Ruby on Rails Short Course: Configure and Deploy

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Outline of the day

1. Web apps, MVC, SQL, Hello World
2. Just enough Ruby
3. Basic Rails

Lunch break

4. Advanced model relations
5. AJAX & intro to testing
6. Configure and Deploy

Informal discussion: RoR and pedagogy

Section 6

- Configuration
  - What about convention over configuration!
- Deployment
  - Capistrano
- Mongrel Application Server
- Routing
- REST - Representational State Transfer

Configuration

- The first and only configuration file you'll need to modify to get started
  - **`config/database.yml`**
- Tell the system a little about your database
  - Database connector
  - User name
  - Password

Database Configuration

config/database.yml

```
# ….
development:
  adapter: mysql
  database: pub_development
  username: root
  password:
  socket: /tmp/mysql.sock

# Warning: The database defined as 'test' will be erased and
# re-generated from your development database when you run 'rake'.
# Do not set this db to the same as development or production.
test:
  adapter: mysql
  database: pub_test
  username: root
  password:
  socket: /tmp/mysql.sock

production:
  adapter: mysql
  database: pub_production
  username: root
  password:
  socket: /tmp/mysql.sock
```

That's It

- Now your ready to start writing you app.
- Some additional configuration
  - Sessions
  - Logging
  - Email
  - Directories
  - Plugins
  - Mime-types
  - etc…

Sessions

- **`config/environment.rb`**
- To store you session data in the database, uncomment the following lines:

```
# Use the database for sessions instead of the file system
# (create the session table with 'rake create_sessions_table')
config.action_controller.session_store = :active_record_store
```

- Use rake to create the session table:

```
rake create_sessions_table
```

- Now your sessions are stored in the database

Logging

- Advanced logging with Hodel 3000

```
# Force all environments to use the same logger level
# (by default production uses :info, the others :debug)
config.log_level = :debug
require 'hodel_logger'
config.logger = Hodel3000CompliantLogger.new(config.log_path)
```

- Very detailed logger that provides easy to parse log formats for analysis and replay of events

Email

- config/environments/production.rb

```
config.action_mailer.raise_delivery_errors = true
config.action_mailer.delivery_method = :smtp

config.action_mailer.server_settings = {
  :address => "mail.mysite.com",
  :port => 25,
  :domain => "mysite.com",
  :authentication => :login,
  :user_name => "support@mysite.com",
  :password => 'password',
}
```

- config/environments/test.rb

```
config.action_mailer.delivery_method = :test
```

Capistrano

- Deployment made easy
  - DSL for running shell scripts on multiple machines in parallel
  - Rule based deployment with dependencies
  - Very Extensible
- Basic Recipes for Rails
- Gem based recipes available for hosting providers
- Initial deploy in 5 minutes
- 30 second deploys after that

Basics

- In the world of Rails, there are three roles for servers. A server can have more than one role
  - The web server
  - The application server
  - The database
- Like everything else, many conventions
- Easy to get started

```
cap --apply-to <path> AppName
```

- Puts up a system maintenance page when upgrading

In The Box

- You're required to supply the following:
  - An application name
  - A target directory root for deployment
  - A domain for the web site
  - A user name to deploy as
  - A repository to check out the code
    - Can be svn, CVS, or Perforce (more adapters have been written)
  - The rails environment
- For a single machine deploy, this is all you need to configure

Many Built in Tasks

- setup - Setup up the host machines for initial deploy
- deploy - Deploy this application either initial or upgrade
  - Checks out the code to a release directory
  - Creates a sym link to the directory called current
  - Restarts the server
- deploy_with_migrations - Same as above with database schema migrations
- rollback - Revert to previous deploy
- diff_from_last_deploy - Dumps out a list of changes since you last deployed
- update_code - Update the code without doing a full deploy
- cleanup - Remove old deploy directories, leaves the last 5

Conventions

- The following directory structure is recommended:
- AppName/shared
  - These are files that will be preserved between deploys
    - log - Log files
    - pid - Process ids for daemons
    - system - The system maintenance page
    - media and application resources like images
- AppName/releases
  - Release directories (for ever deploy a new directory is created)
- AppName/repos
  - Contains the scm repository
- AppName/current -> ../releases/<release>

Getting Fancy

- You can add before and after actions to any one of the deploy steps

```
task :after_update_code, :except => { :no_release => true } do
   run <<-CMD
     cd #{release_path}/app/views/subscription_mailer &&
     ln -nfs ../common .
   CMD
 end
```

