

Linux Mint Software Management

Intro

- from http://www.linuxmint.com/documentation/user-guide/english_15.0.pdf Software Management section:
 - If you have installed Linux for the first time, then you may not be familiar with the concept of organizing software into “packages”. You will soon become familiar with package management and appreciate the advantages it offers in terms of security, control and ease of use.
- The Linux package management system is a system of software curation and software vetting similar to the Android software market, and Apple's Mac & iOS software markets. It is probably safe to say that the Linux community was first with the concept.
- We'll talk a bit about third party software, software not in the package management system
- We'll talk about some things not in the Linux Mint User Guide PDF above

What & Why

- NOT Startup Applications & Preferred Applications
- NOT OS version upgrade nor Printer setup
- To keep parts of OS up-to-date
- To keep apps up-to-date
- To add new apps
- To remove unwanted apps
- To clean the system of obsolete software
- For security updates
- For better stability & bug fixes

Some Basics & Terminology (see Addendum for complete list)

- GUI & CLI environments exist in Linux, Mac, & Windows
 - **GUI** = Graphical User Interface, ie, point & click
 - **CLI** = Command Line Interface, ie, text commands executed in an interface called the terminal or console (or command prompt in Windows = cmd.exe)
- the “**man**” command = Linux CLI help system for OS software & commands
 - man man
- the “**sudo**” command – typically used to raise users authority to level of superuser
 - man sudo

Packages

- <https://library.linode.com/using-linux/package-management>
 - Concept
 - Contemporary distributions of Linux-based operating systems install software in pre-compiled "packages" which contain (for most systems) binaries of software, configuration files, and in most systems, information about dependencies. Furthermore, package management tools keep track of updates and upgrades so that we don't have to hunt down information about bug and security fixes.
 - Without package management, users must ensure that all of the required dependencies for a piece of software are installed and up to date, compile the software from the source code (which takes time and introduces compiler-based variances from system to system), and manage configuration for each piece of software.
 - Debian / Ubuntu Package Management applies to Linux Mint; NOT Red Hat / Fedora
 - DEB filename extension is used for Debian packages
 - RPM filename extension is used for Redhat packages
 - Commands – apt command family (Advance Package Tools), aptitude, dpkg
 - man apt
 - Examples
 - **sudo apt-get update**
 - <http://askubuntu.com/questions/294525/what-does-ign-mean-when-running-an-apt-get-update>
 - Hit means apt checked the timestamps on package list, those match and there are no changes.
 - Ign means there are no changes in the pdiff index file, it wont bother downloading it again.
 - **sudo apt-get upgrade**
 - **Repository** lists (lists of website sources) are stored in /etc/apt
 - can be managed with Software Sources in Control Center

What are the GUI Package Managers

- Update Manager (& notifier)
 - automatically runs at startup on Mint Mate, XFCE, & likely other Mint desktops
 - can also be launched from Mint Mate Menu
 - icon located in Notifications area of Mate's default Panel (“task tray” area)
 - automatically checks for updates & indicates if they are available

- Synaptic Package Manager (also called Package Manager in Mint Menu)
 - <https://help.ubuntu.com/community/SynapticHowto?action=show&redirect=Synaptic>
 - Synaptic is a graphical front-end to **apt**, the package management system in Ubuntu. It combines the point-and-click simplicity of the graphical user interface with the power of the apt-get command line tool. You can install, remove, configure, or upgrade software packages, browse, sort and search the list of available software packages, manage repositories, or upgrade the whole system. You can queue up a number of actions before you execute them. Synaptic will inform you about dependencies (additional packages required by the software package you have chosen) as well as conflicts with other packages that are already installed on your system.
 - this is the workhorse of the GUI package managers – it can do it all – install, remove, identify, cleanup, manage repositories, and do minor to modest repairs
 - <http://www.berthon.eu/wiki/foss:ubuntu:apclean>
- Software Manager
 - from http://www.linuxmint.com/documentation/user-guide/english_15.0.pdf Software Management section:
 - The easiest way to install software in Linux Mint is to use the Software Manager. It is built on top of the package technology we discussed earlier, but makes things easier to understand, as it allows you to install programs rather than packages (though, remember, it is still using the package system in the background, so it still has the same benefits).
 - Translation – it knows what software packages are needed to support the apps you want to install and does so in a simple & convenient interface.
 - Examples of software I installed
 - Audacity – audio capture & processing
 - AVIdemux – simple video processing including cropping
 - BlueFish HTML editor
 - Chromium - the open source web browser project from which Google Chrome draws its source code
 - DropBox – cloud storage & file sharing
 - Filezilla – FTP & SFTP file manager
 - GPartEd disk manager
 - NTP – Network Time Protocol pkg was required to get Mint 14 to sync clock
 - OpenSSH Server
 - SSVNC client – SSL / SSH VNC (remote desktop) client based on TightVNC
 - XFCE desktop – alternative to MATE desktop
 - search for xfce4

