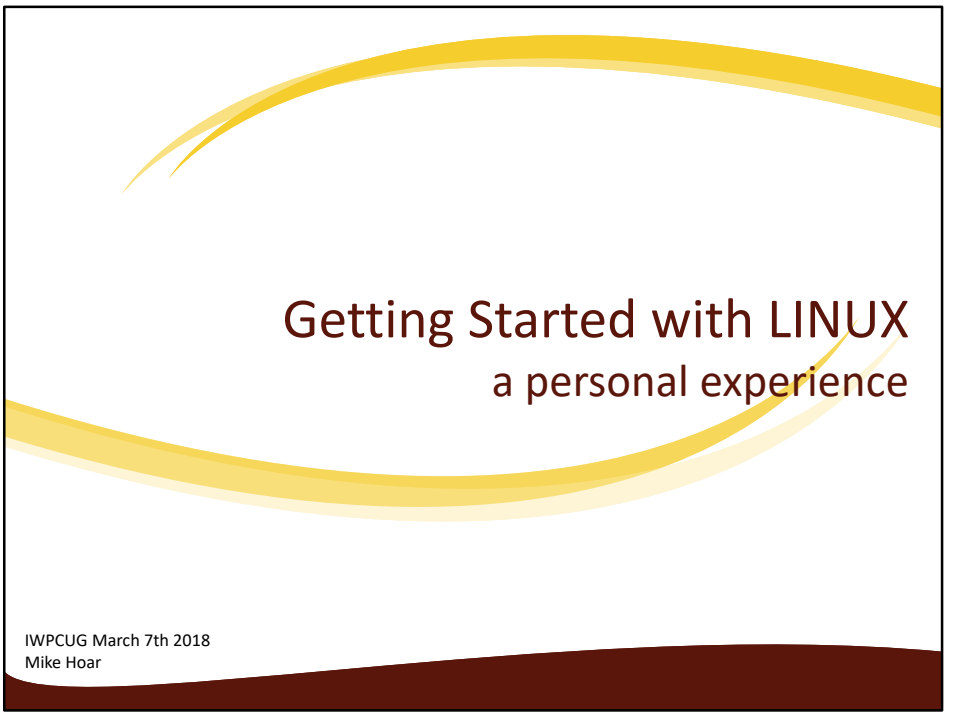
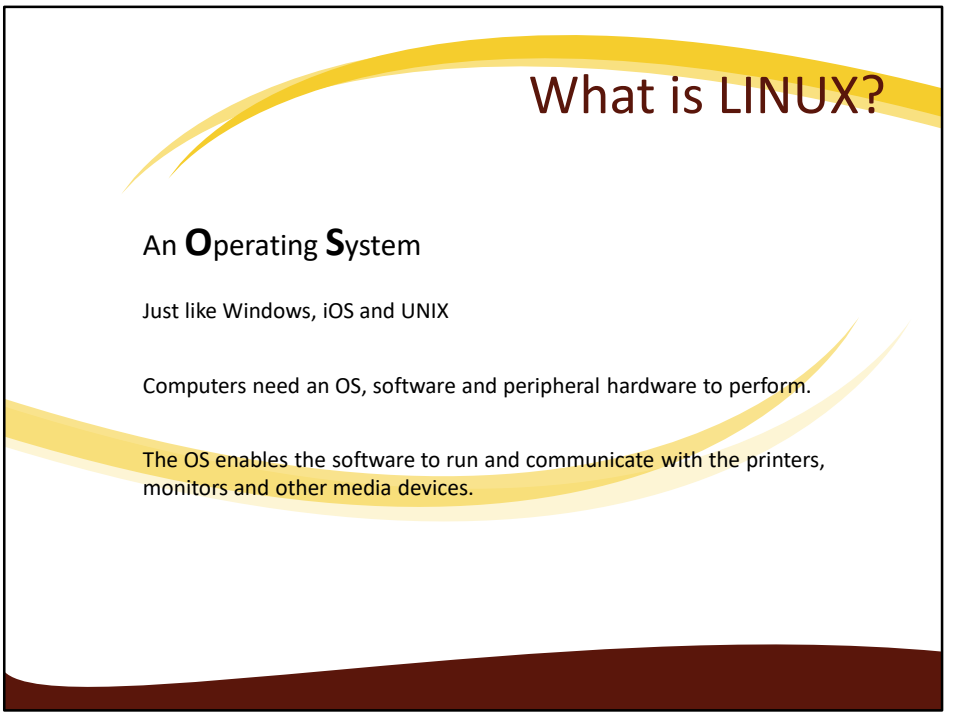


Have been on the fringes of Linux for some years (I pronounce it the Scandinavian way Lee-nux a combination of Linnus Thorvald and UNIX).

This presentation provides an introduction to Linux in the form of a record of my investigations and experience of installing, configuring and initial use of a Linux setup.

Part 1: The Background

- **What is Linux?**
- **What do I want to use it for?**
- **What hardware do I have?**



Just like Windows XP, Windows 7, Windows 8, and Mac OS X, Linux is an operating system. An operating system is software that manages all of the hardware resources associated with your desktop or laptop. To put it simply – the operating system manages the communication between your software and your hardware. Without the operating system (often referred to as the "OS"), the software wont function.

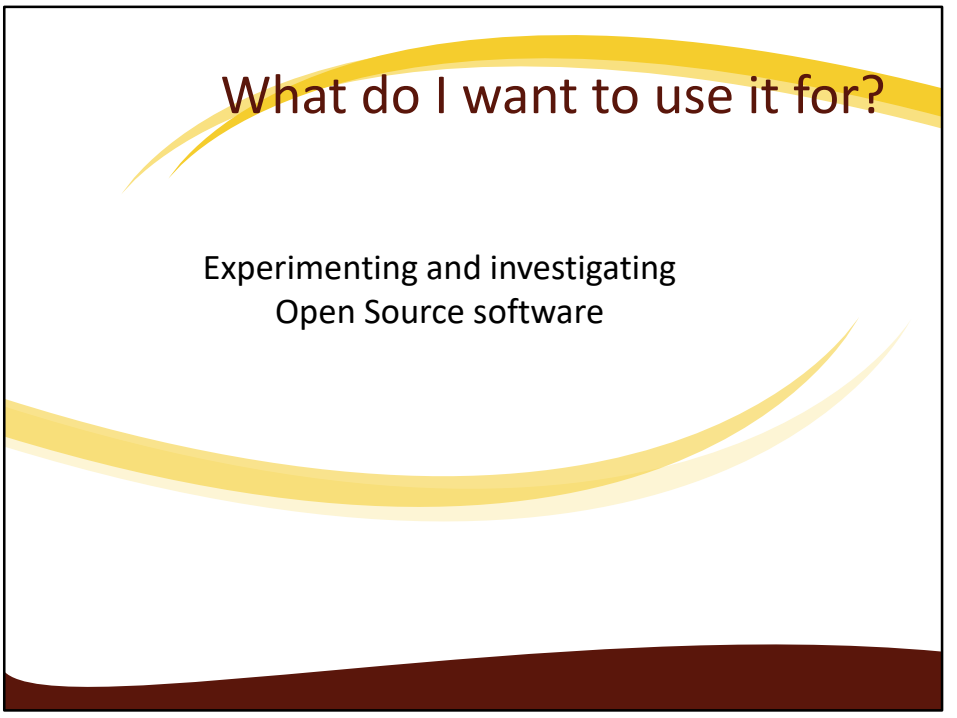
Operating systems have been around since general purpose computers were first developed. They have just got more sophisticated and complex.

The first home computers such as the Commadore64 and Sinclair ZX machines had the OS hard wired into the machine. When the IBM PC was developed it came with the first OS which was installed every time you started up the machine, this was Microsofts DOS. Other versions were soon developed which were compatible with software written to run on MS-DOS . I remember using DR DOS.

Apple developed their own 'PCs' called Macs and had their own iOS to run software on these machines.

UNIX was developed for mini-computer type installations used in business and scientific applications.

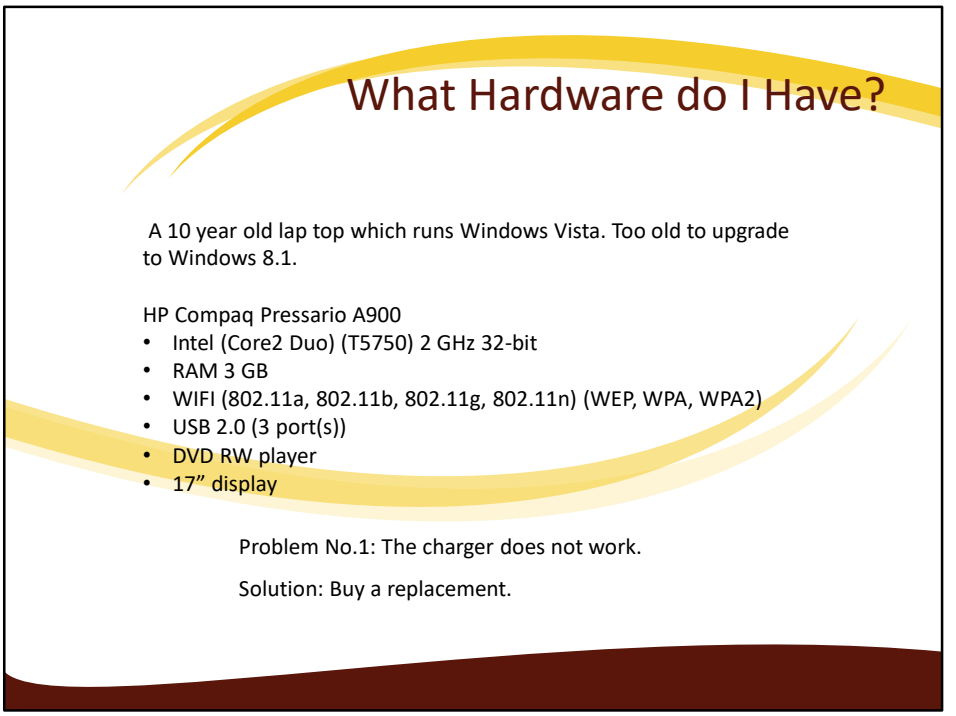
Linux was developed as a nor cost alternative to Windows or iOS and was based on UNIX.



Good question as I already have desktop and laptop machines running Windows 10.

However I do have a couple of Raspbery Pis (which run on Linux) which I use for building things. My brother in Law got a new laptop so I thought I could recycle his old one into a Linux installation – to see what a full size set up was like.

So I will use it to try out Open Source (Free) software and perhaps later as a web server for a home network.



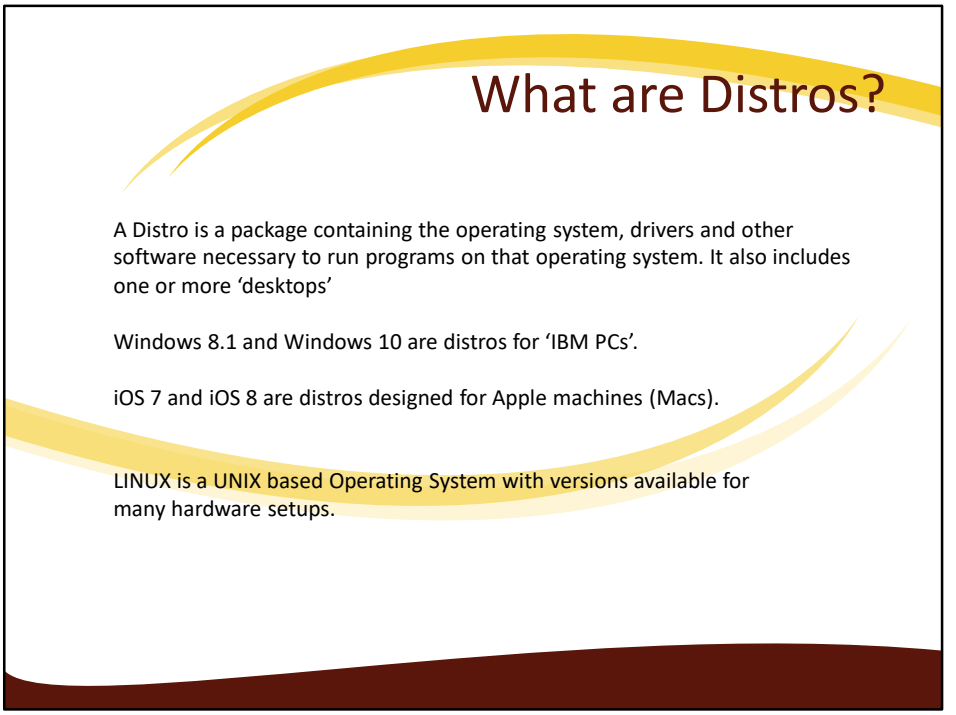
My Brother-in-Law bought without asking my advice or I would have said stick to XP.

For its day this was a pretty good spec, however the 32-bit architecture does limit my choice of Linux.
The 2GHz, 3GB setup is more than adequate for a 32-bit version of Linux.

