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Using Puppet, Foreman and Git to Develop and Operate a Large Scale Internet Service

Agenda

- Introduction and background
- Puppet
- Foreman
- Demo: Deploy change to Development Cluster
- Future plans
- Questions and Answers

Introduction and background

Joost van de Wijgerd
Chief Architect / VP Operations

- 37
- Dutch
- In IT Industry since 1999
- @ eBuddy since 2009
- Responsibilities
  - Overall Architecture
  - Datacenter Operations

About eBuddy

- Founded in 2003
- eBuddy Chat Platform peak at 35M MAU, 9M DAU, 17B Messages per month
- Started XMS Messaging Platform in 2010
- Currently managing 3 production sites and 2 development sites
- About 500 instances (physical and virtual) total

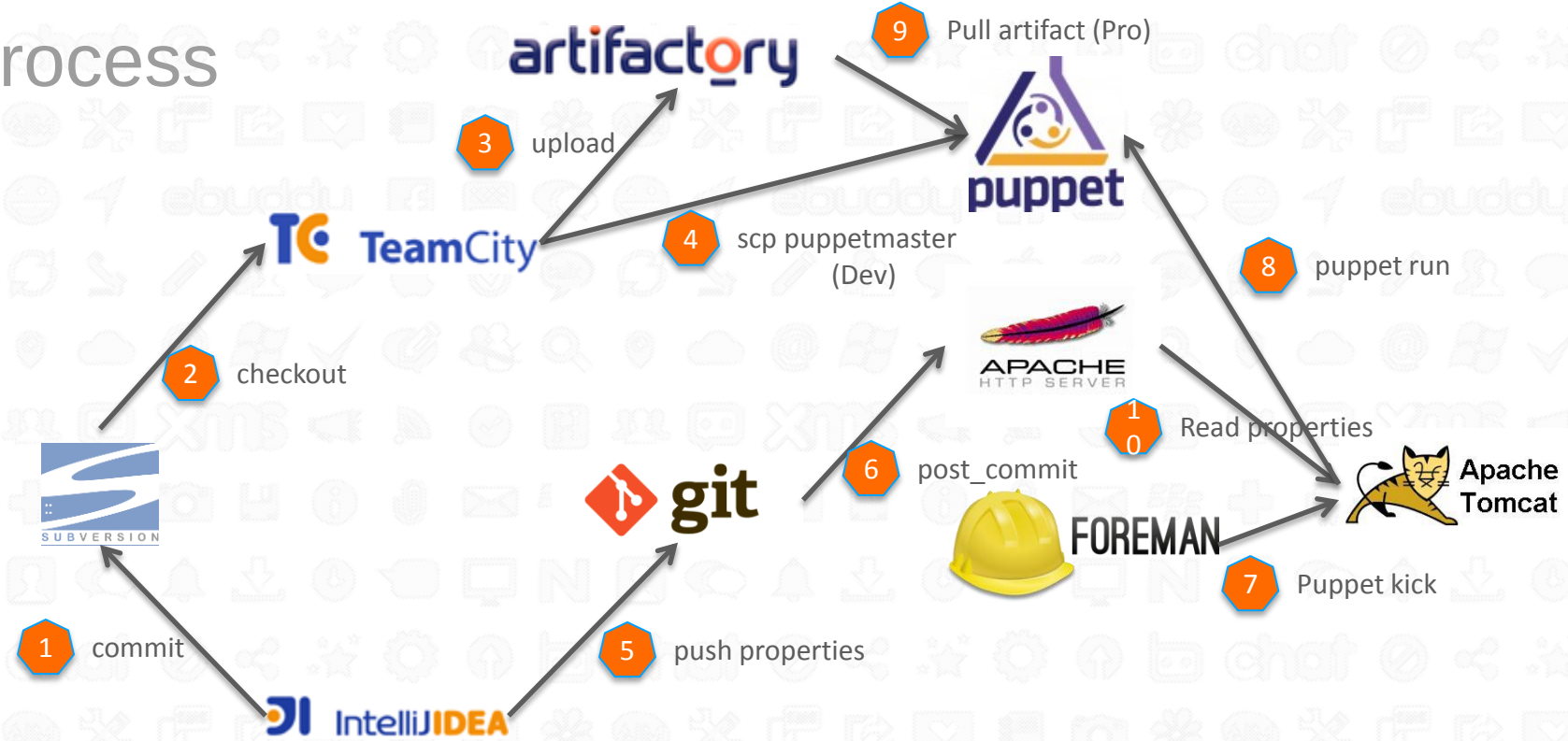
DevOps!? – Some Quotes from the Web