- I needed this desktop to run the Amaya GUI HTML editor which would not run on the Mate desktop
 - ZenMap – a GUI front end to Nmap, a network port scanner
- Software I considered, but did not install
 - Adobe Reader – search for acroread
 - also available [as a DEB file from Adobe](#) web site
 - considered because Chromium has no MIME for PDF files, but Firefox has good built-in PDF support
- Software Sources via Control Center
 - also via menus in the GUI package managers
 - when a repository is off-line, seek a **mirror** or other alternative repository
 - Example #1 - <http://blog.linuxmint.com/?p=2469>
 - Response #1 - <http://www.videolan.org/developers/libdvdcss.html>
 - Response #6 – mirrors list
 - Example #2 - <http://www.webupd8.org/2010/05/getdeb-playdeb-repositories-down-what.html>
 - Compatible Ubuntu Repositories
 - http://en.wikipedia.org/wiki/List_of_Linux_Mint_releases
 - Ubuntu release names
 - <http://releases.ubuntu.com/>
 - Thus Mint 14 Nadia can use Ubuntu 12.10 Quantal repositories
 - Note lag in package version against current version for some software

Third Party Software

- Internet Search is your friend
- Examples of software I installed
 - **By adding Repositories to Package Manager Software Source List**
 - Adding a repository is desirable since the Package Manager should keep you informed when there are updated versions available
 - Angry IP Scanner
 - <http://www.upubuntu.com/2013/01/install-angry-ip-scanner-from-ppa-in.html>
 - `sudo add-apt-repository ppa:upubuntu-com/network`
 - Also available as DEB file

- Handbrake – DVD ripping & video transcoding
 - <http://www.itworld.com/software/369847/install-handbrake-099-video-transcoder-linux-mint-15>
 - `sudo add-apt-repository ppa:stebbins/handbrake-releases`
- **By DEB file installation - DEB files can be installed by just double-clicking on them**
 - Amaya – GUI HTML editor from W3C; available as DEB & RPM
 - Side notes
 - does not run on MATE desktop
 - runs on XFCE desktop
 - http://www.w3.org/Amaya/Distribution/amaya_11.4.7-1_i386.deb
- **By unique command or method**
 - Calibre – eBook manager
 - can be installed via Software Manager, but is several versions behind
 - version 0.8.51 as of this writing
 - most recent version can be installed via CLI
 - version 1.7.0 as of this writing
 - http://calibre-ebook.com/download_linux
 - newbies should use second command on web page:
 - ```
sudo python -c "import sys; py3 = sys.version_info[0] > 2; u = __import__('urllib.request' if py3 else 'urllib', fromlist=1); exec(u.urlopen('http://status.calibre-ebook.com/linux_installer').read()); main(install_dir='/opt ')"
```
      - copy and paste above command into Terminal
  - Zimbra Desktop – cross-platform email client integrates well with Google mail, calendar, & contacts
    - <http://www.zimbra.com/downloads/zd-downloads.html>
      - [http://files2.zimbra.com/downloads/zdesktop/7.2.2/b11951/zdesktop\\_7\\_2\\_2\\_ga\\_b11951\\_20130318070459\\_linux\\_i686.tgz](http://files2.zimbra.com/downloads/zdesktop/7.2.2/b11951/zdesktop_7_2_2_ga_b11951_20130318070459_linux_i686.tgz)
      - [http://files.zimbra.com/website/docs/7.2/Zimbra\\_Desktop\\_Install\\_Guide\\_7.2.1.pdf](http://files.zimbra.com/website/docs/7.2/Zimbra_Desktop_Install_Guide_7.2.1.pdf)
        - unpack TGZ file using Mint file manager
        - using file manager navigate inside unpacked folder
        - right-click & from context menu select Open in Terminal

