

# Administration of Operating Systems

DO2003

<http://www.hh.se/do2003>

## Downloading and Installing Software



# Downloading and Installing Software

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- A system administrator is responsible for keeping one or more systems running properly and secure
- One important part of this task is to keep the Linux Kernel and user applications updated
  - Reasons to keep current
    - Security
    - Bug Fixes
- By default, many useful programs are already installed in the system. However, you or other users may need a particular software that are not installed on the system
- To do so, a system administrator must know how to download, install, configure, and remover software

# Software package

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- Software is commonly distributed in Linux-based operating systems as a software package
- Software package
  - Collection of scripts, programs, files, and dependencies required to install, run and uninstall applications, utilities and system software
    - Binary packages
      - Contain executable files that are precompiled for a specific processor architecture and operating system
    - Source packages
      - Contain source files that need to be compiled but will run on a wide range of machines and operating systems

# Approaches to download and install SW

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- Package management system or package managers
  - Collection of utilities to automate the process of installing, upgrading, configuring, and removing software packages
  - Typically maintains a database of software dependencies and version information
    - Package dependency
      - When a package depends on another package
- Manual
  - Download the source code and build executable files
    - You might use wget or ftp to download packages
    - Prepare the system for building packages
    - Get the source package (TAR file)
    - Configure, solve dependencies, build and install