- *“Developer and Operations collaboration”*
- *“Infrastructure as code”*
- *“Using Automation”*
- *“Using Kanban”*

DevOps at eBuddy

- Operations
  - Provide Infrastructure and Monitoring
  - Provisioning with Foreman, automating with Puppet
  - Providing a Puppet framework for Developers
  - Organized through Kanban
- Development (Backend Teams)
  - Deliver systems not compiled software (including puppet classes)
  - Manage Development environments
  - Deploy to Production Environments
  - Using Scrum

Process

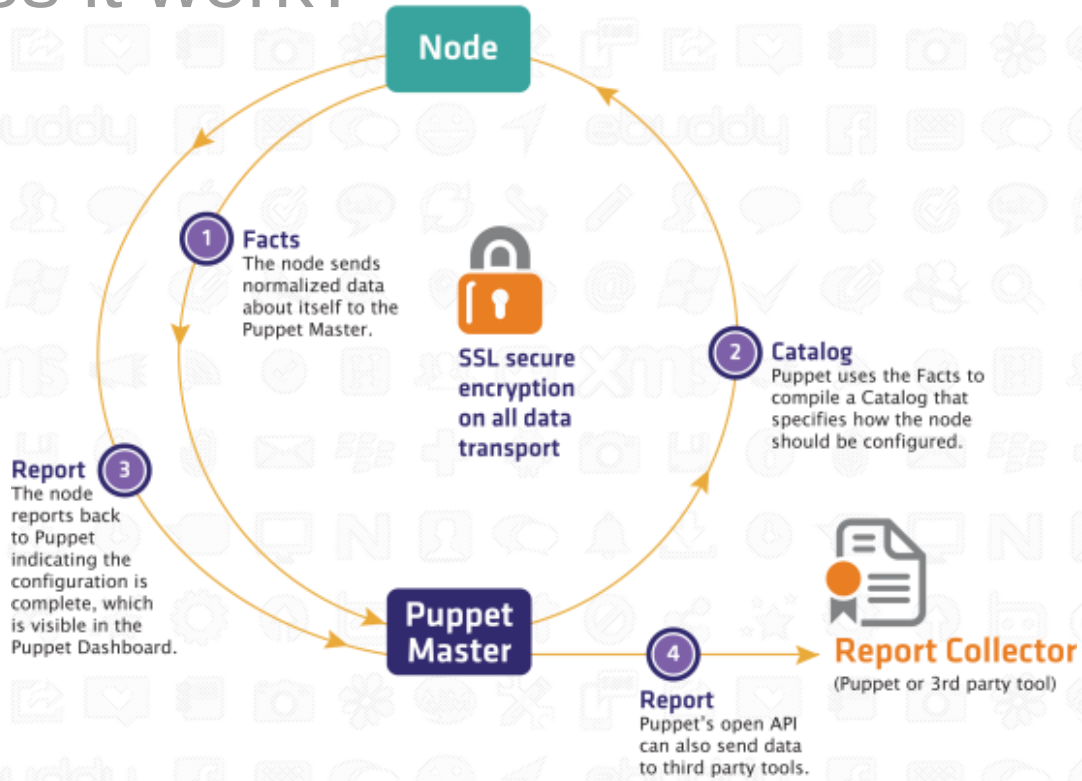

artifactory
9 Pull artifact (Pro)
puppet
3 upload
TeamCity
4 scp puppetmaster (Dev)
8 puppet run
APACHE HTTP SERVER
10 Read properties
2 checkout
SUBVERSION
git
6 post_commit
Apache Tomcat
FOREMAN
7 Puppet kick
1 commit
IntelliJIDEA
5 push properties

Puppet

What is Puppet?

