A Rails 6 package transition in Debian

GSoC 2019 Proposal by Jongmin Kim

Upgrade Rails to 6.0.0 and patch all 169 Debian packages that dependent on Rails to be compatible with Rails 6.0.0.

Biography

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Application Questions

What project do you want to work on?

Rails6 Package Transition in Debian

Why do you like Ruby, and why do you want to work on a Ruby project in GSoC 2019?

Ruby and Rails (Ruby on Rails) are popular language and frameworks for many people around my web projects. I saw a lot of startups developing web services using Rails or Sinatra. I did not deal with Ruby a lot, but I see a lot of people around me and feel the need for learning the Ruby.
My main Linux distribution, Debian, has a huge team, Ruby packaging team. I am one of the active contributors in Debian, and I would like to expand my scope of activity by doing Ruby packaging.

Rails 6 will be released in RailsConf on April 30th. After the release, Debian Developers will begin importing Rails 6 into Debian. This project should resolve many of the conflicts that have arisen since Rails was brought to Debian, and contribute directly to the Ruby projects on the Internet as well as Debian. I think this is a valuable opportunity to gain a large-scale Ruby projects contribution experience, not an intensive one Ruby project. At the same time, it will give me an in-depth experience of Ruby and Rails.

Describe your experience

Ruby
I wrote some script with writing this proposal, for measuring the reverse-dependencies of Rails

- A simple script for parsing Debian d/control file: https://github.com/jmkim/dpkg-control-parser
- A simple script for download package from Debian Salsa and measure Rails reverse-dependencies: https://gist.github.com/jmkim/d5e3f1b9986d51fdbf9531d1b95909c5

C++

- Universal Stock Crawler: https://github.com/jmkim/stock-crawler
- I have experiences with C++ template programming, and tried to write some libraries which replaces C++ STL.

Shell scripts

- Google Domains DDNS Updater: https://github.com/jmkim/google-domains-ddns-updater
- PDF to JPG converter: https://github.com/jmkim/pdf2jpg-bash
- Bootup mailer: https://github.com/jmkim/bootmail

Web projects

- **[PHP]** Simplex - Simple PHP file explorer: https://github.com/jmkim/simplex
- **[JavaScript]** Open source software archive mirror service: https://ftp.harukasan.org/
- **[JavaScript, PHP]** PAKDD2017 international conference website: http://pakdd2017.snu.ac.kr/
- **[JavaScript, PHP]** State public officials relationship graph in Busan, South Korea: http://fun.busan.com/2019busan_public.php
- **[Java]** Search engine for getting the educational background statistics in Busan, South Korea: http://db.pknu.ac.kr/dc/prj/bsn201701/
- **[Java]** Map for showing the educational background statistics in Busan, South Korea: http://db.pknu.ac.kr/dc/prj/bsn201702/

I'm currently learning Ruby and have confidence in learning Ruby, as a lot of languages I already learnt (C, C++, Java, PHP, JavaScript, Go, Shell, Python).
I have plans to use Rails for my future projects, so I want to become an expert in Ruby through this project.

Describe your educational background

(2015-current) Bachelor's degree, IT Convergence and Application Engineering, Pukyong National University.

Have you sent pull requests to any Ruby open source projects?

During Debian Ruby team activities, I did a little patch for Ruby package "sup" (sup-mail in Debian).

- Overview: https://salsa.debian.org/ruby-team/sup-mail/commits/master
- Package transitions:
  - https://salsa.debian.org/ruby-team/sup-mail/commit/fd0c7421e8019bafec5a57dc0d3decfa85b57150
  - https://salsa.debian.org/ruby-team/sup-mail/commit/33a28eb758712baa5582df203c908f2ec64c06ef
  - https://salsa.debian.org/ruby-team/sup-mail/commit/9eb0cad6fba3188f0858fc95c2a7dda574ff2cd1
- Upstream PR:
  - OPENED https://github.com/sup-heliotrope/sup/pull/549

What other commitments do you have this summer aside from GSoC? Are you planning any vacations or trips for fun this summer?

