

LPIC-1 101-400 – Lesson 16

102.5 Use RPM and YUM package management



The *RPM* Package Manager

- The RedHat Package Management (RPM) is one of the most popular package manager on Linux Systems. It is used by RedHat systems and derivatives, as well as SUSE, Fedora, and others
- The package files have an **.rpm** extension
- In RedHat and derivatives it is coupled with the **YUM** dependency resolution system



The naming scheme of *.rpm* files

- File name: **httpd-2.2.3-43.el5.i386.rpm**
- **Package name**
- **Version**
- **Revision**
- **Architecture**



The `rpm` command

- `# rpm -i httpd-2.2.3-43.el5.i386.rpm #`
install package `httpd` from `.rpm` file
- `# rpm -ivh httpd-2.2.3-43.el5.i386.rpm #`
install package `httpd` with verbose output
and progress line
- `# rpm -Uvh httpd-2.2.3-43.el5.i386.rpm #`
upgrade package `httpd` with verbose output
and progress line. If the package does
not exist it will be created
- `# rpm -e httpd #` remove package `httpd`



The `rpm` command

- `$ rpm -qpi httpd-2.2.3-43.el5.i386.rpm # show information from rpm file`
- `$ rpm -qi httpd # show information for the installed httpd package`
- `$ rpm -qp1 httpd-2.2.3-43.el5.i386.rpm # show all files from the rpm package file`
- `$ rpm -q1 httpd # show all files of the httpd package`
- `$ rpm -qd httpd # show documentation files of the httpd package`
- `$ rpm -qpc httpd-2.2.3-43.el5.i386.rpm # show configuration file from the rpm package file`
- `$ rpm -q httpd # query the httpd package`
- `$ rpm -qa # query all installed packages`

The `rpm` command

- `$ rpm -qf /bin/bash # show package containing the /bin/bash file`
- `$ rpm -V httpd # verify the httpd package`
- `$ rpm -Va # verify all installed packages`



The `rpm` command

Command Options of RPM:

- **-i, --install** # install package from .rpm file provided it is not already installed
- **-U, --upgrade** # upgrade package from .rpm file. If the package does not exist it will be installed
- **-F, --freshen** # upgrade package from .rpm file provided it is not already installed
- **-q, --query** # query packages for information
- **-V, --verify** # verify that files of package exist and have not been altered
- **-e** # remove packages



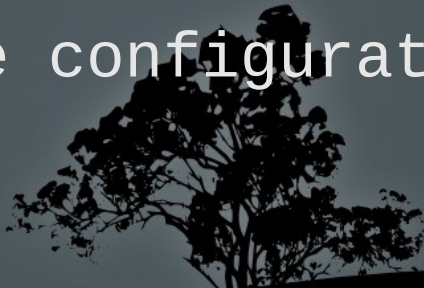
The `rpm` command

Install/upgrade/remove options:

- **--force** # force upgrade or installation and replacement of previous package files
- **-h, --hash** # show hashes (#) during installation. Combined with **-v**
- **-v, --verbose** # verbose output. Combined with **-h**
- **--nodeps** # ignore dependency checks during upgrade, installation or removal
- **--test** # check for dependencies, collisions and other issues without actually installing or upgrading

The `rpm` command

Query/verification options:

- **-a** # query (-q) or verify (-V) all packages
 - **-f [file]** # query (-q) or verify (-V) of packages containing **file**
 - **-p [file.rpm]** # query (-q) inside .rpm file
 - **-i** # show package info (-q)
 - **-R, --requires** # show package dependencies (-q)
 - **-l, --list** # show package files (-q)
 - **-d, --docfiles** # show package documentation files (-q)
 - **-c, --configfiles** # show package configuration files (-q)
- 

Extract data from .rpm files with `rpm2cpio`

- `$ rpm2cpio httpd-2.2.3-43.el5.i386.rpm > httpd-2.2.3-43.el5.i386.cpio # convert .rpm file to .cpio`
- `$ cpio -i -make-directories < httpd-2.2.3-43.el5.i386.cpio # extract files from .cpio archive`
- `$ rpm2cpio httpd-2.2.3-43.el5.i386.rpm | cpio -i -make-directories # combine the previous two commands in one`



