution with a default DE, is among the most significant because the DE is the single biggest consumer of system resources. The newer, flashier DEs (including KDE Plasma) work great on modern hardware, whereas older and less-intensive DEs like LXDE fly even on decade-old equipment. It may not matter if your preferred DE is not a default option for your preferred distribution. In most cases, you are free to install your favourite DE just as you would install any other application package.

Plan Your Installation Strategy

Pick any one out of three different options:

1. Install Linux on the entire hard drive, overwriting any existing operating system.
2. Install Linux to a virtual machine.
3. Install Linux on part of a hard drive, alongside an existing operating system.

Of these, the easiest option is to simply wipe everything and install Linux to over the entire hard disk. Some people prefer to run Linux as a virtual machine within a host operating system. For example, Windows 10 Professional supports Hyper-V, within which any Linux distribution may be installed. It runs in a window. Similarly, tools like VirtualBox also support full-featured Linux computers within a Windows session. You will still allocate some disk space and memory for Linux, but it will subtract from what Windows requires. Virtual machines are great options if you have got plenty of disk space and available RAM — 16 GB or more. Installing Linux alongside Windows or macOS requires an extra step. Before you install Linux, you must use Windows or macOS to free disk space safely.

All computers, when they are initially powered, run a diagnostic utility and a tiny hardware-based operating system that facilitates the loading of your "regular" operating system. On old computers, this hardware OS is called the BIOS. On modern computers, it is called the UEFI. If your computer uses UEFI, you will need to tweak how you burn your ISO to Flash.

Write the Distribution's Installer to a USB Drive

In most cases, you will download an ISO file from your distribution's website. This ISO is technically a disc image originally intended for burning to CDs or DVDs. Now, most people write the ISO to a dedicated removable USB drive. After you have prepared the USB stick, backed up essential files, and — if necessary — resized your Windows or macOS volumes, you are ready to install Linux.

Install Linux

Almost all Linux distributions install with a similar graphical installer. Although each distribution offers its own quirks and screens, for the most part, they are fairly interchangeable. The only complex distributions are those without a graphical installer — e.g., Slackware. The process typically unfolds as follows:

1. Reboot your computer with the USB drive plugged in. Depending on how your computer is configured, it will either boot to the USB drive, or you will have to press some sort of escape-key sequence to prompt an alternative boot order. Watch your computer's screen during the initial start-up sequence. Often, you will see a brief message advising you to press a special key to launch the BIOS/UEFI settings or to modify the boot-device order.
2. Allow Linux to load. Depending on the distribution, it will either push you to an installer program or it will load a live USB environment. In the live environment, you are free to play with it a few minutes to verify you are comfortable with the distribution. When you are ready to install Linux to disk from the live environment, select the Install Linux or equivalent utility. Often, this utility resides as an icon on the desktop.

3. Answer the prompts in the installer. The biggest decision point relates to the partition scheme. To install Linux on the whole hard drive, accept the defaults. To install Linux alongside an existing operating system, assign Linux to the partition or free space you created in Windows or macOS before you started your Linux installation. You are free to mount your Windows or macOS partitions within the Linux filesystem, provided your distribution recognises the filesystem type for Windows or Mac. Be careful, however, with mounting remote filesystems if you are not familiar with how filesystems and drive mounting works — mistakes here could lead to loss of data for Windows or macOS.
4. Set the bootloader. Determine your bootloader strategy. Either Linux manages the bootloader for the computer — required for whole-disk installations — or Windows or macOS does. Windows 10 sometimes struggles on EFI systems with Linux managing the bootloader. If you let Windows or macOS manage the bootloader in a true dual-boot system, use the Windows or Mac tool to reconfigure your bootloader so that it recognises your Linux system. Let Linux manage the bootloader if you are installing a virtual machine. Your host operating system (Windows or macOS) will not be affected.
5. Reboot the computer. After the installer completes, you are either prompted to remove your installation media and reboot, or you are dropped back to the live session. In either case, remove the USB drive and reboot your computer. Pick your Linux distribution from the bootloader screen. Configure Linux. When you log in to your new Linux system for the first time, you are working from a clean slate. Use this opportunity to install valuable open-source software and configure your desktop environment.