From 12 July to 27 July, I have a plan for participating DebCamp19 and DebConf19 (Debian conference). In this period, I'll do packaging sprint in Hacklab, in DebConf venue. No other commitments for GSoC period. I'd definitely be able to give 40 hours per week, during the GSoC period.

How many classes are you taking this summer?

One class (Digital signal processing). The semester will be ends on 24 June, but as only one class which can be take less than 3 hours everyday for studying, I won't compromise on the 40-hour schedule.

Do you have any other employment this summer?

No.

If you've participated in GSoC before, tell us about the project you have done.

Didn't participated any outreach programmes before.

What are your hobbies, aside from coding? Tell us a little about yourself that isn't reflected in the rest of your application.

I like to help others who needs manpower. If some project needs manpower but I don't know much about the technology, I could learn skills from them and help them. So was my first open source contribution. In a projects that requires a lot of people but is now deserted, I'd like to help them.

What else do you think we should have asked but didn't?

What is the benefit packaging the applications to Linux distributions?

To run an application, we need to install the application. To install an application, we need to look what language the application is made in or what package manager to use. We need to learn how to build the application to just run it. If we want to run a lot of applications, we need to learn require a lot of package managers, build methods, etc. It is cumbersome and annoying.

Linux distributions bundle widely used applications. Many distributions, such as Debian and CentOS, provide their own package managers such as apt or dnf. We do not need to know how to build to run your application. Just apt install appname is what we have to know. Life becomes easier.

Proposal: A Rails 6 package transition in Debian

Project details

- Update the Rails to 6.0.0 in Debian.
  - Update the Rails dependencies in Debian [Appendix I].
- Patch the Rails applications and libraries to make compatible with Rails 6.0.0 [Appendix II].
- Upload Rails 6, its dependencies, Rails applications and libraries.

Glossary

- "Rails frameworks": Libraries and frameworks in Rails (actionpack, activesupport, railties, ...).
- "Rails applications" or "Rails applications and libraries": Applications and libraries which dependent on Rails.

Synopsis

Rails is one of the most popular web frameworks in the world. Rails is distributed in several distributions, and Debian is one of them.

Almost of web applications made with Rails are distributed using RubyGems. The package manager in Ruby, RubyGems, is designed to distribute the web libraries multiple versions at the same time. This can make the Rails applications maintain with multiple version of Rails frameworks. However, the package management system in Debian is designed to deliver one version at a time, which cause mangling the dependency relationship.

Currently, the Rails version in Debian is 5.2.2. And all of Ruby applications and libraries in Debian are dependent on Rails 5.2.2. **This proposal proposes to upgrade Rails to 6.0.0 and patch all 169 Debian packages that dependent on Rails to be compatible with Rails 6.0.0.**