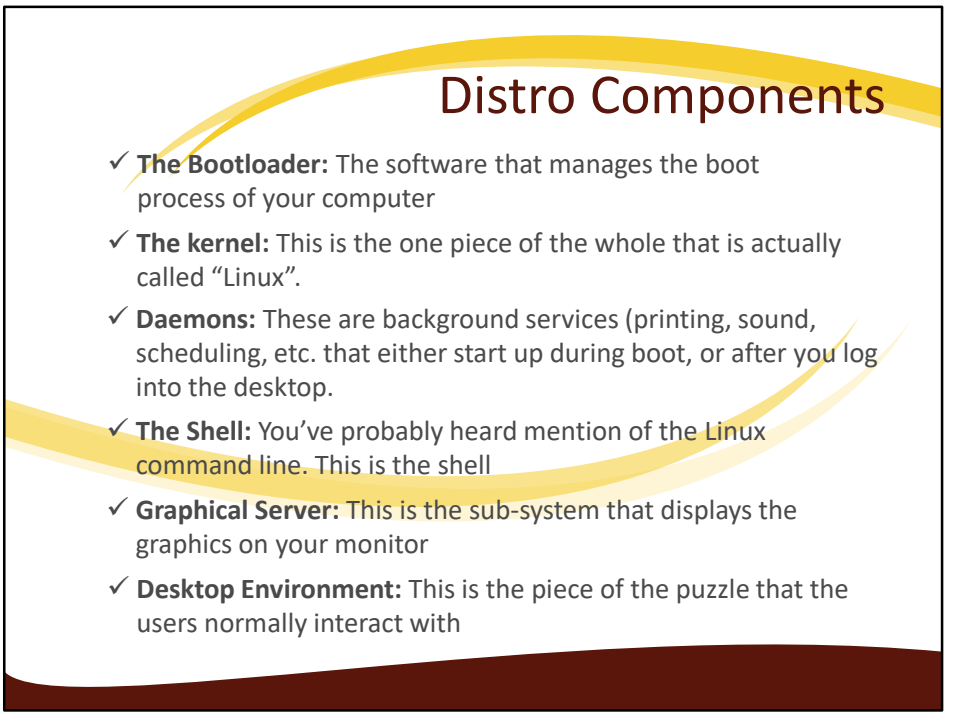
The charger cable to the laptop was chewed through by our dog. Brother-in-law hasn’t learnt not to leave things lying around.
Found a replacement for £10 – It works fine.

Part 2: The Exploration

- **What are Distros?**
- **Distro components**
- **How many different Distros are there?**
- **What are ‘flavours’ and ‘desktops’?**



A distro can also contain various bits of Free software such as Libre Office, Gimp for picture editing. Audacity for sound editing. VLC for media reproduction –films and sound. Software download managers and package managers, file managers etc. Some specialise in media production and have video editors, others are aimed at Home media studios



The Bootloader: For most users, this will simply be a splash screen that pops up and eventually goes away to boot into the operating system. This developed by the Distro owner. For managing dual OS installations this is usual Grub.

The kernel: The kernel is the core of the system and manages use of the CPU, memory and the Basic Input/Output System (BIOS). The kernel is the "lowest" level of the OS. The BIOS is specific for each type of Computer, PC, MAC etc. it is built into the 'motherboard'.

Daemons: These are background services (printing, sound, scheduling, etc) that either start up during boot, or after you log into the desktop.

The Shell: A command process that allows you to control the computer via commands typed into a text interface. This is what, at one time, scared people away from Linux the most (assuming they had to learn a seemingly archaic command line structure to make Linux work). This is no longer the case. With modern desktop Linux, there is seldom any need to ever use the command line. Often referred to as the Terminal. That is unless you wish to or want to install some specialized software.

Graphical Server: It is commonly referred to as the X server or just "X". This handles the output to the display terminal/monitor.

Desktop Environment: There are many desktop environments to choose from (Unity, GNOME, Cinnamon, Enlightenment, KDE, XFCE, etc). Each desktop environment

includes built-in applications (such as file managers, configuration tools, web browsers, games, etc). This what you the user see and interact with on your display.

So how many distros are there?

Short answer – 100s

However for someone starting out on Linux the choice is much smaller.

I subscribe to a magazine called Linux Format and each month I get a DVD with programs and other materials. Usually includes one or more 'Distros'

These 5 DVDs have 11 distros between them.

- **Mint** with the Mate desktop — Suitable for beginners and resembles somewhat Windows. 32 bit and 64 bit version with Cinnamon desktop
- **Scientific** — Intended for use by scientists as a research tool. 64 bit
- **Debian** with the GNOME desktop — Been around for quite a while, often the basis for other distros such as Rasbian for raspberry pi. 64 bit
- **Voyager Live** custom Xfce desktop — A friendly distro for users, this version Live and ready to run from the disk. 64 bit
- **Ubunto** with Remix desktop — Comes with 6 desktops you can try. 64 bit
- **Siduction**
- **Porteus** — 2 low resource distro for older PCs (32 bit only)
- **Fedora** with Gnome desktop — Previously known as Red Hat, been around quite a while, frontier distro with all the latest tech 32 &64 bit
- **Mageia** — New release with uncertain future but has a friendly desktop. 32 bit
- **Ubunto** 6 desktops — More recent release with 6 desktops to try. 64 bit.

❖ **Solus** with the Budgie desktop A new release. 64 bit

As can be seen 32 bit distros are getting rarer with many publishers stopping development of 32 bit versions

Flavours and Desktops

A major difference between Windows x, iOS x and a Linux distro is that Linux comes in various ‘flavours’.

A flavour is simply a different Desktop. You can choose the look and feel of your working environment.

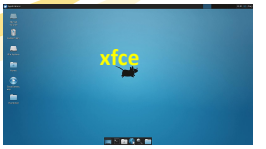
Example

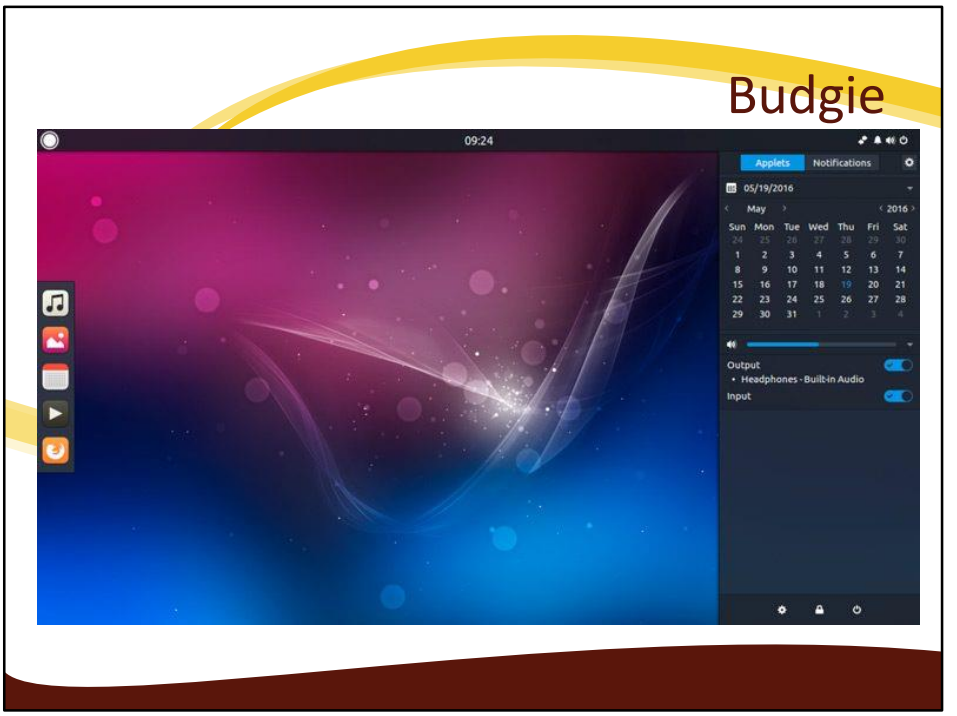
Ubunto is one of the more stable organisations issuing Distros.

On this Disc there are 6 alternative desktops which can be installed.

Unity
XFCE
Gnome
Cinnamon
KDE
Mate

Flavours and Desktops



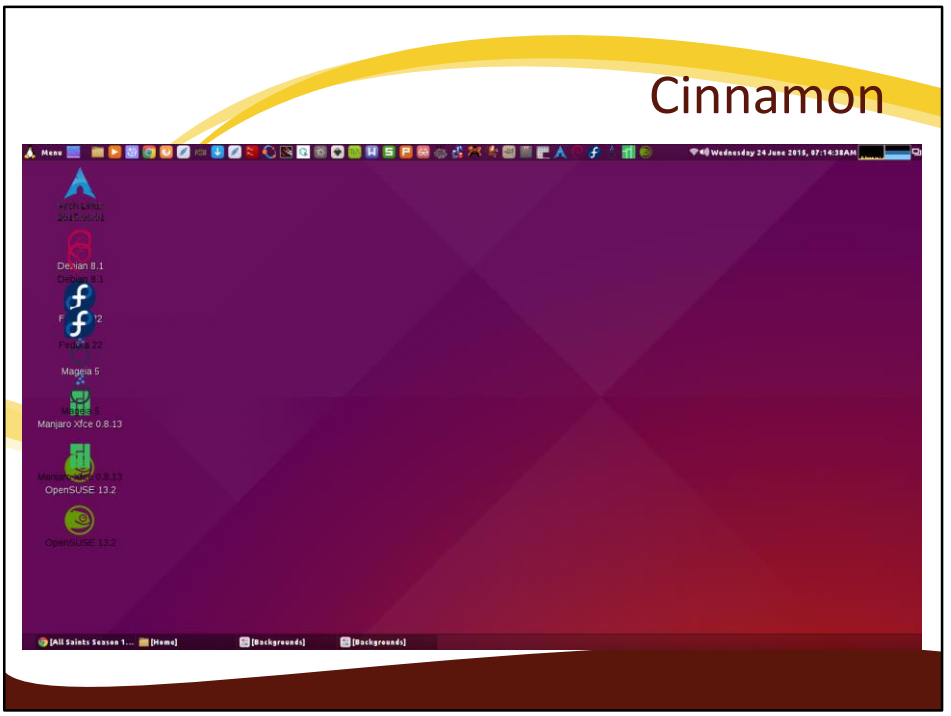


Budgie is a desktop environment, leveraging GNOME technologies developed by the Solus project. Budgie's design emphasizes efficiency, simplicity, elegance, and usability, especially usability for new users. It gives an experience on the desktop similar to that of mobile operating systems such as Android.

Comes with the Solus dsitro

Budgie desktop tightly integrates with GNOME, employing underlying technologies to offer an alternative desktop experience. Budgie applications generally use GTK and header bars similar to GNOME applications. Budgie builds what is effectively a Favorites list automatically as the user works, moving categories and applications toward the top of menus when they are used

Cinnamon



Cinnamon is a desktop environment based on GNOME 3. It was started in 2011. Cinnamon originally started as a fork of GNOME Shell, thus initially as a mere graphical shell of the GNOME software, but became its own desktop environment in Cinnamon 2.0. Cinnamon was developed by the Linux Mint distribution, with wider adoption spreading to other Linux distributions over time.

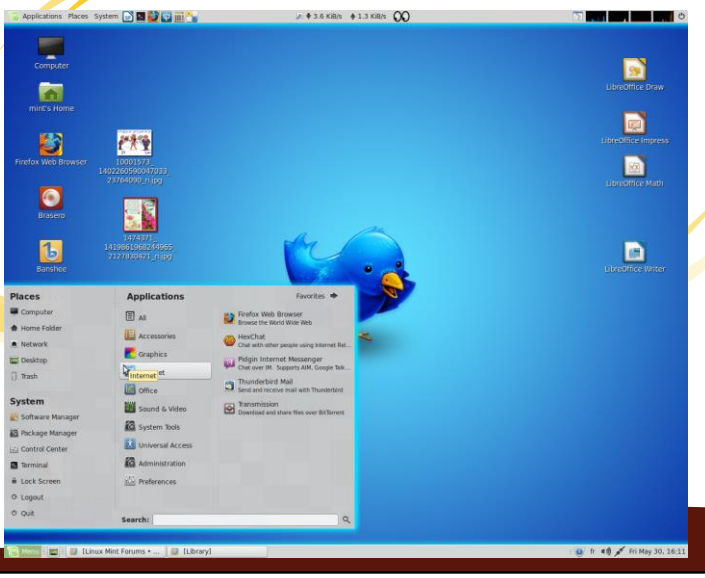
GNOME is developed by The GNOME Project, part of the GNU Project. [10] The GNOME Project is composed of both volunteers and paid contributors, the largest corporate contributor being Red Hat.