- in Terminal enter command:
- `sudo perl install.pl`

## ***Summary Points***

- Package management is a unique concept of relating file dependencies and a way of notifying of software updates and new versions.
- Package management is to be considered the preferred method of obtaining software and maintaining software in the Linux environment.
- The reliability of third party package repositories being available online can be iffy and may require your intervention to change settings in the Control Panel's Software Sources & to find mirrors.
- Linux Mint can install DEB files belonging to the Linux Ubuntu / Debian family tree, but not RPM files belonging to the Linux Red Hat / Fedora family tree.
- Internet search engines are your friend for discovering how to install third party software and discovering the reputation of that software before you install it.

## **Addendum – Definitions & Terminology**

- apt – advanced package tool
  - <http://www.webopedia.com/TERM/A/apt.html>
    - A Debian tool used to manage packages. When a user installs a package on a system, it also searches for and then installs or upgrades all the necessary dependent packages to make the package work. The actual command is apt-get.
- CLI – Acronym for command line interface
  - <http://www.webopedia.com/TERM/C/CLI.html>
    - (1) Short for command line interface, a user interface common to MS-DOS computers. The user sees the command line on the monitor and a prompt that is waiting to accept instructions from the user. The user types in the command, the computer acts on that command and then issues a new prompt for the next instruction from the user.
    - CLI operating systems are becoming less used as GUI operating systems gain in popularity. In a GUI operating system, such as Windows, the user responds to graphic images on the screen instead of typing in commands in response to a prompt.
- client -
  - <http://www.webopedia.com/TERM/C/client.html>
    - (klī &nt) (n.) The client part of a client-server architecture. Typically, a client is an application that runs on a personal computer or workstation and relies on a server to perform some operations. For example, an e-mail client is an application that enables you to send and receive e-mail.
- console -
  - <http://www.webopedia.com/TERM/C/console.html>
    - (1) The combination of display monitor and keyboard (or other device that allows input). Another term for console is terminal. The term console usually refers to a terminal attached to a minicomputer or mainframe and used to monitor the status of the system.
    - (2) Another term for monitor or display screen.
    - (3) A bank of meters and lights indicating a computer's status, and switches that allow an operator to control the computer in some way.
    - (4) A device specially made for game play called a video game console. The player interacts with the game through a controller, a hand-held device with buttons and analog joysticks or pads. Video and sound are received by the gamer though a television. See also console game.
    - (5) In Windows Home Server the Console is the application software you use to manage Windows Home Server from any of the computers on your home network. Here you can configure back-ups, access add-ins, configure folders, and

change Windows Home Server settings.

- daemon -
  - <http://www.webopedia.com/TERM/D/daemon.html>
    - Pronounced DEE-mun or DAY-mun. A process that runs in the background and performs a specified operation at predefined times or in response to certain events. The term daemon is a UNIX term, though many other operating systems provide support for daemons, though they're sometimes called other names. Windows, for example, refers to daemons as System Agents and services.
    - Typical daemon processes include print spoolers, e-mail handlers, and other programs that perform administrative tasks for the operating system. The term comes from Greek mythology, where daemons were guardian spirits.
- .deb – filename extension for a Debian package file
  - [http://www.debian.org/doc/manuals/debian-faq/ch-pkg\\_basics.en.html](http://www.debian.org/doc/manuals/debian-faq/ch-pkg_basics.en.html)
    - A Debian "package", or a Debian archive file, contains the executable files, libraries, and documentation associated with a particular suite of program or set of related programs. Normally, a Debian archive file has a filename that ends in .deb.
- GUI – Pronounced GOO-ee. Acronym for graphical user interface.
  - [http://www.webopedia.com/TERM/G/Graphical\\_User\\_Interface\\_GUI.html](http://www.webopedia.com/TERM/G/Graphical_User_Interface_GUI.html)
    - Abbreviated GUI (pronounced GOO-ee). A program interface that takes advantage of the computer's graphics capabilities to make the program easier to use. Well-designed graphical user interfaces can free the user from learning complex command languages. On the other hand, many users find that they work more effectively with a command-driven interface, especially if they already know the command language.
    - Graphical user interfaces, such as Microsoft Windows and the one used by the Apple Macintosh, feature the following basic components:
      - pointer : A symbol that appears on the display screen and that you move to select objects and commands. Usually, the pointer appears as a small angled arrow. Text -processing applications, however, use an I-beam pointer that is shaped like a capital I.
      - pointing device : A device, such as a mouse or trackball, that enables you to select objects on the display screen.
      - icons : Small pictures that represent commands, files, or windows. By moving the pointer to the icon and pressing a mouse button, you can execute a command or convert the icon into a window. You can also move the icons around the display screen as if they were real objects on your desk.
      - desktop : The area on the display screen where icons are grouped is often referred to as the desktop because the icons are intended to represent real objects on a real desktop.