How to Install Linux Applications

If you have decided to take the leap into the land of Linux, one of the first questions you might find yourself asking is, “How do I install applications?” We are going to remove the mystery from that task so you have all the tools you need to get your work done. There are three different ways to install applications on Linux:
Using a graphical package manager.
From the command line.
Compiling from source code.
We shall take a look at the first two methods as compiling from source code is not always the best route to go. If you opt to go the GUI package manager route, such as Ubuntu Software, GNOME Software or the Elementary AppStore, distribution choice is not nearly as important. Installing a piece of software with GNOME Software is the same on Debian as it is in Fedora. It is when you start working with installing applications from the command line that distribution matters because many distributions of Linux use a different package manager. A package manager is a collection of tools that help automate the process of installing, upgrading, configuring and removing software on a Linux distribution. The different package managers are:

DPKG: The base package manager for Debian-based distributions.
Apt: A front-end for the DPKG system, found in Debian-based distributions, such as Ubuntu, Linux Mint and Elementary OS.
Apt-get: A more feature-rich front-end for the DPKG system, found in Debian-based distributions.
RPM: The base package manager found in Red Hat-based distributions, such as Red Hat Enterprise Linux, CentOS and Fedora.
Yum: A front-end for the RPM system, found in Red Hat-based distributions.
Dnf: A more feature-rich front-end for the RPM system.
ZYpp: Found in SUSE and OpenSUSE.
Pacman: The package manager for Arch Linux-based distributions.
Where the package manager gets a bit confusing for new users is that distributions such as Ubuntu contain both DPKG and Apt. The difference is the dpkg command is used to install a local .deb file, whereas the apt command is capable of installing software from a repository. The same holds true for Red Hat-based distributions, where the rpm command is used to install local .rpm files, whereas yum and dnf can install software from remote repositories. Nearly every Linux distribution is capable of using remote repositories for the installation of software. A repository is a remote server that contains a collection of software that can be installed. There are default repositories a distribution will be aware of and there are third-party distributions you can add to your system. Once a third-party repository has been added, any Linux software package contained within that repository can be installed on the system.

How to Install Programs on Linux From a GUI
There are different GUI tools, depending on your distribution. Here are samples:
Ubuntu Linux: Ubuntu Software
Elementary OS: AppStore
GNOME Software: Any distribution running the GNOME desktop
Discover: KDE's GUI tool

The Ubuntu Software GUI
Since Ubuntu Linux is one of the most popular and user-friendly of all Linux distributions, we shall do the demonstration on Ubuntu Linux 18.04.
1. From the Launcher (sidebar on the left side of the desktop), select the Ubuntu Software icon (orange briefcase with an A in the center).
2. Once Ubuntu Software is open, press Search in the top right corner.
3. Search for the application you want to install.
4. Press Install on the application page.
5. When prompted, type your user password.
6. Allow the installation to complete.

Adding Repositories from the GUI

Of course, what we have just done only applies to the software found in the default repositories. Should you find a third-party repository you want to add, you might have to open a different piece of software. For example, with Ubuntu Linux, you open the Software & Updates application. If your distribution has the KDE desktop, you can not only install software from within Discover, but add repositories all from within the same tool. Sticking with our example, open Software & Updates. In the resulting window, do the following:

1. Select the Other Software tab.
2. Press Add.
3. Type the complete apt line for the repository to be added. For example, "deb http://ppa.launchpad.net/alexlarsson/flatpak/ubuntu bionic main".
4. Press Add Source.
5. Type your user password.

How to Install Linux Software From the Command Line

Although a standard user can get away with never touching the command line, it is always good to have this knowledge on your side.

Let us do the following:

Add a repository.

Updating apt.

Install an application.

For demonstration purposes, we shall install the flatpak tool which is a universal installer system.

1. The first thing to do is add the third-party repository, so apt is aware of the software. To do this, open a terminal window and issue the command:

sudo add-apt-repository ppa:alexlarsson/flatpak

2. You will first be prompted for your user password. Once you type that, you will be asked to hit Enter to accept the installation of the repository. When that is completed, you are ready to move on.

3. The next step is to update apt. Even though you have added the repository, apt is not aware of the software available on that remote server. To update apt, issue the command:

sudo apt-get update

4. Once completed, you are now ready to install the actual software. To install the software, issue the command:

sudo apt-get install flatpak

5. You will be prompted to OK the installation. Type “y” and hit Enter on your keyboard. The installation will start and finish resulting in flatpak installed on your system.

You will also find a vast amount of software ready to be installed from the default repositories. You can either search the GUI tool for that software or issue a search command. For example, say you want to know what software is available with the keyword “office”. From the

command line enter:
apt-cache search office
Chances are the output of that command will fly by too quickly. Fortunately, you can scroll through the output to find what you are looking for. Once you find the name of the software, install it and you are ready to go. Make the most of your new Linux desktop by installing the best, most tested applications.