It features a top bar holding (from left to right) an Activities button, an application menu, a clock and an integrated system status menu.[15][16] The application menu displays the name of the application in focus and provides access to functions such as accessing the application's preferences, closing the application, or creating a new application window. The status menu holds various system status indicators, shortcuts to system settings, and session actions including logging out, switching users, locking the screen, and suspending the computer.

Clicking on the Activities button, moving the mouse to the top-left hot corner or pressing the Super key brings up the Overview.[17] The Overview gives users an overview of current activities and provides a way to switch between windows and workspaces and to launch applications.

KDE stands for the K Desktop Environment. Has been around for nearly 20 years and is an alternative architecture to Gnome

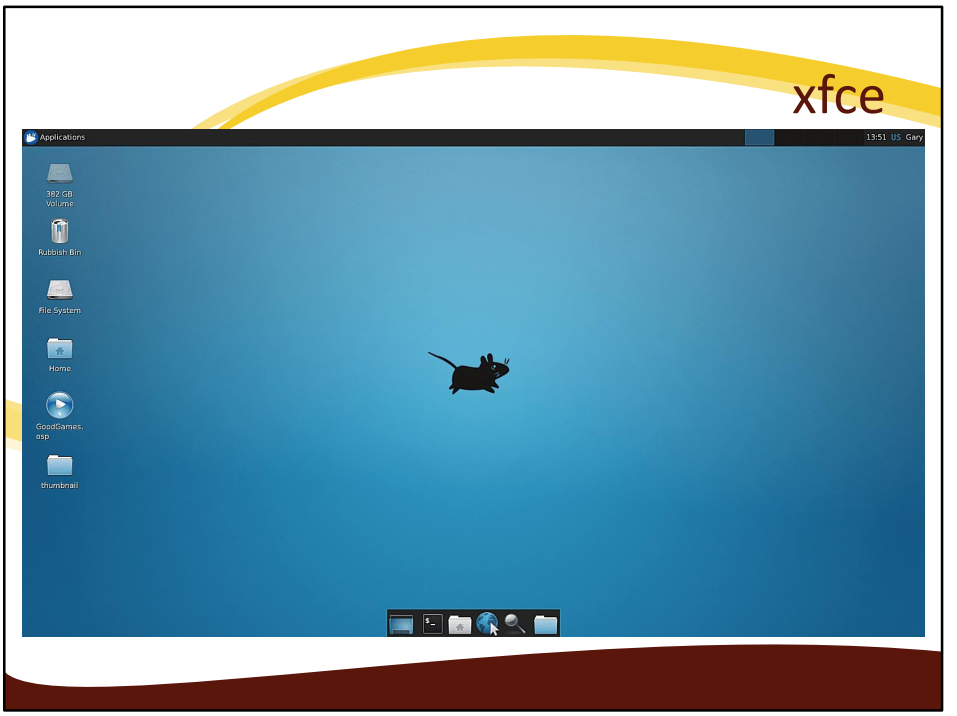
Mate



The MATE Desktop Environment is the continuation of GNOME 2. It provides an intuitive and attractive desktop environment using traditional metaphors for Linux and other Unix-like operating systems.

MATE is under active development to add support for new technologies while preserving a traditional desktop experience.

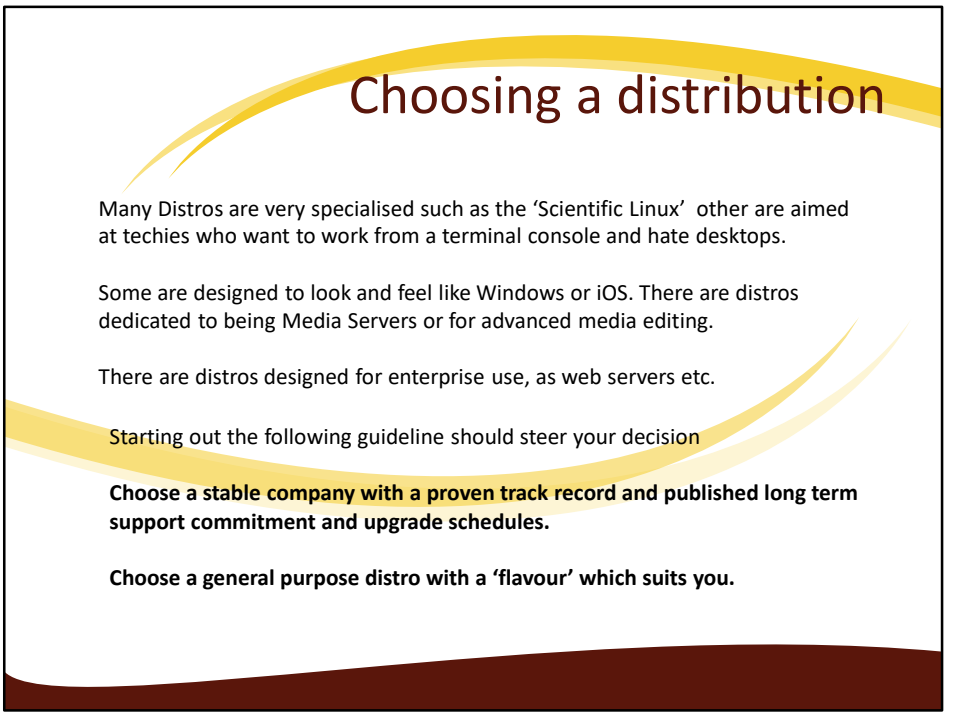
This is the future as envisaged by Ubunto but unfortunately development seems to have stalled.
The idea is to have a desktop that behaves more like an android driven mobile/tablet.



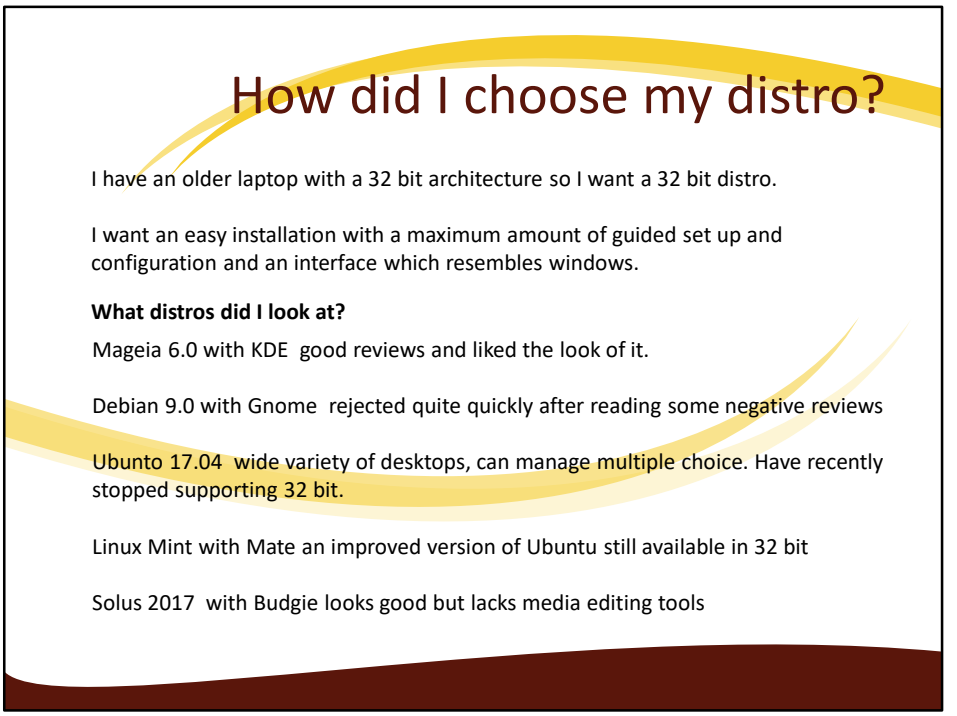
Xfce aims to be fast and lightweight, while still being visually appealing and easy to use. Xfce embodies the traditional UNIX philosophy of modularity and re-usability. It consists of separately packaged parts that together provide all functions of the desktop environment, but can be selected in subsets to suit user needs and preference. Another priority of Xfce is adherence to standards, specifically those defined at freedesktop.org.

Part 3: The Decision

- **What to think about?**
- **How did I choose?**
- **Ditch or not to ditch Windows?**
- **Install from DVD or USB?**



For example the Ubunto Special DVD included a release of Ubunto with 6 different desktops to choose from /experiment with.
You can find examples of what desktops look like in the internet

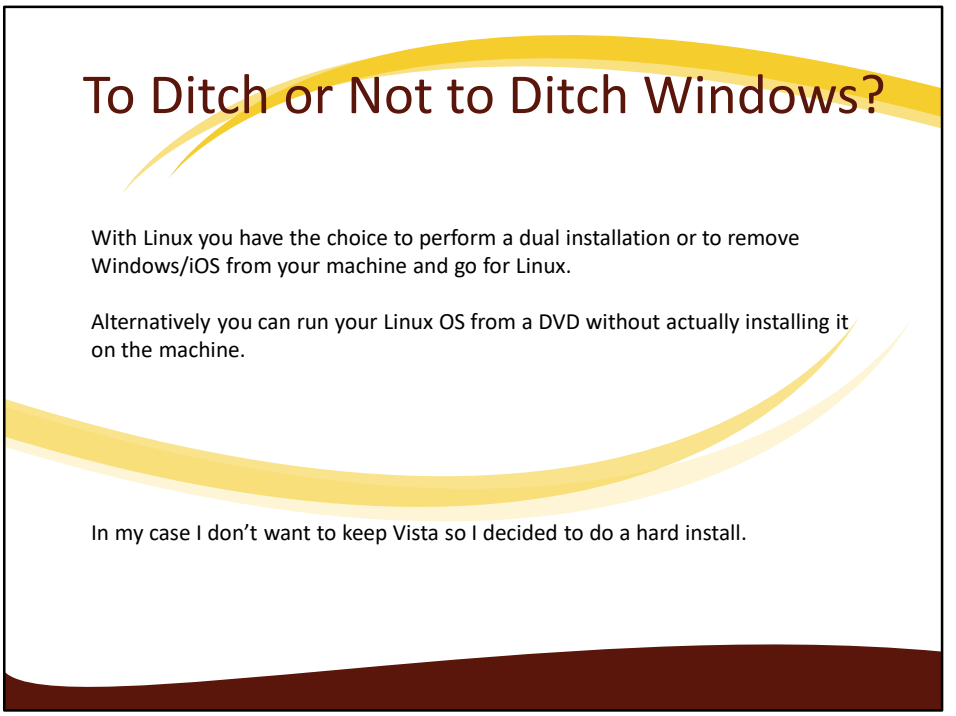


I shortened the list to Mageia and Linux Mint.

Mageia can use all major desktop environments. Plasma, xfce and GNOME for a downloadable iso. However only xfce is available in 32 bit.

Linux Mint is based on Ubunto and has a proven record and has a 32 bit version using the Mate desktop.

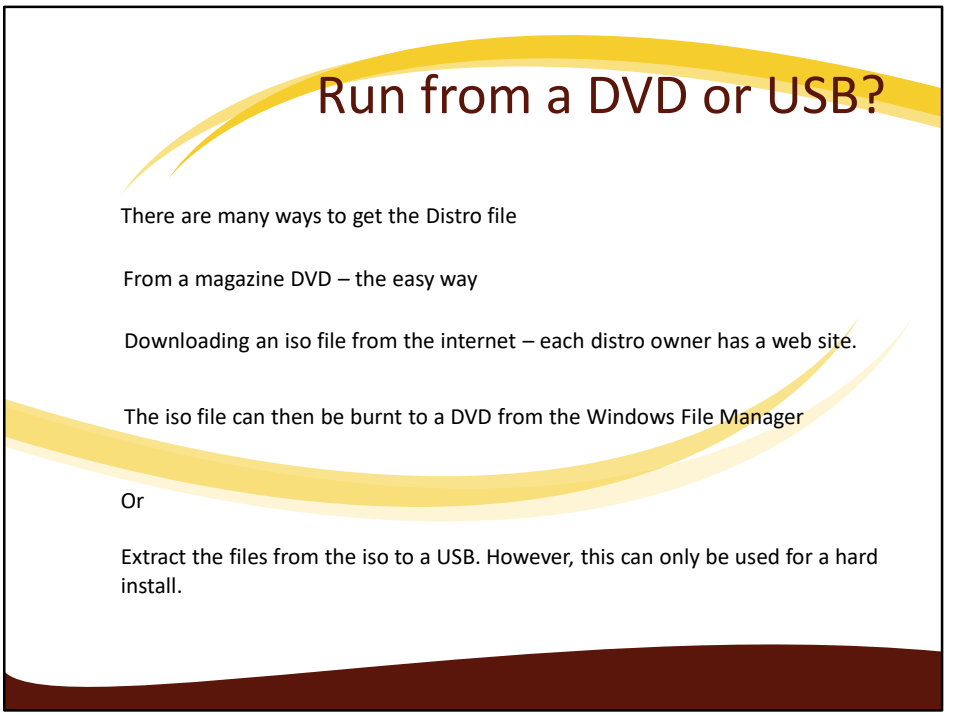
I spent quite time looking into Mageia and Linux Mint, comparing them before deciding that I would go with the Linux Mint/Mate distro as the 32 bit Mageia came with the xfce desktop which I am not so happy with..