Deliverables

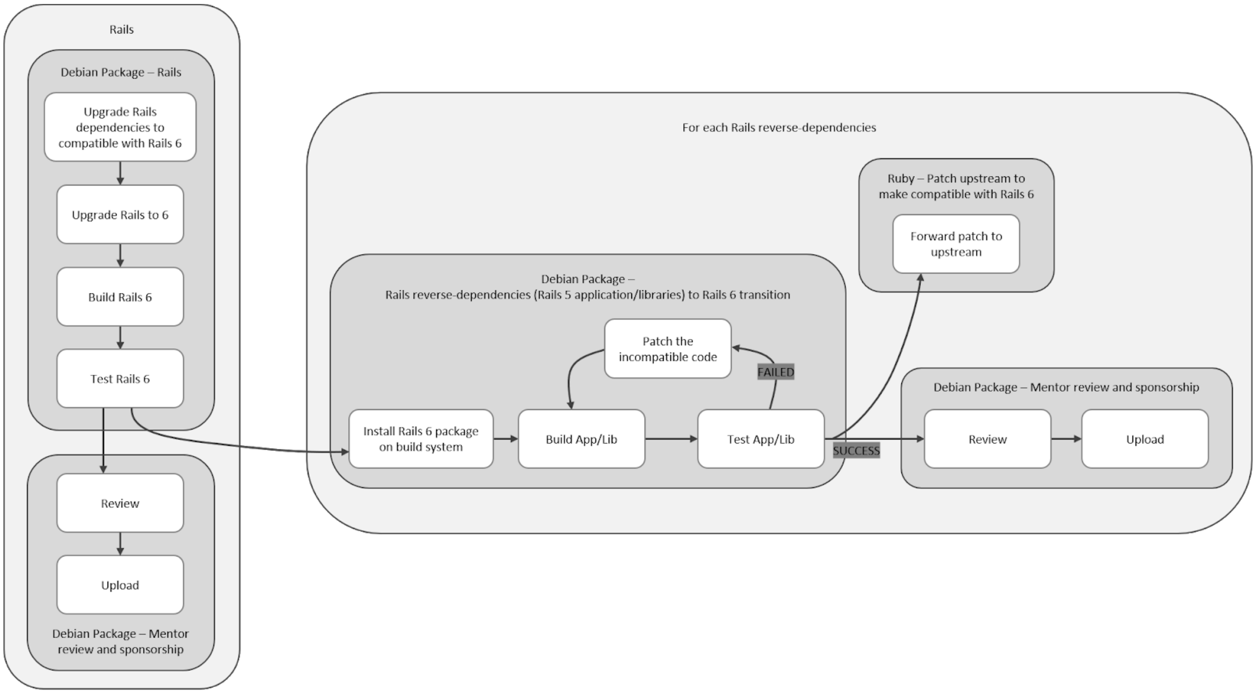
1. People will be able to use Rails 6 in Debian by typing "apt install rails".
2. The upcoming Rails 6 will be released on April 30[1]. With this proposal roadmap, Debian users will be able to use Rails 6 within 4 months after release.
3. By patching the Rails applications and libraries and forward to their upstream, make them do fast transition to compatible with Rails 6.

Success criteria

1. Can install Rails 6 on Debian with "apt install rails".
2. After Rails 6 released in Debian, all the packages should not have FTBFS (Failed To Build From Source).

Packaging bases

Workflow diagram


Rails
Debian Package – Rails
Upgrade Rails dependencies to compatible with Rails 6
Upgrade Rails to 6
Build Rails 6
Test Rails 6
Review
Upload
Debian Package – Mentor review and sponsorship
For each Rails reverse-dependencies
Ruby – Patch upstream to make compatible with Rails 6
Forward patch to upstream
Debian Package – Rails reverse-dependencies (Rails 5 application/libraries) to Rails 6 transition
Patch the incompatible code
FAILED
Install Rails 6 package on build system
Build App/Lib
Test App/Lib
SUCCESS
Debian Package – Mentor review and sponsorship
Review
Upload

[Figure 1] A workflow diagram for updating Rails 6, dependencies, and reverse-dependencies

Measured data

In Debian, **169 packages dependent on Rails** [Appendix II].

- 11 applications dependent on Rails:
  - camping, coquelicot, debci, diaspora, gitaly, gitlab, open-build-service, passenger, redmine, schleuder, sonic-pi
- 158 packages are the libraries which dependent on Rails frameworks.

In Debian, the count of reverse-dependencies of each Rails packages [Appendix II] are:

- ruby-actioncable: none
- ruby-actionmailbox: none (new module introduced from 6.0.0)
- ruby-actionmailer: 8
- ruby-actionpack: 25

- ruby-actiontext: none (new module introduced from 6.0.0)
- ruby-actionview: 5
- ruby-activejob: none
- ruby-activemodel: 17
- ruby-activerecord: 37
- ruby-activestorage: none
- ruby-activesupport: 69
- ruby-railties: 40
- ruby-rails: 32
- rails: 15

In Rails, **the count of breaking changes**, the version between 5 and 6 [Appendix III] are:

- actioncable: 3
- actionmailbox: none (new module introduced from 6.0.0)
- actionmailer: 1
- actionpack: 5
- actiontext: none (new module introduced from 6.0.0)
- actionview: 7
- activejob: 2
- activemodel: 3
- activerecord: 21
- activestorage: 3
- activesupport: 12
- railties: 21

As almost Rails interfaces as it is, it might be not at all packages need changes. If a patch is needed, **make a transition with following [Appendix III]**.

