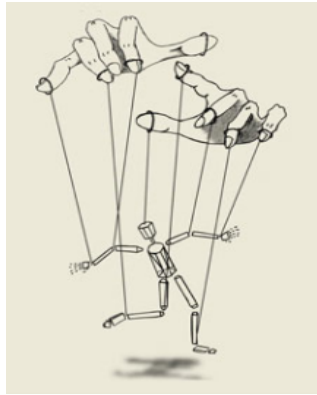


Continuously deliver your puppet code with jenkins, r10k and git

Toni Schmidbauer

September 8, 2014

whoami

- SysAdmin@s-itsolutions.at
- toni@stderr.at
- `http://stderr.at`
- `http://github.com/tosmi`
- stderr@jabber.org

Agenda

- A short story about configuration managment
- What is continous delivery
- How do we develop our Puppet code
- And what about deploying the code?
- Jenkins, GIT and r10k!
- Where do we go from here

A short story about configuration management (CM)

- We manage a very diverse environment of UNIX/Linux Systems (Solaris 10/11, AIX, RHEL 5/6/7)

A short story about configuration management (CM)

- We manage a very diverse environment of UNIX/Linux Systems (Solaris 10/11, AIX, RHEL 5/6/7)
- Before CM we had **strict** standards on how to manage these systems

A short story about configuration management (CM)

- We manage a very diverse environment of UNIX/Linux Systems (Solaris 10/11, AIX, RHEL 5/6/7)
- Before CM we had **strict** standards on how to manage these systems
- The problem:
  count(teammembers) == count(standards)

A short story about configuration management (CM)

- We manage a very diverse environment of UNIX/Linux Systems (Solaris 10/11, AIX, RHEL 5/6/7)
- Before CM we had **strict** standards on how to manage these systems
- The problem:
  count(teammembers) == count(standards)
- So configuration management is the solution to all our problems

The solution to all our problems

The solution to all our problems

- Broke our systems

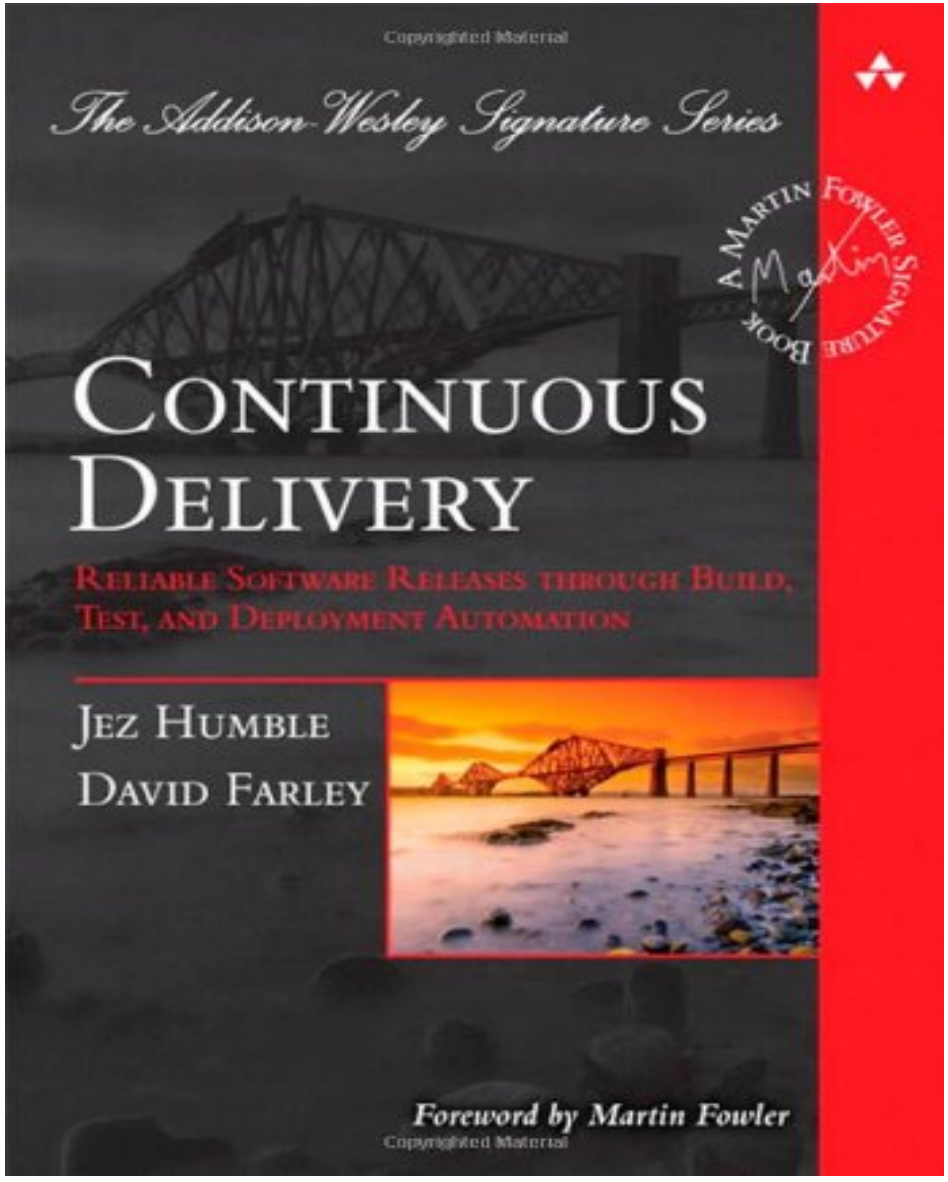
WHY????