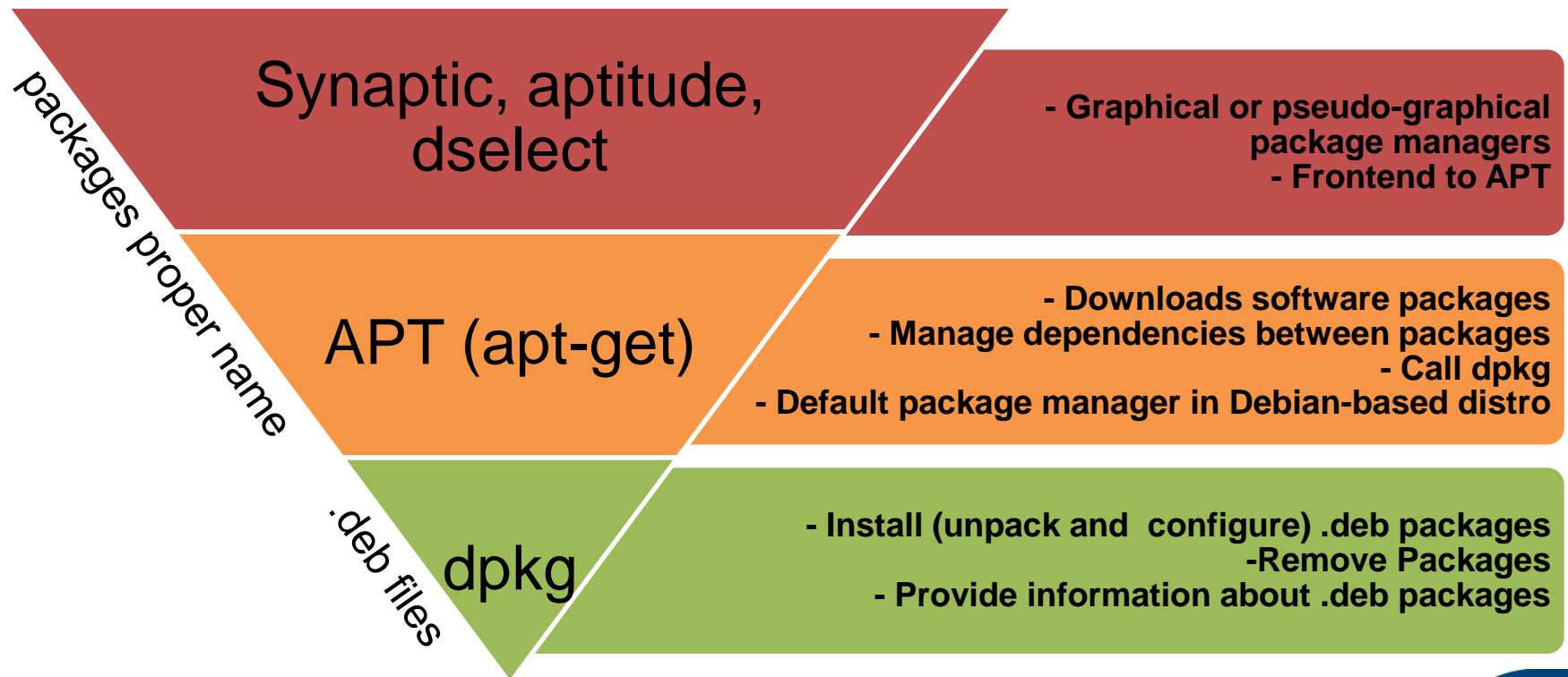
# Package managers and package formats

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- Each package manager relies on the format and metadata of the packages it can manage
- Package managers install, uninstall, upgrade, query, and verify software packets
- dpkg: Debian Package Management System
  - Used on Debian GNU/Linux systems, such as Ubuntu
  - Work with deb files (.deb)
- rpm: Red Hat Package Manager
  - Used on Red Hat, Fedora, ...
  - Work with rpm files (.rpm)

# Debian Package Management tools

- Higher level package management tools such as aptitude or dselect rely on APT which, itself, relies on dpkg to manage the packages in the system



Typically you will not use dpkg

# Repositories

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- Location from which packages of a similar type are available to download and install by a package manager
- A package manager will store an index of all of the packages available from a software channel
- In addition to the official repositories, it is possible to use third party repositories
- The `/etc/apt/sources.list` file specifies the repositories  
type URI repository category-list

```
# deb cdrom:[Xubuntu 11.10 _Oneiric Ocelot_ - Release i386 (20111011)]/ oneiric main multiverse restricted universe
# deb cdrom:[Xubuntu 11.10 _Oneiric Ocelot_ - Release i386 (20111011)]/ oneiric main multiverse restricted universe
# See http://help.ubuntu.com/community/UpgradeNotes for how to upgrade to newer versions of the distribution
deb http://us.archive.ubuntu.com/ubuntu/ oneiric main restricted
deb-src http://us.archive.ubuntu.com/ubuntu/ oneiric main restricted
## Major bug fix updates produced after the final release of the distribution
deb http://us.archive.ubuntu.com/ubuntu/ oneiric-updates main restricted
deb-src http://us.archive.ubuntu.com/ubuntu/ oneiric-updates main restricted
```

....

# Installing and removing software packages

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- **dpkg**

```
dpkg -i /var/cache/apt/archives/ftp_0.17-19_i386.deb
```

```
dpkg -r vsftpd
```

```
dpkg -P vsftpd
```

- **APT**

```
apt-get install vsftpd
```

```
apt-get remove vsftpd
```

```
apt-get --purge remove vsftpd
```

- **Aptitude**

```
aptitude install vsftpd
```

```
aptitude remove vsftpd
```

```
aptitude purge vsftpd
```

*Most of these commands  
require root privileges*



# Querying software packages

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- **dpkg**

  - `dpkg -l vsftpd`

- **APT**

  - Searches the repositories for packages

    - `apt-cache search vsftpd`

  - Info about packages in the repositories, including dependencies

    - `apt-cache show vsftpd`

    - `apt-cache depends vsftpd`

- **Aptitude**

  - `aptitude search vsftpd`

  - `aptitude show vsftpd`

# Maintenance commands

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- Update source list  
`apt-get update`
- Upgrades all installed packages  
`apt-get upgrade`
- Updates the package lists and checks for broken dependencies  
`apt-get check`
- Removes .deb files for packages that are no longer installed on the system and is useful to free some storage space  
`apt-get clean`

*Most of these commands  
require root privileges*

