Integrating Condor into the Debian operating system

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Background: Neuro-imaging
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Research platform: Issues

Problem

- Complex analysis software suites
- Complicated, non-standard, or non-existing installation and update procedures
- Limited, non-uniform set of “supported platforms”
- Typical users have little technical background

http://neuro.debian.net
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Solution

- Integrate all relevant software in a common environment
- Make manual maintenance tasks trivial, or superfluous
  
  → Bring everything into Debian

http://neuro.debian.net
Why debian?

- Vast archive of maintained software (≈30000 binary packages)
- Origin of most active GNU/Linux distributions (63%; distrowatch.org)
- "Do-oocracy" instead of steering (commercial) entity – nevertheless 17-year release history
- No 2nd-class software
- Debian Science, Debian Med, ...
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Release notes Debian 6.0 (squeeze)

Debian GNU/Linux 6.0 is the first GNU/Linux distribution release ever to offer comprehensive support for magnetic resonance imaging (MRI) based neuroimaging research.

http://www.debian.org
What makes Condor attractive?

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- Active research project
- Transparent development (VCS, bug tracker)
- Evidence for prosperous future
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- Active research project
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- Evidence for prosperous future
- Ease of maintenance
- Support for whole DAG submissions
- Support for heterogeneous computing environments
  - “University-style” computing environments are a supported use case
  - Option for the cloud
How can Condor benefit from Debian integration?

- Extended reach
  - one stable release, two rolling “release” flavors
  - ≈120 derivative distributions (distrowatch.org)
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  - Explicitly documented dependencies
  - Synchronized transitions
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  - 3rd-party software in dedicated packages maintained by someone else

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- Less maintenance work through modularity
  - 3rd-party software in dedicated packages maintained by someone else
- Continuous integration testing
  - 13 hardware architectures
  - Three kernels
  - Continuous automated testing for
    - Build success
    - Clean installation/de-installation, Availability of dependencies
    - Policy compliance
    - Package conflicts
How much do you need to/should involve yourself?

Who maintains the package?

Upstream interest in Debian-integration is essential for a high-quality package.

Need to track Debian development.

Need upload privileges, but sponsor could be enough.

→ Ideally: team maintenance with public VCS.

Just ship source code or also binary packages?

Why not? If necessary.

But from a common source package!

backports.debian.org, neuro.debian.net
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Release: when ready  

Updates: every two months (only critical fixes)  

Security support: one year after next stable ($\approx$ 3 years)
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#### Debian "unstable"
- **Release:** never
- **Updates:** multiple times per day
- **Security support:** none (implicit)

#### Debian "testing"
- **Release:** never/continuously
- **Updates:** daily
- **Security support:** yes

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Examples:
- Ubuntu
- Linux Mint
- MEPIS

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   - classad, globus, krb5, libvirt, ...

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Integrating Condor into Debian
CondorWeek 2011
Integration roadmap

1. Have minimal set of dependencies into Debian  [Done]
2. Initial working Condor package draft  [Done]
   - Condor 7.6.0 (clipped)
   - Based on previous packaging attempts
   - Debconf-based setup
   - condor, condor-doc, condor-dbgl cl.(, condor-tests)

3. Test and upload to Debian  [Pending]
4. Fix QA bugs  [WiP]
5. Enrich Condor environment  [WiP]
6. Improve “just works” experience  [ToDo]
7. Make Condor’s test suite run and pass  [ToDo]
8. Offer “standard universe” in official Debian package  [ToDo]
9. Enable every possible Condor feature in the Debian package  [ToDo]
10. Use Condor to improve Debian  [ToDo]
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3. Test and upload to Debian [Pending]
   - Package in use since 4 months
   - Needs more testers
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5. Enrich Condor environment [WiP]
   - dmtcp [Accepted in Debian]
   - gsoap [Uploaded]
   - cctools [Upload pending]
   - nmi
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   - Engine management for IPython
   - DAGMan support for NiPyPE
   - Makeflow support for FSL
   - VM universe with VirtualBox
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7. Make Condor’s test suite run and pass [ToDo]
   - Ship in dedicated package
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9. Enable every possible Condor feature in the Debian package [ToDo]
   - Java, VM, Grid, Cloud, Rocket science
   - Missing: up-to-date Hadoop

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9. Enable every possible Condor feature in the Debian package [ToDo]
10. Use Condor to improve Debian [ToDo]
   - E.g. backfill jobs with package QA tests
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about the slides:
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