Running Linux Live from a DVD can be a good idea at first as you can then do trial runs with various Distros to see which one you prefer.

My decision

- **Linux Mint with the Mate desktop**
- **Installation by DVD**



Distros are available for downloading in a various flavours and 32/64 bit versions.

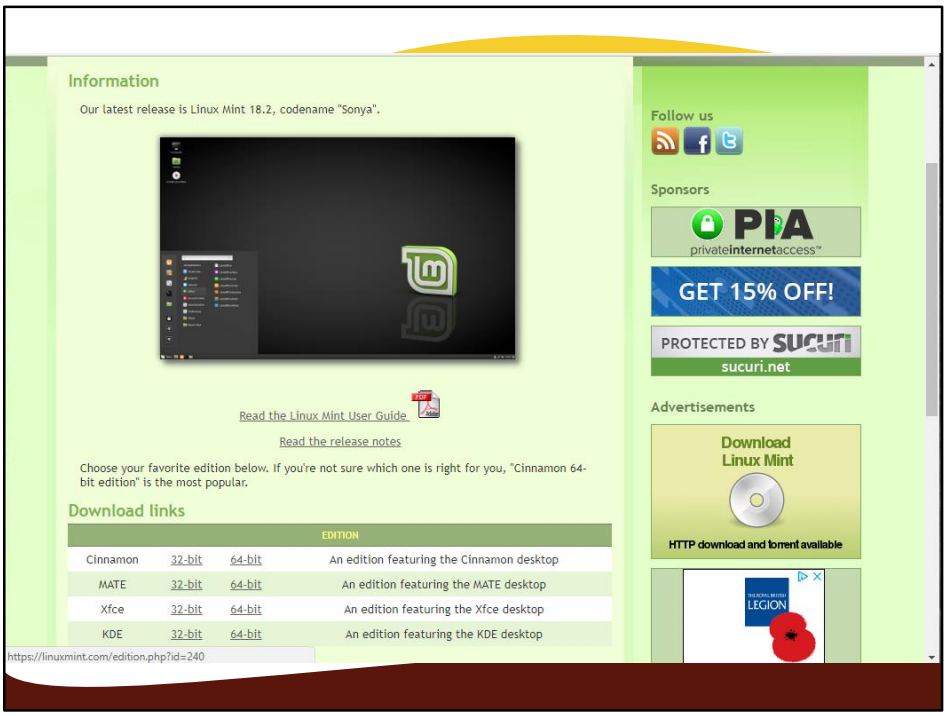
The DVD can then be used to run from DVD or to install, this will usually be the first question after inserting the DVD.

The iso files can be extracted, using 7-zip or similar zip software, to a USB drive. This can only be used to do an install to the machines hard drive.

Which of these methods is up to you. I was installing on a ‘clean’ machine and decided to burn to a DVD.

I had to start from my desktop to get the linux software.
The Linux Mint Downloads page lets you select which flavour you wish to download, In my case the Mate 32 bit.

As is common in the Linux world successive releases are usually given different name. In this case release 18.2 is called Sonya.
Don't ask me why. It is also a good idea to download the user guide.

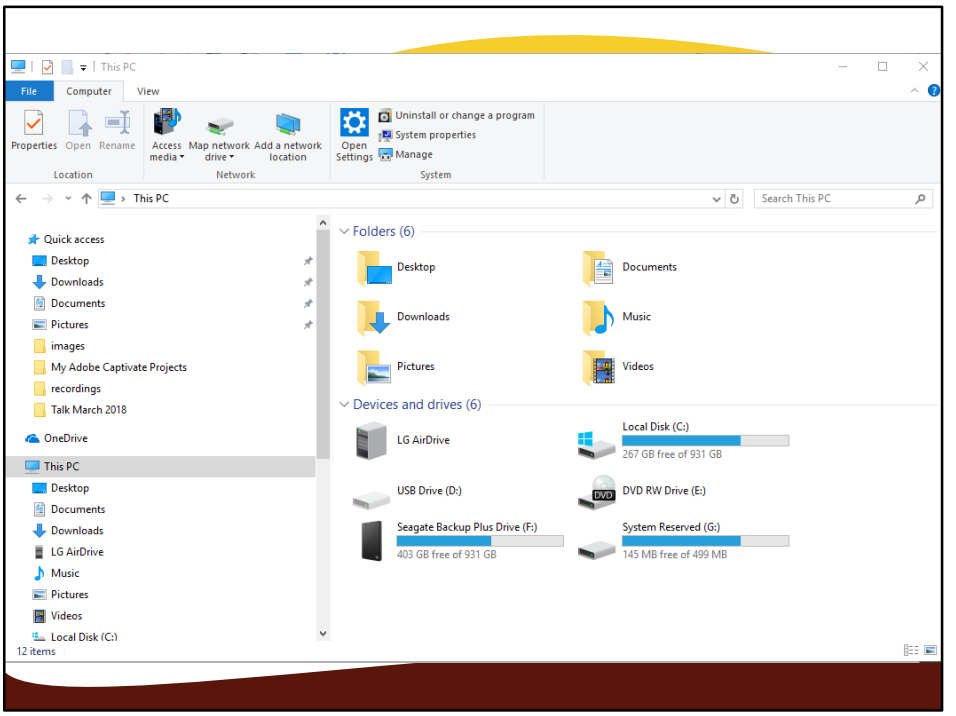


Select the version you want to install. In this case I want the 32 bit MATE version.

You move to the actual download page.
There are many sites you can use, I want one in the UK so I have to scroll down the liat.

Eventually I find 2 sites and chose the first one (no reason).

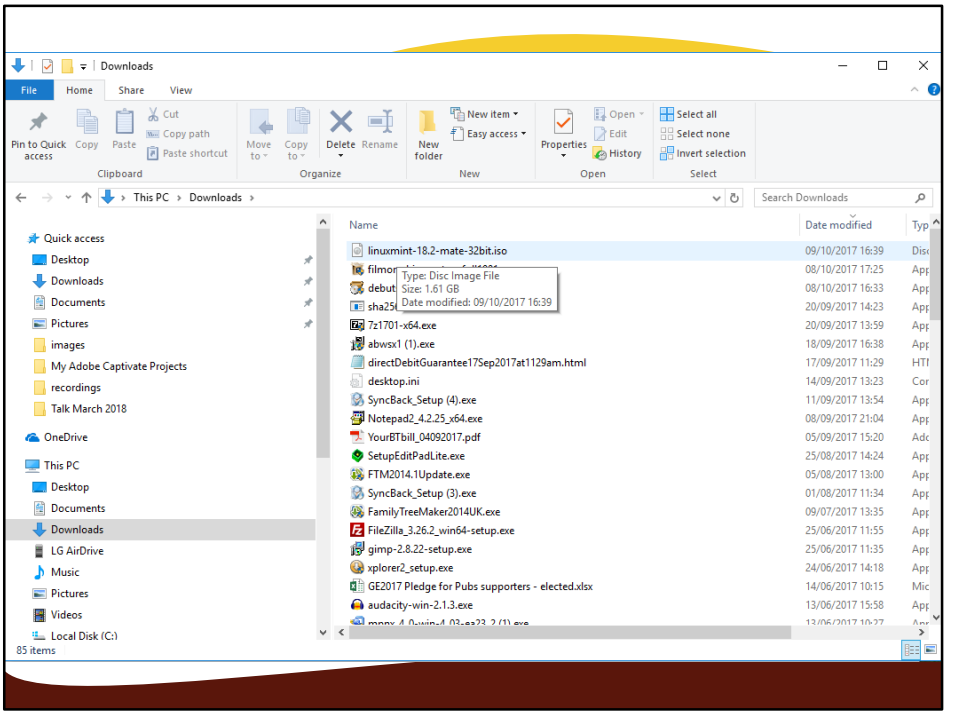
The status bar displays the progress of the download, I didn't take so long - 6-7 minutes.
When the down load is complete use the menu to open the folder it has been installed in.



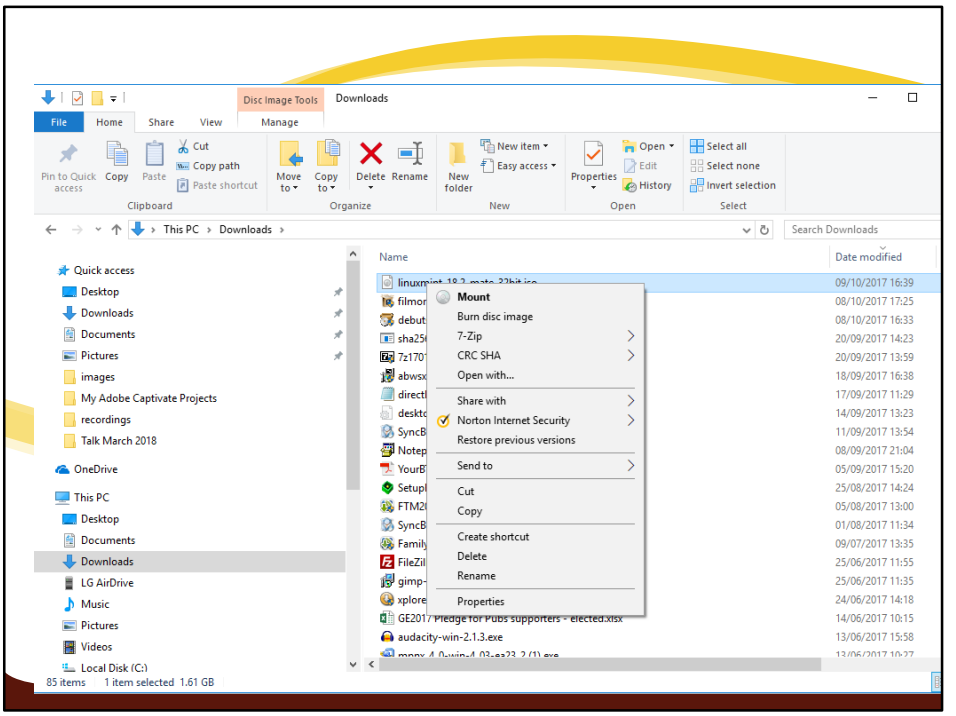
Having got the download the next task is to extract and burn the installation files to a DVD.

This is easily done using the Windows ‘Burn to DVD command.

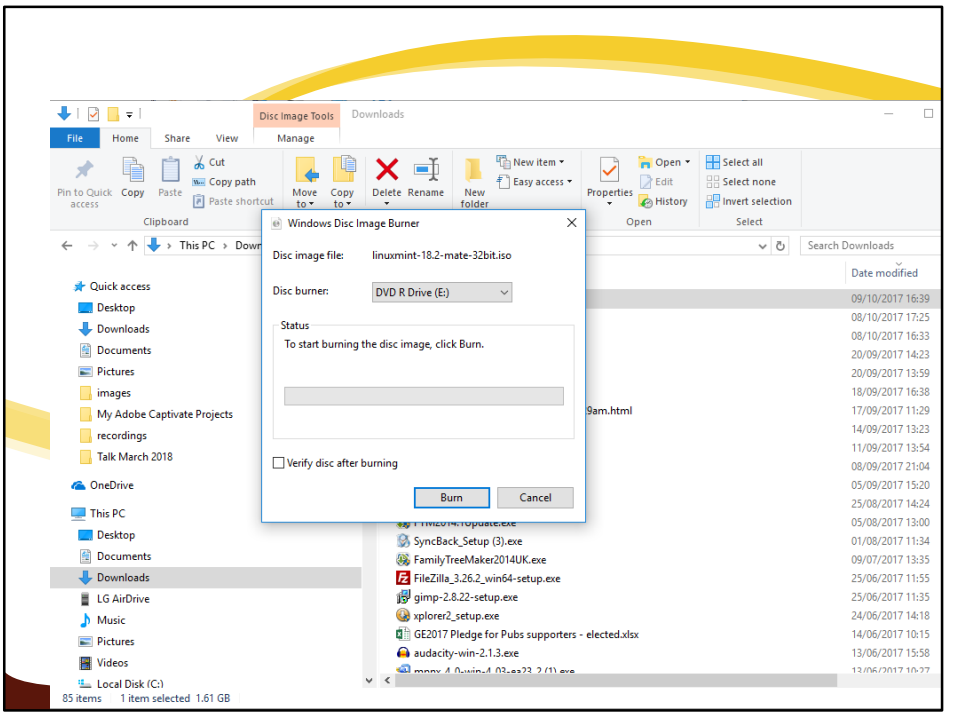
If not already there go to the Downloads folder