Problems with our old CM system

- Systems installed without CM are hard to bring under CM control
- Every system is a special case
- In the beginning every problem was a CM problem
- CFEngine 2 based, no unit tests
- Deployment in stages, but we always had to cross our fingers
- Deployment via manual tagging and checkout, so mistakes happened
- We fixed the same mistakes more than once

So whats our solution?

or: why should i care?


Copyrighted Material
The Addison-Wesley Signature Series
A Martin Fowler Signature Book
CONTINUOUS DELIVERY
RELIABLE SOFTWARE RELEASES THROUGH BUILD, TEST, AND DEPLOYMENT AUTOMATION
JEZ HUMBLE
DAVID FARLEY
Foreword by Martin Fowler
Copyrighted Material

Continuous delivery

- is a pattern for getting software from development to release

1

[1] Continuous Delivery: Jez Humble, David Farley

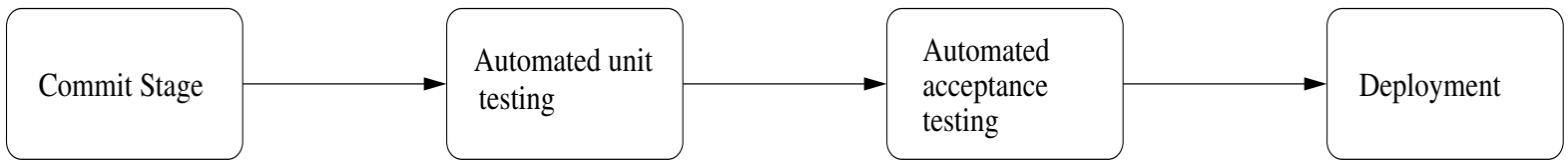
Continuous delivery

- is a pattern for getting software from development to release
- this pattern is called **the deployment pipeline**

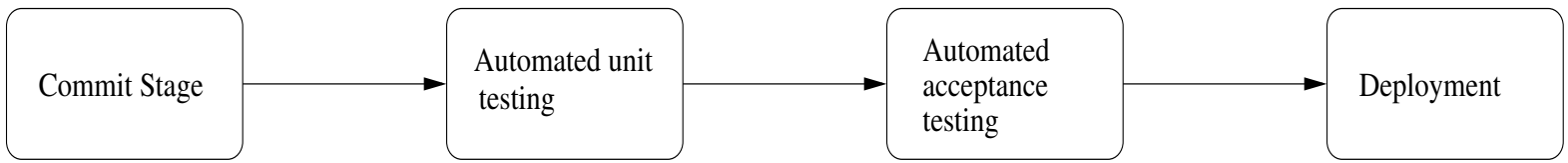
1

[1] Continuous Delivery: Jez Humble, David Farley

The deployment pipeline



The deployment pipeline



but the automated acceptance tests are currently missing in our setup, we will fix this with beaker (thanks puppetlabs)