Picking a Low-Resource Linux Distribution for an Older Computer
For the most part, your selection of a Linux distribution for an older computer should focus on the desktop environment. A DE is the graphical user interface for the operating system. Linux distributions — and there are hundreds of them — generally do not affect quality-of-experience under the hood. However, different DEs require different resource levels, so a high-end DE like KDE will lag painfully whereas the same distribution, on the same computer, with a low-end DE will fly.

Software Selection
Distributions offer large catalogues of software, but beware — installing certain applications can create a disproportionally large system drag. If you install LXDE as your DE, but then install a desktop application that is part of the KDE suite, your computer will download and install a significant part of KDE, which will activate and run to support that application. Your software catalogue will usually tell you what dependencies an application requires. Keep an eye on them. An application that depends on a different DE's infrastructure may well install properly and run properly on your computer — but at a price in overall system resource consumption.

Consider the Shell
The fastest Linux environment is the one without a DE. Linux works great from the command line and many different applications, including the Lynx web browser, work from a shell.

Desktop Environment
When people think about the major differences between Linux distributions, they tend to think of the desktop environment — but the irony is that most distributions support the installation of most desktop environments. A desktop environment is a suite of applications and software libraries that provide a graphical user interface for your Linux system. The components of a desktop environment include some or all of the following tools:
Window manager: Manages themes and window behaviour.
Panels: Contains the system tray, menu and quick-launch icons.
Menus: Facilitates access to applications and controls.
Widgets: Display information like weather, news snippets or system information.
File manager: Manages and organises files.

Browsers: Access the web.
Office suite: Create documents, spreadsheets and presentations.
Text editor: Create simple text files and edit configuration files.
Terminal: Offers access to the shell from within the GUI.
Display manager: Adjusts your screen and graphics settings.
Linux offers many different DEs, each of which offer a mix of aesthetic appeals and tweakable features, but in exchange for varying amounts of system resources. Choosing a desktop environment depends a lot on your personal taste. The list that follows does not appear in a specific order.

Cinnamon
Familiar to Windows users.
Great style.
Many features.
Can be customised.
High memory use.
Many features not as customisable.
Can be buggy at times.
The Cinnamon desktop environment is modern and stylish. The interface is familiar to people with experience using Windows 7, Vista or XP. Cinnamon is the default desktop environment for Linux Mint and it is one of the main reasons why Mint is so popular. It delivers a single panel at the bottom, a beautiful menu with several quick-launch icons and a system tray in the bottom right corner. This DE offers many visual effects and keyboard shortcuts. Cinnamon can be customised and moulded to work the way you want it to. Change the wallpaper, add and position panels and add applets to the panels. Desklets optionally provide news, weather and other key information.

GNOME
Modern desktop.
Many core applications and a development kit.
Lots of keyboard shortcuts.
Great search features and filtering.
High memory usage.
Fairly rigid with minimal customisation.
Not as many features as other desktops.
Poor extension management.
The GNOME desktop environment contains a single panel. It provides a core set of applications, but there are also many other applications specifically written for GTK3 (the under-the-hood framework for GNOME-compliant applications). The core applications include:

Graphical shell
Control Center (like the Windows control panel)
Tweak tool (for customising GNOME)
Chat, IRC, Contacts and Mail
Files, Documents and Photos
Music and Videos
Transfers
Boxes (virtual machines)
Credentials
Disk Utility and Disk Usage Analyser
Software (package manager)
Clock
Maps and Weather
Web (Web browser)
Calculator and Calendar
Dictionary
Notes and Gedit (text editor)
Gitg (front end for GIT)
GNOME is not hugely customisable but the sheer range of utilities makes for a great desktop experience. It includes a set of default keyboard shortcuts too. GNOME is a standard, major DE that is well-developed and visually coherent, although it requires more modern computers given its memory requirements.