- windows: You can divide the screen into different areas. In each window, you can run a different program or display a different file. You can move windows around the display screen, and change their shape and size at will.
    - menus : Most graphical user interfaces let you execute commands by selecting a choice from a menu.
  - The first graphical user interface was designed by Xerox Corporation's Palo Alto Research Center in the 1970s, but it was not until the 1980s and the emergence of the Apple Macintosh that graphical user interfaces became popular. One reason for their slow acceptance was the fact that they require considerable CPU power and a high-quality monitor, which until recently were prohibitively expensive.
  - In addition to their visual components, graphical user interfaces also make it easier to move data from one application to another. A true GUI includes standard formats for representing text and graphics. Because the formats are well-defined, different programs that run under a common GUI can share data. This makes it possible, for example, to copy a graph created by a spreadsheet program into a document created by a word processor.
  - Many DOS programs include some features of GUIs, such as menus, but are not graphics based. Such interfaces are sometimes called graphical character-based user interfaces to distinguish them from true GUIs.
- man – man page
    - [http://www.webopedia.com/TERM/M/man\\_page.html](http://www.webopedia.com/TERM/M/man_page.html)
      - Short for manual page, a page of on-line documentation in UNIX systems. Every UNIX command, utility, and library function has an associated man page that you can view by entering the command:
      - > man
      - For example, to find out about the man command itself, you would enter:
      - > man man
      - If you don't know the name of the command, but only the general topic, you can use the apropos command,
      - > apropos
      - which lists all the man pages related to the specified topic.
      - Man pages are stored as nroff files.
  - MIME - Multipurpose Internet Mail Extensions
    - <http://www.webopedia.com/TERM/M/MIME.html>
      - Short for Multipurpose Internet Mail Extensions, a specification for formatting non-ASCII messages so that they can be sent over the Internet. Many e-mail clients now support MIME, which enables them to send and receive graphics, audio, and video files via the Internet mail system. In addition, MIME supports messages in character sets other than ASCII.

- There are many predefined MIME types, such as GIF graphics files and PostScript files. It is also possible to define your own MIME types.
- In addition to e-mail applications, Web browsers also support various MIME types. This enables the browser to display or output files that are not in HTML format.
- MIME was defined in 1992 by the Internet Engineering Task Force (IETF). A new version, called S/MIME, supports encrypted messages.
- mirror – mirror site
  - [http://www.webopedia.com/TERM/M/mirror\\_site.html](http://www.webopedia.com/TERM/M/mirror_site.html)
    - A Web site that is a replica of an already existing site, used to reduce network traffic (hits on a server) or improve the availability of the original site. Mirror sites are useful when the original site generates too much traffic for a single server to support.
    - Mirror sites also increase the speed with which files or Web sites can be accessed: users can download files more quickly from a server that is geographically closer to them. For example, if a busy New York-based Web site sets up a mirror site in England, users in Europe can access the mirror site faster than the original site in New York.
- NTP – Network Time Protocol
  - <http://www.webopedia.com/TERM/N/NTP.html>
    - Short for Network Time Protocol, an Internet standard protocol (built on top of TCP/IP) that assures accurate synchronization to the millisecond of computer clock times in a network of computers. Based on UTC, NTP synchronizes client workstation clocks to the U.S. Naval Observatory Master Clocks in Washington, DC and Colorado Springs CO. Running as a continuous background client program on a computer, NTP sends periodic time requests to servers, obtaining server time stamps and using them to adjust the client's clock.
- package – software package
  - [http://www.webopedia.com/TERM/S/software\\_package.html](http://www.webopedia.com/TERM/S/software_package.html)
    - (1) A special method of distributing and installing software (or software upgrades) to a computer. For example, on a Macintosh computer, a package usually means "software." It's specifically a directory, presented as a single file, that contains all the information the Mac OS X Installer application needs to install your software. That includes the software itself, as well as files that are used only during the installation process. In a Windows environment it is sometimes called an installation package or update package.
    - (2) Multiple software programs that work together (or performs similar functions) and is bundled and sold together as a software package.
- repository -
  - <http://www.webopedia.com/TERM/R/repository.html>