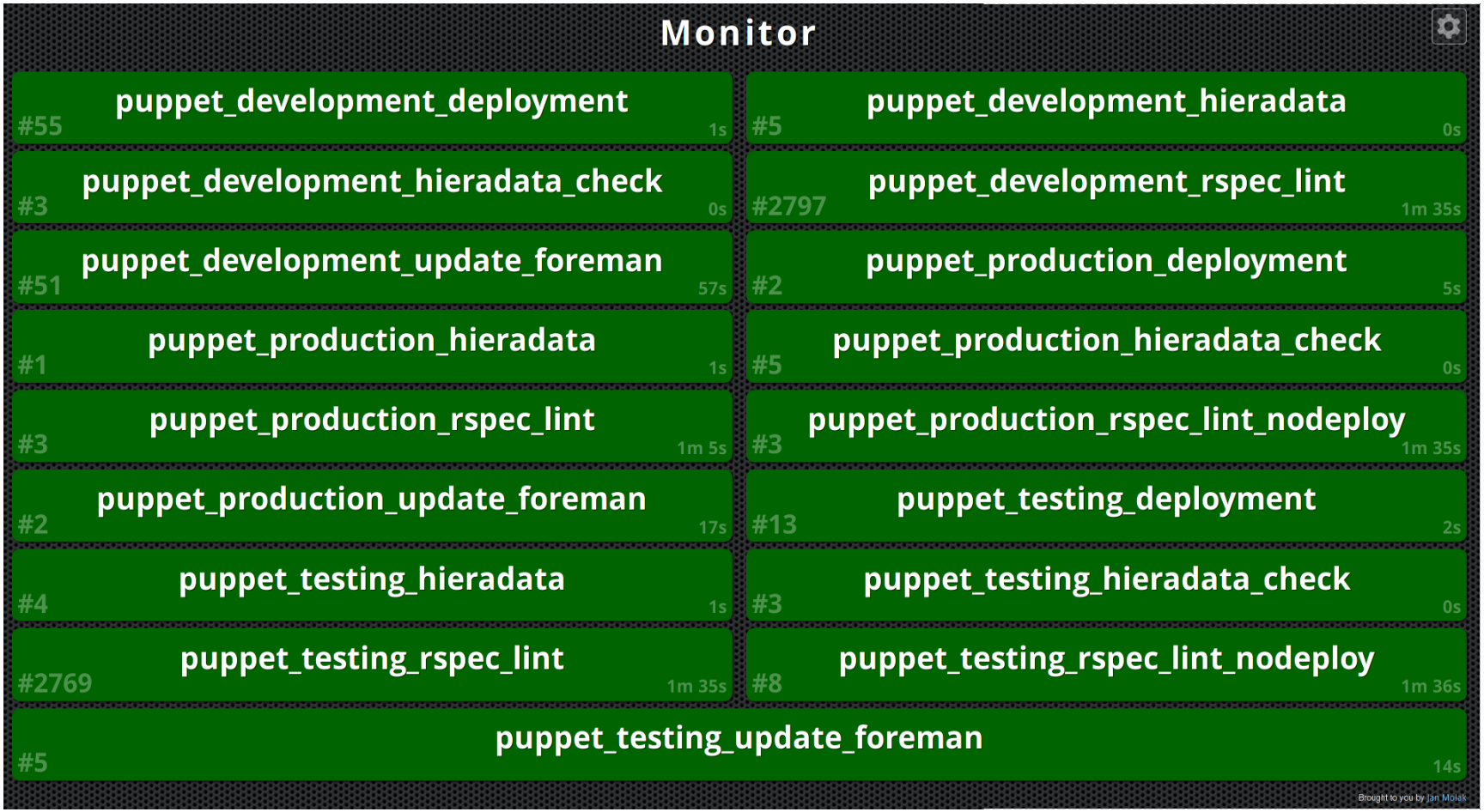
Jenkins

- Jenkins is an Open Source continuous integration server
- It's purpose is to execute and monitor jobs
- Jobs are shell scripts or any other thing that's executable and returns 0 on success
- You can link jobs together, thats our pipeline
- Many plugins available to extend Jenkins (e.g. git, build-pipeline, monitor)

Jenkins II


Build Pipeline: Puppet Production
Run
History
Configure
Add Step
Delete
Manage
puppet_production...
puppet_production...
puppet_production...
Pipeline #14
GITTAG: prod_20140429_1
#14 puppet_production_rspec_lint
Apr 29, 2014 3:55:43 PM
1 min 39 sec
#12 puppet_production_deployment
Apr 29, 2014 3:57:28 PM
10 sec
#12 puppet_production_update_foreman
Apr 29, 2014 3:57:43 PM
13 sec
Pipeline #13
GITTAG: prod_20140425_1
#13 puppet_production_rspec_lint
Apr 25, 2014 2:58:26 PM
1 min 41 sec
#11 puppet_production_deployment
Apr 25, 2014 3:00:11 PM
10 sec
#11 puppet_production_update_foreman
Apr 25, 2014 3:00:27 PM
14 sec
Pipeline #12
GITTAG: prod_20140423_1
#12 puppet_production_rspec_lint
Apr 23, 2014 4:06:23 PM
1 min 38 sec
#10 puppet_production_deployment
Apr 23, 2014 4:08:06 PM
6.9 sec
#10 puppet_production_update_foreman
Apr 23, 2014 4:08:18 PM
14 sec
Pipeline #11
GITTAG: prod_20140422_2
#11 puppet_production_rspec_lint
Apr 22, 2014 5:08:02 PM
1 min 37 sec
#9 puppet_production_deployment
Apr 22, 2014 5:09:44 PM
1.4 sec
#9 puppet_production_update_foreman
Apr 22, 2014 5:09:51 PM
13 sec
Pipeline #10
GITTAG: prod_20140422_1
#10 puppet_production_rspec_lint
Apr 22, 2014 11:49:49 AM
1 min 44 sec
#8 puppet_production_deployment
Apr 22, 2014 11:51:39 AM
6.5 sec
#8 puppet_production_update_foreman
Apr 22, 2014 11:51:51 AM
14 sec
Help us localize this page
Page generated: May 8, 2014 11:55:35 AM
REST API
Jenkins ver. 1.532.2