- Centralized Configuration Management
- Automate repetitive tasks
- Deploy applications

How does it work?



Puppet Details

- Puppet DSL built on top of Ruby
- Puppet Classes defined in Puppet Modules
- Use Modules to compose application stacks
- Collection of Puppet Classes make an environment
- Puppet environment(s) stored in Git and pulled by Puppet Masters

Module Example

- a module is simply a directory tree with a specific, predictable structure:
  - MODULE NAME
    - manifests → contains *init.pp* file with module class
    - files → served as static files to agent nodes
    - templates → ERB (Ruby Templating) files evaluated at runtime
    - lib → plugins (Ruby Code)

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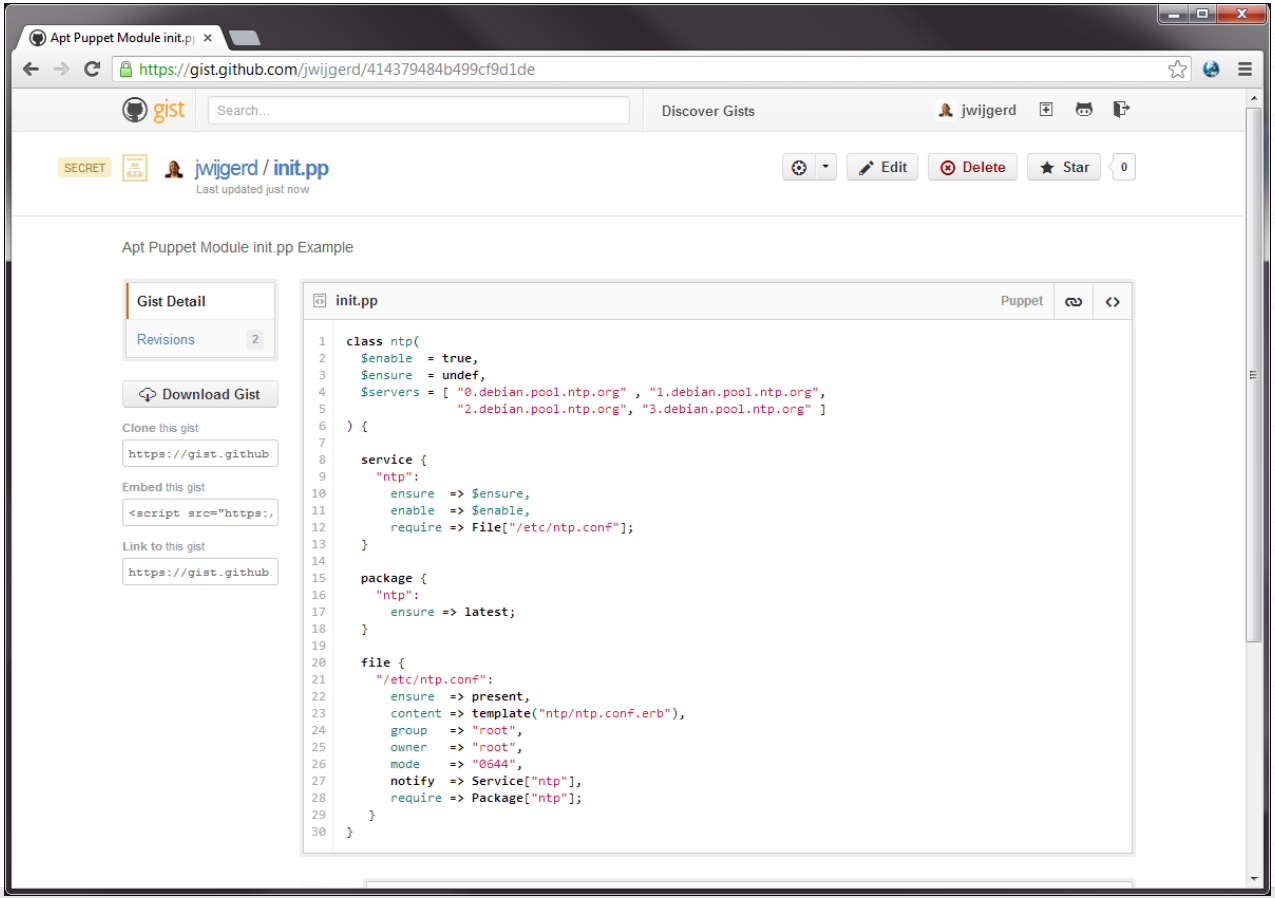
Apt Puppet Module init.pp
https://gist.github.com/jwijgerd/414379484b499cf9d1de
gist
