Custom Debian Distributions

Adapting Debian GNU/Linux to special fields

Andreas Tille

Asia Debian Mini-Conf

Beijing, March 1, 2005

Structure

1. Debian for every purpose
   - What is Debian?
   - Custom Debian Distributions
2. Techniques
   - Meta-packages
   - User menus
   - Communication
3. Prospectus

Debian for beginners

- Linux = *core* of operating system
- Needed: *user-specific applications*
- Assemblage of applications around Linux kernel = *distribution*
- Company that assembles a distribution = *distributor*
- Business model: selling distribution, support & training
- Examples: *Mandrake*, *RedHat*, *SuSE*, . . .
- *Debian* is just one of them.

Sorry.

That was wrong.

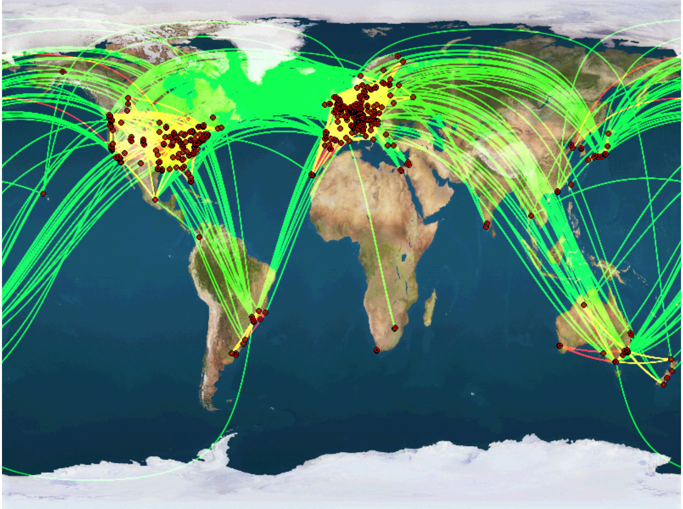
What is Debian? (next try)

The Debian Project is an association of individuals who have made common cause to create a free operating system. This operating system that we have created is called

Debian GNU/Linux,

or simply Debian for short.
Moreover, work is in progress to provide Debian for other than Linux kernels, primarily for the Hurd. Other possible kernels are BSD and even ports to MS Windows are planed.

Web of trust



Differences to commercial distributions

Commercial distributor		Debian
Company	Structure	Organisation
Employees	Persons	Volunteers
CDs, Service	sells	nothing
Business plan	Release	if 0 RC-bugs
certified	Oracle, SAP, etc.	runs in principle
Beginners	preferred by	Administrators
rpm	Packages	deb
Market	Customisation	Do-O-Cracy

Particular features

- Common goal: best possible operating system
- Maintainer: Missing link between developers and users
- Largest collection of ready-to-install Free Software
- Principles of Free Software at distribution level: Independence of commercial interest of producer
- Two ways to obtain Debian GNU/Linux
  - Buying from any *other distributor* on CD
  - Usually *installation via internet*
- Network installation very comfortable

Customising Debian

- Debian $>$ 10000 packages
- General users interested in a *subset* of those packages
- Care for special groups of target users with different skills and interests
- Easy installation and configuration by grouping specific packages
- **No fork** from Debian

Basic idea: Do not make a separate distribution but make Debian fit for special purpose instead

Motivation

1. Support of target users with common profile:
    - Less technical competence
    - Unable to install upstream programs with acceptable effort
    - No interest in administration
    - *Specific subset* of available free software
    - Need for easy usage
    - Defined security profile
    - Language barrier
2. Support of administrators with common profile:
    - Limited time frame
    - Automation of often repeated tasks
    - Lack of specialist knowledge

Existing Custom Debian Distributions

- *Debian-Junior* - Debian for children from 1 to 99
- *Debian-Med* - Debian in medicine
- *Debian-Edu (SkoleLinux)* - Debian in school
- *DeMuDi* - Debian Multimedia Distribution
- *Debian-Desktop* - Debian for everybody
- *Debian-Lex* - Debian for lawyers
- *Debian-NP* - Nonprofit Organisations
- *Debian-Enterprise* - Enterprise Computing
- *Debian-Accessibility* - Blinds and visually impaireds
- *Debian-eGov* - E-Government

Debian - adaptable for any purpose?

- Developed by about 1000 volunteers
- Flexible, not bound on commercial interest
- Strict rules (policy) glue all things together
- Common interest of each individual developer:
  Get the best operating system for himself.
- Developers have children in real life or work in the field of medicine etc.
- In contrast to employees of companies every single Debian developer has the freedom and ability to realize his vision
- Every developer is able to influence the development of Debian - he just has to *do* it.

