

Why Ruby On Rails?



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There's something special going on with Ruby and Rails. Never before has there been such coordinated community efforts to efficiently produce reusable code (aka gems) in such open and social fashions. Coding is fun again. We want to introduce that reality to the IBM i platform.

"...an estimated **million**
developers use Rails..."

- Yehuda Katz**, as stated in "[The Rails 4 Way](#)"

**member of the jQuery, RubyOnRails, and Ember.js Core Teams



Ruby... a dynamic, open source programming language with a focus on simplicity and productivity. It has an elegant syntax that is natural to read and easy to write.

Matz desired a language which he himself enjoyed using, by minimizing programmer work and possible confusion - enter Ruby.

hello_world.rb

```
puts "Hello World"
```

Invoke in PASE:

```
1. ssh aaron@192.168.168.76 (ssh)
→ ~ ssh aaron@192.168.168.76
aaron@192.168.168.76's password:
-bash-4.2$ ruby hello_world.rb
Hello World
-bash-4.2$
```

- Est 1995 by **Yukihiro "Matz" Matsumoto**
- Mass acceptance 2006
- Very active and well organized community

Features:

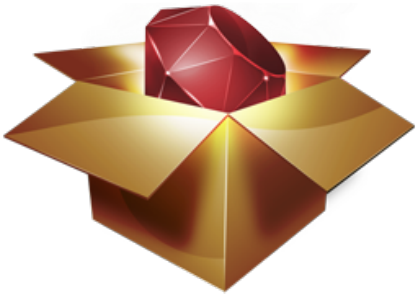
- variable declarations are unnecessary
- everything is an object
- can be written in procedural fashion
- has interactive environment for easy learning (i.e. tryruby.org)

ruby-lang.org – Home website

ruby-doc.org/docs/ProgrammingRuby - Traditional learning

codecademy.com - Learn Ruby in the browser for free

amzn.to/1apcrse - Metaprogramming Ruby: Program Like the Ruby Pros



RubyGems... *simplify the process of installing, removing, updating and managing Ruby libraries and their dependencies.*

Ruby is a great language, but the Ruby community wanted to start modularizing and sharing code - enter RubyGems.

- Est 2001
- server for hosting and distribution of gems, rubygems.org
- manage gem dependencies
- manage multiple versions of the same library easily
- included in Ruby as of 1.9.3
- Rails and Bundler are gem themselves.

“There’s a gem for that”
- every Ruby business programmer

```
-bash-4.2$ gem install will_paginate  
Fetching: will_paginate-3.0.5.gem (100%)  
Successfully installed will_paginate-3.0.5  
Installing ri documentation for will_paginate-3.0.5  
1 gem installed  
-bash-4.2$
```

rubygems.org - Home website

linuxjournal.com/article/8967 – RubyGem history

How to find the right Gem?

Catalog of Ruby and Rails plug-ins, gems, tools and resources for Ruby developers with popularity ratings based on Github watchers and Gem downloads



ruby-toolbox.com



Bundler maintains a consistent environment for ruby applications. It tracks an application's code and the rubygems it needs to run, so that an application will always have the exact gems (and versions) that it needs to run.

RubyGems made sharing of code so easy that organizing them soon became difficult for an application maintainer - enter Bundler.

myapp/Gemfile contents:

```
source 'https://rubygems.org'

gem 'rails', '4.0.0'
gem 'ibm_db'
gem 'jquery-rails'
gem 'turbolinks'
gem 'jbuilder', '~> 1.2'
gem 'thin'
```

- Est 2008 by [Yehuda Katz](#)
- Application dependencies declared in *Gemfile*
- Command `bundle install` downloads all gems in Gemfile and also their dependencies.
- Included in Rails as of 3.0

[bundler.io](#) - Home website

[railscasts.com/episodes/201-bundler-revised](#) – Video tutorial

[yehudakatz.com/2010/12/16/clarifying-the-roles-of-the-gemspec-and-gemfile](#)



“...Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.”

Invented by [Linus Torvalds](#) (creator of Linux), in 2004, maintained at git-scm.com, intro video [here](#).