Search...
Discover Gists
jwijgerd
SECRET
jwijgerd / init.pp
Last updated just now
Edit
Delete
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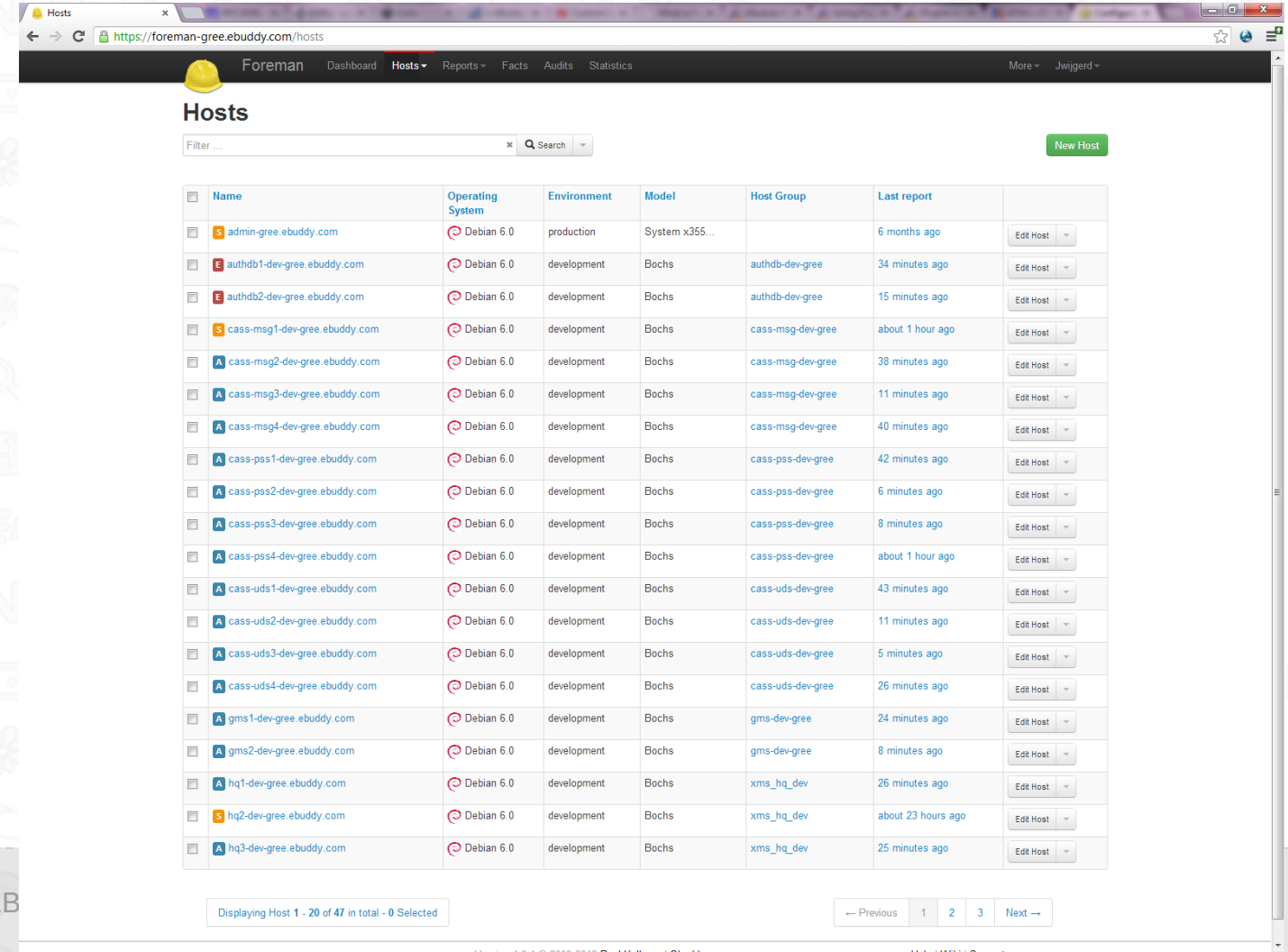
0
Apt Puppet Module init.pp Example
Gist Detail
Revisions 2
Download Gist
Clone this gist
https://gist.github.
Embed this gist
<script src="https:/
Link to this gist
https://gist.github.
init.pp
Puppet
class ntp(
$enable = true,
$ensure = undef,
$servers = ["0.debian.pool.ntp.org" , "1.debian.pool.ntp.org",
"2.debian.pool.ntp.org", "3.debian.pool.ntp.org"]
) {
service {
"ntp":
ensure => $ensure,
enable => $enable,
require => File["/etc/ntp.conf"];
}
package {
"ntp":
ensure => latest;
}
file {
"/etc/ntp.conf":
ensure => present,
content => template("ntp/ntp.conf.erb"),
group => "root",
owner => "root",
mode => "0644",
notify => Service["ntp"],
require => Package["ntp"];
}
}

