Hudson Continous Integration Server

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Continous Integration

- Software development practice
- Members of a team integrate their work frequently
- Each integration is verified by an automated build (including test) to detect integration errors as quickly as possible
- http://martinfowler.com/articles/continuousIntegration.html

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Continous Integration (CI) Server

- Prevents „works on my machine“ bugs
- Starts building your project as soon as a new commit is made
- „Build“ can be anything from compiling source code to running automatic tests, static code analysis and creating packages. Often it is a combination of all of the above mentioned steps
- Sends notifications if a build fails

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Choosing a CI server

- There are many CI server implementations out there. Most of them are targeting a particular language or framework
- There are a couple of Ruby/Rails based implementations:
  - cruisecontrol.rb (http://cruisecontrolrb.thoughtworks.com/)
  - cerberus (http://cerberus.rubyforge.org/)

Enter Hudson

- http://hudson.dev.java.net
- Two main objectives:
  - Building/testing software projects continuously
  - Monitoring executions of externally-run jobs

Enter Hudson f.

- Java based. Runs in any servlet container. Brings it‘s own servlet container
- Easy configuration (no XML - at least you don‘t have to touch it)
- RSS/E-Mail/IM integration
- Distributed builds
- Plugin support: Jabber, git, Twitter, Trac, Redmine...

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Rails CI: Why Hudson?

- Hudson can be used for:
  - Java projects (has Junit/TestNG support, jar file fingerprints)
  - Rails/Ruby projects
  - Flex, Latex, C or whatever can be build with a command line script
  - As a replacement for cron/at
- Well suited for „multi language environments“

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Hudson test drive

- `curl -OL http://hudson.gotdns.com/latest/hudson.war`
  (or just download it using a browser)
- `java -jar hudson.war`
- `open http://localhost:8080/`
- It's that simple

Dashboard [Hudson]

http://localhost:8080/ RSS Google

Hudson

search

Hudson

ENABLE AUTO REFRESH

New Job

Manage Hudson

People

Build History

add description

Build Queue

No builds in the queue.

Build Executor Status

No.	Status
1	Idle
2	Idle

All +

S	W	Job ↓	Last Success	Last Failure	Last Duration
		Test-Rails-Job	7 days 21 hr (#3)	8 days 0 hr (#1)	25 sec

Icon: S M L

Legend for all for failures for just latest builds

Hudson ver. 1.261

Beim Öffnen der Seite ist ein Fehler aufgetreten. Weitere Informationen erhalten Sie im Menü „Fenster" über die Option „Aktivität".

Test-Rails-Job [Hudson]

http://localhost:8080/job/Test-Rails-Job/

Hudson

search

Hudson » Test-Rails-Job

ENABLE AUTO REFRESH

- Back to Dashboard
- Status
- Changes
- Workspace
- Build Now
- Delete Project
- Configure
- Rcov report
- Rails stats report

Build History (trend)

- #14 Nov 22, 2008 3:49:53 PM
- #13 Nov 22, 2008 3:47:57 PM
- #12 Nov 22, 2008 3:44:47 PM
- #11 Nov 22, 2008 3:43:47 PM
- #10 Nov 22, 2008 2:47:51 PM
- #9 Nov 22, 2008 2:47:20 PM
- #8 Nov 22, 2008 2:46:19 PM
- #7 Nov 22, 2008 2:45:12 PM
- #6 Nov 22, 2008 2:43:46 PM
- #5 Nov 22, 2008 2:43:04 PM
- #4 Nov 22, 2008 2:39:32 PM
- #3 Nov 14, 2008 5:06:57 PM
- #2 Nov 14, 2008 2:51:48 PM
- #1 Nov 14, 2008 2:17:10 PM

for all for failures

Project Test-Rails-Job

Example Rails project. Source:

`git://github.com/juretta/hudson-example-project-rails.git`

edit description

Rcov report

Rails stats report

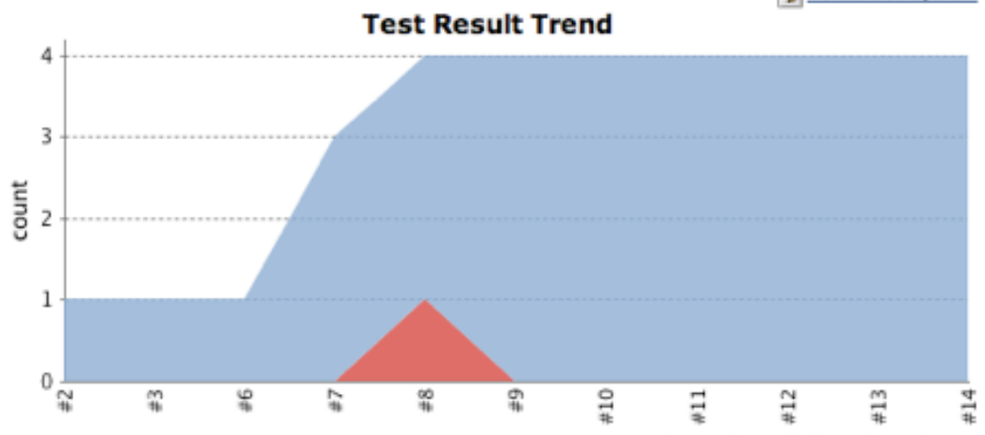
Workspace

Recent Changes

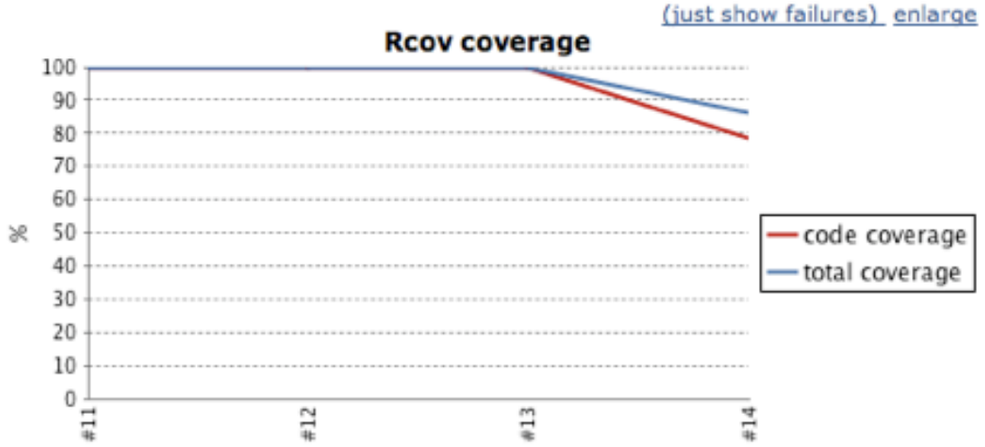
Latest Test Result (no failures)

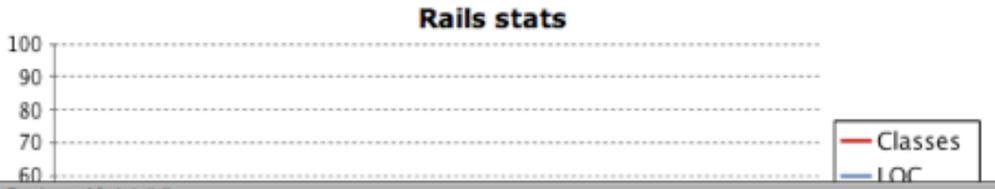
Permalinks

- Last build (#14), 4 min 52 sec ago
- Last stable build (#14), 4 min 52 sec ago
- Last successful build (#14), 4 min 52 sec ago
- Last failed build (#8), 1 hr 8 min ago



(just show failures) enlarge





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How does it work?