Monitoring with Jenkins



a word on testing

- you must have unit tests for your puppet code: **rspec-puppet**
- you need to test everything to get most out of the build pipeline
- we test
  - interal puppet modules
  - hiera data
  - puppet configuration

rspec-puppet

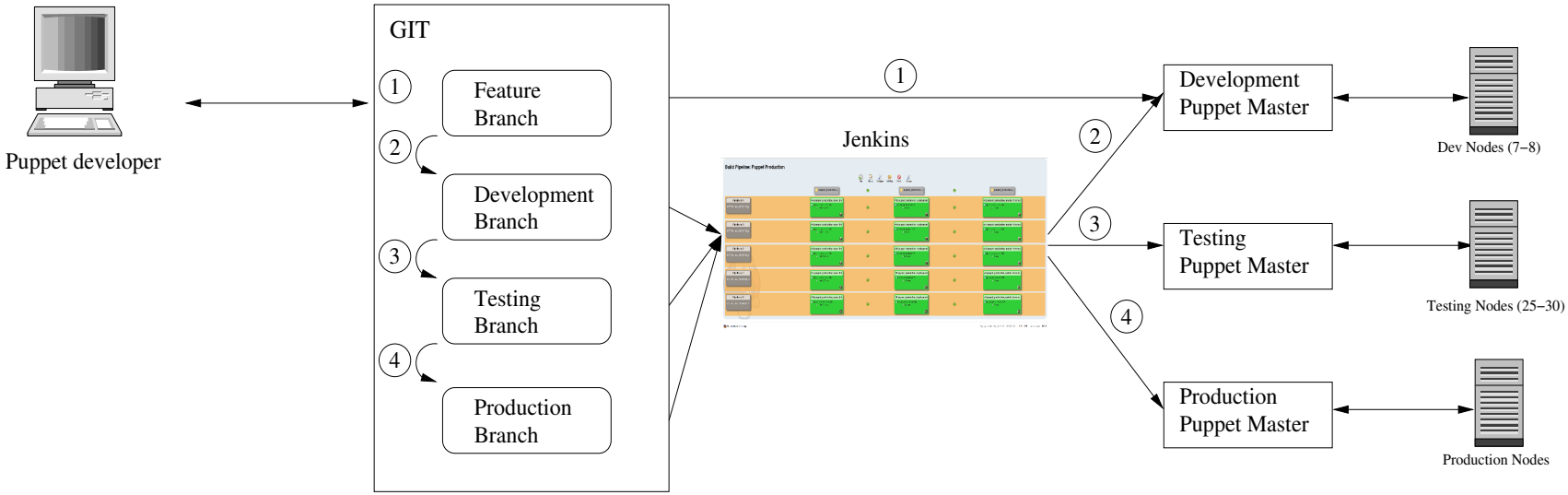
- Ruby RSpec (unit tests) for puppet
- Every interal module must have rspec tests

```
require 'spec_helper'
describe 'linuxwochen2014' do
  let :facts { { :osfamily => 'RedHat' } }

  context 'ensure is set to absent' do
    let :params { { :ensure => 'absent'} }

    it do
      should contain_user('toni').with({
                                         'ensure' => 'absent',
                                         'uid'    => '4711',
                                         'gid'    => '100',
                                       })
    end

    it { should contain_package('emacs-nox').with_ensure('installed') }
    it { should contain_package('vim-enhanced').with_ensure('absent') }
    it { should contain_package('emacs-nox).that_comes_before('Package[vim-enhanced]') }
  end
end
```

GIT

- One central repository managed with gitolite (access control for git)
- 3 main branches
  - development
  - testing
  - production
- feature branches for new site local modules
- hiera data is in the same repository

GIT workflow



1. Features Branches get automatically created on Puppet Master (Dynamic Environments)
2. Development Branch gets deployed on commit via Jenkins
3. Testing Branch gets deployed via GIT tag
   a normal commit to the Testing branch only runs tests
4. Production Branch gets deployed via GIT tag
   a normal commit to the Prodcution branch only runs tests

It's all the same for Hiera yaml files!

r10k

- a tool to deploy puppet environments and modules
- every git branch gets deploy to a puppet environment
- in the current version (1.3.2) dependencies have to be managed manually

GIT repository layout for r10k

- modules/: where r10k stores external (forge, github) modules
- site/: site local modules, that we do not want to share
- hiera/: our hiera yaml files
- Puppetfile: config file for r10k that specifies which modules we need

DEMO

Thanks for you attention!