Some Linux Distributions

Andy Pepperdine

Introduction

Strictly speaking, the name Linux refers to the central core of an operating system, the so-called kernel of it. This is the part that manages all the resources of the machine and divides up the time between the various jobs to be done. The user at a keyboard does not interact with it directly.

To help with this, there are a number of low level utilities and libraries of functions,which have been provided by the GNU foundation. For this reason, the preferred name for these systems is GNU/Linux, but everyone usually calls the complete set up they have just Linux.

On top of that, are all the applications, like a photo editor, and other jobs that run behind the scenes like the way e-mail receives new mail on occasion and alerts you. Applications are provided by a number of different parties, but all of them, with a few exceptions, have released the work for free use and modification under a permissive copyright license.

Distros or Linux Distributions

In November, we discussed various Linux distributions and what they were good and bad for. Why would you choose one over another, and which ones are suitable for a newcomer to the OS.

The best place to start to find out about any distro for Linux is the news website at distrowatch [1]. There is a lot of information there, and all the links you need to find a distro's homepage so you can download it. Changes and new releases are announced there for almost all distros.

I will assume for the purposes of this text that the reader is not especially technically competent, but wants something that they think will satisfy their requirements for a system to get simple work done, like browsing the web, sending and receiving e-mail, writing simple documents and doing simple spreadsheets. But being able to extend the applications to others where necessary.

First, for those who are newcomers to Linux, a word about the people who bring all this to us all free of charge.

How do they afford it?

With difficulty, in general for most distros, as the volunteers have to provide all the server power to deliver the final product to you, as well as the work involved in selecting the packages, putting them together, making sure they work together, fixing any minor issues that come up, building the Live CD for you to try it out, and announcing it. There are a few exceptions to the rule of volunteers, but not many.

Since they are volunteers they write software that does what they want; you have to take it as it comes unless you yourself get involved in changing it to do what you want. The developers are prepared for you to take it, and use it. If you find errors, then they would be pleased to hear of it, but whether they fix it will depend on its severity, and whether it affects what they are doing. I will make a general plea here, that if you like a distro after you've tried it, to think how you can

contribute to its continuation. Even if every downloader donated a small amount, it would keep the infrastructure running, and you will rely on that for the future. It's still cheaper than Windows.

How do they do it?

Applications are built from source code that is held in some source repository. Developers for those applications will update the master repository [0] and make announcements in the technical mail lists, or wherever is appropriate, that a new version is available. If some worker on a distro is interested in that application, they will see this, and check it out to see if it worth making a new package for the distro. Doing it for one distro, may make it available for many others, as there is a lot of common ground and de facto standards in the way things get done.

Once it has been converted into a package, it can be placed into the distro's own package repository, both binary (executable) form, and the original source form.

At some point, a decision is taken that all the packages in a repository should be frozen in order that a CD can be released to the general public, e.g. on a live CD or DVD. At that point, all the packages will be given a check, although sometimes rather perfunctory, that they work as a whole, and the whole lot shifted onto a publicly visible repository, with the CD put into the download position on the site.

Why so many distributions?

Linux, the kernel, is flexible – very flexible, and can be installed on everything from a tiny self-contained device to an enormous supercomputer. It is unreasonable to expect that everything in this range will have the need for the same set of applications with the same requirements for security fixes and support. In a smaller way, offices and individuals may not need the same things in their systems. Distros each have their own idea of what their users are looking for, and put together a set of applications that will fit that niche.

Different distros will have different policies of updates, and security fixes. Check the distro you are interested in to see whether it suits your needs before committing your own files and work to it.

Desktops

A word about desktops. The commonest is Gnome. The latest version, Gnome 3, can use extensive features of modern graphics chips in video cards, but has a fall-back position for older hardware at the moment. This situation merits some careful watching as it is possible that support for older machines will become patchy among all the popular distros, which is unfortunate as one of the reasons for converting to Linux was to save money by re-using old hardware. It will become increasingly more difficult to find a suitable distro in this situation.

For those who don't like Gnome 3, they could try KDE, now up to KDE 4, although that has gone another way and has its own idiosyncrasies that have generated a number adverse comments. These two are the leaders.

A lighter weight one that is worth considering when the option is easily available is Xfce. It lacks some of the features of the leaders, but is perfectly adequate for most users and Windows conversions. There are others coming up which would be worth watching in future.

Media and booting

Most of the distros still fit onto a CD, but the most popular ones are straining at the space limit. There will be a move towards supplying only DVDs in future. If you have an old machine, it may not be able to boot from a DVD, in which case, as a newcomer you will be out of luck for that distro.

With a bit of effort, and it's getting easier to do, most can be moved over to a USB stick with plenty of space. If your machine can boot from a USB stick, then all well and good. If not, then there are ways around but that will not be addressed here.