- Configuration and projects are stored in the Hudson workspace directory
- This is $HOME/.hudson by default
- You can change this location simply by moving or copying the whole directory to a new location
- All the settings, logs, build archives are stored here. This is the directory to backup!
- To change this: Set the HUDSON_HOME environment variable before starting Hudson

```
export HUDSON_HOME=/opt/local/hudson/workspace
```

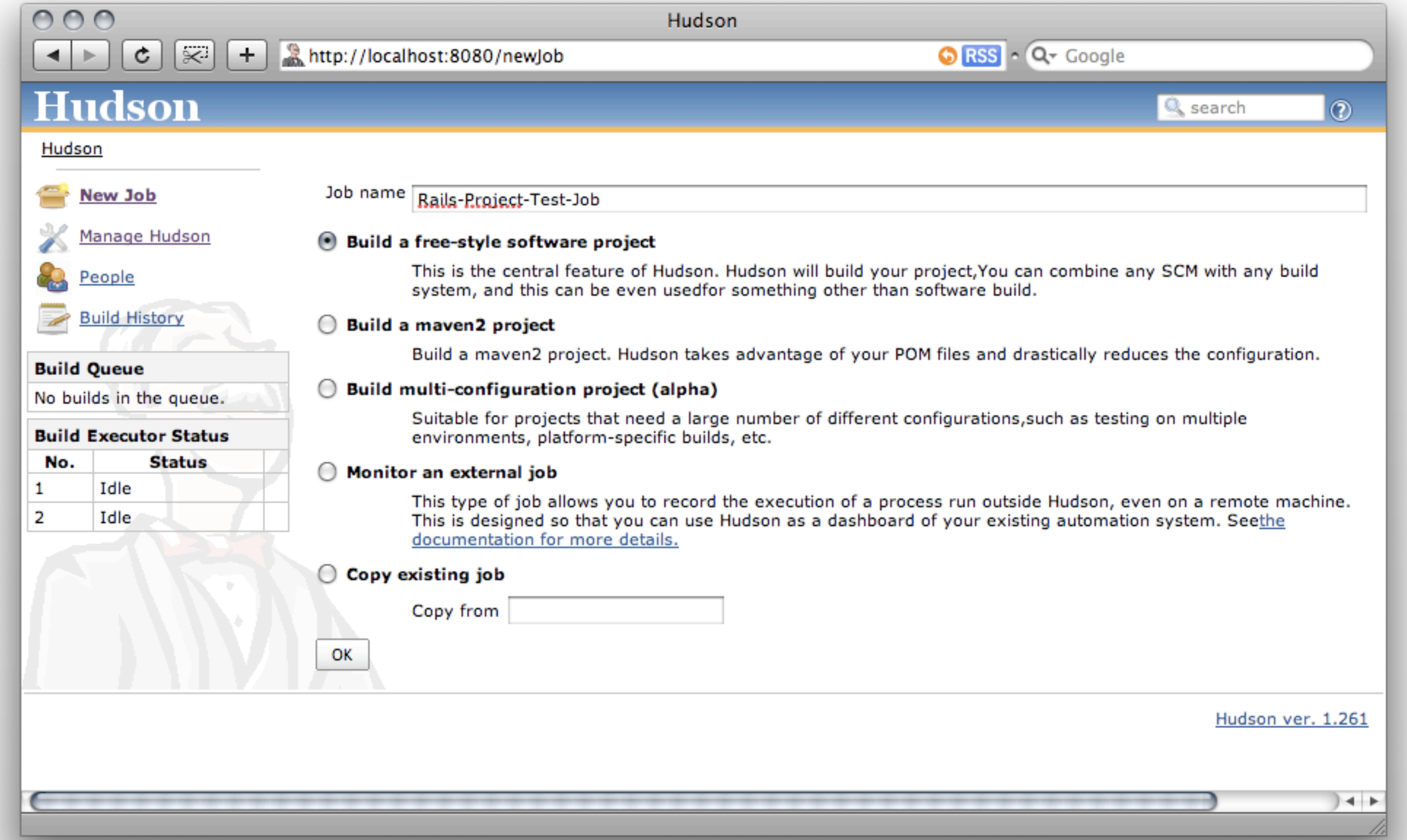
Rails + git + Hudson

- Install the required plugins and configure Hudson
- Prepare your Rails project
- Configure git to run Hudson builds

Install the required Hudson plugins

- To make Hudson a viable Rails build server we need a couple of plugins (Manage Hudson > Manage Plugins):
  - git
  - rake
  - ruby
  - rubyMetrics
- Install the plugins and restart Hudson!