Frictionless Context Switching. Create a branch to try out an idea, commit a few times, switch back to where you branched from, apply a patch, switch back to where you are experimenting, and merge it in.

Feature Based Workflow. Create new branches for each new feature you're working on so you can seamlessly switch back and forth between them, then delete each branch when that feature gets merged into your main line.

Disposable Experimentation. Create a branch to experiment in, realize it's not going to work, and just delete it - abandoning the work—with nobody else ever seeing it (even if you've pushed other branches in the meantime).



Try Git from the browser: try.github.io

Git is included with PowerRuby's IBM i install.



*GitHub is a web-based hosting service for software development projects that use the Git revision control system. Their **fork** and **pull request** features have revolutionized social coding.*

Fork - Desire to contribute to someone else's project, or would like to use someone's project as the starting point for your own.

Pull Request - Pull requests let you tell others about changes you've pushed to a GitHub repository. Once a pull request is sent, interested parties can review the set of changes, discuss potential modifications, and even push follow-up commits if necessary.

Social coding:

- invites more people to the table
- many developers providing input from many industries
- brings open source projects to fruition faster
- eliminate bugs sooner
- Ruby and Rails communities makes extensive use of GitHub

github.com - Home site

youtube.com/watch?v=-CpIIXPsvw - intro to Forks and Pull Requests

youtube.com/user/GitHubGuides - best place to learn



*... an open-source web framework written in the Ruby language that's optimized for programmer happiness and sustainable productivity. It lets you write beautiful code by favoring **convention over configuration**.*

Programming 5250 green screens with RPG was very efficient. RubyOnRails (aka Rails) accomplishes the same, but in the modern web world.

- ★ **Est 2004 by David Heinemeier Hansson**, in 2006 Apple ships with OSX 10.5 “Leopard”

Rails was made to save you time!

RubyOnRails.org – Framework home

Guides.RubyOnRails.org/getting_started.html – Quick learning, formal documentation

RailsCasts.com - Excellent video resource for learning about all things Rails

TeamTreehouse.com - Comprehensive Ruby/Rails/HTML/CSS/Javascript training



Everyone has been there - an application needs to do something differently based on whether it is running in development, testing, or production. Rails takes care of that.

- ★ By default a Rails project comes with three environments: `development`, `test`, `production`. You can easily create additional custom ones (i.e. `staging`).
- ★ Environment variable `RAILS_ENV` determines which settings are used.
- ★ Uses
 - Specify what IBM i data library for each environment
 - Whether errors should go to the browser (good for development)
 - Whether Ruby programs should be cached
 - Determine which credit card account to use (i.e. test vs. live <cough> expensive mistake)



...save you a large amount of time by writing boilerplate code, code that is necessary for the app to work.

Generators

- ★ The `rails new <app name>` command generates the entire infrastructure for an app in seconds - something that can take days to do in other frameworks
- ★ Generate entire CRUD (Create, Read, Update, Delete) applications with a single command
- ★ Generators can be used to create big or granular boiler plate code
- ★ Discover your own commonly used pattern? Learn how to create your own generator here.

```
ssh aaron@192.168.168.76
-bash-4.2$ rails g model product name:string descr:string type:string
invoke    active_record
create    db/migrate/20140502221153_create_products.rb
create    app/models/product.rb
invoke    test_unit
create    test/models/product_test.rb
create    test/fixtures/products.yml
```



Active Record

...is the M in MVC - the model - which is the layer of the system responsible for representing business data and logic.

RPG's extremely simple native database access has always been the one thing no other language has come close to. Then I tried Rails' ActiveRecord and fell in love.

- ★ Layer between Ruby and DB2 for i
- ★ Validate models before they get persisted to the database

Convention over Configuration goodness!

...Ruby's Open Class capabilities make defining *getters* and *setters* for columns unnecessary.

```
class Customer < ActiveRecord::Base
end
```



...feature of Active Record that allows you to evolve your database schema over time. Rather than write schema modifications in pure SQL, migrations allow you to use an easy Ruby DSL to describe changes to your tables.

