Red Hat Package Manager (RPM)

RPM (Redhat Package Manager) is the software installation process by tracking information about installed programs. RPM Package Manager is a package management system

RPM consists of three (3) components.

- Package Files
- RPM Database
- RPM Command

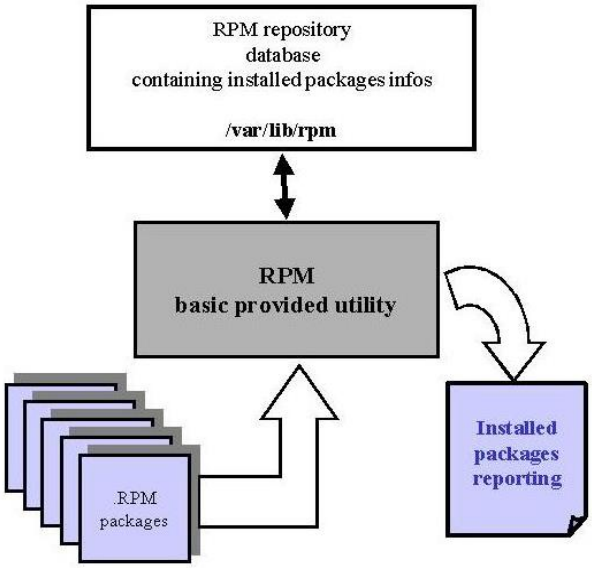

Figure 1 – Software and Package Administration
Retrieved from https://kkslinuxinfo.wordpress.com/2015/12/11/software-and-package-administrationrpm/

Package Files replace the TAR files used before RPM, like TAR files and Package files contain. The files that must be installed unlike TAR files:

1. Name and Version of Package
2. Build date and Build host
3. Description of package
4. Size and MD5 Checksum
5. Identity of the organization
6. Package group to which package belongs.

In **RPM Database**, once a package installed, information about the package is stored in the RPM database which resides in /var/lib/rpm.

RPM Command is executable component of the RPM facility.

1. Installation Packages
2. Updating Packages
3. Removing Packages
4. Querying RPM Database
5. Querying a Package File
6. Building a Package File
7. Validating a Package
8. Validating a Package file

The **Red Hat distribution of Linux**, including kernel, libraries, and applications are provided as RPM files. An RPM file, also known as a "package" is a way of distributing software so that it can be easily installed, upgraded,

queries, and deleted.

Using the Red Hat Package Manager (RPM)

The way to install a package from source is to specify the "rebuild" switch to the RPM utility. For example:

rpm –ivh –rebuild foo.src.rpm

The above command would configure and compile the "foo" package, producing a binary RPM file in the "/usr/src/redhat/RPMSi386/" directory. The administrator can then install the package as normally would.

The administrator can use the following steps (illustrating our fictitious "foo" package example) to compile the source, build a new binary package, and then install from the binary package:

rpm –ivh foo.src.rpm
cd /usr/src/redhat/SPECS
pico –w foo.spec

Make whatever changes you feel are needed to the ".spec" file, and then type:

rpm –ba foo.spec

This will rebuild the package using whatever changes you have made to the ".spec" file. As above, the resultant binary RPM file will be located in "/usr/src/redhat/RPMSi386/"

Structure of RPM Package Name

package – 1.0 – 2 . i386 . rpm where;
package is the Name
1.0 is the version
2 is the Release, and
i386 is the Architecture

General *rpm* mode of operations:

Operation	Effect
rpm –ioptions package-file	Installs a package; the complete name package file is required.
rpm –eoptions package-file	Uninstalls (erases) a package; you only need the name of the package, often word.
rpm –qoptions package-file	Queries a package. List the package information.
rpm –Uoption packae-file	Upgrades; same as install, but any previous version is removed.
rpm –Foptions package-file	Upgrade; but only if package is b1 currently installed.

General *rpm* command line options:

Option	Description
-v	Displays basic information about the RPM operation's status.
-vv	Displays debugging information.
--quiet	Displays only error information.
--help	Show a usage summary.
--version	Show the RPM version number.
--justdb	Updates only the database, not the filesystem.

The General Syntax of an RPM query is:

rpm –q [query options] package […]

Some *rpm* query mode options:

Option	Type	Description
-qa	S	Query all installed RPMs. Does not require a package specification.
-a –whatrequires capability	S	Query all RPMs that need capability in order to function properly.
-q –whatprovides capability	S	Query all RPMs that provide capability.
-qf file	S	Query all RPMs that owns file. Does not require package specification.
-qg group	S	List the packages in the RPM group. Does not require package specification.
-qp package [..]	S	Query the uninstalled RPM named package.
-qi	I	Display complete information about queried RPM(s)
-qR	I	List all RPMs on which the package depends.

Some *rpm* query mode options:

Option	Type	Description
-q –provides	I	List the capabilities the required RPMs provides.
-q –changelog	I	Display change information about the queried RPMs
-ql	I	List all the files stored in the RPM
-qs	I	For each file in the original RPM, display its state, which one (1) is of normal, not installed, or replaced.
-qd	I	List only the documentation files stored in the RPM
-qc	I	List only the configuration files stored in the queried RPMs
-q --dump	I	List only files with complete details
-q --last	I	Display the installation date and time of each RPM queried, starting with most recently installed RPM.

Software Package Types

Extension	File
.rpm	Software Package created with Red Hat; Software Package Manager, used on Red Hat, Caldera, Mandrake, SuSe distributions.
.src.rpm	Software packages that are source code versions of applications, created with the Red Hat Software Package Manager.
.gz	gzip compressed file (use *gunzip* to decompress)
.bz2	bzip2 compressed file (use bunzip2 to decompress, also use the j option with tar, as in xvjf)
.tar	Tar archive file, use tar with xvf option to extract.
.tar.gz	gzip compressed tar archive file. Use gunzip to decompress and tar to extract. Use the z option with tar as in xvzf to both decompress and extract in one (1) step.
.tar.bz2	bzip2 compressed tar archive file. Extract with tar -xvzj
.tz	tar archive file compressed with the compress command
.Z	File compressed with the compress command (use the decompress command to decompress)
.deb	Debian Linux package

RPM Installation

The basic syntax for installing an RPM is: rpm –i[options] package. The package is the complete name of the RPM to install and options refines the installation process. The table lists he commonly used options values. See the rpm man page for more details.

Common *rpm* installation options:

Option	Description
--force	Forces installation despite conflicts. Install the package even if it is already installed, install an older version or replace files already installed.
-h	Displays # symbols to illustrate the progress of the illustration.
--nodeps	Installs/upgrades without performing any dependency checks.
--test	Do not install the package or update the database, just identify and display possible conflicts or dependency errors.
-v	Be slightly verbose and show some useful information during the installation.

Upgrading and Removing RPMs

Two (2) options for upgrading RPMs:

- -U for upgrade
  - rpm –U[options] package-name
- -F for freshen
  - rpm –F[options] package-name

Upgrade	Freshen
Installs RPM even an earlier version is not currently installed.	Installs RPM only if an earlier version is currently installed.
Identical with --i (install) options	Identical with --i (install) options

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