

# Debian

## The Universal OS



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# Agenda

- What is Debian?
- Development process
- Derivatives – collaborating using Debian as a base
- The future?
- Debian and the commercial world
- Getting involved



# What is Debian?

- 3 aspects, interlinked:
  - A Project
  - An Operating System
  - A Community

# Debian – the Project



- Over 1,000 volunteer developers spread all over the world
  - Large numbers in North America & Europe
  - Smaller numbers in Australia & Japan
  - Growing Latin American development community
- Thousands more contributors
  - Documentation, translation etc.

# Debian – the Project (2)



<http://www.debian.org/devel/developers.loc>

# Debian – the OS



- **Completely** Free Software
  - Debian Free Software Guidelines
- Support for 12 different architectures
  - alpha, amd64, arm, armel, hppa, i386, ia64, mips, mipsel, powerpc, s390, sparc
- Largest GNU/Linux distribution
  - Over 18,000 binary packages in last release
  - Over 23,000 binary packages expected in the next release

# Debian – the Community



- Open development
  - We don't hide problems
- Large amounts of communication
  - Mailing lists, web sites and IRC channels
- Large number of active users
  - Users help each other, contribute packages, become developers

# How is Debian different?



- Volunteer-driven
  - No company in charge
- Free Software
  - Social Contract
  - Debian Free Software Guidelines
- Size
- Packaging system
- Stability & Support





# Social Contract

- We declare that:
  - Debian will remain 100% free
  - We will give back to the free software community
  - We will not hide problems
  - Our priorities are our users and free software
  - Works that do not meet our free software standards



# DFSG

- **Guidelines** only – not hard rules
- Used to help decide what we will distribute in the Debian system
- main, contrib & non-free



# DFSG (2)

- Free Redistribution
- Source Code
- Derived Works
- Integrity of The Author's Source Code
- No Discrimination Against Persons or Groups



# DFSG (3)

- No Discrimination against Fields of Endeavour
- Distribution of License
- License Must Not Be Specific To Debian
- License Must Not Contaminate Other Software
- Example Licenses
  - BSD, GPL



# History

- Founded in 1993 by Ian Murdock
- Named after DEBra and IAN Murdock
- The first major distribution developed “openly in the spirit of Linux and GNU”
- Early work sponsored by the GNU project



# Leaders

- Ian Murdock (1993 – 1996)
- Bruce Perens (1996 – 1997)
- Ian Jackson (1997 – 1998)
- Wichert Akkerman (1999 – 2001)
- Ben Collins (2001 – 2002)
- Bdale Garbee (2002 – 2003)
  - HP Open Source and Linux Chief Technologist



# Leaders (2)

- Martin Michlmayr (2003 – 2005)
  - “Open Source Community Expert” in HP's Open Source Program Office
- Branden Robinson (2005 - 2006)
- Anthony Towns (2006 – 2007)
- Sam Hocevar (2007-2008)
- Steve McIntyre (2008-present)



# Releases

- 1993: early development snapshots
- 1994: v0.91
- March 1995: v0.93R5
- November 1995: v0.93R6
- ~~December 1995: v1.0~~
- June 1996: v1.1 (Buzz)





# Releases (2)

- December 1996: v1.2 (Rex)
- June 1997: v1.3 (Bo)
- July 1998: v2.0 (Hamm)
- March 1999: v2.1 (Slink)
- August 2000: v2.2 (Potato)
- July 2002: v3.0 (Woody)



# Releases(3)

- June 2005: v3.1 (Sarge)
- April 2007: v4.0 (Etch)
- ??: v5.0 (Lenny)
- Why the silly names? :-)



# Where do I fit in?

- Joined the project in 1996
- Package maintainer
  - cvs, nas, etc.
- CD team leader
  - Make Debian CDs and DVDs
- Project leader
  - “management” - ugh!



# Project structure

- Started with limited structure
- Volunteers
- Minimal “people management”
- Package maintainers control their own work



# Various teams

- Teams grow as jobs get bigger
- Examples:
  - ftpmaster
  - debian-installer
  - debian-cd
  - release team
- Scalability



# Project decisions

- DPL elected each year
  - Delegates key project positions
- General resolutions (GRs)
  - Votes on important issues
- Technical committee
- Software in the Public Interest (SPI)



# Process: from Chaos...

- Over a thousand Debian developers
- Thousands of packages
- Many thousand bugs
- Millions of users



# ... to Stability

- Debian policy
- Quality checking of packages
- Testing (^2)
- Release team coordination





# Policy

- Comprehensive list of requirements for packages:
  - What goes in a package, and where
  - How to start & stop daemons
  - Interactions with other packages
  - Configuration files
  - Upgrades
  - etc.