The smallest distros usually have smaller and less capable applications, which may suit someone who knows what they are doing, but not for the uninitiated. Other small distros are for engineers only and have a specialised customer base. Still others have a certain type of user in mind, like Scientific Linux that caters to scientific laboratory staff, who because they have adapted their systems in some way to their own requirements are very conservative and can move forward with the system updates with care.

Some others are moving towards providing a smaller release with less on the CD, but assuming that the machine has an internet connection, fetching the remainder directly from their repositories. It will use a lot of bandwidth, strain their servers, but will get you the latest versions of everything with less need to update after install. It complicates the install a bit and may put off those who have never seen the update process before.

Ubuntu

Ubuntu [2] has been the leader in recent years for the newcomer to Linux. A lot of work has gone into making it easy to use and easy to install – work that other distros have picked up for their own purposes. The latest version is 11.10 (Oneiric Ocelot) which moves towards a desktop window manager that requires a recent video card. On older machines, it falls back to a less capable display, but it remains to be seen how long that is still maintained.

From the live CD, certain things have to be done before you can try it out properly. These are listed below.

1. Add English (UK) to your languages by clicking on the System Settings icon and selecting Language Support. Select English (UK) from the greyed out list and drag it up to the top of the list. Then hit Close.

2. Add a UK keyboard and make it usable by going to System Settings icon and selecting Keyboard Layouts. Click the little plus sign (+) at the bottom of the left pane and select English (UK) from the list presented. Use the little chevron icon to move it to the top of the list and then return to the Settings window using the All Settings link near the top.

3. If you need to set the date and time, select Time & Date in System Settings and click on the map to give the location.

I noticed also that the live CD does not have Adobe Flash plugin installed in Firefox to view Youtube, but it installed from the Adobe site easily enough.

Ubuntu will support (i.e. provide security and other fixes for) its releases for 18 months normally. Some of the releases are designated Long Term Support (LTS). These are supported for three or five years – check the release notes for each one to see which it is. The last LTS release was 10.04 (Lucid Lynx) and the next one will be 12.04.

More recent releases have been moving towards a window manager that expects good quality support in the video card. There is a fall-back position for older cards that have poorer features, but it may be something to bear in mind for the future if you are trying to make the most of older hardware.

Ubuntu has for some years been the most popular, and the one recommended for newcomers to Linux as they had concentrated on making it easy to install.

As well as the the regular Ubuntu with its Unity desktop interface, there are other community developed variants that are based on Ubuntu. Xubuntu uses a lighter weight window manager called Xfce, more suited to older video cards. Lubuntu also is aimed at less capable machines using the LXDE desktop environment. Since these derivatives of Ubuntu rely on the latest release, they will normally lag Ubuntu by a little time.

Linux Mint

Linux Mint [3] was originally designed to be Ubuntu plus all the codecs (see later) so that it had all the necessary software already present for films and music. Since the codecs have licensing constraints that vary in different parts of the world, it is best to download the international version, not the US version.

It was based on the latest Ubuntu release, but necessarily followed it as it had to be tweaked before a new Mint release could be issued. Later they have decided to move so that Mint is derived directly from Debian, instead of going through Ubuntu. This will give Linux Mint more autonomy to decide what packages and desktops to use.

Since Mint is designed with the newcomer in mind, all the codecs required for video and sound are already installed. However, that means that now, for release 12 onwards, all of this has to be put onto a DVD. If you have an older machine that cannot boot from DVD, then you will have to use the CD without the codecs and add them after installation. I could not test that from the live CD, however.

An alternative is to burn the DVD to a USB stick, but only if your machine can boot from USB. If it cannot, then you are out of luck.

Mint are trying to maintain an interface that resembles Windows to some extent, and so has not gone over to the new Unity style desktop that Ubuntu is now using.

When Mint started it based itself on Ubuntu, but is moving to base all its packages on Debian, which means it will drift away from the latest Ubuntu methods. In particular, they wish to separate their choice of Window managers and desktops in order to continue to support older hardware for longer.

Fedora

Fedora [4] is a system based on Redhat. In fact it is the public face of the Redhat company which supplies support services to businesses. It is Redhat's way of trying out new ideas and packages before presenting them to corporations. It uses a different way of managing packages to install extra software. The latest version is Fedora 16.

It is definitely getting better for the newcomer to install and use this system; I would not rule it out from consideration. The current default desktop environment is Gnome 3, although there are also variants that use KDE, Xfce and LXDE. Choose the one that suits.

When starting on an older system, it may be necessary to start it in Compatibility mode which will fall back to older video capabilities.

In order to change the language settings, including the layout of the keyboard, you go to Applications → System Settings and click on Region and Language. The date and time setting will select US by default, and can be changed only after the Unlock button is pressed in the Date and Time dialog. You will have to wait a while before it updates the display.