Create a new Hudson job



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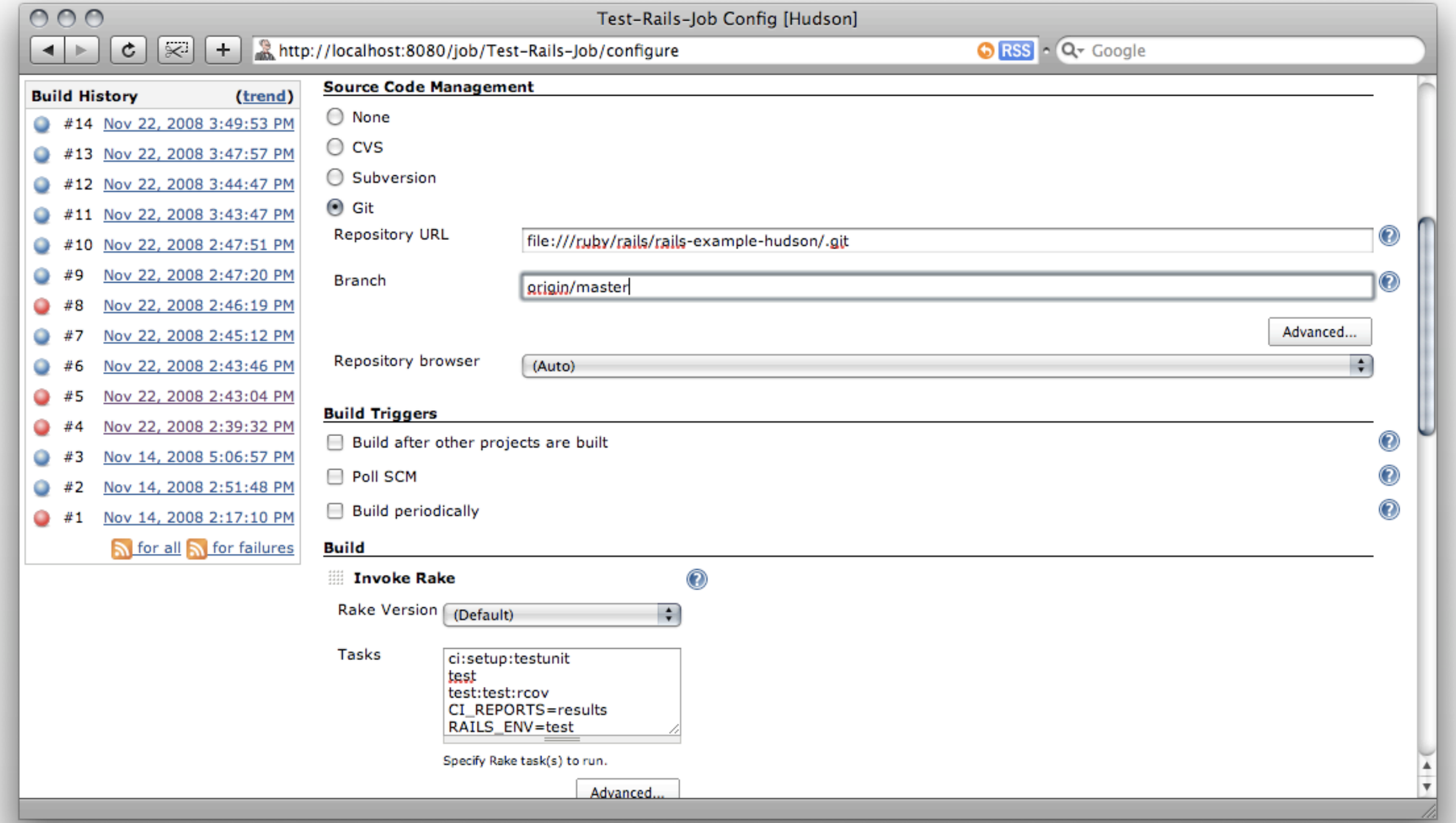
Configure the project



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Post-build Actions

- [ ] Archive the artifacts
- [ ] Record fingerprints of files to track usage
- [ ] Publish Javadoc
- [x] Publish JUnit test result report

You need the ci_reporter gem for this.

