

rpmautospec @ nest 2020

RPMAUTOSPEC @ NEST 2020

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INTRODUCTION

The prototype presented here was implemented in Q1/2020 by these people:

- Nils Philippsen - nphilipp
- Adam Saleh - asaleh
- Pierre-Yves Chibon - pingou

...with input from Neal Gompa, Clime and all the people who contributed their thoughts and opinions on the topic in the different threads we had on the fedora devel list.

THE PROBLEM

The release field and changelog of an RPM package are manually maintained.

Consequences:

- Conflicts between parallel pull requests
- Fragile automation around spec files
- Maintaining similar information in two places: RPM changelog and GIT commit log

THE IDEA

- Bump the release automatically when building
 - Challenge: guaranteed upgrade path
- Generate the RPM changelog from GIT commit messages
 - Challenges: not every commit message should be included and future corrections allowed
- Use macros to opt into both cases

APPROACHES FOR GENERATING THE RPM CHANGELOG

We looked at:

- Filtering and correcting changelog entries by specially tagged commit log messages
 - Cumbersome and error-prone
 - How to edit the changelog message (e.g. magic keywords, `git push --force`)?

APPROACHES FOR GENERATING THE RPM CHANGELOG (CONT'D)

We looked at:

- Generating entries from commit log messages and keeping a separate changelog file for later edits

APPROACHES FOR BUMPING THE RELEASE FIELD

We looked at:

- # of commits - # of builds
 - Changes with merge commit
 - Affects the upgrade path
- rpkg-utils
 - Essentially adds a templating engine on top of spec file macros

APPROACHES FOR BUMPING THE RELEASE FIELD (CONT'D)

We looked at:

- Emulating a human maintainer, using build history in the build targets as input

OUR CHOICE

- Emulating a human, as good as possible
- Very little change in the way we work, opting in and out is easy
- Produces a reproducible SRPM
- Preserves a clean upgrade path
- Allows local builds, directly from the spec file

USAGE

Name: mypackage

Version: 1.0

Release: %autorel

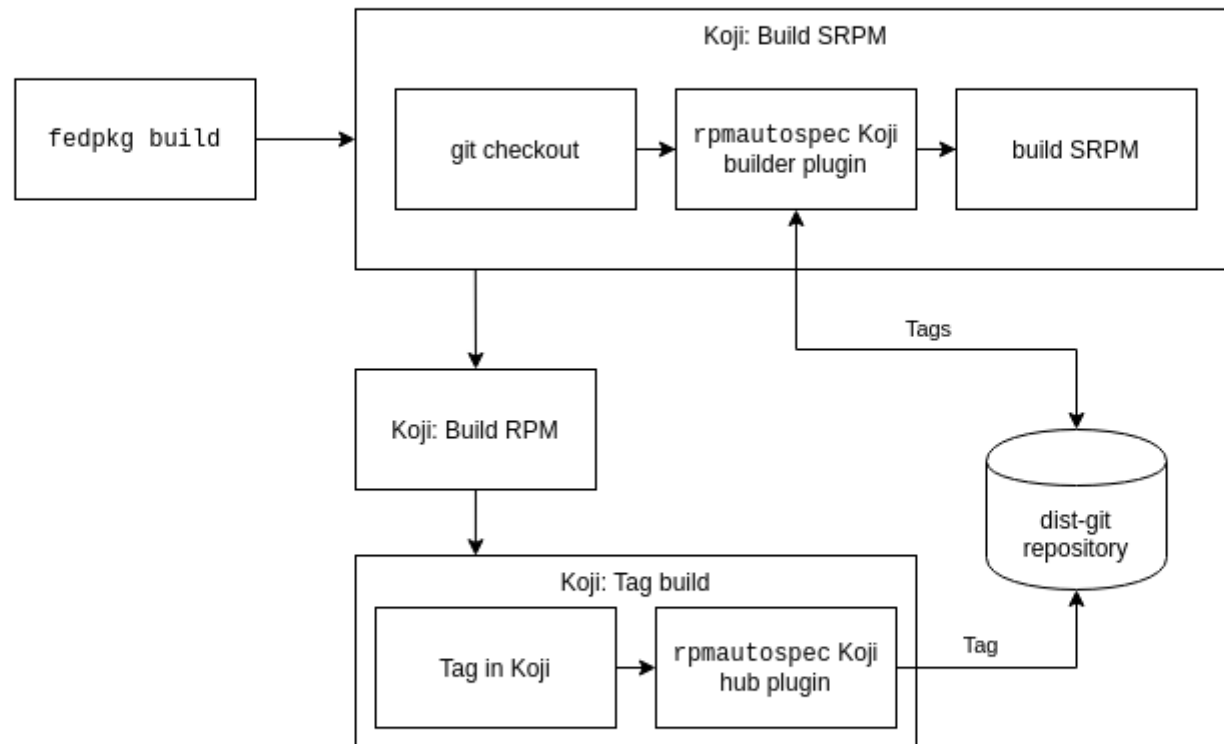
...

%changelog

%autochangelog

HOW DOES IT WORK?

- Command line tool
- Koji plugins
 - on the builder - postSCMCheckout
 - on the hub - postTag



HOW DOES IT WORK?

COMMAND LINE TOOL

- Reads git tags, commit log messages and changelog file in the dist-git repository
- Calculates the release field for the next build
- Generates missing changelog entries
- Fills in these values in the spec file

HOW DOES IT WORK?

KOJI BUILDER PLUGIN

- Hooks into the `buildSRPMFromSCM` task
- Ensures latest builds are tagged in dist-git
- Uses command line tool to fill in release field and changelog before the SRPM is built

HOW DOES IT WORK?

KOJI HUB PLUGIN

- Tags successful build in dist-git repository

KNOWN SIDE EFFECTS

- Build order over commit dates
- Multiple builds from a single commit

KNOWN SHORTCOMINGS

It's a normal Python package, i.e. tied to a specific Python minor version. If Python is upgraded in the build root, this would render the package non-functional.

Solution: Place the rpmautospec Python package used in the build root outside of the versionized Python path.

KNOWN SHORTCOMINGS (CONT'D)

Some use cases (e.g. pre-releases) aren't implemented yet because we ran out of time.

(Obvious) Solution: Implement these use cases.

KNOWN SHORTCOMINGS (CONT'D)

You need to install the macro package manually in order to use them.

Solution: Make `redhat-rpm-config` depend on the package containing the macros.

KNOWN SHORTCOMINGS (CONT'D)

Version checks in fedpkg aren't aware of automatic releases, therefore `--skip-nvr-check` must be used at the moment.

Solution: Patch fedpkg to automatically skip this check on spec files using the automatic features.

KNOWN SHORTCOMINGS (CONT'D)

Scratch builds from local SRPMs don't work yet.

Workaround: `fedpkg build --scratch` works but requires changed to be pushed into the dist-git repository.

Solution: `fedpkg scratch-build` should pre-process the dist-git repository before submitting scratch builds, e.g.

```
rpmautospec process-distgit  
/path/to/distgit/clone [dist-tag]
```

NEXT STEPS

- Call for testers once the staging environment is back online
- Bring this to FESCo for consideration
- Fix the aforementioned shortcomings (if FESCo wants this pushed forward)
- Bug fixes and improvements?