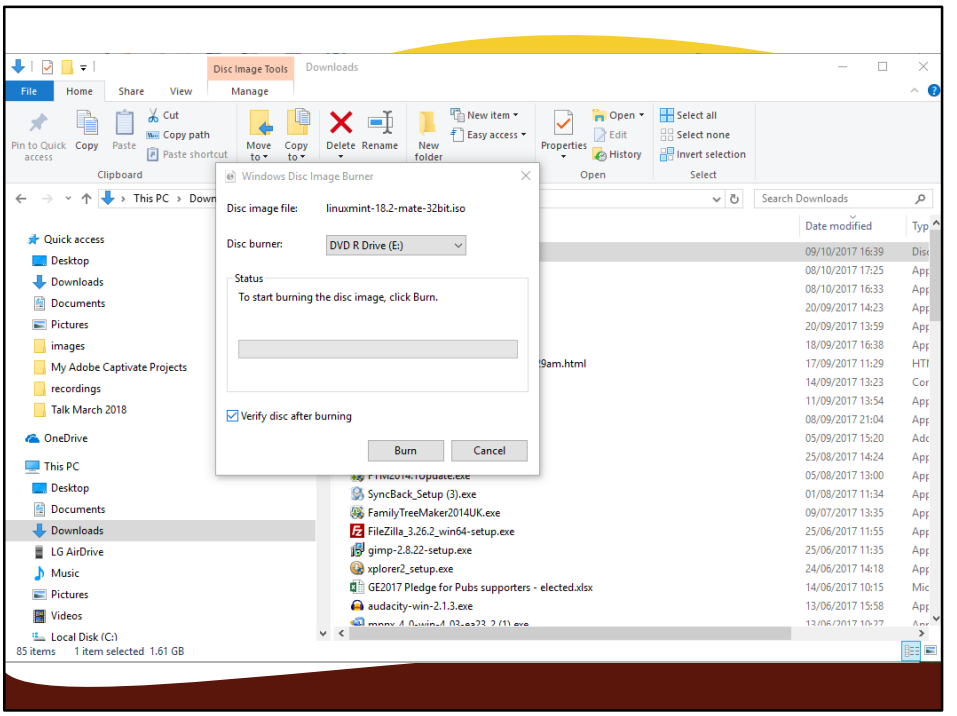
Find the downloaded file



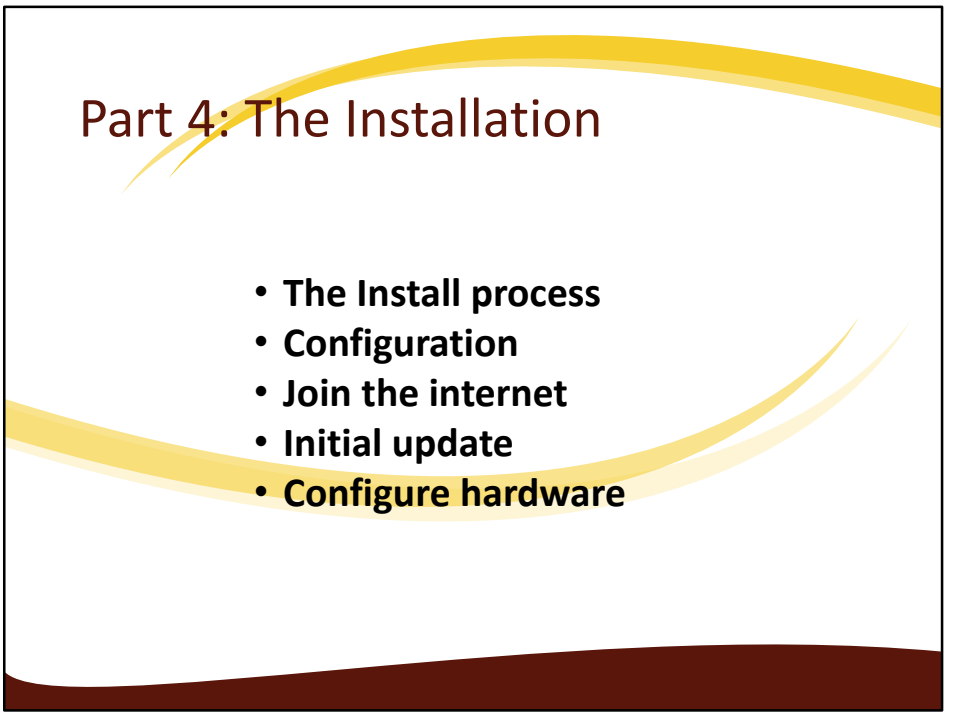
Right-click on the file name – a menu is displayed.
Select the 'Burn disc image' item



The Burner window opens.
Check the correct DVD writer is selected and click ‘Verify disc after burning’



Finally click the Burn button.
The burning/verify process will take 15 minutes or so-it depends on the speed of your burner.



Now it’s time to do the actual installation.

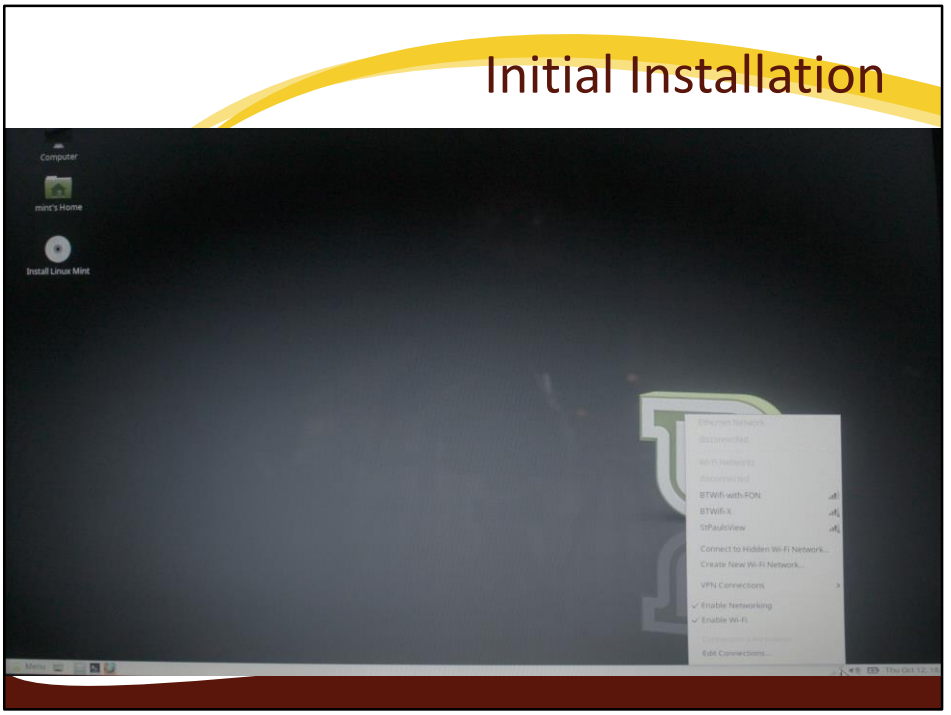
Prepare for installation.
Check that the DVD is set as the first boot source in your BIOS set-up.
Place the DVD in the DVD reader and then restart your PC.

The DVD automatically starts following the reatart.

It then made a lot of noise reading the DVD for 10 minutes or so before displaying a desktop.

At this stage Linux Mint is running live from the DVD. You can decide to explore the desktop, however if you quit then nothing you have done will be saved.

Initial Installation



I was presented with the default Mate desktop with 3 icons
Computer
Mint's Home
Install Mint

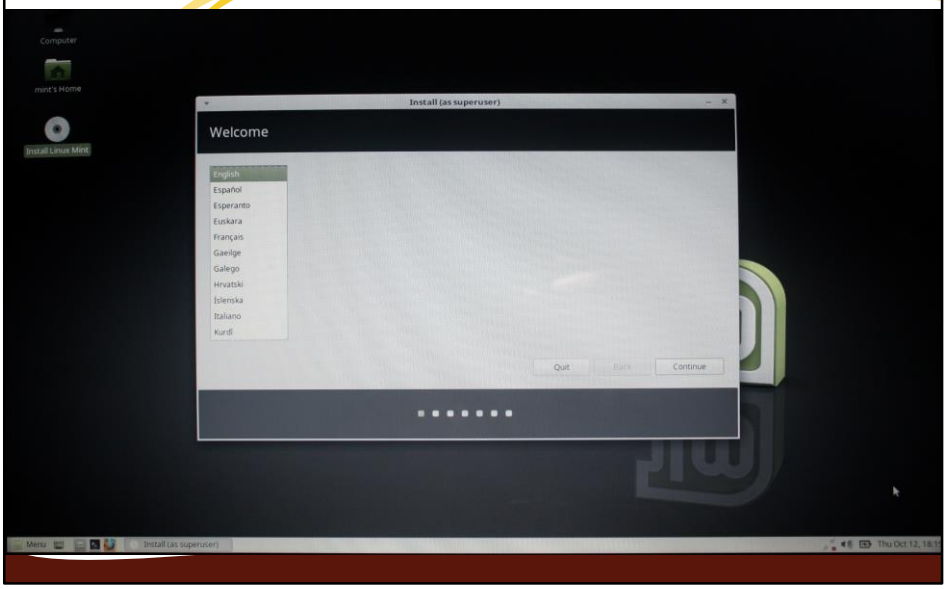
Before proceeding with the install you have to connect to the internet by configuring either the wifi service or the wired connection.
In my case I have a wifi connection.
Clicking the internet icon opens the connection dialogue.

Preparing Installation

I selected my wifi service and I was then I was asked for my wifi key.

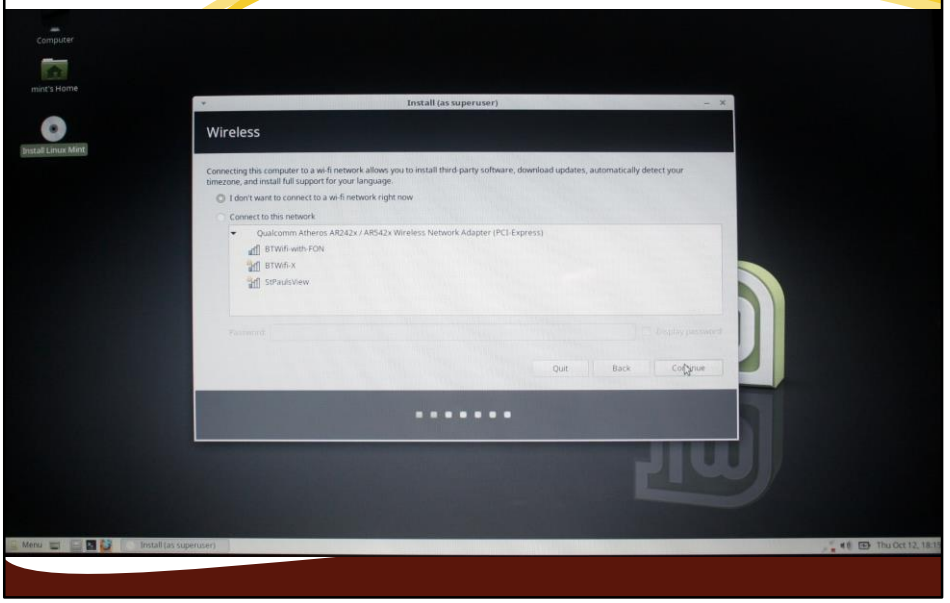
The desktop went blank and I clicked the Install Mint icon.