Test report XMLs: results/*.xml

Fileset 'includes' setting that specifies the generated raw XML report files, such as 'myproject/target/test-reports/*.xml'. Basedir of the fileset is the workspace root.

- [ ] Aggregate downstream test results
- [ ] Build other projects
- [x] E-mail Notification

Recipients: stefan@coravy.com

Whitespace-separated list of recipient addresses. E-mail will be sent when a build fails.

- [x] Send e-mail for every unstable build
- [x] Send separate e-mails to individuals who broke the build
- [ ] Push GIT tags back to origin repository
- [x] Publish Rcov report

Rcov report directory: doc/coverage/test

relative path to the coverage report directory

Coverage metric targets

Total coverage	80	0	0
Code coverage	80	0	0

Configure health reporting thresholds.
For the row, leave blank to use the default value (i.e. 80).
For the and rows, leave blank to use the default values (i.e. 0).

- [x] Publish Rails stats report

Rake Version: (Default)

Save

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Rails + git + Hudson

- Install the required plugins and configure Hudson
- Prepare your Rails project
- Configure git to run Hudson builds

Prepare the Rails project

- There is no need to change anything if you don‘t want to
- Hudson can run any script and marks a build as success or failure depending on the exit code of the script (echo $? -> 0: success, everything else: failure)
- But: to draw fancy graphs we need a machine readable test output

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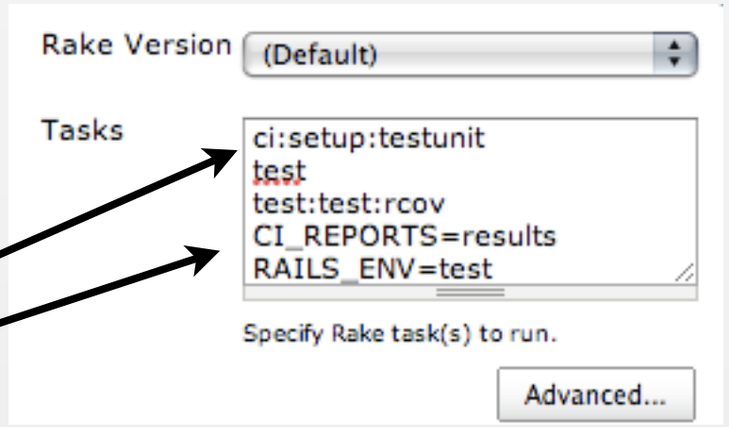
Prepare the Rails project f.

- „CI::Reporter is an add-on to Test::Unit and RSpec that allows you to generate XML reports of your test and/or spec runs. The resulting files can be read by a continuous integration system that understands Ant's JUnit report XML format." (http://caldersphere.rubyforge.org/ci_reporter/)
- Install the ci_reporter gem: `sudo gem install ci_reporter`
- Add „ci_reporter" to the main Rakefile and invoke the ci_reporter target

```
11
12  require 'rubygems'
13  gem 'ci_reporter'
14  require 'ci/reporter/rake/test_unit' # use this if you're using Test::Unit
```