Foreman

What is Foreman?

- *External Node Classifier* for Puppet
- Add Nodes to Host Groups
- Assign Puppet Classes per Host or Host Group
- Define parameters per Host Group or per Host
- Report Collector for Puppet runs
- Kick Puppet agents
- Access control
  - Let Developers deploy on Production with needing platform access


Hosts
https://foreman-gree.ebuddy.com/hosts
Foreman
Dashboard
Hosts
Reports
Facts
Audits
Statistics
More
Jwijgerd
Hosts
Filter ...
Search
New Host
Name
Operating System
Environment
Model
Host Group
Last report
admin-gree.ebuddy.com Debian 6.0 production System x355... 6 months ago
authdb1-dev-gree.ebuddy.com Debian 6.0 development Bochs authdb-dev-gree 34 minutes ago
authdb2-dev-gree.ebuddy.com Debian 6.0 development Bochs authdb-dev-gree 15 minutes ago
cass-msg1-dev-gree.ebuddy.com Debian 6.0 development Bochs cass-msg-dev-gree about 1 hour ago
cass-msg2-dev-gree.ebuddy.com Debian 6.0 development Bochs cass-msg-dev-gree 38 minutes ago
cass-msg3-dev-gree.ebuddy.com Debian 6.0 development Bochs cass-msg-dev-gree 11 minutes ago