Do-O-Cracy = "The doer decides"

What are packages

- Main part of the work of a distributor
- Contains
  - Executable programs
  - configuration
  - `{pre/post}install` + `{pre/post}remove` scripts
  - Relations to other packages

  ⟶ More than just an archive of files
- Enables easy handling
  - Ensures compliance of all dependencies
  - Clean upgrades
  - Easy handling of security updates

  ⟶ Basis of modern GNU/Linux distributions

Problem: Increasing number of packages

Meta-Packages

- *Special packages* with following content:
  1. Relations on other Debian packages (essential)
     - "Depends" for necessary packages
     - "Recommends" for interesting packages
     - "Suggests" for not so important or non-free packages
  2. Menu entries (recommended)
     - Customisation of default entries possible
     - Documentation entry if useful
  3. Adapted configuration (optional)
     - *`debconf`* questions or pre-seeding
     - *`cfengine`* scripts
- Special meta package: `<cdd>`*`-common`*
- Meta-packages ⟶ kind of task packages
- Easily built by using *`cdd-dev`* package

Short introduction to build meta-packages

Control file

```
$ cp -a /usr/share/doc/cdd-dev/examples/tasks .
$ cat tasks/README
$ edit tasks/task1
Task: task name
Description: short description
 long description as in any debian/control file
Depends: dependency1, dependency2, ...
Suggests: suggests1, suggests2, ...  (optional)
$ cp tasks/task1 tasks/<meta-package-name>
```

For each meta package this skeleton of a `debian/control` *entry is needed*

see */usr/share/doc/cdd-dev/examples/tasks*

Short introduction to build meta-packages (2)

Directory debian

```
$ cp -a /usr/share/doc/cdd-dev/examples/debian .
$ cat debian/README
$ edit debian/control.stub
 change the variables of the example
$ edit debian/rules
 change the variable _CDD_ to your CDD
$ make -f debian/rules dist
```

Source - `tar.gz` is ready

Build package

```
$ debuild
```

In principle you are ready.

Common Meta-package

Optional

```
$ cp -a /usr/share/doc/cdd-dev/examples/common .
$ cat common/README
$ edit common/{conf,control,common.1}
```

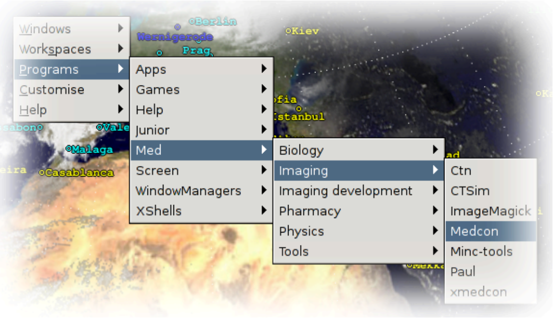
*change variable _CDD_*

Initialisation of role based menu system

- Meta packages will depend from common package
- Installs *auto-apt* helper
- Strongly suggested

Role based user menus

- User with role *<cdd>* gets extra user menu



- User with role *<cdd>* is provided with additional menu
- Do not bother other users with those additional menus
- Implemented in current Debian-Med packages
- Role system is implemented by flexible plugins

Changing user menus

Optional

```
$ cp -a /usr/share/doc/cdd-dev/examples/menu .
$ cat menu/README
$ cat menu/task1/README
$ edit menu/task1/dep1.menu
$ edit menu/task1/dep2.txt
$ edit menu/task1/dep3.html
```

Create valid menu entries with sensible descriptions

Find task names

```
$ cp menu/task1 menu/<meta package name>
```

User menu entries for every dependencies - at least pointing to documentation

Developer platforms

- *Project at Alioth*
- *Subversion Repository*
- *Common developer mailing list*
  Use this list often for CDD issues!
- User mailing lists for most CDDs
  `http://lists.debian.org/debian-<cdd>`
- Web pages for most CDDs
  `http://www.debian.org/devel/debian-<cdd>`

Current state

- Probably most popular CDD: *Debian-Edu (SkoleLinux)*
- Back integration: *DeMuDi*
- *How to start a Custom Debian Distribution*
- Basic problem: reinventing the wheel frequently
- Debian-Fork possible ⟶ but CDD makes more sense
- Fork: requires adaptations continuously
- CDD: Work has to be done *only once*
- Debian = Give and Take

CDD in Asia

- Customisation regarding languages
- Dependencies of certain font packages
- Adapted input / output methods
- Special configuration

Future

- More Custom Debian Distributions
- Further development of CDD tools
- Spreading the idea to developers and users
- *Customised live CDs of CDDs*
- *New way to distribute Debian*
- Extra *Packages* file for each CDD

This talk can be found at
http://people.debian.org/˜tille/talks/
Andreas Tille <tille@debian.org>