ci_reporter

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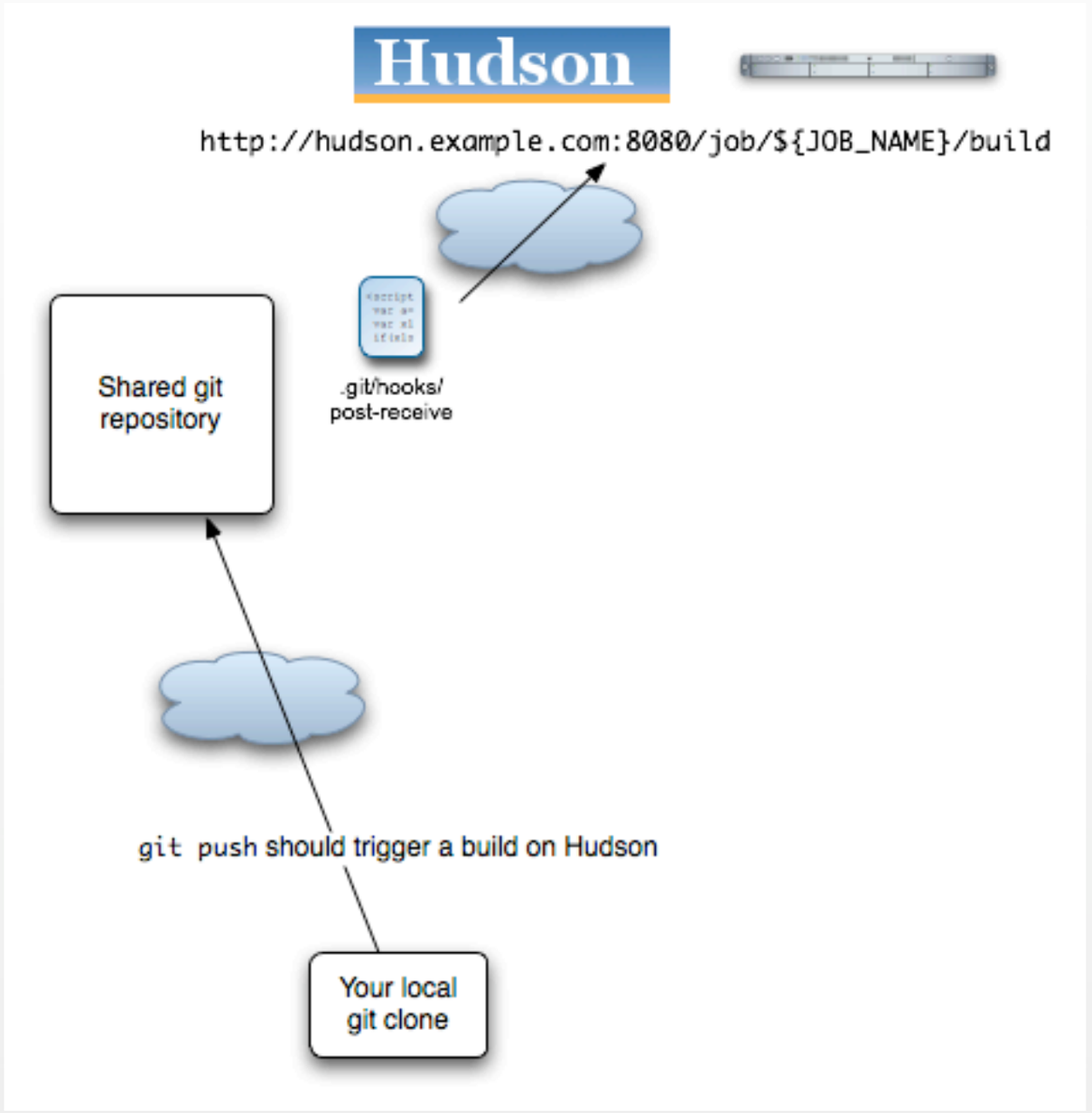
Rails + git + Hudson

- Install the required plugins and configure Hudson
- Prepare your Rails project
- Configure git to run Hudson builds

Configure git to run Hudson builds

- Run a build as soon as you have pushed your changes back to the shared repository



Configure git to run Hudson builds f.

- Add the following lines to the .git/hooks/post-receive hook (Change the job name accordingly):

```
URL='http://localhost:8080/job/Test-Rails-Job/build'
echo "Run Hudson build: ${URL}"
curl $URL > /dev/null 2>&1
```

- Make the post-receive hook executable:
  `chmod u+x .git/hooks/post-receive`

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Thank you.
Questions?

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