- ★ Keeps track of database versions over time
- ★ Dead simple to keep a team members development environment up to date
- ★ Simple syntax to alter database vs. raw SQL
- ★ Rollback capabilities built-in in case database migration fails
- ★ DB seeding for default development environment data (saves your developers time)
- ★ Code generators to quickly generate migration scripts





RailsGuides

The Asset Pipeline

... provides a framework to concatenate and minify or compress JavaScript and CSS assets.

... adds the ability to write these assets in other languages and pre-processors such as CoffeeScript, Sass and ERB.

"Fast by default"

...you shouldn't need endless tweaking once in production.

What?

Concatenates all `.js` files into single file

Concatenates all `.css` files into a single file

Why?

Reduces number of requests from the browser to render page

How?

Requires Javascript server-side runtime (provided by PowerRuby with NodeJS port)

Also...

Supports CoffeeScript, makes Javascript easier

Supports SaSS (Syntactically Awesome Style Sheets), makes CSS easier

guides.rubyonrails.org/asset_pipeline.html – Formal Docs

coffeescript.org – Formal Docs

sass-lang.com – Formal Docs

Unit Testing

Do you manually walk through your application after making changes?

What if you could deploy to production multiple times a day with low risk?

Rails' unit testing affords you knowing the change you just made didn't adversely affect other code and subsequently giving you assurances of deployment success.

- ★ Rails generators also create unit testing infrastructure - NOT AN AFTERTHOUGHT!
- ★ Rails app has *testing* environment configuration built-in by default (i.e. configure a test IBM i library for database testing)
- ★ [Capybara Gem](#) allows the authoring of scripts to automate opening a literal browser and automatically clicking through your app. **Blew me away!**
- ★ [Many other options](#) for testing including FactoryGirl and RSpec.





irb

... IRB (Interactive Ruby Shell) is an interactive environment where you can enter Ruby syntax and have it immediately be run.

BIG TIME SAVER!

Normally, to run a quick bit of code you'd create a file, enter the code, save it, run it in the browser; and then repeat it all over again. This gets you right into testing the code!

```
1. ssh aaron@192.168.168.76 (ssh)
-bash-4.2$ rails c
Loading development environment (Rails 4.0.0)
irb(main):001:0> Post.last ←
  (6.0ms) SET SCHEMA A2222_D
  (6.9ms) SET SCHEMA A2222_D
  Post Load (48.2ms) SELECT posts.* FROM posts ORDER BY posts.id DESC FETCH FI
RST 1 ROWS ONLY
=> #<Post id: 1, title: "Conifers are everywhere!", text: "Do you ever get the
feeling you are being followed ...", created_at: "2013-10-31 00:00:00", updated
_at: "2013-10-31 00:00:00">
irb(main):002:0> █
```



A remote server automation and deployment tool written in Ruby.

- ★ Reliably deploy web application
- ★ Automate audits of any number of machines (checking login logs, enumerating uptimes)
- ★ Script arbitrary workflows over SSH
- ★ Automate common tasks in software teams.



...flexible authentication solution for Rails.

Many gems are built exclusively for Rails.

- ★ **Encrypts** and stores a **password** in the database to validate the authenticity of a user while signing in
- ★ **Sends emails with confirmation** instructions and verifies whether an account is already confirmed during sign in.
- ★ **Resets** the user **password** and sends reset instructions
- ★ **Expires sessions** that have no activity in a specified period of time
- ★ **Manages** generating and clearing a token for **remembering the user** from a saved cookie

