Chapter 8 YUM - Notes

8.2 Introduction

yum program provides higher level of intelligent services for using underlying **rpm** program. Can automatically resolve dependencies when installing, updating, removing packages. Accesses external software **repositories**, synchronizing with them, retrieving/installing software as needed.

8.3 Learning Objectives:

- Discuss package installers and their characteristics.
- Explain how **yum** works as a high level package management system.
- Configure **yum** to use repositories.
- Discuss the queries **yum** can be used for.
- Verify, install, remove, and upgrade packages using **yum**.
- Learn about additional commands and how to install new repositories.
- Understand how to use **dnf**, which has replaced **yum** on Fedora.

8.4 Package Installers

Lower-level package utilities (eg. **rpm**, **dpkg**) deal with details of installing specific software package files. managing already installed software.

Higher-level package **management systems** (eg. **yum**, **dnf**, **apt**, **zypper**) work with databases of available software, incorporate tools needed to find, install, update, uninstall software in highly intelligent fashion.

- Can use both local/remote repositories as source to install/update binary as well as source software packages
- Used to automate install, upgrade, removal of software packages
- Resolve dependencies automatically
- Save time because no need to either download packages manually/search out dependency information separately

Software repositories provided by distributions/other independent software providers. Package installers maintain databases of available software derived from catalogs kept by repositories. Unlike low-level package tools, have ability to find/install dependencies automatically -> critical feature.

In this section, discuss **yum** and **dnf**. **zypper** and **apt** discussed in later chapters.

8.5 What is yum?

yum provides frontend to **rpm**. Primary task: fetch packages from multiple remote repositories, resolve dependencies among packages. Used by majority (but not all) of distributions using **rpm**, including RHEL, CentOS, Scientific Linux, Fedora.

yum caches information + databases to speed up performance. To remove some or all cached information, can run command:

```
$ yum clean [ packages | metadata | expire-cache | rpmdb | plugins | all ]
```

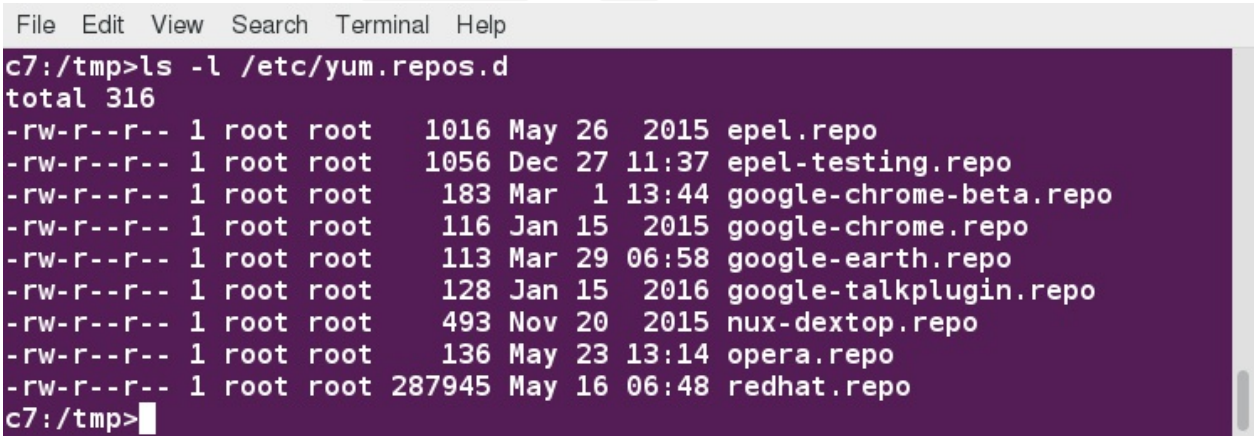
yum has number of modular expressions (plugins) + companion programs that can be found under `/usr/bin/yum*` and

`/usr/sbin/yum*`.

Will concentrate on command line use of **yum**, not consider graphical interfaces distributions provide.

8.6 Configuring yum to Use Repositories

Repository configuration files kept in `/etc/yum.repos.d`, have `.repo` extension. Eg. on one RHEL 7 system:



Note: on RHEL 6 there is no `redhat.repo` file. RHEL 6 + earlier versions handled distribution-supplied repos in somew hat different manner, although RHEL clones like CentOS used conventional repos for main distribution packages.

8.7 Repository Files

Very simple repository file may look like:

```
[repo-name]
    name=Description of the repository
    baseurl=http://somesystem.com/path/to/repo
    enabled=1
```

More complicated examples found in `/etc/yum.repos.d`, w ould be good idea to examine them.

Can toggle the use of particular repository on/off by changing value of enabled to 1/0, or using `--disablerepo=somerepo` and `--enablerepo=somerepo` options w hen using **yum**.