# Quality checking

- Lintian
  - Run by maintainer to check for packaging mistakes after packages are built
  - Simple framework; new tests are added easily
  - Automation work ongoing
- piuparts
  - Tests how well packages will upgrade from one version/release to the next



# Testing – in Packages

- Developers run their own tests before upload
- Build-time test harnesses
- Other developers and users report bugs
- Bugs are fixed, new uploads made

# Testing – as a Distribution



- Uploads go to “unstable” distribution
- After a period of time with no major bugs reported, packages become valid to migrate into “testing”
- Archive maintenance scripts check for dependencies
- Testing should be (almost) ready to release as “stable” at any point



# Release team

- Constantly monitor the state of the testing distribution
- Co-ordinate uploads with package maintainers to make transitions smooth
- Track large groups of packages as they work through the system (e.g. KDE, Gnome)
- Responsible for deciding release goals and release dates



# Security team

- Work with maintainers where possible
- Security updates for “oldstable”
- Security updates for stable
- Security updates for testing
- Coordination with other distributions
- [security.debian.org](https://security.debian.org), DSAs



# Stable point releases

- Organised by the stable release team
- Made every few months
- Collect together:
  - Current security updates
  - Highly-tested package updates to fix other **serious** bugs
- Update the archive
  - rebuild CDs, DVDs etc.



# Collaboration

- Many different source code control systems in use; choice of which is made by the developers
  - cvs, subversion, git, bzd, darcs, others...
- Discussions via mailing lists
- IRC for realtime discussion
- Real-life meetings becoming more common
  - Debconf, Extremadura, FOSDEM





# Alioth

- Sourceforge-like system
  - Source code, mailing lists, web space, ...
- Used for collaborating on Debian work
  - Projects like debian-installer, debian-cd
  - Packaging work
- Also hosts a number of non-Debian projects



# Packaging

- Work with upstream developers
  - Many packaging teams include upstream
- Make software packages work together well in a consistent system
- Coordination of bug reports and fixes
- Support for users



# Packaging system

- Modular design
- Simple low-level tool
  - dpkg installs and removes packages
- More intelligent higher level management
  - apt, aptitude, synaptic, debtags, etc.
- Packages.gz, Sources.gz, Release
  - Easy to create and mirror



# Trust

- Developers sign packages before upload
  - Checked against keyring
- Checksums stored in Packages.gz and Sources.gz
- Release file signed
  - Links together individual files, signed by the master archive key



# Derivatives

- Not just a distro, can be a base
- LOTS of derived distributions:
  - Ubuntu
  - Xandros/Linspire
  - Skolelinux/Lliurex/others
  - LiMux
  - *many* more



# Derivatives (2)

- Why?
  - Licensing – it's all free
  - Solid, stable base system
  - Reduce effort
- How?
  - Take existing packages and add extras
  - Rebuild packages where desired
- No problem – everybody wins!

# The future – coming soon



- Lenny due Real Soon Now
  - System is frozen already
  - Release team working hard
  - RC bugs being fixed



# Next year

- Debconf 9 in Extremadura, July 2009
  - Major conference
  - Lots of work
  - Lots of FUN! :-)





# Further on...

- Squeeze after another 18-24 months?
- Improved quality
- Even more developers
- Even more packages, better tools
- Even more derived distributions
- Even more collaboration



# Commercial

- Debian is free – how do people make money?
  - Support, solutions
- Work with various companies
  - Large: HP, Google, Sun, Nokia
  - Small: Credativ, Univention, hands.com
- Local government
- Education



# Working with Debian

- Technical collaboration
  - Help work on the features you need
- Sponsorship
  - Hosting, hardware, Debconf
- Experts in the field
  - Developers employed all over the industry



# How do I get involved?

- Test, report (and ideally fix!) bugs
- Translation
- Documentation
- Help with packages
- Sponsoring
- New Maintainer Process



# Want to know more?

- [www.hp.com/go/debian](http://www.hp.com/go/debian)
- [www.debian.org](http://www.debian.org)
- mailing lists
- IRC
- ask me!

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