

Installing Packages on the EMAC LDC

The EMAC Linux Development Computers are based on the Debian distribution of GNU/Linux. Older LDCs use Debian 5.0/Lenny while newer ones use Debian 6.0/Squeeze. The command line package management on both is identical for basic tasks such as installation and removal of software packages. It is based on `dpkg` which is a basic tool for installing, building, removing, and managing Debian packages. However, day-to-day use of `dpkg` by users is not very common due to its lack of support for automated resolving of package dependencies. APT, short for Advanced Package Tool, does provide basic CLI support for automated package dependency resolution. More advanced text-based tools include `dselect` and `aptitude`; of the two, `aptitude` is widely considered more useful and generally better at resolving dependencies both during installation and removal of packages. The final package management tool worth mentioning here is `synaptic`, which is a graphical frontend to the Debian package system for the X Window System. `synaptic` will not be covered

This guide only covers very basic use of APT and `aptitude`. The best way to learn how to use each of these tools is by reading the man pages for the text-based tools and the graphical help files provided with `synaptic`. To access the man pages from the command line in Linux, use the following construct:

```
$ man [num] <keyword>
```

Where `[num]` is an optional parameter indicating the section number of the man page with the name `<keyword>`. The optional parameter is sometimes necessary because there can be multiple manual pages that provide differing types of information for manual pages that share the same name as in the case of `chroot` which is both a system call, `man 2 chroot`, and a command line tool, `man 8 chroot`. If used without the optional numeric parameter in cases like this, the largest number manual page is usually preferred.

This Guide is intended for the EMAC Linux Development Computers, **not for EMAC OE Single Board Computers!** The OE builds provided by EMAC for its SBCs use a different package management system.

Basic APT How-To

The basic interface to apt is known as `apt-get`, although it is actually a collection of tools including `apt-get`, `apt-cache`, `dpkg`, `dselect`, and others.

Install

```
$ sudo apt-get install <package_name>
```

If `<package_name>` exists, calculate package dependencies, prompt the user to continue if there are dependencies, then perform installation of the package and its dependencies.

Search

```
$ apt-cache search <keyword>
```

Search the local cache of available packages for packages whose short descriptions or name contain `<keyword>`.

Remove

```
$ sudo apt-get remove <package_name>
```

If `<package_name>` exists and is installed, perform package removal. Note that this command does not automatically remove package dependencies. To do this, use the following command:

```
$ sudo apt-get autoremove
```

Update

```
$ sudo apt-get update
```

Retrieve and update the local cache with a list of available packages.

Upgrade

```
$ sudo apt-get upgrade [package_name]
```

Based on updated list of available packages, upgrade current packages for which new versions are available. An optional parameter, the package name, may be used to indicate that a specific package should be upgraded.

Note that <package_name> can actually be a space-separated list of packages to install or remove.

Basic aptitude How-To

Debian users tend to agree on fairly sound principles that aptitude is the superior command-line utility for reasons such as the following:

- aptitude has a more complete package dependency resolution algorithm that applies when removing as well as when installing—using `apt-get remove <package_name>` to remove packages can leave unnecessary packages on one's system if another command is not run to remove them.
- aptitude provides a single tool with different “actions” in contrast with APT's multiple tools which can be confusing for beginners.

Install

```
$ sudo aptitude install <package_name>
```

Search

```
$ aptitude search <keyword>
```

Remove

```
$ sudo aptitude remove <package_name>
```

Update

```
$ sudo aptitude update
```

Upgrade

```
$ sudo aptitude safe-upgrade|full-upgrade
```

Text User Interface

In addition to its command-line utilities, aptitude also provides a text user interface that can be invoked from a terminal with the following command:

```
$ sudo aptitude
```

This utility provides a complete interface to the Debian packaging system. The interface is similar to the vi command-mode with the following noteworthy keyboard shortcuts:

- Up or k – The Up Arrow key and the letter 'k' both cause the current selection to move up.
- Down or j – The Down Arrow key and the letter 'j' both cause the current selection to move down.
- Enter – Expand or collapse a group of packages.
- + – Mark a package and its required dependencies for installation.
- - – Mark a package and its required dependencies which are not required for any other installed packages for removal. This will also undo the + action.
- g – Perform all pending installations, removals, and upgrades.
- u – Update the lists of available packages.
- / – Perform a search.
- q – Quit the current action. For example, if viewing a package and its dependencies after pressing 'Enter', this command will take you back to the previously-viewed screen.
- ? – Display the aptitude help screen. (press q to quit)

This list of commands is far from complete. To learn more about the aptitude text user interface, read the help page displayed by the q command, the aptitude manual page, and the Debian aptitude wiki page (<http://wiki.debian.org/Aptitude?action=show&redirect=aptitude>) .

apt sources.list

In order for either APT or aptitude to work, they must be given a list of source archives from which to download available package lists and the package themselves. This is contained in the /etc/apt/sources.list file. For more information on this, see the “sources.list” manual page.

The following archive list is necessary and should be sufficient for most EMAC LDC uses:

```
deb http://ftp.us.debian.org/debian squeeze main non-free contrib
deb-src http://ftp.us.debian.org/debian squeeze main non-free contrib
deb http://security.debian.org/ squeeze/updates main non-free contrib
```

Further Information

Due to the open nature of GNU/Linux software, there is a wealth of information available for those who are new or inexperienced with GNU/Linux operating systems. This information is available in the form of mailing list archives, message board posts by other GNU/Linux users, and wikis created as introductions to specific topics of interest within the free software community. The best way to seek new information is through Google searches using keywords relevant to the task at hand.

Synaptic

The Debian wiki article on Synaptic (<http://wiki.debian.org/Synaptic>) is the best place to start learning about Synaptic.

General Package Management

The Debian wiki is the best place to start learning about the Debian operating system and its package management system. If the information you are looking for is not to be found there, information is available there to help you get in touch with someone who can assist you with your questions. The Ubuntu wiki is another great place to get started since it is heavily based on the Debian operating system.

- Debian Package Management (<http://wiki.debian.org/PackageManagement>)
- Ubuntu Add & Remove Software wiki (<https://help.ubuntu.com/11.04/ubuntu-help/addremove.html>)

» start » linux_start » packages

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