

50 - RPM - ReadHat Package Manager

- **Filename format of RPM packages:**

PackageName-VersionNumber.Architecture.rpm

- **Content of RPM packages:**

- Information about the package
- List of files to install
- List of Dependencies
- 4 Scripts:
 - Before Installation
 - After Installation
 - Before De-Installation
 - After De-Installation
- Actual files to install

- **Where are the RPM databases:**

- Directory of RPM Database of installed packages(in binary format):
/var/lib/rpm/*
- Directory of RPM tools needed to manage RPM packages:
/usr/lib/rpm/*
- To rebuild the RPM Database: rpm --rebuilddb

- **Syntax:**

rpm Action [Options] Packagename[.rpm]

- **Action:**

<u>Short Format</u>	<u>Long Format</u>	<u>Description</u>
Installation/Upgrade/Uninstallation		
-i	--install	Install the package. Works only when no older package was already installed.
-U	--upgrade	Upgrade the package. Works like Install. but will also erase an older version of it.
-F	--freshen	Upgrade the package. Works only when an older version of it is already installed.
-e	--erase	Un-install the package.

- **'Installation Options**

--nodeps	Installs and does not check dependencies.
--noscripts	No Pre/Post-Install scripts will be run.
--test	Do not install, just simulate installation.
--excludedocs	Install but without the documentation.
--replacepkgs	Install all even if some packages are already installed.
--replacefiles	Overwrite already installed files if existing.
--oldpackage	Allow Downgrading a package version.
--force	Install all no matter what. It can be seen as the same as: --replacepkgs --replacefiles --oldpackage

De-Installation Options

--nodeps	De-Installs and does not check dependencies.
--noscripts	No Pre/Post-de-Install scripts will be run.
--test	Do not de-install, just simulate de-installation.
--allmatches	De-Install all packages names that matches pattern. In this case the pattern no errors would be produced if the pattern matched 2 or more packages.

- **Package queries**

- If a query is made on installed packages the package name needs to be naked without the version or revision number or `.rpm`
- If a query is made for an RPM file, then the actual file name including the `.rpm` must be given as the package name.

```
-q[options] --query      Queries info on the package.
  i    --info           Information header of package.
  l    --list           List of all files
  c    --configfiles   List of Configuration files.
  d    --docfiles      List of Documentation files.
  R    --provides      Programs/Libs provided by the package.
      --requires      List of files on which this package depends.
      --changelog     Display log of package changes.
      --scripts       Displays all 4 Install/Un-install scripts.
      --dump          List of all files and their attributes.
      --filesbypkg    Same as --list + package name per line
      --last          Date of last installations of the package.
      --state         Same as '--LIST' incl. Files Installation status:
                      normal, not installed or replaced
      --qf %{QUERYTAG} or
      --queryformat %{QUERYTAG}
                      Extracts specific items from info header.
                      Lists the QUERYTAGS usable in --queryformat.
                      --querytags
```

Examples:

Displays only description part of the info.

eg. `rpm -q --qf %{DESCRIPTION} apache`

Lists only names of all installed packages.

eg. `rpm -qa --qf "%{NAME}\n" | sort | less`

- **Query Package selection:(combined with `-q` option)**

```
a    --all             Query all installed Packages
f    --file filename  Query installed Package owning file (incl. path)
p    --package        Query Specific Un-installed packages (.rpm)
```

- `--whatrequires`

Query all installed packages that depend on this one.

Note: `rpm -q --whatrequires --qf "%{NAME}\n" apache | less`

Displays all names of packages that depends on `apache` package.

- `--whatprovides program_or_libname(incl. path)`

Query all installed packages that provides this program or library.

Note: `rpm -q --whatprovides --qf \
"%{NAME}\n-%{VERSION}\n-%{RELEASE}\n" /bin/sed`

Displays names of packages that provides `/bin/sed`.

Same output as `rpm -qf /bin/sed`

- `g group` or `--group group` All installed packages belonging to group

Note: `rpm -qa --qf "%{GROUP}\n" | sort -u | less`

Lists group names of which some packages are installed.

- **Examples:**

```
rpm -qil PackageName           Information and install file list of package.
rpm -qa | sort | less           Display all installed packages(all .rpm files)
rpm -qai | grep -2 "^Release" | less
                                Same as above but more complete info.
rpm -hiv PackageName.rpm       Install with progress bar (hash #)
rpm -hiv --replacefiles PackageName.rpm
                                Install on top of existing package with progress
                                bar (hash #)
rpm -hUv PackageName.rpm       Upgrade with progress bar (hash #)
rpm -hUv --force PackageName.rpm
                                Upgrades and overwrite existing package even
                                if conflict or lack of dependencies exists.
rpm -qf filename(incl PATH)    Tells which packet this file belongs to
rpm -qdf filename(incl PATH)  Tells which help documents came with this file
```

Queries for not installed rpm packages

```
rpm -qpi PackageName.rpm       header information of this package.
rpm -qpl PackageName.rpm       List of files where this package installs
```

- **Advanced Examples:**

- **To display a list of all already installed packages and their summary description:**

```
rpm -qa --qf "%{NAME} : %{SUMMARY}\n" | sort | less
```

- **To search for an already installed *PackageName* by pattern:**

```
rpm -qai | awk -F: ' /^Name|^Version/ {print $1,$2} /^Version/ \
{print ""}' | cut -b-30 | grep -l PackageName
```

or for simpler results:

```
rpm -qa pattern* *pattern* ....
```

- **To search through RPM files for a filename:**

```
rpm -qp --filesbypkg *.rpm | grep filename
```