Timeline

7th May ~ 11th May

Update Rails dependencies to compatible with Rails 6.0.0.

12th May ~ 18th May

Update Rails package to 6.0.0.

19th May ~ 25th May

Update Rails package to 6.0.0 and release it with its dependencies into experimental. This might be done prior to the coding phase.

Week 1 (26th May ~ 1st June)

Learning the patching, by doing transition the libraries which dependent on lesser break change Rails frameworks (actionmailer, activeview, actionpack, actionmodel).

Packages List

ruby-actionmailer
ruby-mail-gpg
ruby-messagebus-api
ruby-exception-notification
ruby-activeview
ruby-rbpdf
ruby-rails-deprecated-sanitizer
ruby-actionpack
ruby-actionpack-page-caching
ruby-diaspora-federation-rails
ruby-escape-utils
ruby-gon
ruby-haml-magic-translations
ruby-ice-cube
ruby-redis-actionpack
ruby-rack-google-analytics
ruby-rails-timeago
ruby-activemodel
ruby-rails-observers
ruby-email-validator
ruby-openid-connect
ruby-rspec-collection-matchers
ruby-state-machines-activemodel
ruby-validate-url
ruby-activeldap
ruby-acts-as-api
ruby-pundit
ruby-sequel

Week 2 (2nd June ~ 8th June)

Do transition the Rails libraries dependent on activesupport. Careful that activesupport has a lot of breaking changes.

Packages List

ruby-activesupport
ruby-awesome-print
ruby-babosa
ruby-backports
ruby-blade
ruby-case-transform
ruby-climate-control
ruby-clockwork
ruby-cocaine
ruby-delorean
ruby-excon
ruby-grape
ruby-grape-entity
ruby-grape-path-helpers
ruby-hashie
ruby-html-pipeline

Week 3 (9th June ~ 15th June)

Do transition the Rails libraries dependent on activesupport. Careful that activesupport has a lot of breaking changes.

Packages List

ruby-activesupport
ruby-oj
ruby-omniauth-crowd
ruby-origin
ruby-rabl
ruby-rack-oauth2
ruby-rails-dom-testing
ruby-redis-activesupport
ruby-shoulda-matchers
ruby-spring-watcher-listen
ruby-swd
ruby-task-list
ruby-timecop
ruby-treetop
ruby-webfinger
ruby-wikicloth

Week 4 (16th June ~ 22nd June)

Do transition the Rails libraries dependent on activerecord. Both activesupport and activerecord have a lot of breaking changes. activerecord is related to RDBMS connector, so transition might quite complex than others.

Packages List

ruby-activerecord
ruby-activemodel-serializers-xml
ruby-activerecord-import
ruby-activerecord-nulldb-adapter
ruby-acts-as-list
ruby-acts-as-taggable-on
ruby-acts-as-tree
ruby-after-commit-queue
ruby-attr-encrypted
ruby-database-cleaner
ruby-default-value-for
ruby-delayed-job
ruby-delayed-job-active-record
ruby-em-synchrony
ruby-factory-bot
ruby-fast-gettext

Week 5 (23rd June ~ 29th June)

Do transition the Rails libraries dependent on activerecord. activerecord is related to RDBMS connector and has a lot of breaking changes, so transition might be complex than others.

Packages List

ruby-activerecord
ruby-flipper
ruby-kaminari
ruby-model-tokenizer
ruby-moneta
ruby-parallel
ruby-paranoia
ruby-roxml
ruby-seamless-database-pool
ruby-seed-fu
ruby-sequenced
ruby-state-machines-activerecord
ruby-stringex
ruby-thinking-sphinx
ruby-validate-email

Week 6 (30th June ~ 6th July)

Do transition the Rails libraries dependent on railties. Railties handles the command line interfaces and has a lot of breaking changes, so transition might be complex than others.