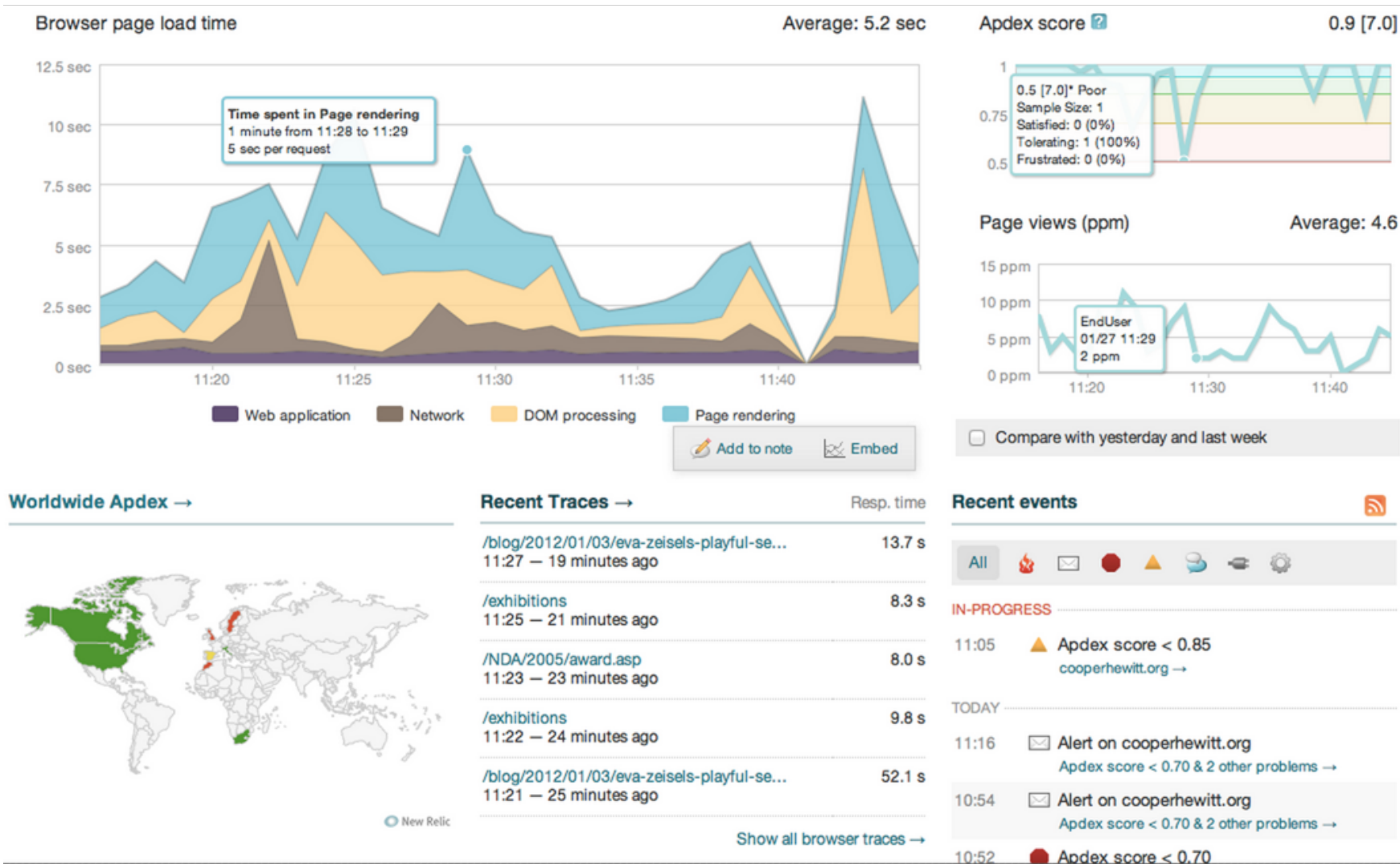
A screenshot of a user authentication form. At the top, it says "Connect with a social network or other social networks". Below this are three buttons: "Facebook" (blue), "Google" (red), and "Twitter" (light blue). Underneath these is a section titled "Sign in with your email address". It contains two input fields: "Email Address" and "Password", both with asterisks indicating they are required. At the bottom, there is a "Sign In" button and a "Forgot password?" link.

github.com/plataformatec/devise – Formal Docs

railscasts.com/episodes/235-devise-and-omniauth-revised – An intro



Application Monitoring in one place allows you to see your application performance trends at a glance – from page load times, to error rates, slow transactions, count of active users on site, etc.
In short, solve issues fast!