KDE Plasma
Instantly familiar to people used to Windows.
Provides a great set of default applications.
Can be heavily customised.
High memory usage.
Some components are very complicated.
No easy backup and restore.
KDE Plasma provides a desktop interface similar to Cinnamon but with a little bit extra in the guise of Activities. This desktop follows the more conventional route with a single panel at the bottom, menus, quick launch bars and system tray icons. You can add widgets to the desktop to access information like news and weather. KDE comes with a large array of applications by default. There are too many to list here, but some key highlights include:
Akonadi: Personal Information Manager
Ark: Compression utility
Dolphin: File manager
Gwenview: Image viewer
KAccounts: Accounts

kCalc: Calculator
Kdenlive: Video editor
Kontact: Contact manager
kMail: Mail
Akregator: RSS reader
Kopete: Instant Messenger
Kate: Text editor
Konqueror: Web browser
The look-and-feel of the KDE applications are all very similar, they have a huge array of features and are highly customisable. KDE is great for modern computers.

XFCE
Lightweight compared to most desktop environments.
Highly customisable.
Lots of good widgets.
Looks outdated compared to other desktops.
Not as many default applications as GNOME or KDE.
XFCE is a lightweight desktop environment that looks good on both older computers and modern computers. The best part about XFCE that it is highly customisable. Everything can be adjusted so that it looks the way you want it to. By default, it offers a single panel with a menu and system tray icons, but you can add docker style panels or place other panels at the top, bottom or sides of the screen. XFCE supports quite a few widgets that insert directly into the panels, as well. XFCE comes with a window manager, desktop manager, the Thunar file manager, the Midori web browser, Xfburn DVD burner, an image viewer, terminal manager and a calendar. It is an ideal choice, given its low resource requirements and long development history, for older machines or for people who really enjoy tweaking their desktops. LXQT is also lightweight. It is similar, visually, to the motifs of Windows XP, so it is a good candidate for someone who may struggle with new approaches to desktop computing. If LXQT looks like Windows XP, LXDE looks like Windows Vista. It is a bit more visually appealing with more glassy design elements by default.

MATE
Moderate memory usage.
Lots of customisable features.
Developer kit is available.
Strong history, based on GNOME 2.
Does not look as good as more modern desktops.
Not as lightweight as XFCE or LXDE.
Not very user friendly.
MATE looks and behaves like the GNOME desktop environment prior to version 3. It is great

for older hardware and contains panels and menus in much the same way as XFCE. MATE is provided as an alternative to Cinnamon as part of the Linux Mint distribution. The MATE desktop environment is highly customisable and you can add panels, change the desktop wallpaper and generally make it look and behave the way you want it to.

Enlightenment
Very lightweight.
Everything can be customised.
Very fast and efficient.
Many undocumented features.
Looks old and dated.
Can feel a bit quirky when compared to other desktops.
Enlightenment is one of the oldest desktop environments and is very lightweight. Absolutely every part of the Enlightenment desktop environment can be customised and there are settings for everything, which means you can really make it work how you want it to. Virtual desktops feature prominently as part of the Enlightenment philosophy such that you can easily create a massive grid of work spaces. Enlightenment does not come with many applications by default because it started life solely as a window manager and not as a full-fledged DE.

Pantheon
Lightweight yet looks great.
Smooth animations.
Simple to use.
Few configuration options.
May be too simple for some users.
Known to be somewhat buggy.
The Pantheon Desktop Environment was developed for the Elementary OS project. The term pixel-perfect springs to mind with Pantheon. Everything in Elementary has been designed to look great and therefore the Pantheon desktop looks and behaves brilliantly. You will find a panel at the top with system tray icons and a menu. At the bottom appears a docker-style panel for launching your favourite applications. Functionality-wise, it does not have the customisable features of XFCE and Enlightenment and it does not have the applications available with GNOME or KDE, but if your desktop experience is merely launching applications such as a web browser, then this DE is definitely worth considering.

Trinity
Lightweight.
Familiar for Windows users.
Highly customisable.

What we do not like
Looks outdated.
No modern features.
Missing basic functionality.
Trinity is a fork of KDE before KDE went in a new direction. It is incredibly lightweight. Trinity comes with many of the applications associated with KDE, although older or forked versions of them. Trinity is highly customisable and XPQ4 projects have created a number of templates that make Trinity look like Windows XP, Vista and Windows 7.

The "best" desktop environments balance configurability with the relative resource consumption of the DE itself. A brand-new computer, or a computer with high-end specifications, can run any desktop environment with the smoothness of melted butter. But on lower-end or older hardware, particularly in the netbook space, the selection of DE can make-or-break the usability of the entire system. If you do not like any of the desktop environments available, you can always make your own. You can create your own desktop environment by combining your choice of window manager, desktop manager, terminal, menu system, panels and other applications.

We have developed a list of the best free and open-source programs for the Linux ecosystem.