The `yum` command

- **YUM** (Yellowdog Updater, Modified) is a tool designed by Yellowdog Linux which ultimately replaced the previous RedHat equivalent tool, **up2date**
- Provides installation from repositories, dependency resolution, conflict resolution and information about packages
- It functions in a similar way as **apt**, but used **rpm** as installation/upgrade/removal backend
- It will eventually be faced out by another similar tool, named **DNF**



The `yum` command

- `# yum install httpd # install httpd (apache) package with dependencies; If the -y option is passed it will answer 'Yes' to all questions`
- `# yum remove httpd # = yum erase httpd remove httpd (apache) package with dependencies`
- `# yum search http # query for the 'http' keyword in package names and descriptions`
- `# yum info httpd # information about the httpd package`
- `# yum list httpd screen # summary information about the httpd and screen packages`
- `# yum list # summary information about all packages (both installed and absent)`



The `yum` command

- `# yum update httpd # update httpd package to a newer version`
- `# yum update # update all packages for which newer versions exist`
- `# yum -y update # answer 'Yes' to all the prompts`
- `# yum check-update # check for updated versions of installed packages`
- `# yum upgrade # smarter collision resolution. Useful for OS upgrades to a newer version`



Configuration files and data directories of `yum`

- `/etc/yum.conf` # main **yum** configuration file
- `/etc/yum.repos.d/` # directory containing repository configuration files for **yum**. The file have a **.repo** extension
- `/var/cache/yum` # cache for downloaded **.rpm** files by **yum** and metadata. You can clean the cache with **yum clean all**



The `yumdownloader` command

- `# yumdownloader httpd # download the .rpm file for the httpd package, from the repositories, to the working directory`

Options:

- `--destdir # define destination directory`
- `--resolve # download dependencies as well`



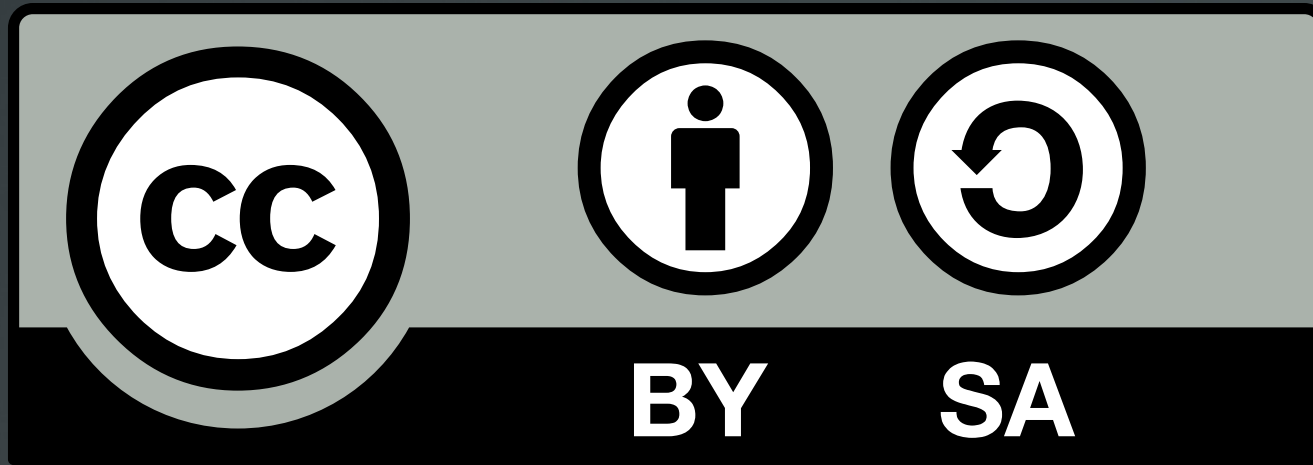
Comparison of RedHat and Debian package managers

- The following page provides useful information about the equivalent commands of **dpkg** and **rpm**, as well as **apt** and **yum**

https://help.ubuntu.com/community/SwitchingToUbuntu/FromLinux/RedHatEnterpriseLinuxAndFedora#Package_Management



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