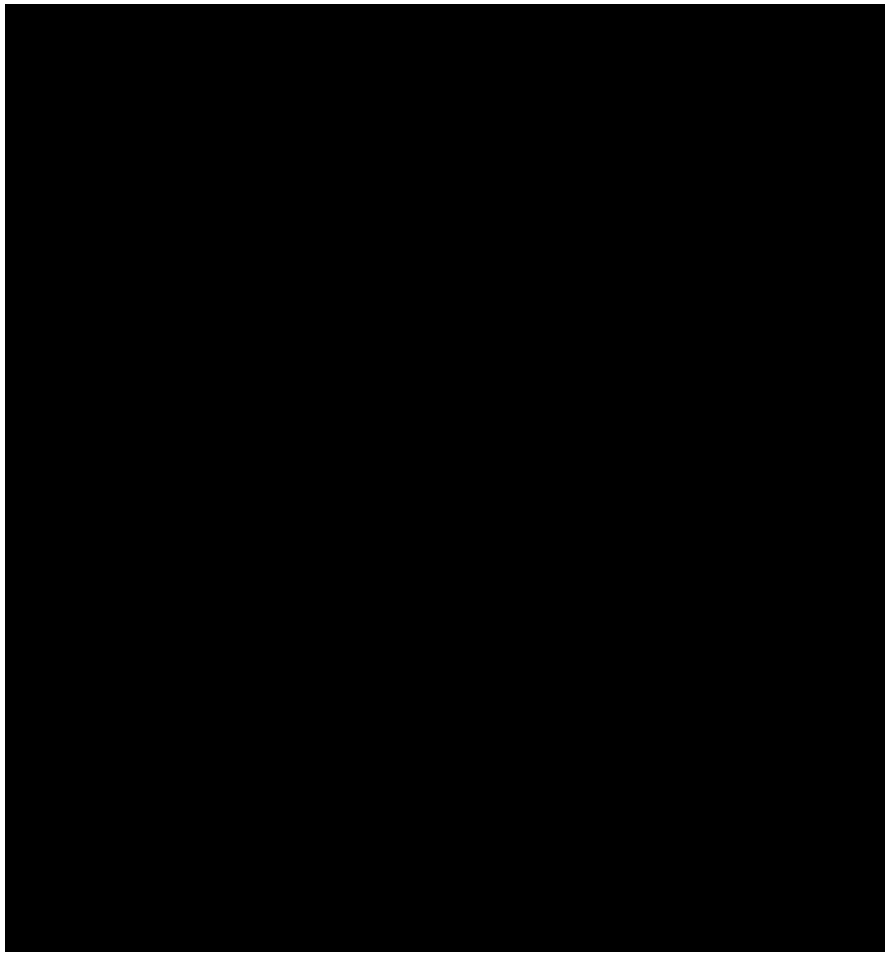
- This task will run after the code has been updated and create a symbolic link to another directory
- A task can run a script anywhere

```
task :restart_daemon, :roles => :app do
   run <<-CMD
     cd #{current_path}/daemon &&
     ./daemon stop && ./daemon start
   CMD
 end
```

- This task will run on the application machine(s)

Standard Deploy

- Apache or Lighttpd
  - Reverse proxy
  - Static content
- Mongrel
  - HTTP handler
  - Application Server
  - Rails application
- Database
  - MySQL
  - Postgsql
  - Oracle
  - MsSQL
  - Sybase
  - …



Not Only Ruby

- Capistrano can be used to deploy any web application
- Has been used to deploy Java application

Mongrel

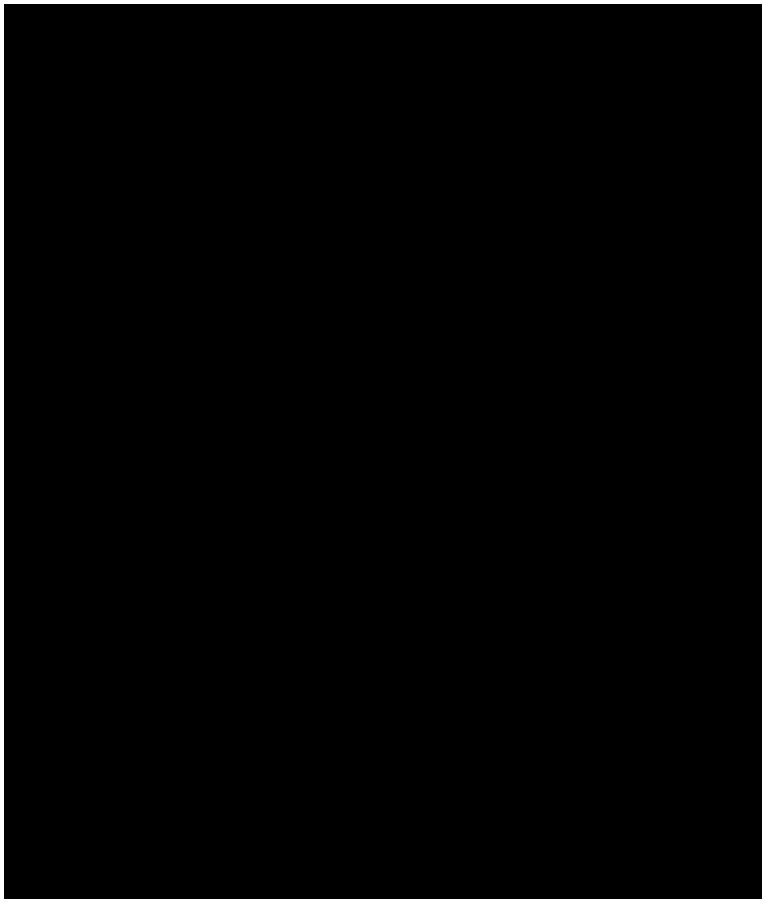
- Mongrel provides a high performance application server
- HTTP server written in C
- Lightweight container
- Can be clustered, about 70 MB per server
- Easy to install and test
- Joyent has scaled to 4,000 requests per second
  - Uses BigIP L7 load balancer
  - 48 Mongrels