Preparing Installation



It started by ask me to set up a language. English was already selected as the default

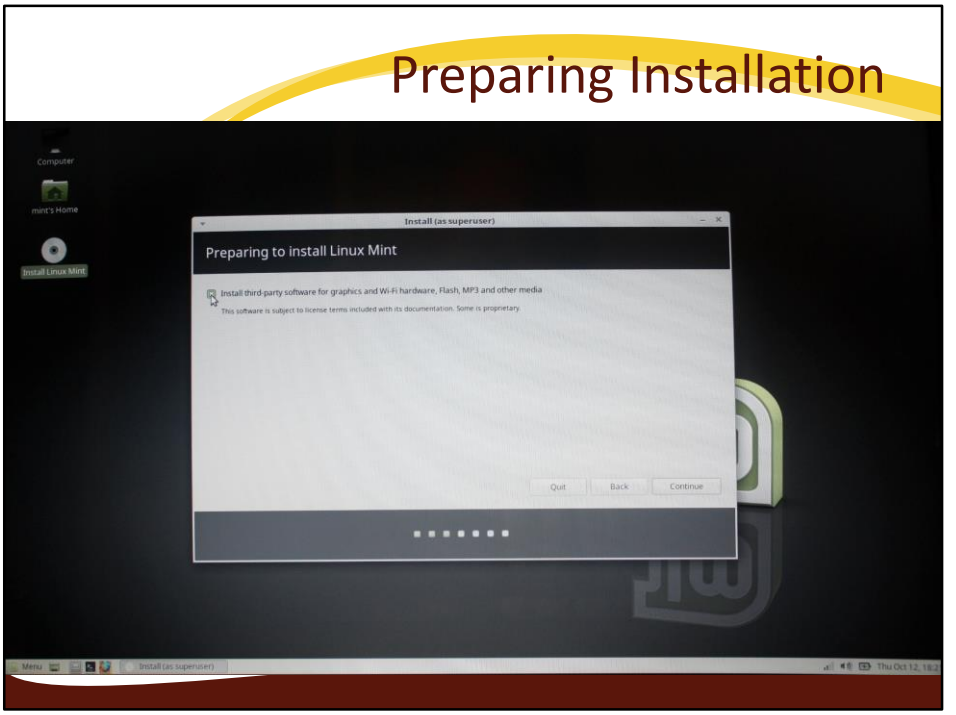
Preparing Installation



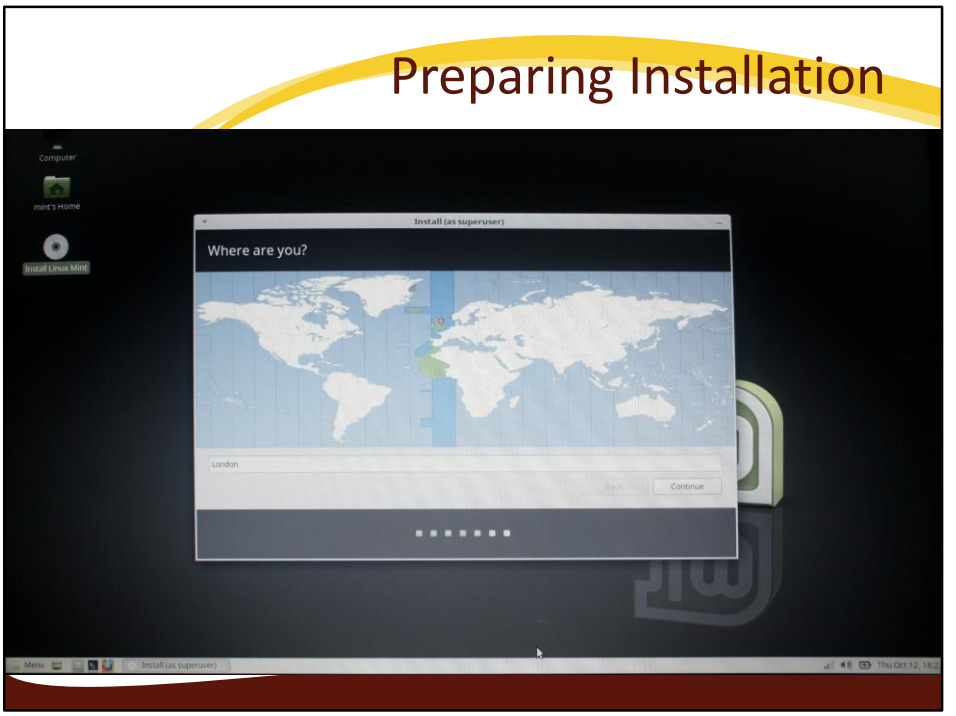
If third party software is required for any of your hardware then the installation process requires access to the internet.

I didn't know so I chose to connect to the wifi network

Preparing Installation

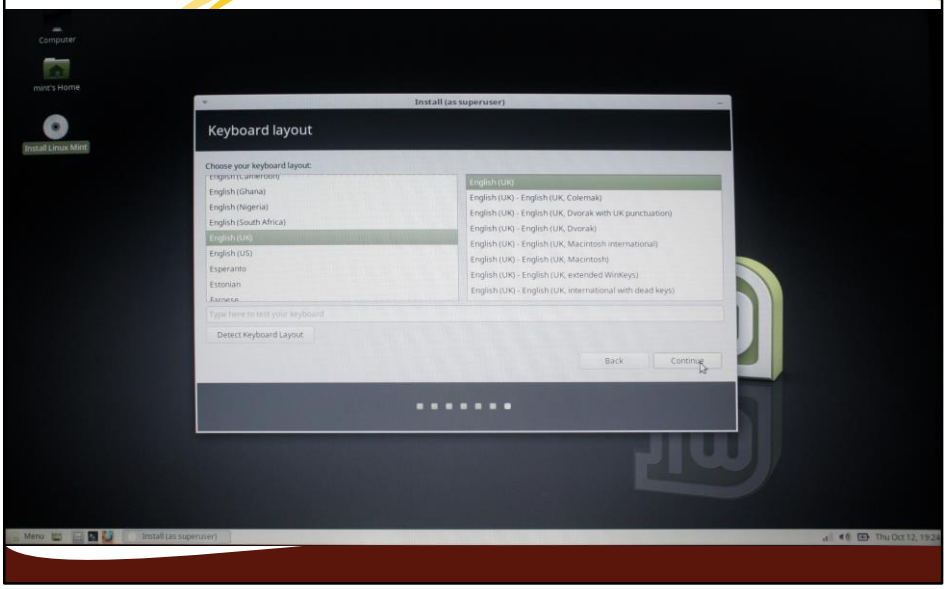


I checked the install third party software and continued. This enables drivers for some hardware which uses proprietary software – although it is free.

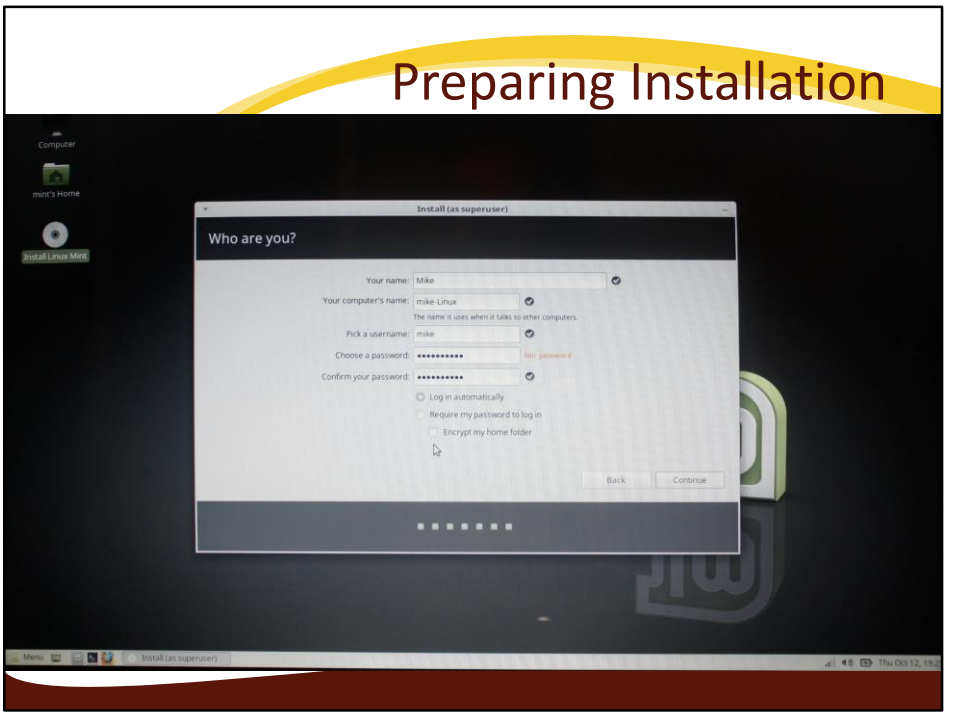


Silly question as it already seems to know! However if it places you somewhere else the click on the UK.

Preparing Installation



Again it has already selected the standard English keyboard so just continue



At last something it didn't know.

Enter your name and a user name plus a password.
You can decide to have automatic log in, or if sharing your machine you can ask for a password login.
This password is very important as it enables Administrator rights.
As I am the sole user of this laptop I select auto login.

An important difference between Windows and Linux systems is the way the disk memory is assigned.
All the core systems are only accessible through the root user. It's a bit like they are hidden by a firewall.

Note Administrator is NOT the same as root user but there is a method by which the administrator can function as a root user (all commands in the terminal are preceded by 'sudu').

Final Installation

Now the real work began.
This step installed all the necessary programs etc to provide me with a working Linux installation and software.

At this stage I left the machine to it and went off for a cup of tea. With periodic shakes of the mouse to revive the display.
The complete installation took about 90 minutes, including updates which I come to later.

Installing Windows 10 on My brother-in-law's 2 year old notebook took 2.5hrs, without any software, that took an additional 90 mins.

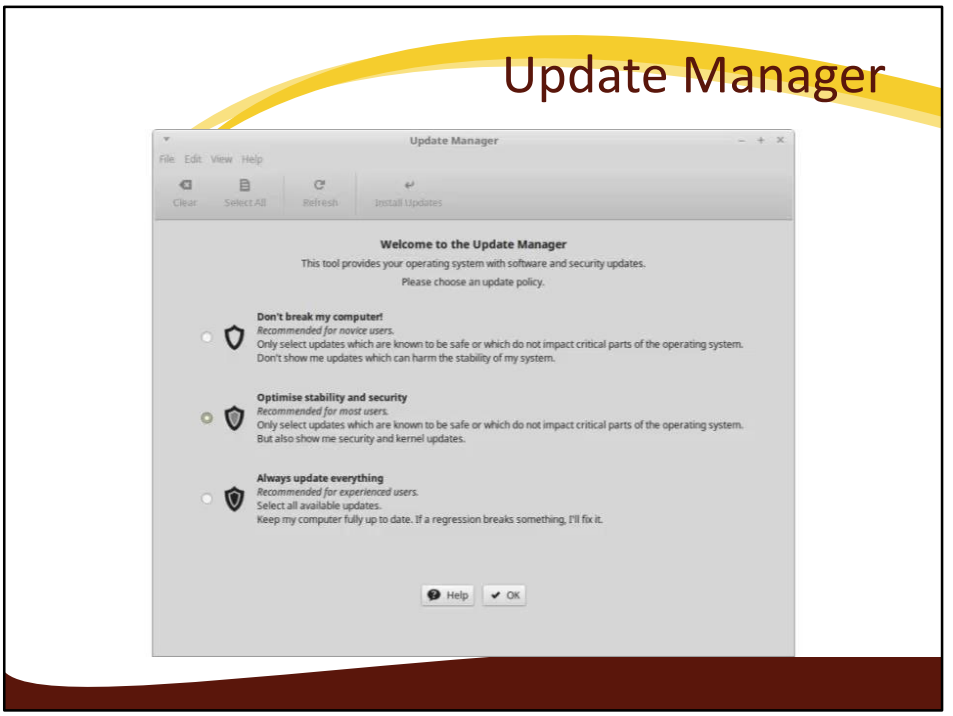
Final Installation

When the install process finished the Install icon disappeared and this welcome splash was displayed. I decided to retain it for the moment in case any of the links were needed. You can decide to hide this screen later.

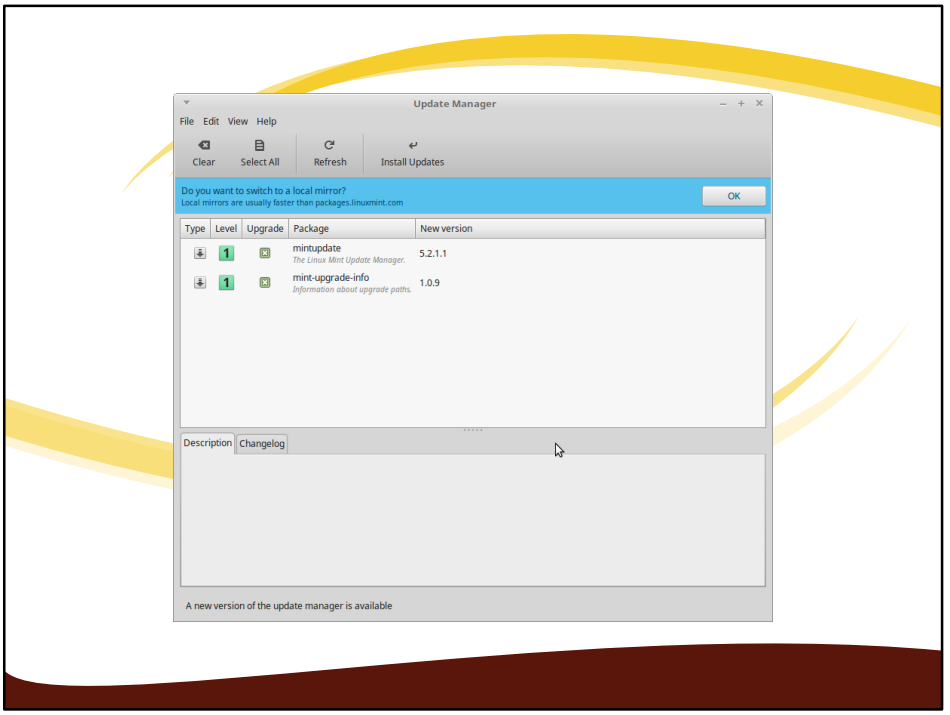
According to the best advice there is one more thing you MUST do to complete the installation.

Linux and other software is being constantly updated (just like Windows) and therefore the installation has outdated files which need updating.