Can (but should not) also turn off integrity checking w ith `gpgcheck` variable.

8.8 Queries

Like **rpm**, **yum** can be used for queries such as searches. How ever, can search not just w hat is present on local system, but also inquire about remote repositories. Examples:

- Search for packages w ith `keyword` in name:

```
$ sudo yum search keyword
$ sudo yum list "*keyword*"
```

These tw o commands give somew hat different information. First one tells more about packages, second one makes it clearer

what is installed, what else is available.

- Display information about a package:

```
$ sudo yum info package
```

Information includes size, version, what repository it came from, source URL, longer description. Wildcards can be given, eg. `yum info "libc*"` for this + most **yum** commands. Note: package need not be installed, unlike queries make with `rpm -q`.

More **yum** examples:

- List all packages, or just those installed, available, or updates that have not yet been installed:

```
$ sudo yum list [ installed | updates | available ]
```

- Show information about package groups installed or available, etc.:

```
$ sudo yum grouplist [group1] [group2]
$ sudo yum groupinfo group1 [group2]
```

- Show packages that contain a certain file name:

```
$ sudo yum provides
```

as in

```
$ sudo yum provides "/logrotate.conf"
```

Note need to use at least one `/` in file name, which can be confusing.

8.9 Verifying Packages

Package verification requires installation of **yum-plugin-verify** package. Might have to do:

```
$ sudo yum install yum-plugin-verify
```

Note: this is **yum plugin**, not executable. Many other plugins available for **yum**, extends possible set of commands and arguments it can take:

- To verify package, giving most information:

```
$ sudo yum verify [package]
```

- To mimic `rpm -V` exactly:

```
$ sudo yum verify-rpm [package]
```

- To list all differences, including configuration files:

```
$ sudo yum verify-all [package]
```

Without arguments, above commands will verify all packages installed on system.

By default, verification commands ignore configuration files which may change through normal + safe usage. Some other options: see **man yum-verify**.

8.10 Installing/Removing/Upgrading Packages

Some examples of commonly performed operations:

- Install one or more packages from repositories, resolving/installing any necessary dependencies:

```
$ sudo yum install package1 [package2]
```

- Install from local **rpm**:

```
$ sudo yum localinstall package-file
```

This is not quite the same as

```
$ rpm -i package-file
```

because it will attempt to resolve dependencies by accessing remote repositories.

- Install specific software **group** from repository, resolving/installing any necessary dependencies for each package in group:

```
$ sudo yum groupinstall group-name
```

or

```
$ sudo yum install @group-name
```

- Remove packages from system:

```
$ sudo yum remove package1 [package2]
```

Must be careful with package removal, as **yum** will not only remove requested packages, but all packages that depend on them! May not be what you want, so never run `yum remove` with `-y` option, which assumes automatic confirmation of removal.

- Update package from repository:

```
$ sudo yum update [package]
```

If not package name given, all packages updated.

During installation (or update), if package has configuration file which is updated, will rename old configuration file with `.rpmsave` extension. If old configuration file will still work with new software, will name new configuration file with `.rpmnew` extension. Can search for these filename extensions (almost always in `/etc` subdirectory tree) to see if you need to do any reconciliation, by doing:

```
$ sudo find /etc -name "*.rpm*"
```

Same behavior the more naked underlying **rpm** utility exhibits, but mentioned here for reference.

8.11 Additional Commands

No shortage of additional capabilities for **yum**, according to what plugins are installed. Can list them all with:

```
$ sudo yum list "yum-plugin"
```

In particular:

- Show list of all enabled repositories:

```
$ sudo yum repolist
```

- Initiate interactive shell in which to run multiple `YUM` commands:

```
$ sudo yum shell [text-file]
```

If `text-file` given, **yum** will read + execute commands from that file instead of from terminal.

More examples of **yum** commands:

- Download package, but do not install them; just store them under the `/var/cache/yum` directory, or another directory specified:

```
$ sudo yum install --downloadonly package
```

or can type `"d"` instead of `"y"` or `"n"` when prompted after issuing install command. Package(s) will be downloaded under `/var/cache/yum` in location depending on repository from which download proceeds, unless `--downloaddir=` option used. Any other necessary packages will also be downloaded to satisfy dependencies.

- Can view history of **yum** commands, and, with correct options, even undo/redo previous commands:

```
$ sudo yum history
```

8.12 dnf

dnf intended to be next generation replacement for **yum**, will underlie **yum** in RHEL 8.

Can gradually learn to use **dnf** on Fedora systems because it accepts subset of **yum** commands that take care of majority of day-to-day tasks + points out at each use of **yum** that has **dnf** equivalent.

To learn more, see: Package Management section in the Fedora System Administrator's Guide.

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