- **To list all installed packages names and their short descriptions:**

```
rpm -qa --qf "%{NAME}\ \-\-\-\ \%{SUMMARY}\n" | sort | less
```

- **Verifying integrity of packages**

```
rpm -V PackageName           Verify integrity of the installed packages
rpm -Va                       Verify integrity of all installed packages
```

The result of both of these above commands will be shown as follows:

- One line per file is displayed.
 - Each line contains a status field(8 chars.) File type (1 char) Filename.
- eg. S.5....T c /etc/samba/smbpasswd

Meaning of Status field:

S	Size of file has changed	U	File Owner has changed
M	Access rights has changed	G	Group of file has changed
5	MD5 Checksum doesn't match	T	Time-stamp has changed
L	ReadLink system call failed	.	OK
D	Major/Minor numbers of device has changed		

Meaning of file type:

```
' '   Normal File
'c'   Configuration file.
'?'   Couldn't check (maybe because of read access failed)
'g'   Ghost File. The file contents are not included in the package
'd'   Documentation file
'l'   Licence
'r'   README File
```

- **PGP and GPG Signature test**

Syntax:

```
rpm --checksig Packagefilename.rpm
```

result should be:

```
Packagefilename.rpm md5 gpg OK
-----
```

In this example the package was checked against the MD5 Checksum and its 'GPG' signature. If the MD5 checksum is ok but the signature(gpg) is NOT ok then the result would be:

```
Packagefilename.rpm md5 GPG NOT OK
```

Serching RPM files on the Internet

www.rpmseek.com

www.rpmfind.net

- **Extract from RPM Man page:**

QUERYING AND VERIFYING PACKAGES:

```
rpm  { -q | --query } [select-options] [query-options]
rpm  { -K | --checksig } [--nogpg] [--nopgp] [--nomd5] PACKAGE_FILE ...
rpm  { -V | --verify } [select-options] [--nodeps] [--nofiles] \
      [--nomd5] [--noscripts]
```

INSTALLING, UPGRADING, AND REMOVING PACKAGES:

```
rpm  { -i | --install } [install-options] PACKAGE_FILE ...
rpm  { -U | --upgrade } [install-options] PACKAGE_FILE ...
rpm  { -F | --freshen } [install-options] PACKAGE_FILE ...
rpm  { -e | --erase } [--allmatches] [--nodeps] [--noscripts] \
      [--notriggers] [--repackage] [--test] PACKAGE_NAME ...
```

MISCELLANEOUS:

```
rpm  { --initdb | --rebuilddb }
rpm  { --querytags | --showrc }
rpm  { --addsign | --resign } PACKAGE_FILE ...
rpm  { --setperms | --setugids } PACKAGE_NAME ...
```

SELECT-OPTIONS

```
[PACKAGE_NAME] [-a,--all] [-f,--file FILE] [-g,--group GROUP]
[-p,--package PACKAGE_FILE] [--querybynumber NUMBER]
[--triggeredby PACKAGE_NAME] [--whatprovides CAPABILITY]
[--whatrequires CAPABILITY]
```

QUERY-OPTIONS

```
[--changelog]  [-c,--configfiles] [-d,--docfiles] [--dump]
[--filesbypkg] [-i,--info]          [--last]          [-l,--list]
[--provides]   [--qf,--queryformat QUERYFMT]         [-R,--requires]
[--scripts]   [-s,--state]          [--triggers,--triggerscripts]
```

INSTALL-OPTIONS

```
[--allfiles]  [--badreloc] [--excludepath OLDPATH] [--excludedocs]
[--force]     [-h,--hash]   [--ignoresize]       [--ignorearch]
[--ignoreeos] [--includedocs] [--justdb]           [--nodeps]
[--noorder]   [--noscripts] [--notriggers]        [--oldpackage]
[--percent]   [--prefix NEWPATH] [--relocate OLDPATH=NEWPATH]
[--repackage] [--replacefiles][--replacepkgs]     [--test]
```

Note: Options for Building packages are left out here. See man page for further info.

- **Other source of info are at** <http://www.rpm.org>
The program kpackage, KpackViewer and kpm

Existing Software Packaging Systems

Format	Operating Systems (1)	Binaries ?	Cross Platform?	Patches?	Upgrades?	Conflicts?	Requires?	Replaces?	Config Files?	Map Files?
installp	AIX	Yes	---	---	---	Yes	Yes	---	---	---
pkg_add	FreeBSD NetBSD OpenBSD	Yes	Yes ²	---	---	Yes	Yes	---	---	---
dpkg	Debian Xandros Knoppix Lindows	Yes	Yes ²	---	Yes	Yes	Yes	Yes	Yes	---
swinstall	HP UX	Yes	---	Yes	Yes	Yes	Yes	---	Yes	Yes
inst	IRIX	Yes	---	Yes	Yes	Yes	Yes	Yes	Yes	Yes
pkgadd	Solaris	Yes	---	Yes	---	Yes	Yes		Yes	Yes
rpm	Mandrake RedHat SuSE TurboLinux Slackware	Yes	Yes ²	---	Yes	Yes	Yes	---	Yes	---
setid	Tru64 UNIX	Yes	---	---	---	Yes	Yes	---	---	---

1. - Standard packaging system for named operating systems.
2. -These packaging systems are cross platform but require the package management utilities to be installed on the platform before installing the package.