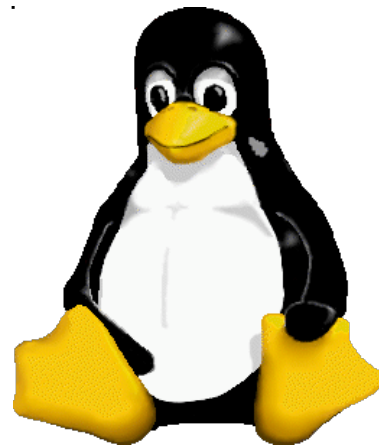


Introduction To Linux



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About Me

- Honors Student in Computer Science
 - **Project:** Architecture of a Data Storage System for the Walnut Kernel
- Vice President of Linux Australia
- Been involved with CSSE Club since 2000
- Considered local UNIX “guru”
- Involved in many Open Source Projects

Assumed Knowledge

- Experience using (modern) Computing Platforms
 - e.g. MacOS (9/X), Windows, Linux
- Basic understanding of UNIX/Linux

What We'll Be Covering

- Linux Concepts & Philosophy
- Installing Debian GNU/Linux
 - Partitioning
 - Co-existing with Windows
 - Linux Drivers
 - APT sources and package selection

- Why the Debian Installer is a pain
- Why it's worth it!
- Setting up your hardware (discover, mdetect)
- Installing new software
 - Debian Security Updates
 - Debian Releases (testing, unstable)

Philosophy

(Badly misquoted no doubt...)

Me: “So do you play with other systems to see how they do things?”

Linus: “No, not really.”

Me: “So it’s just as long as we’re doing something sane?”

Linus: “Pretty Much”

Free Speech

(as opposed to Free Beer)

- Free to use and modify
- Free to redistribute modifications
- Free to learn how it works
- The GPL makes sure that others respect your freedom by ensuring that they distribute under the same conditions!

So why do I pay for CDs?

- For somebody's time to duplicate and distribute them
- Physical media
- Supporting Open Source Software (OSS)
 - (we like to eat too)

More Philosophy...

- <http://www.gnu.org/philosophy/>
- http://www.debian.org/social_contract
- <http://www.debian.org/intro/free>

Good reasons to want Linux:

- Speed
- Scalability
- Security
- Features
- Access to Source Code
- Ability to Get Involved
- Freedom!

Okay, I want it.

What now?

**Choose your
distribution**



debian

Why Debian?

- Stable
- Complete
- Free
- Our experience
 - People we give Debian to don't come back with problems!

Why not Debian?

- Debian Installer is ugly
- More commercial support for other Distributions
- Newer software in other distributions
- Some others are more specialized

**So what do I need
now?**

Installation Media

- Install from CD-ROM
- Install from DVD-ROM
- Install via a network (Net-Install)

Getting CDs/DVDs

- <http://www.isl.com.au>
- <http://www.everythinglinux.com.au>
- Computer Swap Meets
 - <http://www.comtrader.com.au>
- CSSE Student Club
 - <http://club.csse.monash.edu.au>

Starting a net install

- Unfortunately we still have download something beforehand
- Either a set of boot-floppies or a boot CD
- Boot CD < 30MB
- This is how we install Debian at Install Days

Where to get net-install ISOs

- <http://www.debian.org/distrib/netinst>
- With XFS:
 - i386: <http://people.debian.org/~blade/XFS-Install/>
 - ppc: <http://penguinppc.org/~eb/files/>

WAIT!
I want to live with
Windows too!

Co-existence

- Linux people have done a **lot** of work on this.
- Microsoft doesn't care. They want to rule the world and won't accept compromise.
 - This has more to do with management than actual engineers.
- It is not only possible, but many people do it!

Linux can:

- Exist on the same drive as Windows
- Give you a menu on startup offering to boot into Windows or Linux
- Exist on a different drive than Windows
- Make you never want to run Windows again.

Linux can:

- Read FAT and NTFS partitions (mounting or mtools)
- Write to FAT partitions reliably
- (Experimental) NTFS write support*
- Connect to Windows Networks (samba)
- Serve files to Windows machines (samba)

* Requires custom kernel, and guts.

Linux can:

- Share an internet connection to/from a Windows machine (netfilter)
- Open Windows file formats (OpenOffice*)
 - Word, Excel, PowerPoint et al.
- Run (some) Windows programs (WINE)

*Must be installed separately from Debian 3.0r1

Linux Can:

- Run Windows!
 - Bochs, plex86 (free)
 - VMware (commercial, but high quality)
- Be a “Remote Desktop” client (rdesktop)

WAIT!
I want to live with
MacOS X too!