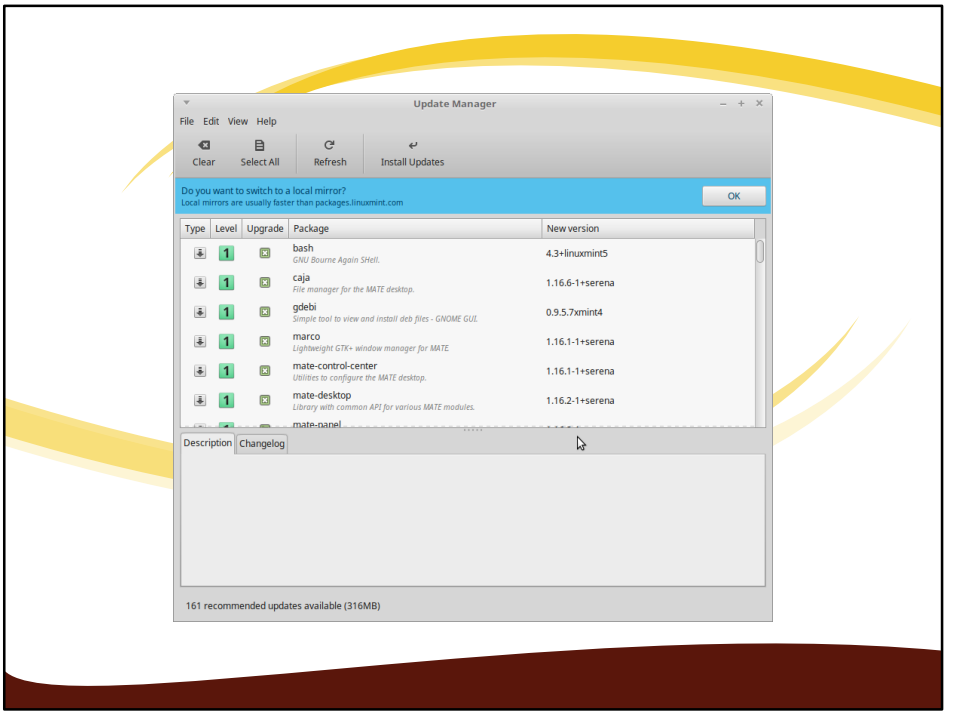
Update Manager



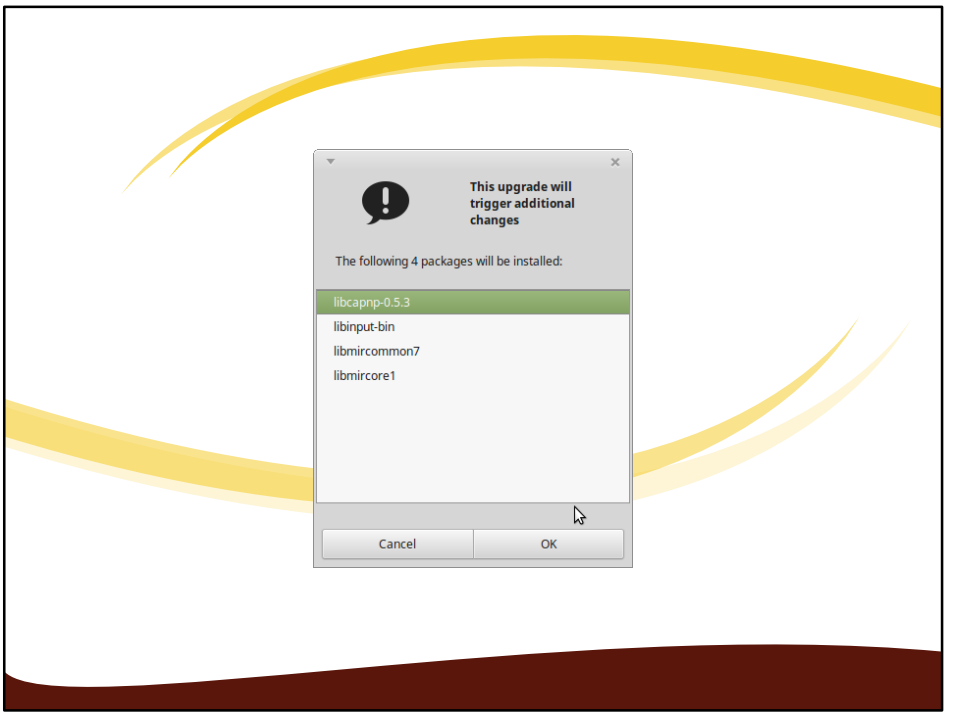
I always go for the middle ground



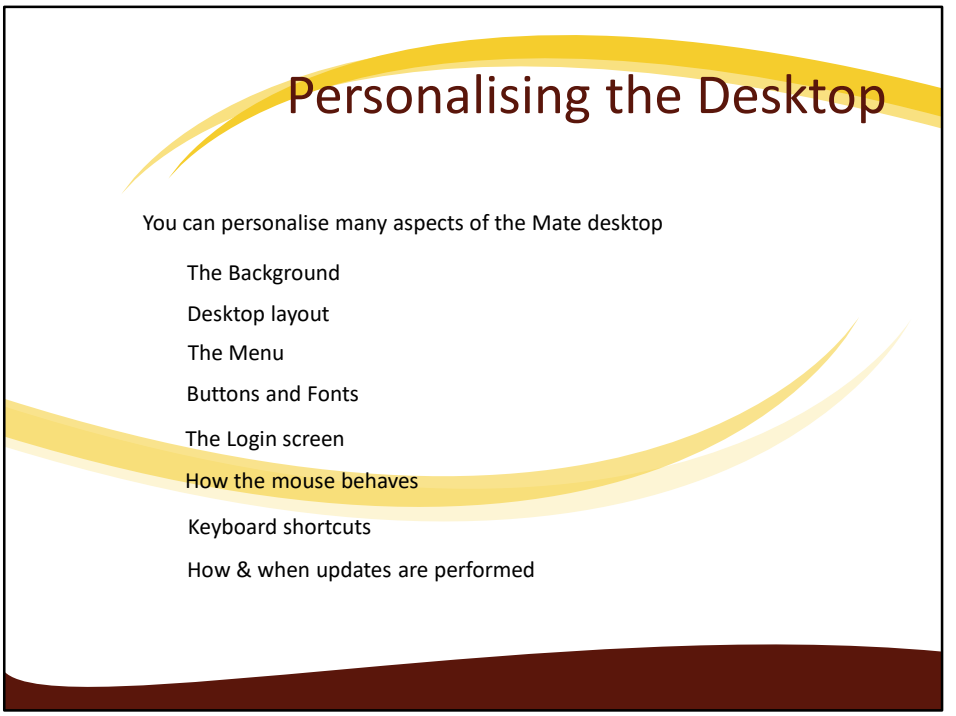
Updates come labelled with one of 5 levels, 1 & 2 are recommended and secure whereas 5 is to be regarded as beta version and probably not reliable or stable. Select the files you want to run and click Install Updates



This lists the file contents with individual components. You may not wish to update/upgrade all. However most of these titles are meaningless to me so I just select all.



One or more of the selected components are dependent on other components which also need to be updated.
You can either cancel the complete update or continue.



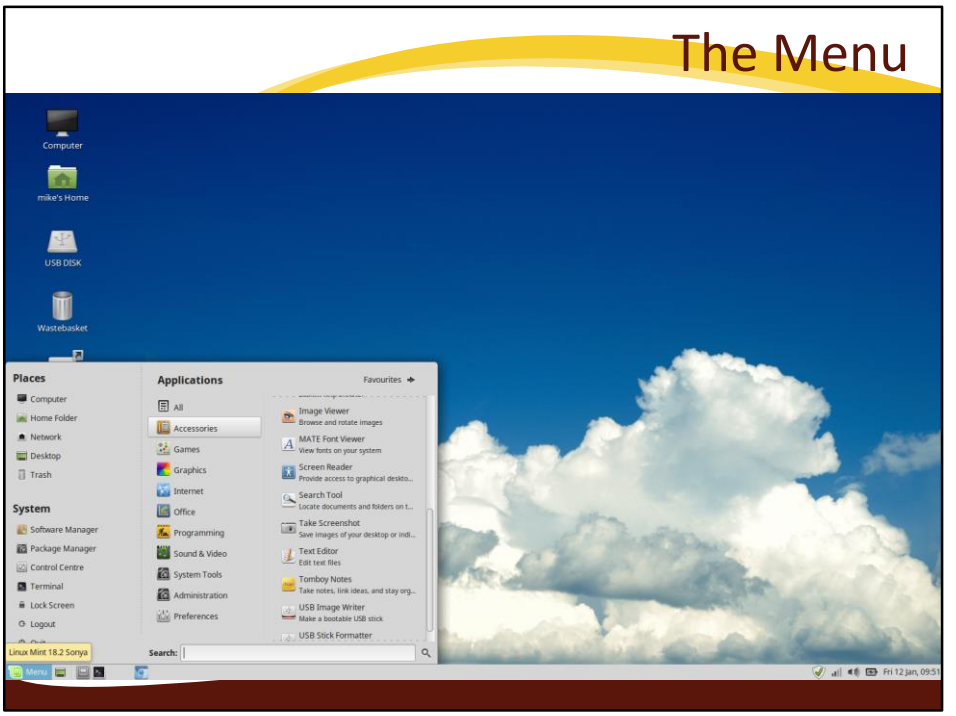
At this point I have a full, working installation of Linux Mint with the Mate desktop, but what have I got?

Display the desktop and explore live

I have no idea what many of these apps are but I have the essentials

Firefox bowser
Thunderbird email client
Libre Office suite
Gimp photo editor
File explorer

There is the usual bundle of extras such as a notepad, snipping tool, media player, software manager, package manager, user admin and customiser.



On the left there are two groups of direct links: to **Places** and **Systems**.
In the middle is a list application groups
On the right is a list of apps in the selected group. Double click to open an app.

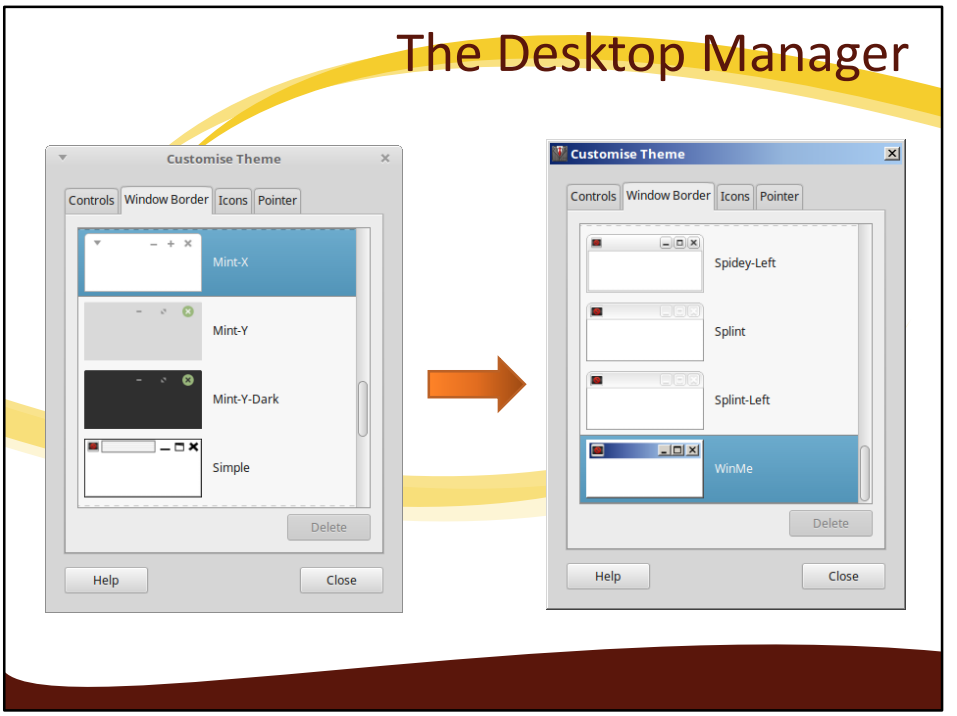
At the top right corner is an arrow, click this to display a list of **Favourites**.

The Menu

You can either double click a favourite app or click on the All Applications arrow.

