RPM Changes

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Contents

1 Introduction

This document is intended to outline changes that occur in RPM^{TM}. We will assume that information is complete until RPM 2.3. Anything prior to that is covered in the book by Ed Bailey, *Maximum RPM*. That book is available for download or purchase at *www.redhat.com* <http://www.redhat.com>. This document covers changes *after* that book was released.

Most information on RPM can be found at the official RPM web site, *www.rpm.org* <http://www.rpm.org>.

2 Background

RPM is the **R**ed Hat **P**ackage **M**anager. While it does contain Red Hat in the name, it is completely intended to be an open packaging system available for anyone to use. It allows users to take source code for new software and package it into source and binary form such that binaries can be easily installed and tracked and source can be rebuilt easily. It also maintains a database of all packages and their files that can be used for verifying packages and querying for information about files and/or packages.

Red Hat Software encourages other distribution vendors to take the time to look at RPM and use it for their own distributions. RPM is quite flexible and easy to use, though it provides the base for a very extensive system. It is also completely open and available, though we would appreciate bug reports and fixes. Permission is granted to use and distribute RPM royalty free under the GPL.

3 Changes

In this section we will outline all changes in RPM from version 2.3 until the second edition of *Maximum RPM* is released.

3.1 2.2.11 to 2.3

This is mostly an internal cleanup release.

- are memory leaks, but the functions are only used between a `fork()` and `exec()` so it doesn't matter
- created directories are stamped with mtime from the file list

3.2 2.3 to 2.3.1

This release is mainly an internal cleanup release for i18n efforts and for some internal functions that didn't behave with serial numbers.

- changed `--help` routing to have intelligent line wrapping to make i18n efforts easier
- treat `RPM_CHAR_TYPE` as `RPM_INT8_TYPE` for queries
- made `rpmEnsureOlder()` internal to `lib/install.c`
- added `rpmVersionCompare()` to compare version/release/serial numbers for packages – returns like `strcmp()`
- stdout/stderr were getting closed after running a verify script
- relocting packages didn't work with the packages contained the directory which was it's prefix

3.3 2.3.1 to 2.3.2

- fixed bug in new `rpmVersionCompare()` which made it worse then useless (thanks to Norbert Kiesel)

3.4 2.3.2 to 2.3.3

- Ripped out header internals and redid them. Any compatibility problems this causes are *bugs* as it should be completley transparent. If this works the devil better buy some Prestone™.
- Use `cp -pr` instead of `cp -ar` for `%doc` expansion
- look for non-POSIX (broken) `chmod`
- include local copies of `glob/fnmatch`
- switched to `popt` from `getopt`, which allows command line aliasing
- read initial aliases from `/usr/lib/rpmpopt` then `/etc/popt` and `$HOME/.popt`
- cleanup up `rdev` verification (only verifies device files, checks device related mode bits as well)
- made `tools/dumpdb` read the `rpmrc` so it can find the database
- added `--nomd5` for `-V` and `-K`
- bunch of minor cleanups to avoid warnings on other OS's

3.5 2.3.3 to 2.3.4

- `%changelog` processing
- fixed broken requires/conflicts parsing for spec file
- vastly improved `--rebuilddb`'s robustness
- added conflicts documentation to `docs/dependencies` (see section 5 for more detailed documentation).
- using multiple query formats has them all concatenated

- removed stdin based query and verify selectors
- installs `rpmpopt` in `libdir`
- moved `--provides` and `--scripts` to rpmpopt
- added `--setperms`, `--setugids`
- `--resign/--addsign` was broken in 2.3.3 from popt conversion

3.6 2.3.4 to 2.3.5

- %{#TAG} in query format prints the array length
- cleanup up protoypes in `rpmlib.h`
- let `-Vp` work on URLs
- don't set `umask(0)` anymore – that confused programs which link against rpmlib quite badly
- moved print out in `rpm -v -i` to occur after any warnings to pretty up the output a bit
- added default optflags for powerpc
- run shell for post/pre scripts in debug mode with `-sx` for some silly shells
- installing source packages with `--root` checked for the sources/specs directory to exist outside of the root – fixed
- modified toplevel Makefile to run dependency generation only against referenced sources
- array size mismatches in `--qf` should send error to stderr
- made verify verify owner and groups by name rather then by id – if the symbolic names aren't available use the uids

3.7 2.3.5 to 2.3.6

- `-Vf` uses `realpath()` now
- `-Vp` lets you use `--ftpproxy, --ftpport`
- changed popt format, breaking all popt alises `:-(`
- added ability to alias character arguments to popt
- moved `--requires, --info` to `/usr/lib/rpmpopt`
- RPM is more forgiving of blank user names (dumb)
- popt searches for aliases in the correct order now
- cleanup query code to handle missing uid lists better
- cleanup up `configure.in` a tad

3.8 2.3.6 to 2.3.7

- fixed nasty memory link in `-Va`
- configure checks for `-lnsl` explicitly rather then linking it to `-lsocket` (for NCR SysVR4)
- configure checks for `dirent.h`
- modified `glob.c` to include `config.h` and use `HAVE_DIRENT_H`
- cleanup of `LIBS/LIBPATH` mess a bit more

