Package Management System

Presented By:

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What is package management system?

- A **package management** system is a collection of tools to automate the process of installing, upgrading, configuring, and removing software packages from a computer.
- Packages are distributions of software and metadata such as the software's full name, description of its purpose, version number, vendor, checksum, and a list of dependencies necessary for the software to run properly.
- Upon installation, metadata is stored in a local *package database*.

Package Management System vs. Installer

Package Management System	Installer
Typically part of the operating system.	Each product comes bundled with its own installer.
Uses a single installation database.	Performs its own installation, sometimes recording information about that installation in a registry.
Can verify and manage all packages on the system.	Only works with its bundled product.
Single package management system vendor.	Multiple installer vendors.
Single package format.	Multiple installation formats.

Package Management System Functions

- **Typical functions of a package management system include:**
  - Verifying file checksums to ensure correct and complete packages.
  - Verifying digital signatures to authenticate the origin of packages.
  - Applying file archives to manage encapsulated files.
  - Upgrading software with latest versions, typically from a software repository.
  - Grouping of packages by function to help eliminate user confusion.
  - Managing dependencies to ensure a package is installed with all packages it requires.

Package Formats

- Each package manager relies on the format and metadata of the packages it can manage.
- Often a suit of tools manages the basic installation from these packages and other mangers relies on them (Provide new functionalities).
  - yum relies on rpm as a backend
  - Synaptic Package Manager uses apt library
  - apt relies on dpkg as a backend

Package Managers past and present

- Traditional Linux package management systems such as RPM present several problems for users.
  - Dependency problems
  - Finding packages
- Present Linux package management systems such as APT solve the problems
  - Internet-based repository

Examples of package managers

- **RPM Package Manager**
  - The file format *RPM is the baseline package format of the Linux Standard Base.*
- **Advanced Packaging Tool (APT)**
  - APT was originally designed as a front-end for dpkg to work with Debian's .deb packages but it has since been modified to also work with the RPM Package Manager system via apt-rpm.
- **Synaptic**
  - is a GTK+ graphical user interface front-end to the Advanced Packaging Tool

Working with APT package manager

- To search for a package
  - apt-cache search messenger
- Then to see information about that package:
  - apt-cache show pidgin
  - apt-cache depends pidgin
  - apt-cache showpkg pidgin
- To download source a package:
  - apt-get source pidgin
  - apt-get -b source pidgin

Working with APT package manager

- To install a package
  - apt-get install pidgin
- To reinstall a package
  - apt-get --reinstall install pidgin
- To uninstall a package
  - apt-get remove pidgin
  - apt-get --purge remove pidgin
- To update packege list
  - apt-get update

Working with APT package manager

- To upgrade your all packages in your distro
  - apt-get -u upgrade
  - Cache Limit?
    - vi */etc/apt/apt.conf.d/70debconf*
    - *APT::Cache-Limit "10000000";*
- To upgrade your distro
  - apt-get -u dist-upgrade
- To Remove unused package files
  - apt-get clean
    - /var/cache/apt/archives/
    - /var/cache/apt/archives/partial/
  - apt-get autoclean

Working with APT package manager

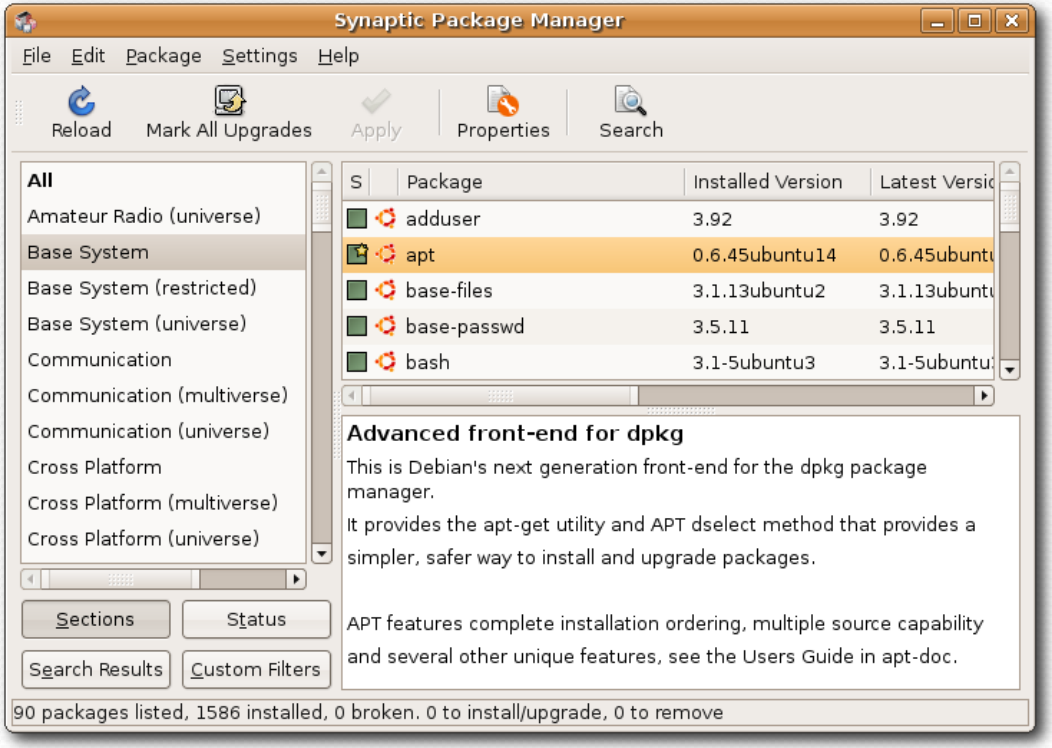
- apt repositories are specified in:
  - /etc/apt/sources.list
    - deb http://host/debian distribution section1 section2 section3
    - deb-src http://host/debian distribution section1 section2 section3
  - After editing this file you must run:
    - apt-get update