Packages List

ruby-railties
ruby-actionpack-xml-parser
ruby-backbone-on-rails
ruby-browser
ruby-coffee-rails
ruby-doorkeeper
ruby-entypo-rails
ruby-factory-bot-rails
ruby-font-awesome-rails
ruby-generator-spec
ruby-i18n-inflector-rails
ruby-jquery-rails
ruby-jquery-scrollto-rails
ruby-jquery-ui-rails
ruby-js-routes

Week 7 (7th July ~ 11th July)

Do transition the Rails libraries dependent on railties. Railties handles the command line interfaces and has a lot of breaking changes, so transition might be complex than others.

Packages List

ruby-railties
ruby-devise
ruby-devise-two-factor
ruby-jira
ruby-lograge
ruby-markerb
ruby-momentjs-rails
ruby-peek
ruby-rabl-rails
ruby-rails-i18n
ruby-request-store
ruby-sass-rails
ruby-sidekiq
ruby-versionist
ruby-web-console
ruby-webpack-rails

Week 8 (14th July ~ 20th July, in DebCamp19)

Do transition the Rails applications in DebCamp Hacklab. Rails applications are huge and complex, so work in DebCamp might be helpful for asking a guide from Ruby developers and Debian mentors.

Packages List

Binary packages (Rails applications)
camping
coquelicot
debci
diaspora
gitlab

Week 9 (21st July ~ 26 July, in DebConf19)

Do transition the Rails applications in DebCamp Hacklab. Rails applications are huge and complex, so work in DebCamp might be helpful for asking a guide from Ruby developers and Debian mentors.

Packages List

Binary packages (Rails applications)
gitaly
open-build-service
passenger

redmine
schleuder
sonic-pi

Week 10 (28th July ~ 3rd August)

Do transition the complex Rails libraries. ruby-rails contains all of Rails frameworks, so transition might be complex.

Packages List

Weak ruby-rails (might not contain all the Rails frameworks)
ruby-actionpack-action-caching
ruby-asset-sync
ruby-codemirror-rails
ruby-data-migrate
ruby-devise-lastseenable
ruby-enumerize
ruby-hamlit
ruby-joiner
ruby-leaflet-rails
ruby-premailer-rails
ruby-rails-tokeninput
ruby-sprockets-rails
ruby-validates-hostname
ruby-active-model-serializers

Week 11 (4th August ~ 10th August)

Do transition the complex Rails libraries. ruby-rails and rails contains all of Rails frameworks, so transition might be complex.

Packages List

Strong ruby-rails (contain all the Rails frameworks)
ruby-appraiser
ruby-flot-rails
ruby-gettext-i18n-rails
ruby-gettext-i18n-rails-js
ruby-rqrcode-rails3
ruby-sentry-raven
ruby-simple-captcha2
ruby-snorlax
ruby-yaml-db
ruby-api-pagination
ruby-carrierwave
ruby-combustion
rails
ruby-dalli
ruby-globalid

Week 12 (11th August ~ 17th August)

Do transition the complex Rails libraries. rails contains all of Rails frameworks, so transition might be complex.

Packages List

rails
ruby-haml
ruby-haml-rails
ruby-hashie-forbidden-attributes
ruby-health-check
ruby-jbuilder
ruby-jquery-atwho-rails
ruby-js-image-paths
ruby-mobile-fu
ruby-rails-html-sanitizer
ruby-responders
ruby-roadie-rails
ruby-rspec-rails
ruby-spring
ruby-voight-kampff

Week 13 (18th August ~ 24th August)

Ready for submit final work report.

Some notes regarding timeline

Week 8~9 Have a plan for participating DebCamp19 and DebConf19 (Debian conference) from 12 July to 27 July. In this period, do sprint in Hacklab, in DebConf venue.
A lot of packages should be done transition, so the timeline should be re-estimate occasionally during community bonding phase and coding phase.

References

[1] https://weblog.rubyonrails.org/2018/12/20/timeline-for-the-release-of-Rails-6-0/
[2] https://github.com/rails/rails

Appendices

[Appendix I] Measured data: Rails dependencies in Debian
[Appendix II] Measured data: Rails reverse-dependencies in Debian
[Appendix III] Summarised data: Breaking changes on Rails 6