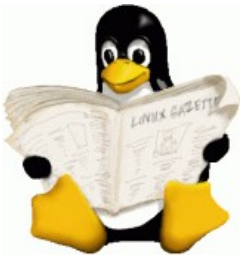
What is Linux?



An Introduction to Open Source, Distributions, Live Versions and other Key Linux Concepts

Right: Tux the Linux Penguin (with permission from Larry Ewing)

Linux is a free open-source operating system based on Unix. It was created by Linus Torvalds (http://www.cs.helsinki.fi/u/torvalds/) as an alternative to commercial versions of Unix and has been further developed by the open source community who have contributed freely to its development and have now replicated most of the features of commercial versions, in some cases by 'reverse engineering' existing packages and utilities. It was originally developed for Intel 386 microprocessors (PCs) but now runs on other platforms.

Linux is written and distributed under the GNU General Public Licence which means that its source code is free and available to the general public, although most users will download, or buy, or be given, a pre-built 'distribution' developed by companies or groups (the best known of which include Red Hat, SUSE, Fedora Core (based on Red Hat) and Ubuntu (based on Debian Linux). There is no restriction on the number of times you install a Linux distribution, or on sharing it with others: in fact you are positively encouraged to do so.

Linux distributions come bundled with different software applications and utilities. Some of these are designed to run on the 'command line' (rather like the MS-DOS interface in Windows); some run in the X-Windows graphical user interface (which is found on all Unix systems); and others are designed to run on newer graphical user interfaces or 'desktop environments' designed specially for Linux. KDE and Gnome are the most widely used of these environments, and provide the kind of windows, icons, menus and pointers familiar to Windows or Macintosh users. Neither X-Windows, KDE nor Gnome are needed to run Linux as they are separate from the underlying non-graphical environment.

Alongside the Linux 'Kernel' and the desktop environments are a range of important tools developed as part of the long-established GNU project (GNU stands for 'Gnu's Not Unix') http://www.gnu.org

Funded by the Home Office

If you would like to know more about the man behind Linux and the early history of Linux then go to a nearly first hand account at http://liw.iki.fi/liw/texts/linux-anecdotes.html

Linux Distributions

When people talk about 'running Linux' they probably mean they are running a particular *distribution* which is based on the Linux Kernel, a range of GNU tools, X-Windows and usually a desktop environment as well. Another important element of many users' Linux-based systems is the Open Office suite (http://www.openoffice.org) which provides a replacement for Microsoft Office, and includes Word Processor, Spreadsheet, Presentation and Drawing tools. Open Office can convert documents to and from other formats, including those used in Microsoft products.

Major distributions include: Red Hat, Fedora Core, SUSE, Debian, Slackware, Mepis and Mandrake. As a rule you can download distributions from websites at no cost (but don't try this on a dial-up connection as they are BIG), or you can buy a package including CD's or DVD's, manuals and bumper stickers.

Popular free distributions at present include: Fedora Core, Ubuntu and Ark Linux.

- Fedora Core http://fedora.redhat.com/ has been developed and sponsored by Red Hat Linux and is entirely comprised of open source software. Although it is not supported as a product by Red Hat, their engineers are continuing to work on it with the assistance of the open source community with the intention of developing a completely free operating system (with the added benefit of producing useful tools for Red Hat).

- Ubuntu http://www.ubuntulinux.org/ Ubuntu is based on the established Debian Linux and is well supported. It uses the Gnome desktop by default and accessibility is a priority. The developer community has pledged to keep it free and maintain it with new releases every 6 months or so. Ubuntu includes more than 1,000 pieces of software, starting with the Linux kernel version 2.6 and Gnome 2.10, and covering every standard desktop application from word processing and spreadsheet applications to internet access applications, web server software, email software, programming languages and tools and of course many games.

- Ark Linux http://www.arklinux.org/ has been created with the purpose of giving users from Windows *the easiest to use Linux distribution* It was designed primarily for desktop use and to be easy to use with lots of tools and applications.

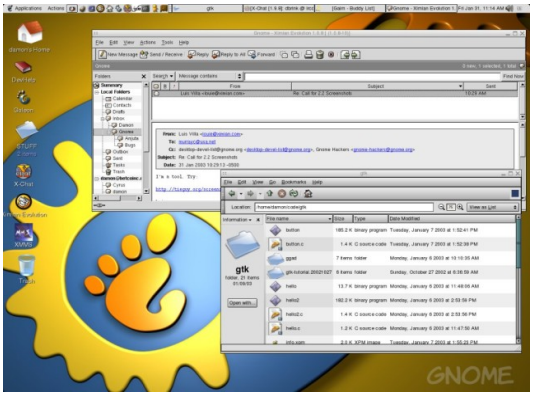
For more information about distributions, try the Penguin Distribution Guide. http://library.thinkquest.org/C003740/distributions.html#linux or the main Linux information hub at: http://www.linux.org/dist/index.html.

Live Versions of Linux

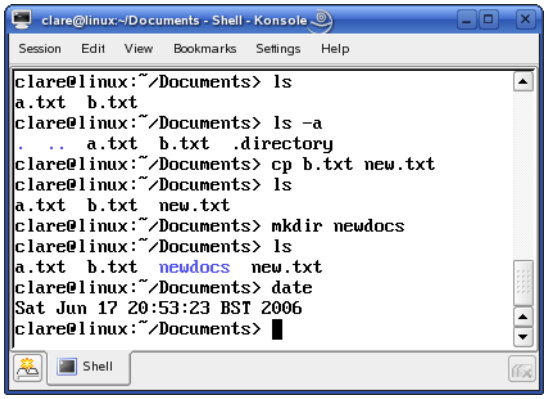
Some Linux versions can be run from a CD and do not need to be installed to a PC. These are a good way for people to familiarise themselves with the environment without having to install it and it is possible for individuals to prepare themselves for the workplace using a version like this. These versions are called Live CD versions and will boot Linux directly from the CD. There are several popular Live CD distributions, such as MEPIS, Knoppix and Slax. Most major Linux distributors (SUSE, Mandriva, Ubuntu) also offer Live CD versions of their products.

Graphical User Interfaces and the Command Line Interface

Originally, Linux was aimed at users who were happy to interact with their computer using keyboard commands via the command line. Now, just as most users of Windows and Macintosh systems use Graphical User Interfaces (GUIs), Linux users can choose from a range of GUIs – although there are times (when installing applications or troubleshooting, for example) when it is useful to go 'under the bonnet' and use the Command Line Interface (CLI). The command line interface enables commands to be taken from the keyboard, these are read by the 'shell' processed and given to the operating system. If you are in a GUI (Graphical User Interface) you will most probably run a programme called Bash (which stands for **B**ourne **A**gain **SH**ell, written by Steve Bourne) that acts as the shell program. There are several additional shell programs available on a typical Linux system. These include: ksh, tcsh and zsh. If you are in a GUI and wish to use the command line you can run a terminal or virtual emulator. This looks like a text editor and your commands will involve text and punctuation marks.



GUI (this is Gnome)



CLI (this is KDE's 'Konsole')

Finding Out More

This series of factsheets focusses on accessibility issues; for a more general set of beginners tutorials,dealing with installation, graphical interfaces and using the command line interface, these, from 'Linux Directory' are very useful: http://www.linux-directory.com/newbie/