- (1) Generically refers to a central place where data is stored and maintained. A repository can be a place where multiple databases or files are located for distribution over a network, or a repository can be a location that is directly accessible to the user without having to travel across a network.
- (2) In a CASE development system, a database of information about the software, including data elements, processes, inputs, outputs and interrelationships. A CASE system uses a repository to identify objects and rules for reuse.
- .rpm – RedHat Package Manager filename extension
- shell -
  - <http://www.webopedia.com/TERM/S/shell.html>
    - (1) The outermost layer of a program. Shell is another term for user interface. Operating systems and applications sometimes provide an alternative shell to make interaction with the program easier. For example, if the application is usually command driven, the shell might be a menu-driven system that translates the user's selections into the appropriate commands.
    - (2) Sometimes called command shell, a shell is the command processor interface. The command processor is the program that executes operating system commands. The shell, therefore, is the part of the command processor that accepts commands. After verifying that the commands are valid, the shell sends them to another part of the command processor to be executed.
    - UNIX systems offer a choice between several different shells, the most popular being the Cshell, the Bourne shell, and the Korn shell. Each offers a somewhat different command language.
- SSH -
  - <http://www.webopedia.com/TERM/S/SSH.html>
    - Developed by SSH Communications Security Ltd., Secure Shell is a program to log into another computer over a network, to execute commands in a remote machine, and to move files from one machine to another. It provides strong authentication and secure communications over insecure channels. It is a replacement for rlogin, rsh, rcp, and rdist.
    - SSH protects a network from attacks such as IP spoofing, IP source routing, and DNS spoofing. An attacker who has managed to take over a network can only force ssh to disconnect. He or she cannot play back the traffic or hijack the connection when encryption is enabled.
    - When using ssh's slogin (instead of rlogin) the entire login session, including transmission of password, is encrypted; therefore it is almost impossible for an outsider to collect passwords.
    - SSH is available for Windows, Unix, Macintosh, and OS/2, and it also works with RSA authentication.
- sudo -

- <http://en.wikipedia.org/wiki/Sudo>
  - sudo (/ˈsuːdoʊ/ or /ˈsuːduː/) is a program for Unix-like computer operating systems that allows users to run programs with the security privileges of another user (normally the superuser, or root). Its name is a concatenation of "su" (substitute user) and "do", or take action.
- terminal -
  - <http://www.webopedia.com/TERM/T/terminal.html>
    - (1) A device that enables you to communicate with a computer. Generally, a terminal is a combination of keyboard and display screen. Terminals are sometimes divided into three classes based on how much processing power they contain:
      - intelligent terminal: a stand-alone device that contains main memory and a CPU.
      - smart terminal: contains some processing power, but not as much as an intelligent terminal.
      - dumb terminal: has no processing capabilities. It relies entirely on the computer's processor.
    - (2) In networking, a terminal is a personal computer or workstation connected to a mainframe. The personal computer usually runs terminal emulation software that makes the mainframe think it is like any other mainframe terminal.
- VNC – Virtual Network Computing
  - [http://www.webopedia.com/TERM/V/virtual\\_network\\_computing.html](http://www.webopedia.com/TERM/V/virtual_network_computing.html)
    - Through the use of software VNC, acronym for virtual network computing, makes it possible to interact with a computer from any computer or mobile device on the Internet. VNC software provides cross-platform support allowing remote control between different types of computers. To use VNC you must have a network TCP/IP connection, a VNC server and a VNC viewer to connect to the computer running the VNC server. The open source version of VNC has been freely available since 1998, and more than 20 million copies of the software have been downloaded.