Notable people with quotes

“Rails is the **most well thought-out web development framework** I’ve ever used. And that’s in a decade of doing web applications for a living. I’ve built my own frameworks, helped develop the Servlet API, and have created more than a few web servers from scratch. **Nobody has done it like this before.**”

-James Duncan Davidson, Creator of Apache Tomcat and Ant

“After researching the market, Ruby on Rails stood out as the best choice. We have been very happy with that decision. We will continue building on Rails and consider it a **key business advantage.**”

-Evan Williams, Creator of Blogger, ODEO, and Twitter

“Having scaled multiple rails sites, a couple to millions and another to billions of PV/month, the runtime performance of the interpreter is never the slowest. Scaling a site is about architecture, databases, caching, event queues, disk IO, CDNs, etc. With a few exceptions, the runtime or framework doesn't crack the top 5. Most important of all, Rails is the most efficient framework right now to **build your app quickly and effectively.** Stop worrying and start building. Less than 1% of sites on the internet get to enough traffic to even care about performance.... but if you have performance problems, rejoice! That means you built something people use!”

- Aaron Batalion, CTO & Co-Founder, LivingSocial

Why is RubyOnRails Hot? **BusinessInsider** explains well...

businessinsider.com/heres-why-ruby-on-rails-is-hot-2011-5

Who uses Ruby On Rails?*



*builtwith.com and rubyonrails.org used for references

Open Source Rails Websites



opensource Rails.com
your resource for the most popular and
up to date open source rails based sites.





- What is PowerRuby?

- Freely** available and **commercially supported** port of the Ruby language
- Includes supporting infrastructure (i.e. Rails) for running Ruby web applications on IBM i
- Available for download from PowerRuby.com
- Includes native DB2 database driver – MySQL not necessary
- Integrates with XMLSERVICE for access to IBM i programs and objects

- Components

- Ruby 2.1.0, 2.0.0, and 1.9.3 (MRI implementation, a.k.a CRuby)
- `ibm_db` (IBM supported - rubyforge.org/projects/rubyibm/)
- `xmlservice` (IBM supported - youngiprofessionals.com/wiki/index.php/XMLService)
- Apache + Thin ← the web server stack (nginx and Puma coming as options)
- Rails 4.0.x and 3.2.x
- Server-side Javascript with Google V8 and Node.js

