

Using the Red Hat Package Manager

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Overview

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(We'll use Maximum RPM v1.1 as the reference manual)

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Why use packages ?

- Simplify system administration
- Install, upgrade and remove without problems
- Ability to add dependencies between software, libraries and tools
- Indexing and verifying installed systems
- Simplify software building and distribution

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RPM design goals

- Make it easy to get packages on and off the system
- Make it easy to verify a package was installed correctly
- Make it easy for the package builder
- Make it start with the original code
- Make it work on different computer architectures

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What is a package ?

- Package label (!= filename)
 - Software name logwatch
 - Software version 0.1.0
 - Package release dag.1
- Build date and build host
- Install date and total size of files installed
- Package license, vendor and packager
- Description, summary, group information and URL
- A signature to verify authenticity and integrity
- Changelog of the Spec file
- Per-file information
 - Location of file
 - File permissions and ownership
 - MD5 checksum

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Using RPM to install packages

- **rpm -i**
 - -h print "#" marks during install
 - -v display additional information
 - -vv display debugging information
 - --test

 - --nodeps do not check dependencies
 - --replacepks replace a package with a new copy
 - --replacefiles replace files owned by another pkg
 - --force ignore package and file conflicts
 - --noscripts do not execute install scripts
 - --prefix relocate package if possible

 - --root set alternate root
 - --dbpath use alternate RPM database

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Installation examples

```
[root@lune ~]# rpm -ihv /home/dag/autofs-3.1.5-5.i386.rpm
autofs      #####
```

```
[root@lune ~]# rpm -ivv ftp://ftp.easynet.be/...wertools/i386/iptraf*
D: counting packages to install
D: found 1 packages
D: looking for packages to download
D: logging into ftp.belnet.be as ftp, pw (username)
Retrieving ftp://ftp.easynet.be/...owertools/i386/iptraf-2.2.0-4.i386.rpm
D: ... as /var/tmp/rpm-xfer.ldArgM
...
```

```
[root@lune ~]# mount -t ext2 /dev/hdb2 /mnt/fw
[root@lune ~]# rpm -i --root /mnt/rh62 ipchains-1.3.9-17.i386.rpm
```

```
[root@lune ~]# rpm -i --prefix /mnt/rh62/usr ipchains-1.3.9-17.i386.rpm
```

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Using RPM to erase packages

- **rpm -e**
 - -vv display debugging information
 - --test perform erase tests only

 - --noscripts, --nodeps, --root, --dbpath
- **Configuration files will never be removed if changed !!**

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Using RPM to upgrade/freshen packages

- **rpm -U**
 - -h print "#" marks during upgrade
 - --test perform upgrade tests only
 - --oldpackage permits "upgrading" to an older pkg
 - --replacepkgs, --replacefiles, --force, --noscripts
- **Unchanged configuration files will be replaced**
- **Uses magic to determine when to replace**
- Can be used instead of rpm -i in all cases
- Use **rpm -F** to freshen files (i.e. upgrade only packages that are already installed)

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Getting information about packages

- **rpm -q**
 - -p query (not-installed) package file (parameter)
 - -f query package owning file (parameter)
 - -a query all installed packages
 - -i display summary package information
 - -l (-s) display list of files in package (w/ state)
 - -c display list of configuration files
 - -d display list of documentation files
 - --scripts display install and verify scripts
 - -v, -vv, --root, --dbpath

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Query examples

```
[dag@lune ~]$ rpm -qi logwrapper
Name       : logwrapper      Relocations: /usr
Version    : 0.1.0            Vendor: Dag Wieers <dag@wieers.com>
Release    : dag.1         Build Date: Thu 13 Dec 2001 09:06:44 PM CET
Install date: Fri 14 Dec 2001 ... Build Host: lune.dag.wieers.com
Group      : System/Tools   Source RPM: logwrapper-0.1.0-dag.4.src.rpm
Size       : 916           License: CPL
Packager   : Dag Wieers <dag@wieers.com>
URL        : http://dag.wieers.com/home-made/logwrapper/
Summary    : A wrapper script for logging all activity of a program
Description:
logwrapper is a tool that is able to log all activity of a program.
It will log the date, user and full command together with its output.
```

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Query examples

```
[dag@lune ~]$ rpm -qa
ld.so-1.9.5-13
vtun-2.3-1
diskcheck-3.1.1-2
...

[dag@lune ~]$ rpm -q logwatch
logwatch-0.1.0-1

[dag@lune ~]$ rpm -ql logwatch-0.1.0
/etc/logrotate.d/logwrapper
/etc/profile.d/logwrapper.sh
/usr/bin/logwrapper
/usr/share/doc/logwrapper-0.1.0
/usr/share/doc/logwrapper-0.1.0/README
/var/log/logwrapper
```

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Extra query options

- Extra options
 - --whatprovides query pkgs providing capability
 - --whatrequires query pkgs requiring capability

 - --provides display capabilities provided by pkg
 - --requires display capabilities required by pkg
 - --dump display all verifiable information

 - --queryformat
 - Queryformat tags:
NAME, VERSION, RELEASE, SUMMARY, BUILDHOST,
BUILDTIME, INSTALLTIME, SIZE, FILEMODES,
FILENAMES, FILESIZES, REQUIRENAME, ...

Queryformat-tags are not case sensitive.



Query examples

```
[root@lune ~]# rpm -qf `which logwrapper`  
logwrapper-0.1.0-1
```

```
[root@lune ~]# rpm -qf /lib/libss.so.2  
e2fsprogs-1.18-16
```

```
[root@lune ~]# rpm -qf --queryformat "%{summary}\n" /lib/libss.so.2  
Utilities for managing the second extended (ext2) file system.
```

```
[root@lune ~]# rpm -q --whatprovides webserver  
apache-1.3.14-2
```

```
[root@lune ~]# rpm -q --whatrequires apache  
piranha-gui-0.4.14-1  
mod_ssl-2.7.1-2
```



Query examples

```
[root@lune ~]# rpm -qc --whatprovides webserver  
/etc/httpd/conf/access.conf  
/etc/httpd/conf/httpd.conf  
/etc/httpd/conf/srm.conf  
/etc/logrotate.d/apache  
/etc/rc.d/init.d/httpd  
/var/www/html/index.html
```

```
[root@lune ~]# rpm -q -f /lib/libc.so.6 --provides  
ldconfig  
ANSI_X3.110.so  
...  
libutil.so.1(GLIBC_2.0)  
glibc = 2.1.94-3
```



Using RPM to verify packages

- rpm -V
 - -v display additional information
 - -vv display debugging information

 - -p verify against (not-installed) pkg (parameter)
 - -f verify package owning file (parameter)
 - -a verify all installed packages

 - --noscripts, --nodeps, --nofiles, --root, --dbpath
 -
- rpm -K
 - -v display additional information
 - -vv display debugging information

 - --nopgp do not verify PGP signatures



Verify example (and mnemonics)

```
[dag@lune ~]$ rpm -V setup
```

```
S.5....T c /etc/host.conf
```

```
SM5....T c /etc/profile
```

```
S.?....T c /etc/securetty
```

- S -- file size differs
- M -- mode differs (includes permissions and file type)
- 5 -- MD5 checksum differs
- D -- device major/minor number mismatch
- L -- symbolic link mismatch
- U -- user ownership differs
- G -- group ownership differs
- T -- file modification time differs
- ? -- unreadable file
-
- c -- configuration file