To install the Flash plugin to Firefox, follow these directions at https://support.mozilla.com/en-US/kb/installing-flash but select the most recent .tar.gz file instead of the one mentioned.

The live CD is missing several things, notably an office suite. They are available after installation from the Add/Remove Software menu.

Puppy

Puppy [5] is a minimalist system suitable for small memory or old machines. The latest version is Puppy 5.3 (Slacko). Note that this is compatible with Slackware, which is not a distro a newcomer should tangle with. Puppy, however, makes this an irrelevance as it handles all the application distribution easily.

It concentrates on using simple applications, so you do not get all the power of, say, LibreOffice, but instead a number of smaller applications with more limited capabilities. These are easily adequate for simple jobs on the move, like on a netbook, but not for more demanding tasks.

Puppy is very suitable for emergency rescue of damaged systems as it will run in small memory, directly from RAM, does not need any external hard disk, can be run from USB or CD, and runs everything as root.

The new Slacko looks slick when run from the live CD. At the end you get the options of either terminating the run, saving your data to the CD (if the CD was burnt to allow it, but this is a trial feature at the moment), or saving to a USB stick, which you could then use in conjunction with the CD in future. You could also create a USB to boot from and carry that around for use on any USB-bootable PC.

From the live CD, you will be asked to select a suitable configuration for your video display. Selecting Vesa will always work, but may not be the best. You can try out other options before deciding what to go for. When you get to the desktop, wait until the Personalize settings dialog comes up. Eventually you will be given the option of setting up your keyboard and timezone. When selecting the English keyboard, a further refinement will be presented where you can select UTF8 to allow AltGr key to give you European language capabilities.

It is less suitable for installation on the hard drive of a machine unless the machine is old enough to mean that Puppy is the most suitable distro to use.

Because it is so small, the number of drivers is small, and limited in features. But as a system to put on very old hardware, it could extend the life for a while.

Not suitable for any serious permanent work, but for a travel machine it can be recommended.

Arch

If you have a very old machine, then you might try Arch [6], which provides out of the box only the most minimal system, to which you have to add any and all applications you need. It is categorically NOT suitable for those who are not familiar with Unix or Linux, as all you get is a command line. However, having said that, the installation documentation is excellent, and I have a system with graphical interface and browser to which others things can be easily added.

This is definitely one for someone who likes to tinker, but has not otherwise had the opportunity to do so. It's a way to learn more about Unix and Linux in particular.

It could be used on ancient hardware as the only software you will install will be what is necessary for you and the hardware. You have to add everything yourself.

Sabayon

I tried Sabayon [7] just as an exercise to see what it contains. It is based on an engineers' distribution, Gentoo, but should be suitable for newcomers who are just looking for a replacement for Windows. It is quite easy to use, but I have some reservations.

There are a number of different desktops. One that sounded intriguing was called Awesome. However, although it is lightweight and had good reviews, it does require a lot of setting up, and the documentation is rather rudimentary. For example, to set up the keyboard to a UK version instead of the default US, you should enter the following command in a terminal window.

```
setxkbmap -model pc105 -layout gb -variant basic
```

It uses a recent kernel (3.1.0), and failed to boot in any form on my old desk machine. Whether that is due to the new kernel is still to be determined. There were no such problems on the old notebook.

Conclusion

For the person who is looking at Linux for the first time on a decent fairly modern machine, the recommendation is to use Mint. If you want to get more out of an older machine, but memory is not a problem, then try one of the lighter weight desktop variants of Ubuntu. For very old machines, Puppy can extend the life, but be aware that most of the applications are not as fully functioning as in the larger distros.

A more recent arrival among the distros is Bodhi [8], which is also aimed at getting a lot out of old boxes, and well worth a look, but I did not have time to consider it when writing this paper.

References

[0] E.g. github at https://github.com/ or sourceforge at http://sourceforge.net/

[1] http://distrowatch.com/

[2] Ubuntu homepage: http://www.ubuntu.com/ from where you can find the download page.
Xubuntu home page: http://www.xubuntu.org/
Lubuntu is available from: https://help.ubuntu.com/community/Lubuntu/GetLubuntu

[3] Linux Mint homepage: http://linuxmint.com/ from where you can find the download page.

[4] Fedora homepage: https://fedoraproject.org/ from where you can find the download page. Variants are at: https://fedoraproject.org/en/get-fedora-options#desktops

[5] Puppy homepage: http://puppylinux.org/ from where you can find the download page.

[6] Arch homepage: https://www.archlinux.org/ from where you can find the download page.

[7] Sabayon homepage: http://www.sabayon.org/ from where you can find the download page.

[8] Bodhi home page: http://bodhilinux.com/ which gives all the information you need.