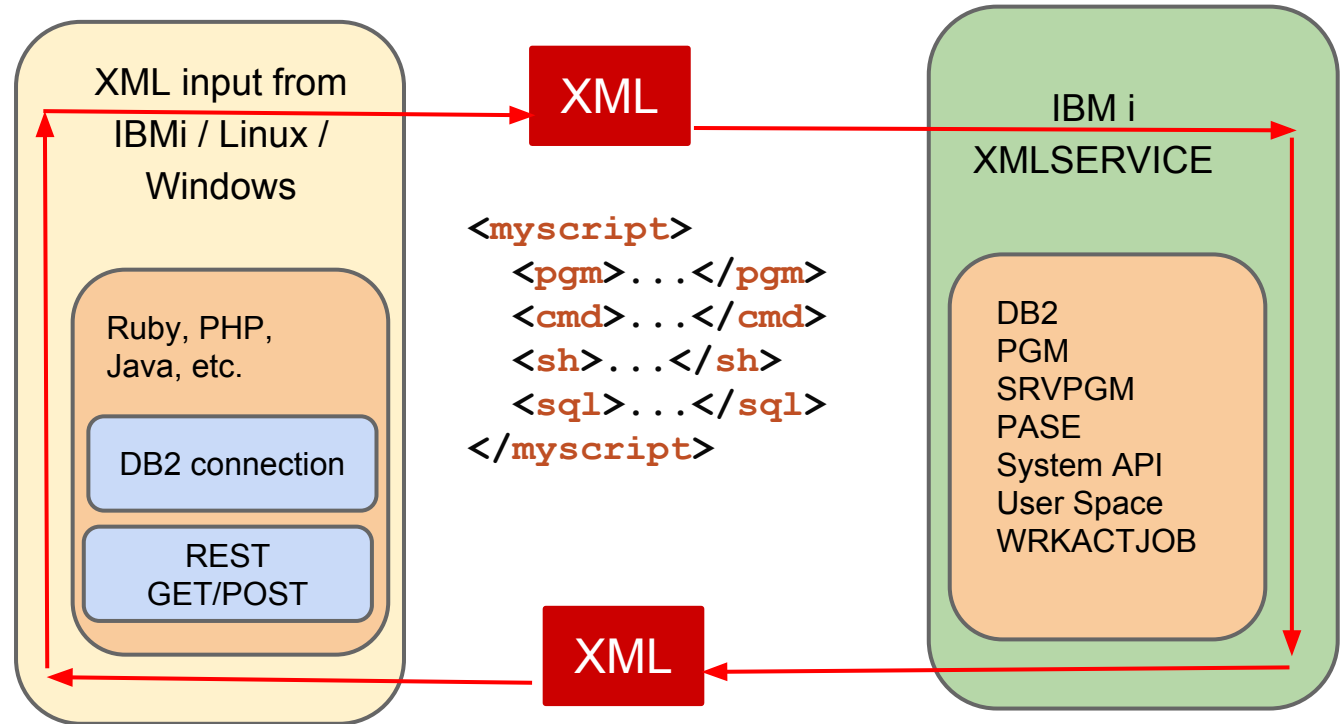
- Learn more

- PowerRuby.com for downloads, updates, and news
- twitter.com/rubyonpower

Ruby integration with i - XMLSERVICE

- DB2 for i – SQL and Native
- Program call
- Procedure call
- Data Area
- Data Queue
- Message Queue
- Commands
- System values
- Spool files

- Delivered with OS as of IBM i 7.1: TR5 and also included with PowerRuby
- Similar to IBM ToolBox for Java, but better in many ways
- Great for re-use of existing RPG code
- Author: Tony Cairns, IBM Rochester



YoungiProfessionals.com/wiki/XMLSERVICE (a.k.a. YiPs)

More open source at YoungiProfessionals.com/wiki

PowerRuby Install



Download zip with *SAVF objects from PowerRuby.com

CRTSAVF FILE(QGPL/PRUBY_BASE)

CRTSAVF FILE(QGPL/PRUBY_0001) ← Ruby v1.9.3

CRTSAVF FILE(QGPL/PRUBY_0002) ← Ruby v2.0.0

CRTSAVF FILE(QGPL/PRUBY_0003) ← Ruby v2.1.0

RSTLICPGM LICPGM(1PRUBY1) DEV(*SAVF) LNG(2924) SAVF(QGPL/PRUBY_BASE)

RSTLICPGM LICPGM(1PRUBY1) DEV(*SAVF) LNG(2924) OPTION(1) SAVF(QGPL/PRUBY_0001)

RSTLICPGM LICPGM(1PRUBY1) DEV(*SAVF) LNG(2924) OPTION(2) SAVF(QGPL/PRUBY_0002)

RSTLICPGM LICPGM(1PRUBY1) DEV(*SAVF) LNG(2924) OPTION(3) SAVF(QGPL/PRUBY_0003)

---- QSYS.LIB ----

POWER_RUBY - Contains commands like `RAILSNEW` and `RAILSSVR` to create new projects and administer the Rails application server, respectively.

---- IFS Root ----

`/PowerRuby/prV2R1M0` Various Ruby versions

`/PowerRuby/prV2R1M0/lib/ruby/gems` Precompiled gems including Rails, Thin, ibm_db

`/PowerRuby/oss/bin` Open source tools including **bash**, **git**, **joe**

New App From Scratch

The RAILSNEW command creates a new Rails application, including bundling necessary gems.

