CIT 371 lab 15: Software installation

Parts of this lab must be done using the Web Console. See the Student VM Access document for more information on accessing your VMs.

Log into Coivcenter and start your VM (VM2). Login as yourself. Open a terminal window.

1. Installation using yum, su to root for this step.
2. Type **which gcc** (the GNU’s C/C++ compiler, we need this to install source code). Gcc is not yet installed. Install it with yum. Type **man yum**. *What does yum stand for? What Red Hat package manager does yum use?* The format for a yum command is **yum [options] [command] *packagename***. Commands include **install**, **list** (show all packages that match the name). Type **yum list \*gcc\***. *How many packages matched? Of those listed, which one(s) do you suppose will install when you install gcc?*

**Yum stands for Yellowdog Updater Modified. Yum uses the RPM package manager. There was only 1 package that matched. When you install gcc the package that should download is libgcc.x86\_64 .**

1. Install gcc with **yum install gcc**. You can add the option **–y** to prevent yum from pausing to ask for your permission, **-q** to run in quiet mode, and **-e=*#*** to output error messages of level # or higher (#is a digit from 0 to 10). *How big is the gcc download size? How many packages need to be installed and how many upgraded?*

**The total size of the download was 33 M. 5 packages needed to be installed while 4 needed to be upgraded.**

1. Once installed, type **man gcc***. What is the official name for the software?* Type **which** **gcc**. *Where is it installed?* We will use gcc later in this lab. Exit from root for step 2b.
2. **The official name of the software is GNU project C and C++ compiler. Gcc is installed in /usr/bin/gcc .**
3. There are two GUI programs to install software: Applications 🡪 System Tools 🡪 Application Installer and Software (same submenu). Application Installer is similar to the Microsoft and Apple App Store while Software is the same as the Add/Remove Software from older RedHats.
4. Select **Application Installer**. In may take a few moments to minutes to populate (otherwise you may see boxes with … in them). Select **the box with 3 vertical dots** to expand the list. Select **Utilities**. Scroll down and select **Emacs** (a text editor like vi but in my opinion, more sophisticated and easier to use). You do not need to install Emacs, but look at its information. *What version is currently available? What does it say for License? How big is the download size?*  If you wish to install it, select the Install button at the top of the page and authenticate as root. At the top of the window, select the back arrow twice to return to the main page. Select **Add-Ons**. Along the left pane, Fonts is selected. Select **Shell Extensions**. Scroll down to see what is available. You may install anything you like. When done, **exit** out of the Application Installer.

**The current version available in Emacs is version 1:24.3-23.el7 . The license is free. The download size is 3.0 Mb.**

1. Run the **Software** program. The left pane has package types (e.g., Web Services lists programs to support web servers). Select **Web Server** and in the right pane are all the available packages. Checkmarked items are already installed. One choice is Apache HTTP Server (we won’t install it now, but we will install it in a later lab from source code). Select **Applications** and then **GNOME Applications**. All four packages are already installed. *Why?* Select **KDE Applications**. None are installed. *Why not?* Let’s install Wireshark. Where will we find it? Type **Wireshark** in the search bar and all Wireshark-related titles appear in the right pane. From this list, select **Network traffic analyzer** (this is Wireshark). Below this pane is information about Wireshark. *What operating systems is this program for? How large is its download size?* Select the **Dependent** button. We will explore what this means in step 3. *What other packages require this package?* Select **Required**. *How many additional packages are required to install this? What license does it use?* This version of wireshark is text-based only. Select **Gnome desktop integration for wireshar**k, which is a GUI. Select **Install** followed by **Apply Changes** (this button is at the top of the window), authenticating as root. This installation causes Network traffic analyzer to also be installed. When done, close the Software window. To run wireshark, just type **wireshark &**. You should have used wireshark in other classes (130, 247) so we omit using it (but you can play with it if you like). Close the **wireshark** window and the **Software** window.

**All four of the applications installed in the GNOME application is because we have used GNOME multiple times and have previously downloaded these files. In the KDE applications, it is all customizable for your Linux and have not been downloaded or used. The operating system that this program is for Unix-ish operating systems. The download size is 13.1 MB. There are no other packages require this package. The license used is GPL+ .**

1. Software today usually is installed in a package (a collection of many files, including pre-compiled shared library routines, usually written in C/C++). Its easy to install packages using yum and GUI programs. But an older approach was using RPM (RedHat Package Manager) where you had to track down some of these library dependent routines. To use rpm, we need to download an rpm file which specifies how to install the software. **su** to **root**.
2. In a web browser, go to **rpmfind.net**. In the search box, type **apg**, scroll down the Distribution column to find the version “EPEL 7 for x86\_64”. **Click the link in last column of that row**. Save it (it should save to your user’s Downloads directory). cd there. The file will be named apg-….rpm (… is version information). Type **rpm –i *name*** where *name* is the file’s name (use tab completion for convenience!) You will get a warning about NOKEY and may also get warnings about missing user/group accounts. Ignore these. Type **which apg**. *Did it install?* If not, its because you do not have a key matching the signature of the file. Keys verify that the software is what it claims to be. We can test an RPM file for a key. Issue the command **rpmkeys –K *name*** (*name* is again the name of the apg rpm file). *What key is missing?* If apg did not install, redo the rpm command but add **--force**. apg randomly generates passwords. Type **apg** to see.

**Yes it did install into /usr/bin/apg . No keys are missing, it is OK.**

Table

Description automatically generated with medium confidence

1. We can remove installed packages with rpm. Type **rpm –e apg** (notice we don’t use the full filename to remove). Type **apg** and **which apg** and you will find its gone. You need the rpm file to either install, erase (-e) or upgrade (-u) a package.

**No apg is found after the erase.**

Close any open windows, shut down your VM if desired, disconnect from the VPN if you are using it, and submit your lab report.