LibreOffice: The best Linux office suite
Free and available for multiple platforms.
Can work with MS Office formats.
Customisable interface.
Stable and reliable.
Can save to cloud and remote locations.
Includes editing features (such as track changes and comments).
Large documents (200+ pages) can become unresponsible or slow to use.
LibreOffice is full-featured, open-source, drop-in replacement for Microsoft Office. It is free, includes all of the tools you would expect to find in an office suite (word processor, spreadsheets, presentations, formulae, database) and works on any number of machines at no extra cost.

Other noteworthy mentions: Apache OpenOffice, AbiWord word processor (very lightweight, though lacking in advanced features).

GIMP: The best image editor
Powerful filters (which can be easily expanded).
Single window layout.
Plug-in support.

Easy photo retouching.
Drawing tablet support.
Script support.
Easy to install new brushes.
Steeper learning curve than some similar programs.
Sometimes has problems with layers in Photoshop-native files.
The GNU Image Manipulation Program and is the open-source equivalent to Adobe Photoshop. It is powerful, it is free and it includes a vast array of tools to help create or edit your images to perfection. Although the GIMP interface does take some time to get used to, especially if you're migrating from Photoshop, once you understand the layout and the tools, the possibilities are limitless. GIMP allows you to save in many format types — .jpg, .png, .tiff, .gif, .svg, etc. — and, in certain file formats, preserves layers. GIMP is a great tool for engineers, scientists, graphic designers, photographers and illustrators.

Another noteworthy mention: Inkscape (very good vector graphics editor).

Firefox: The best web browser
It is light, fast and stable.
No more bloat.
Included 2-Factor Authentication with the Firefox Account login.
Supported by nearly every website on the planet.
Available on nearly every platform (Linux, macOS, Windows, Android).
Extension feature allows users to add new features.
The Test Pilot program gives users a sneak peek into possible future features.
Built-in tracking protection.
Includes private browsing mechanism.
Does not integrate into primary ecosystems (Microsoft, Google).
The Firefox web browser has come a long way from where it was just a few short years ago. The open-source web browser is no longer burdened with bloatware, renders pages as quickly as any browser on the market, offers plenty of security features and is light and fast. For the Linux platform, you would be hard-pressed to find a better web browser. Even better, you can now connect the browser to a Firefox Account and synchronise your passwords, open tabs and related information with any instance of Firefox associated with that account.

Another noteworthy mention: Chromium browser.

Audacity: The best audio recorder
Incredibly easy to use.
Powerful, built-in filters and special effects.
Cross platform (for Linux, macOS and Windows).

Exports to industry standard formats.
Can record audio from multiple sources.
User-friendly navigation through tracks.
Audacity does not function well when another application is using either the microphone or the computer speakers.
Could use a more modern interface.
Look no further than the free, open-source Audacity for all your recording needs. This program is the audio recorder of choice for millions of users, regardless of platform. Audacity makes recording anything from a single-track microphone to a multi-track band incredibly easy. Audacity even makes editing said recordings incredibly easy. And with a large amount of included filters, the sky is the limit on what you can do. Best of all, there is next to no learning curve with Audacity. In fact, you will not find a better ratio of ease-of-use to powerful features in any other recording/editing software on the market. And if you need to import audio files, Audacity supports an incredible number of file formats.

Evolution: The best groupware tool
Keep track of all your business groupware needs from one application.
Seamless integration with Google Mail and Calendar.
Easy setup.
Works with multiple accounts.
Integrates with the GNOME desktop.
Works with GPG for encryption.
Built-in, powerful email filtering tools.
Automatic spam filtering.
Address book can be used as data source in LibreOffice.
Interface is a bit outdated.
Is not supported by all MS Exchange servers.
Do you use Microsoft Outlook in either Windows or macOS? You will not find a desktop-application version of Outlook for Linux. What you will find, however, is the open-source equivalent in Evolution. Evolution is a single tool that includes email, calendar, to-dos, tasks, contacts and memos. Evolution connects to IMAP, POP3, Google and even MS Exchange email servers, so you will be able to manage your mail and calendars, no matter who your provider is. Evolution installs from the standard repositories on most Linux desktop distributions.

Clementine: The best audio player
Tiny learning curve.
Supports numerous file formats.
Easy playlist management.
Built-in internet radio support.