Pretty much the same
story as Windows,
except Apple has been
nicer.

Partitioning

- Necessary evil
- Splits a disk up between Operating Systems
- Windows usually gives itself the whole drive
- We will want to take some of this for Linux

Resizing

- This makes the space allocated to Windows smaller, so we have room for Linux
- We use GNU parted to resize FAT filesystems.
- NTFS support is not (yet) in GNU parted, we have ntfsresize, but has not yet been declared stable.

NTFS?

- Best try a commercial package such as PartitionMagic or
- Or, backup your data and try ntfsresize!
- Or, backup your data and reformat.
- Please note that this is all because Microsoft won't release documentation on NTFS.

Debian GNU/Linux Installation Demo

Debian Installer Sucks

- Not “user friendly” enough
- Makes some easy things difficult
 - hardware detection/installation
 - strange questions for a newbie

Why it's worth it

- Debian is robust enough that you're probably only going to run it once
 - Unless you start doing install days
 - or buy more machines
- It works, although it's ugly.
- Don't panic, there's a new installer for sarge

Driver Configuration

- The Debian Installer sucks at it
- Majorly sucks at it
- It doesn't do it.

The Good News

- Post installation,
 - discover and mdetect do good jobs of detecting hardware and installing the appropriate drivers
- At installation, you probably only care about your network card

NVIDIA Drivers

- If you have an NVIDIA based graphics card, and want 3D acceleration, you will need NVIDIA drivers.
- These have to be built specifically, and are non-free
- They are kept relatively up to date in unstable
- There are docs on the net, google it!

WinModems

- Otherwise known as “software modems”
- Basically, the cards are a sound card with a telephone plug on them.
- A lot of manufacturers are idiots and don't release the specs needed to write a driver or allow people to write open source drivers.

www.LinModems.org

- Information on getting these modems working on Linux
- A lot of them work
- Some don't
- Check the site, they have instructions.

Installing software

- During installation, you got some software installed.
- What if you want something more?
- Maybe you want SPIM for your uni work.

debconf

- Debian Configuration
- Asks you questions and helps you configure your debian system.
- Sometimes asks bizarre questions
 - Defaults are (usually) safe
- Some are simply informational

APT

- APT is Debian's package tool.
- There is an interface directly to apt, and there are some (pretty) front ends too.
- There are over 10,000 Debian packages, the software you are looking for is probably there*.
- Also used for updates

*Finding it can be another problem, more later.

APT Sources

- Where Debian looks for packages
- What distribution of Debian to look at
- Can Include:
 - Network sites (e.g. security.debian.org)
 - CD-ROMs
 - DVDs

Distribution? Huh?

- There is more than one version of Debian!
- stable (currently woody)
 - 3.0r1, everything is meant to work
- testing (currently sarge)
 - what will become stable, **should** work
- unstable (currently sid)
 - things break, get over it.

Debian Stable

- Released every 12 to 18 months
- Designed to be solid and in a known state
- Security team works on this
- Packages can be considered “old” by many people.
- Use this unless you know what you are doing and why you are doing it.

Debian Testing

- Newer packages
- Should work (as they are candidates for stable)
- Testing will become the next stable

Debian Unstable

- The latest, greatest and unstablist of all
- When a Debian Developer submits a new version of a package, it comes here.
 - Hopefully it worked for them
 - It may not work for you
- Things do break, but are generally fixed quickly.

Configuring apt sources

- Edit: `/etc/apt/sources.list`
 - allows you to fine-tune things
- OR run: `apt-setup`
 - which is much prettier
- then run: `apt-get update`
 - to let Debian know of your changes

Finding a package to install

- apt-cache search evolution
- Searches through the list of known packages for any containing the word “evolution”
- can then use: ‘apt-get install evolution’ to install evolution
- Also look at: dpkg-awk and grep-dctrl

Updates

- apt-get update
 - Downloads the latest list of packages (security.debian.org is a good one!)
- apt-get dist-upgrade
 - Installs any updates needed for your system

Security Updates

- **ARE IMPORTANT!**
- **ARE VERY IMPORTANT!**
- Having the security.debian.org apt source will do things largely automatically for you
- subscribing to the security announce mailing list can be useful too.
- Look at <http://security.debian.org/>

APT Demo

But it's not pretty!

Front Ends

- dselect
 - Traditional interface, love/hate relationship
- aptitude
 - text based menu system, bit better
- synaptic
 - graphical utility
- kpackage, gnome-apt etc

Demo of front-ends

Q&A