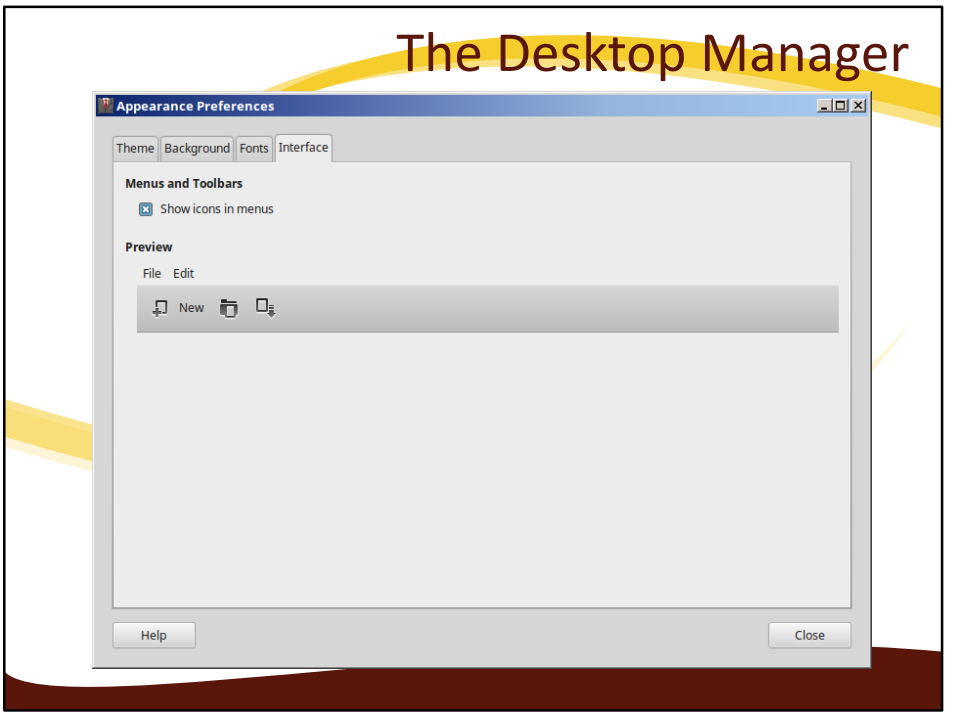
Opening the Desktop Manger displays this dialogue.

You can select a theme, background, fonts and the interface
Here I selected the Mint X theme and then customised it.

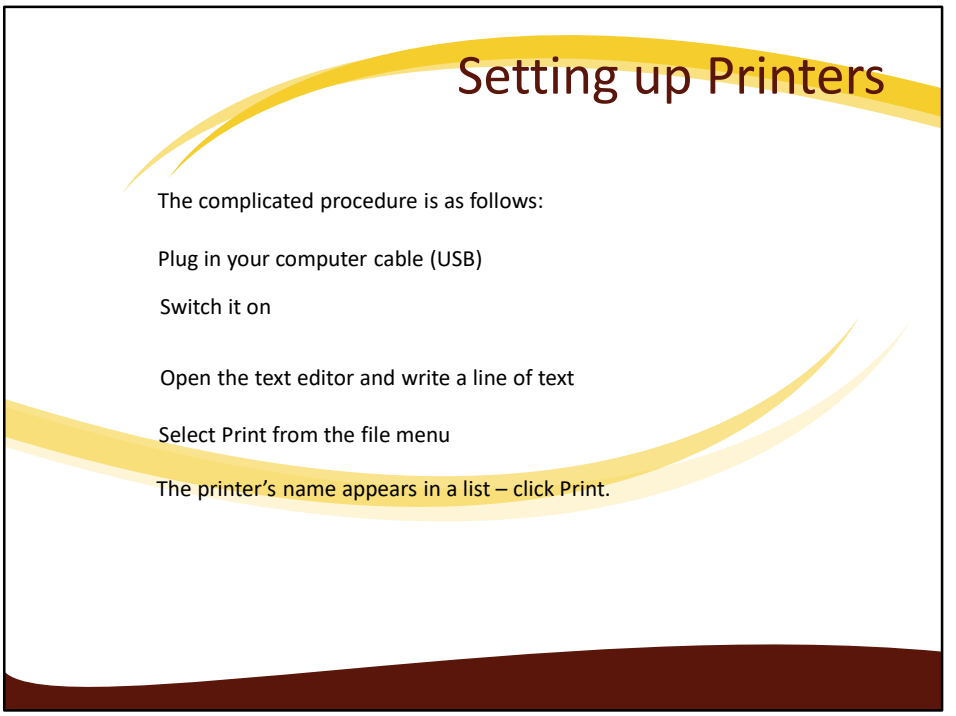


You customise the way controls appear, the window border, icons and the pointer. I selected the Winme version so that the windows appear like Windows windows.

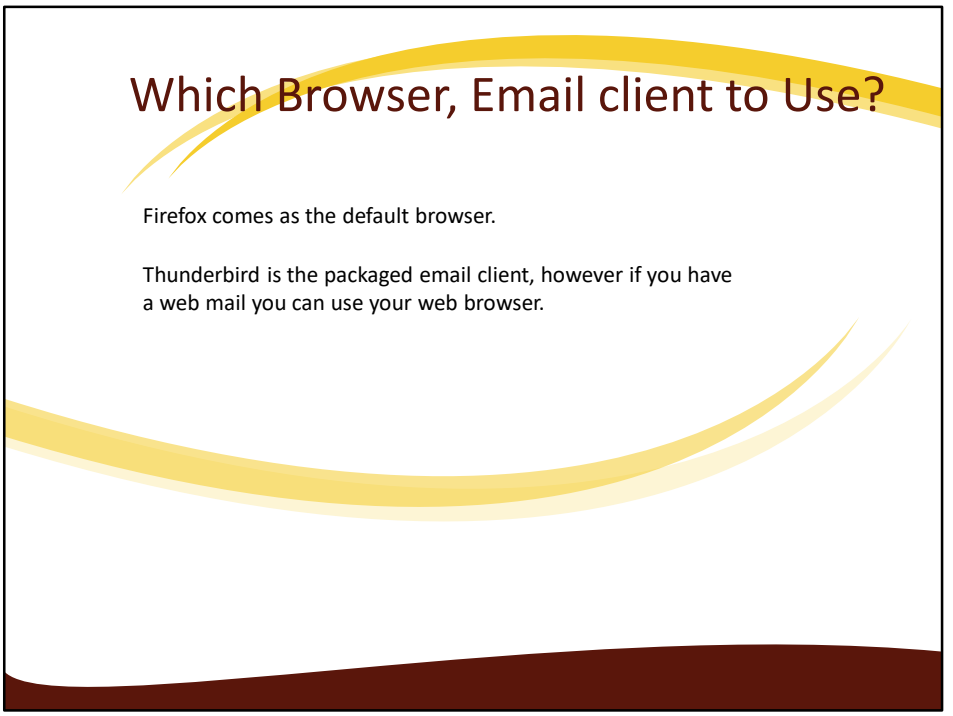
I have replaced the original plain desktop with the Mint logo with one of the many desktop pictures available.



Finally in the Interface section I decided to include icons in the drop down menus



Surprisingly easy compared to what I had heard before.



If you prefer to use another browser then Chrome, Opera and others are available in the software catalogue.

Likewise there are other email clients available, but I have not tested them:
Evolution, looks like Outlook
Thunderbird. Part of the Firefox family
Kmail, comes with the KDE desktop but available for other, highly customizable.
Geary, aimed at older slower installations and doesn't have as many features.

You only need to install an email client if you require features the web interfaces don't provide – in my case the ability to run 4 different email addresses and to be able to easily set up separate contact lisst for each one and to build distribution lists.

Until a few years ago all software had to be manually downloaded, compiled and installed using the terminal.

This can still be done and in some cases is the only way.
However most software these days is available the Linux distributors equivalent of the Google Store.

The selected app is downloaded and installed automatically.

Comment
It was now that I discovered the laptop was overheating badly. Experimented by running without the battery – did not get hotter than normal.
Decided to buy a new battery – firm in Hayling Island sold me one for £25.

Had no problems since. However this unused laptop has now cost me £35!

Note the extensive range of apps available, however you will only recognise about 1% as useful.

Click on a group icon to open a list of available apps

The Software Manager

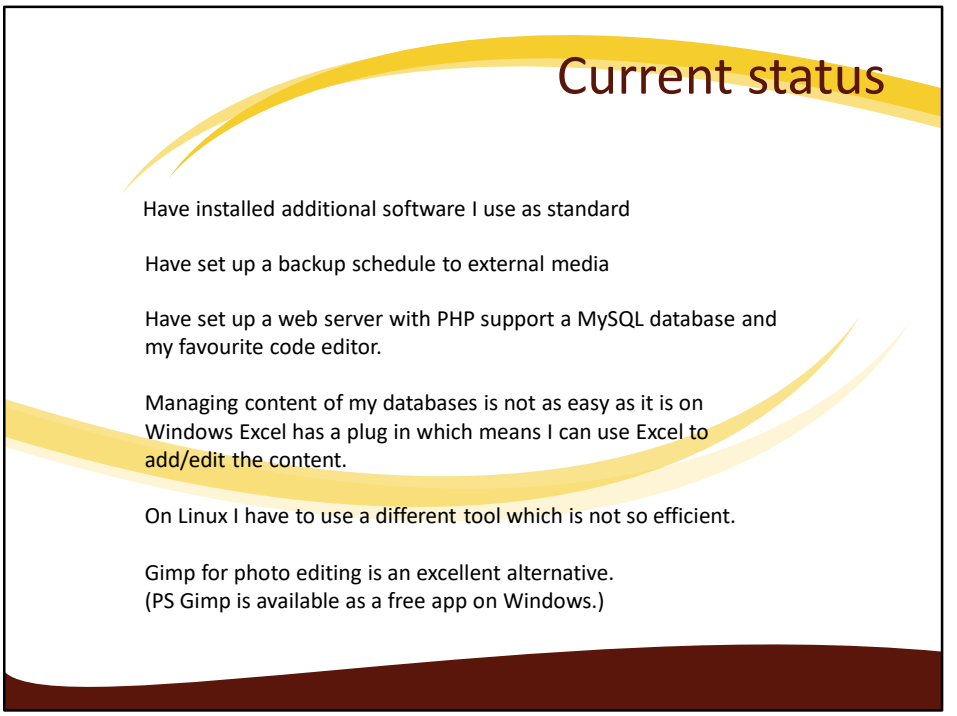
The apps are listed by popularity.
To install an app, click on it.

There is a search box if you know what you are looking for.

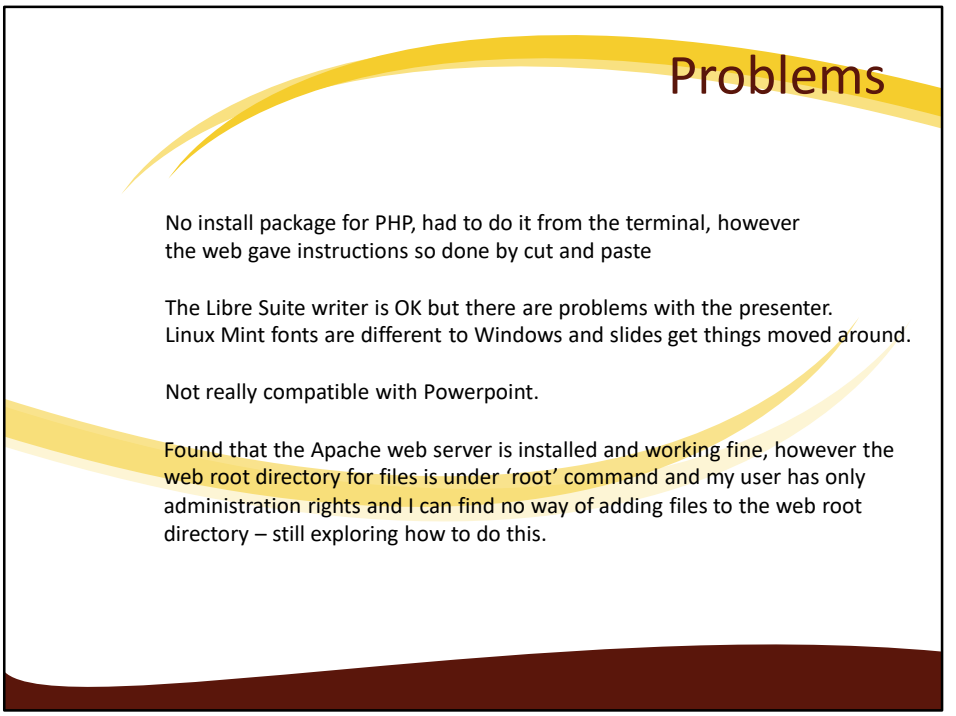
A description of the selected app is displayed. On the left the installed status is shown and on the right an action button. This button either says Install or Remove. Click the button to perform the desired action..

The Instasll button disappears and the progress bar is shown.

When installation is over the Remove button is displayed and status is shown as Installed.
The app will be listed in the appropriate group on the menu.



Installed Teamviewer



Since the talk I have found that I have a problem configuring The MySQL Workbench to work with the database.
Probably have to uninstall both the workbench and the database, do a restart and load them again and hope I can set up a root user password so that I can connect with the database.

I have found instructions on the web for giving my user read/write privileges for the Web Server document folder. Waiting until I can get MySQl working before I do this.

Just type in your question in the address bar and google will find an abundance of helpful sites.

I found most answers on the Linux Mint site.


That’s All Folks!