Improving efficiency in cognitive neuroscience research with NeuroDebian

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Scientific Users

A Plain Operating System Is Not Enough...
A complete research environment consists of many software tools. Each of them has its own requirements, release cycles, mailing lists and bugs.

Why Debian?
Huge integrated environment providing about 30000 fully-supported, prebuilt, and preconfigured software packages covering a vast range of applications. Known for stability and smooth upgrades that become available when they are ready, not enforced by political or commercial considerations.

What Is Readily Available?
Packages have individual maintainers that are familiar with a particular software. Active communities for medical and scientific software.

What Do I Get?
For example, installing FSL takes only one command and a few seconds:

apt-get install fsl

Performing system updates also takes care of updating research software:

apt-get update; apt-get upgrade

Convenient graphical frontends are available.

What Is NeuroDebian?

NeuroDebian is Debian — with some additional software packages that are on their way to become a part of Debian. A supplemental repository with neuroscience software for Debian (and Ubuntu) systems is also provided.

Debian Facts
Independent, international non-profit volunteer organization of several thousand developers and contributors
Continuously developed since 1993
Origin of dozens of derived distributions (e.g., Ubuntu pulls from Debian)

GNU-based operating system ported for three different kernels: Linux, FreeBSD, Hurd
Supports the majority of available hardware platforms (e.g., Intel/AMD 32/64 bit, ARM, PowerPC, Itanium, IBM 6/390)

How To Obtain It?
CD/DVD/USB-disk/ Floppy installer images: http://www.debian.org/
Virtual machine image (with pre-installed neuroscience software): http://neuro.debian.net

What Is Readily Available?

Distribution Ecosystem: Improved Efficiency Through Coordination

Conventional Operating Systems
Software Projects
Distribution Ecosystem

Scientific support Technical support Deployment
Scientific user System administrator Distribution developer

BTS

P1
OS1

P2
OS2

Maintainer

Package Repository

BTS

A Couple Of People Are Not Enough...
Impossible to build and tests software in all environments where it is needed (hardware, library/compiler versions) — many projects restrict the "supported environment" to limit necessary support effort.

Why Debian?
Many scientific development tools/libraries in a versatile integrated ecosystem Debian-wide QA efforts make bug and security fixes available to developers (often before they actually become a problem, e.g., new compiler versions).

What Is Readily Available?

Uniform bug-tracker interface for all packages
report/bag python-nifti
Publicly available build-logs for all Debian platforms.
Package tests run on machines that are otherwise not available to upstream developers.
Everybody can subscribe to package-related messages (e.g., bugs reports)

What Do I Get?

Locations of a NeuroDebian repository server

Package downloads per city
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http://www.debian.org
http://neuro.debian.net