3.9 2.3.7 to 2.3.8

- added `-t?` options to build packages from tarballs which contain .spec files instead of from the .spec files directly
- added Makefile rule for building `rpmconvert` (which is almost never needed) – this isolated gdbm dependence to this target
- `--requires` shouldn't imply `-q`
- fixed but in changelog processing which made it hang on '*' in a changelog entry
- `rpm --erase` wasn't returning proper error codes with package removal failed

3.10 2.3.8 to 2.3.9

- reworked `%setup` to allow multiple `-a` and `-b` options, which should noticeably ease the task of unapcking multiple tar files
- md5 sum's were calculated incorrectly on big endian machines from 2.3.2 through 2.3.8 – this was fixed and some hacks were done to keep verification working
- added `--allmatches` to allow erasing multiple versions/releases of a package
- changed ftp URL's to use \r\n, not just \n (this should let RPM work with some picky (but rfc compliant) ftp servers
- simple spec file macros (see section 4 for detailed documentation)
- should now process entire file list before failing

/message HELP ME

3.11 2.3.9 to 2.3.10

- new predefined macros: `%SOURCEn` `%PATCHn` `%percnt;SOURCEURLn` `%PATCHURLn`
- fix anomoly with %files -f <file> and %doc
- ignore config bit when it's set on directories (which allows users to replace directories with symlinks)
- don't set config bit on directories
- %tags are now case sensitive (macros too)

3.12 2.3.10 to 2.3.11

- fixed newlines in `--scripts` output
- fix handling of source files with bad owners/groups

3.13 2.3.11 to 2.4

- set `RPM_INSTALL_PREFIX` environment variable when running verify scripts
- switched to CVS and updated some Makefile rules
- made many strings in rpm program (though not yet in the various libraries) translatable
- eight character user names could break -qlv
- requirements which begin with a leading `/` require files (in the database!) instead of packages
- get path to gzip from `/usr/lib/rpmrc` rather then just hoping it's in the path
- don't set owner/group if binaries installed by "make install"
- don't use cpio when installing packages
- fixed bug which affected dependencies on the Alpha
- complain if critical rpmrc variables (cpiobin, gzipbin, etc) aren't set anywhere
- added check for systems whose chown() follows symlinks. If configure is run as root, this should get it right, otherwise it assumes chown() does not follow symlinks. You can use `--enable-broken-chown` to force configure to think chown does indeed follow symlinks.
- added packager and url to default -qi output

3.14 2.4 to 2.4.1

- take advantage of `lchown()` if it's available
- fixed configure script to assume `chown()` doesn't follow symlinks if `lchown()` isn't available and configure is not being run as root
- added `:shescape` query format type for strings, which prints strings which will survive a single level of shell expansion
- fixed `--setperms` and `--setugids` to handle empty packages and packages with odd filenames
- created `noarch` architecture which everything is compatible with
- fixed group verification (Benedict Lofstedt)
- don't backup config files on `netsharedpaths`
- added info on `--build{arch|os}` to `--help` and usage messages

3.15 2.4.1 to 2.4.2

- added `fsnames` and `fssizes` virtual query tags
- added `rpmdbFindByHeader()` and `rpmdbFindByTag()` public functions
- added rpmfilename tag to rpmrc to define the filename format to use for binary packages (note the rpmdir is prepended to it)
- updated man pages
- `netsharedpath` entries shouldn't match partial directory names anymore (a `netsharedpath` of `/usr/lib` shouldn't affect `/usr/libexec`)
- don't backup config files on netsharedpaths (take 2)
- added `day` query format which is like `date`, but doesn't print any time
- added `--changelog` alias to query a packages changelog entry
- `fflags` query type displays `s` for specfiles, `m` for missingok files, and `n` for noreplace files
- implemented `%config(missingok)` flag in install
- added `--allfiles` flag for `-i` and `-U`, which forces all files (even `missingok` files) to be installed
- implemented `%config(noreplace)` for the install, but it hasn't been tested in any way
- added ppc/rs6000 differntiation for AIX
- IP is considered the same as mips (not sgi)
- added IRIX64 OS, it's compatible w/ IRIX

4 Macros

This is the contents of /usr/doc/rpm*/macros only nicely formatted. Macros in RPM are used in the spec file for building RPMs only (ie this is not an end user item).

RPM 2.3.9 introduces simple spec file macros. The macros can do straight text substitution only. Macros can be used anywhere in a spec file, and in "included file lists" (those read in using %files -f <file>).

4.1 Defining a Macro

To define a macro use:

```
%define <name> <expansion>
```

All whitespace surrounding <expansion> is removed. Name may be composed of alphanumeric characters, and the character '_' (the underscore). Macro expansion is performed on <expansion> so that <expansion> my reference other macros that have already been defined.

4.2 Using a Macro

To use a macro, write:

```
%<name>
```

or

```
%\{<name>\}
```

The latter allows you to place the expansion adjacent to other text.

4.3 Predefined Macros

The following macros are defined as the values they reference are specified in the spec file:

- PACKAGE_VERSION
- PACKAGE_RELEASE

5 Conflicts

While conflicts were implemented in earlier versions of RPM they never worked properly until RPM 2.3.4 (well, we hope they work properly now anyway).

Conflicts allow a package to say it won't work with another package (or virtual package) installed on the system. For example, qmail doesn't work (without custom setup) on machines with sendmail installed. The qmail spec file may codify this with a line like:

```
Conflicts: sendmail
```

The syntax of the "Conflicts" tag is identical to the syntax of the "Requires" tag and conflict checking may be overridden by using the `--nodeps` flag.

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