Connect and synchronise devices.
Outstanding music queue manager.
Although user-friendly, the interface is somewhat outdated.
The best audio player choice can be a bit tricky, but if you are looking for the best blend of user-friendliness and large feature list, the open-source (and free) Clementine application cannot be beaten, especially if your music library is large. One of the best aspects of Clementine is how simple it makes working with playlists. You can create both static and dynamic playlists, create playlists from entire albums or folders, organise playlists and more. Clementine also includes an outstanding equaliser, the ability to listen to podcasts, audio CD support and native Linux desktop notifications.

VLC media player: The best video player
Very easy to use.
Handles numerous media formats.
Can play music as well.
Can play DVDs with ease.
Integrates with webcams.
Glitchy handling of corrupted video files.
Just as Clementine is the best audio player, no other tool has yet to dethrone VLC as the best video player. Without question, VLC is the single best tool for playing nearly any type of video format. One of the best things about VLC is that, during installation, it will install all the necessary multimedia codecs, so you do not run into a situation where a popular media format will not play. This is not the case for many other video players for Linux. VLC can even convert files and act as a media server.

UPM: Best password manager
Built-in password generator.
Lightweight.
Copy passwords, user IDs, URLs to clipboard.
Directly open URLs.
Keep notes of your accounts.
Password protected database.
Import and export database function.
Interface is out of date.
Network synchronising is challenging.
No built-in cloud support.
If you have finally realised your passwords are not strong enough and you need to start working with more complicated strings of text, a password manager is in your future. There are a lot of password managers available and plenty offer a large number of bells and whistles. If you are looking for something simple and solid, however, you cannot beat the Universal

Password Manager. UPM uses AES for database encryption and can synchronise across a network using HTTP/S. The interface is a bit old school, but it will not get in your way of managing your various accounts.

VirtualBox: Best virtual machine manager
Easy to use.
Built-in snapshot tool.
Ability to integrate with host operating system.
Create isolated networks for testing purposes.
USB and audio support.
Additional programs necessary to fully maximise some VMs.
To run virtual machines on Linux, you will not find an easier way than with VirtualBox. Run Linux, macOS, Windows and other platforms all from your host operating system. VirtualBox allows you to run guest operating systems either with the user-friendly GUI or "headless" (from the command line). There is no better way to test other operating systems on Linux. After you have your virtual machine up and running, you can pause it, stop it, clone it and modify it to meet your changing needs.

Calibre: Best ebook manager
Built-in ebook editor.
Supports numerous file formats.
Built-in content server, so you can share your library across a LAN.
Can convert to multiple ebook formats from multiple source formats.
Frequent updates.
Ebook editor has a steep learning curve.
If you are either a reader or a writer, you owe it to yourself to start using Calibre. Not only can this free, open-source tool allow you to import your favourite ebooks for easy reading, it can also convert your files into ebooks. Authors looking to publish on Amazon, Barnes & Noble, Smashwords, etc. will find Calibre an absolute necessity. Readers enjoy the ease at which ebooks can be managed or generated with this simple tool.

Among other notable software, Scribus, which is an open source desktop publishing software, may be mentioned.

So, at the end of the day, what did we do? Since, MultiSpectra Consultants is primarily a Civil Engineering company and we develop Civil Engineering software as part of our operations, we, after evaluating all the options at our disposal, decided to go in for Ubuntu Linux with a GNONE desktop environment for our not-so-old computers. For the oldest of our computers, we decided to go in for Ubuntu Linux with a XFCE desktop environment. We use LibreOffice, GIMP, Firefox, Inkscape, Scribus, Apache OpenOffice, Chromium, AbiWord, Clementine and

VLC media player and other software also. We have tweaked the entire set-up and call it the MultiSpectra OS which is basically Ubuntu Linux with a choice of the GNOME and the XFCE desktop environments and a set of pre-installed software. We use Firefox as our main browser and we use Chromium for developmental purposes. We have tweaked Chromium also. This tweaked version of Chromium is also present in the MultiSpectra OS along with other software. We use LibreOffice as our main productivity suite with Apache OpenOffice as an ersatz productivity suite. We use AbiWord for very lightweight word processing tasks. Because the state of internet connectivity is poor in much of India, we provide stand-alone installers for a lot of software and thus the MultiSpectra OS is designed to be a good operating system even in areas of poor internet connectivity. The ideal use case is, of course, in areas where the internet connectivity is normal. We also bundle some of our Civil Engineering software along with the MultiSpectra OS but these software can be omitted by someone who does not need them. We make no attempt to make an operating system that looks like Microsoft Windows. We aim to be different.