RAILSNEW

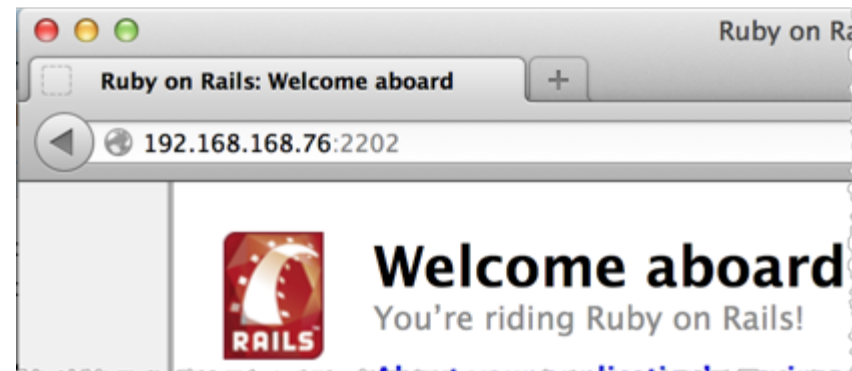
```
VRM(*V200) --version of PowerRuby
PLACE(*WWW) -- *WWW or *HOME
RAILSAPP(A2222) -- Name of Rails app. /www/A2222/htdocs/ A2222
DBUSR(A2222) -- CRTUSRPRF A2222 with below DBPASS
DBPASS(A2222)
DBROOT(A2222) -- Run SQL: CREATE COLLECTION A2222_D; CREATE COLLECTION A2222_T
HTTPSRV(A2222) -- /www/A2222
EXTPORT(2222) -- /www/A2222/conf/httpd.conf Listen *:2222
INTPORT(2202) -- thin start -p 2202
```

Command `bundle install --local` is run so all gems are resolved and the Gemfile.lock file is created.

It also runs the following commands to start Apache and Thin

```
STRTCPSVR HTTPSVR(A2222) SERVER(*HTTP)
RAILSSVR ACTION(*START)
APP('/www/A2222/htdocs/A2222')
VRM(*V200)
PORT(2202)
```

Try your app in the browser!



What's running?

- A2222 entries are Apache jobs
- RAILSSVR is a Thin job



Work with Active Jobs

CPU %: 17.6 Elapsed time: 00:00:00 Active jobs: 196

Current

Opt	Subsystem/Job	User	Type	CPU %	Function	Status
	QHTTPSVR	QSYS	SBS	.0		DEQW
	A2222	QTMHHTTP	BCH	.0	PGM-QZHBMAIN	SIGW
	A2222	QTMHHTTP	BCI	.0	PGM-QZSRLOG	SIGW
	A2222	QTMHHTTP	BCI	12.3	PGM-QZSRHTTP	SIGW
	QSYSWRK	QSYS	SBS	.0		DEQW
	RAILSSVR	AARON	BCH	.0	PGM-ruby	SELW

Stopping and Starting



Start Apache

```
STRTCPSVR SERVER (*HTTP) HTTPSVR (A2222)
```

End Apache

```
ENDTCPSVR SERVER (*HTTP) HTTPSVR (A2222)
```



Start Thin

```
RAILSSVR ACTION (*START)  
APP ('/www/A2222/htdocs/A2222') VRM (*V200) PORT (2202)
```

End Thin

```
RAILSSVR ACTION (*END) APP ('/www/A2222/htdocs/A2222')
```

Logs

Locations to look for logs and/or errors:

WRKSPLF <profile that used RAILSSVR>

WRKSPLF QTMHHTTP <----- Apache job logs

/www/A2222/htdocs/A2222/logs/development.log <----- Rails log

Started GET **"/posts"** for at 2014-01-20 22:22:57 +0000

Processing by PostsController#index as HTML

[1m[35mPost Load (0.2ms)[0m SELECT "posts".* FROM "posts"

Rendered posts/index.html.erb within layouts/application (183.4ms)

Completed 200 OK in 280ms (Views: 230.7ms | ActiveRecord: 9.7ms)

Started GET **"/postss"** for at 2014-01-21 00:36:49 +0000

ActionController::RoutingError (No route matches [GET] **"/postss"**):

actionpack (4.0.0) lib/action_dispatch/middleware/debug_exceptions.rb:21:in `call'

actionpack (4.0.0) lib/action_dispatch/middleware/show_exceptions.rb:30:in `call'

railties (4.0.0) lib/rails/rack/logger.rb:38:in `call_app'

railties (4.0.0) lib/rails/rack/logger.rb:21:in `block in call'

. . .



THE END!



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