Long Running Actions

- Use BackgroundDrb to handle long running processes
- Start a Drb daemon
- Send asynchronous requests to DrbDaemon
- Poll until finished from client

BackgroundDRB

- Rails application uses MiddleMan object as proxy for worker
- Server daemon starts sub processes to handle work requests
- Dynamic status reporting on progress



Routing

- Routing is a set a rules that determine what to do with a url
- A route is a very flexible pattern that can match various URL paths and parts
- Routes can also generate URLs for generating HTML links
- Routes now support REST

Simple Routes

- What's in the box

```
ActionController::Routing::Routes.draw do |map|
  # The priority is based upon order of creation: first created -> highest priority.

  # Sample of regular route:
  # map.connect 'products/:id', :controller => 'catalog', :action => 'view'
  # Keep in mind you can assign values other than :controller and :action

  # Sample of named route:
  # map.purchase 'products/:id/purchase', :controller => 'catalog', :action => 'purchase'
  # This route can be invoked with purchase_url(:id => product.id)

  # You can have the root of your site routed by hooking up ''
  # -- just remember to delete public/index.html.
  # map.connect '', :controller => "welcome"

  # Allow downloading Web Service WSDL as a file with an extension
  # instead of a file named 'wsdl'
  map.connect ':controller/service.wsdl', :action => 'wsdl'

  # Install the default route as the lowest priority.
  map.connect ':controller/:action/:id.:format'
  map.connect ':controller/:action/:id'
end
```

Advanced Routing

- The :<name> section of the route will match a portion of a path
  - It's possible to place pattern restrictions on any portion of the route
  - Any part of the route not specified can be defaulted

```
# This route matches any url in the following format:
#   http://www.xxx.com/account/balance/123041.html
map.connect ':controller/:action/:id.:format'

# If you leave off the format, you'll match this route:
#   http://www.xxx.com/account/balance/123041
map.connect ':controller/:action/:id'

# How about:
#   http://www.xxx.com/trx/123041/2007.01.01/2007.06.31
map.connect 'trx/:account/:start/:end',
            :controller => 'transactions',
            :action => 'list',
            :requirements => { :start => /(19|20)\d{2,2}\.\d{2,2}\.\d{2,2}/,
                               :end => /(19|20)\d{2,2}\.\d{2,2}\.\d{2,2}/,
                               :account /\d+/ }
```

URL Generation

- A route is bi-directional. A route that can be parsed can also be generated

```
url_for(:controller => 'account', :action => 'show', :id => 123141)
=> http://www.xxx.com/account/show/123141
```

- If we're rendering a controller action, it's even easier. The params are used to default the new URL

```
url_for(:action => 'show')
=> http://www.xxx.com/account/show/123141
```

Named Routes

- Named routes are short hand when generating URLs

```
…
  map.index 'account/', :controller => 'account', :action => 'index'
  map.trx 'trx/:account/:start/:end',
               :controller => 'transactions',
               :action => 'list',
               :requirements => { :start => /(19|20)\d{2,2}\.\d{2,2}\.\d{2,2}/,
                                  :end => /(19|20)\d{2,2}\.\d{2,2}\.\d{2,2}/,
                                  :account /\d+/ }
…

index_url
=> http://www.xxx.com/account/

trx_url(:account => account, :start_date => start_date, :end_date => end_date)
=> http://www.xxx.com/trx/123432/2007.01.01/2007.06.31

<%= link_to 'Index', index_url) %>
```

RESTful Routing

- Maps web resources to URLs

```
ActionController::Routing::Routes.draw do |map|
 map.resources :postings
end

GET http://www.xxx.com/postings
=> List of postings (index)

POST http://www.xxx.com/postings
=> Creates a new posting (create)

GET http://www.xxx.com/postings/1
=> Shows the posting with id 1 (show)

PUT http://www.xxx.com/postings/1
=> Updates posting with id 1 (update)

DELETE http://www.xxx.com/postings/1
=> Deletes posting with id 1 (delete)
```

Importance of REST

- Simple application integration
  - Lightweight web services
  - Use another web application as your model
- Simple
  - Provide a simple controller pattern
  - Automatic named routes
- Can be nested multiple layers deep
  - Traverse the object graph by nesting the resources
- Automatically responds with formatted results
  - use respond_to and provide html to browsers and XML to other applications

Questions