Working with APT package manager

- If an installation breaks in the middle of the process and you find that it's no longer possible to install or remove packages, try :
  - # apt-get -f install
  - # dpkg --configure -a

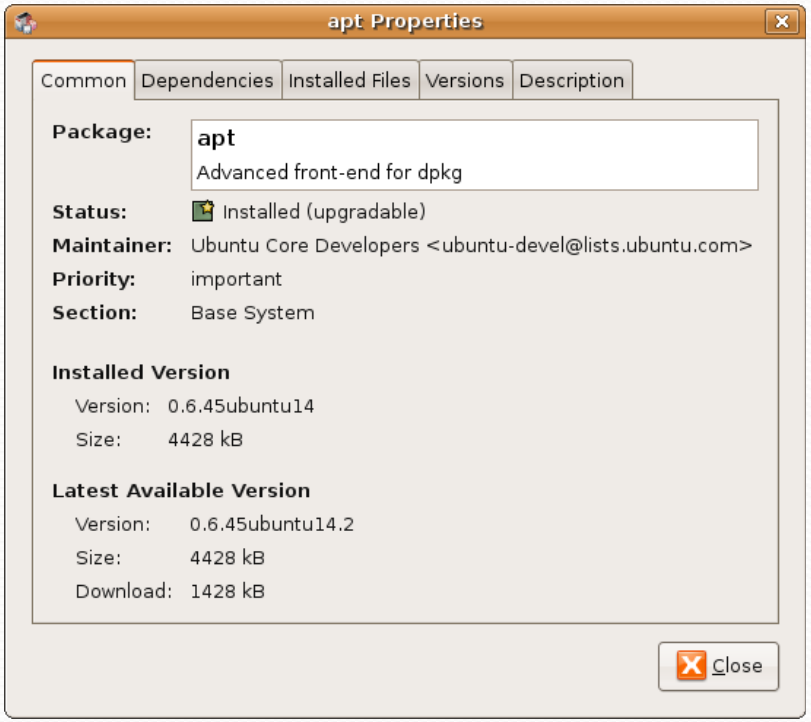
Working with Synaptic

- To launch Synaptic, choose **System > Administration > Synaptic Package Manager**

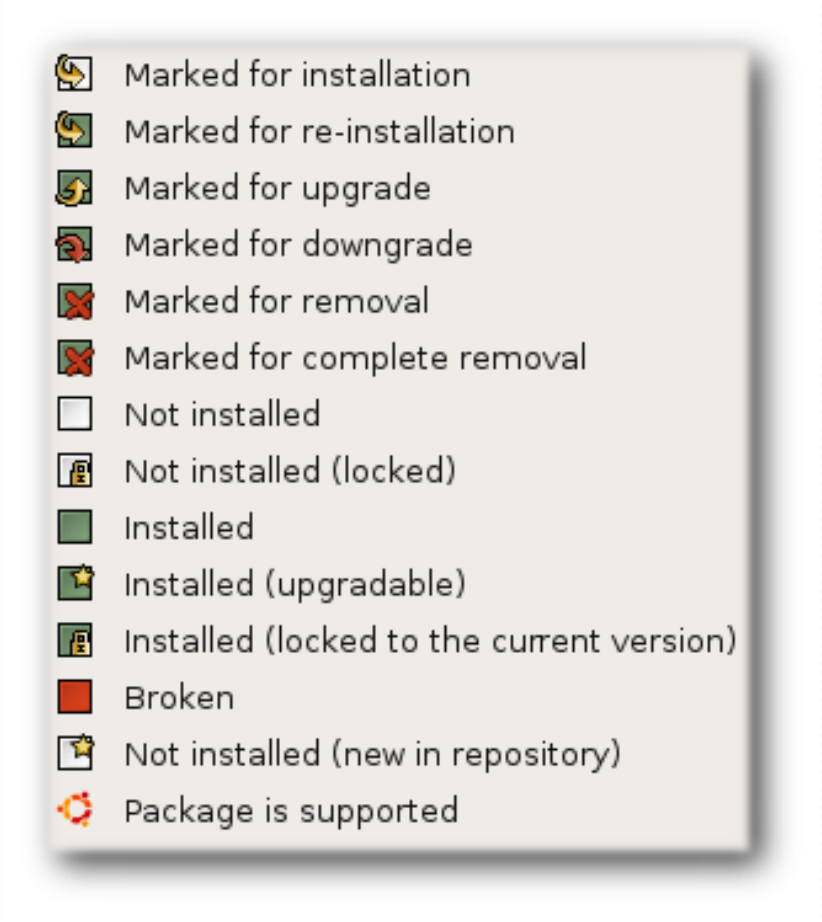


Working with Synaptic

- To see more information about a package
  - Right Click on a **package > Properties**



Working with Synaptic



Working with Synaptic

- **To fix broken packages**
  - 'Broken packages' are packages that have unsatisfied dependencies
  - Choose **Edit** > **Fix Broken Packages** from the menu.
  - Choose **Apply Marked Changes** from the **Edit** menu or press **Ctrl + P**.
  - Confirm the summary of changes and click **Apply**.
- **To free disk space**
  - Settings -> Preferences -> Files
  - click Delete Cached Package Files