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cass-pss1-dev-gree.ebuddy.com Debian 6.0 development Bochs cass-pss-dev-gree 42 minutes ago
cass-pss2-dev-gree.ebuddy.com Debian 6.0 development Bochs cass-pss-dev-gree 6 minutes ago
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cass-uds2-dev-gree.ebuddy.com Debian 6.0 development Bochs cass-uds-dev-gree 11 minutes ago
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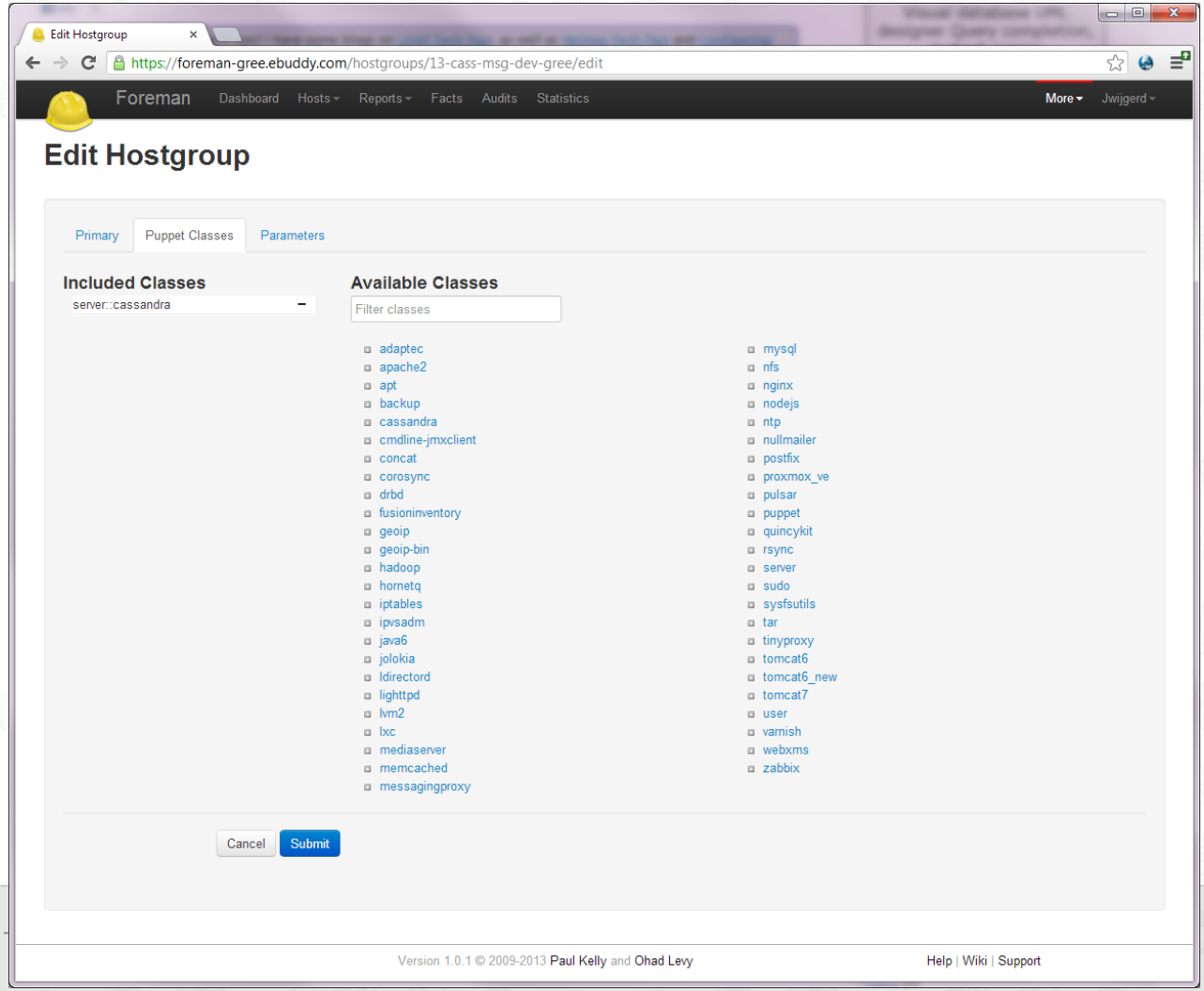
cass-uds4-dev-gree.ebuddy.com Debian 6.0 development Bochs cass-uds-dev-gree 26 minutes ago
gms1-dev-gree.ebuddy.com Debian 6.0 development Bochs gms-dev-gree 24 minutes ago
gms2-dev-gree.ebuddy.com Debian 6.0 development Bochs gms-dev-gree 8 minutes ago
hq1-dev-gree.ebuddy.com Debian 6.0 development Bochs xms_hq_dev 26 minutes ago
hq2-dev-gree.ebuddy.com Debian 6.0 development Bochs xms_hq_dev about 23 hours ago
hq3-dev-gree.ebuddy.com Debian 6.0 development Bochs xms_hq_dev 25 minutes ago
Edit Host
Displaying Host 1 - 20 of 47 in total - 0 Selected
← Previous
1
2
3
Next →



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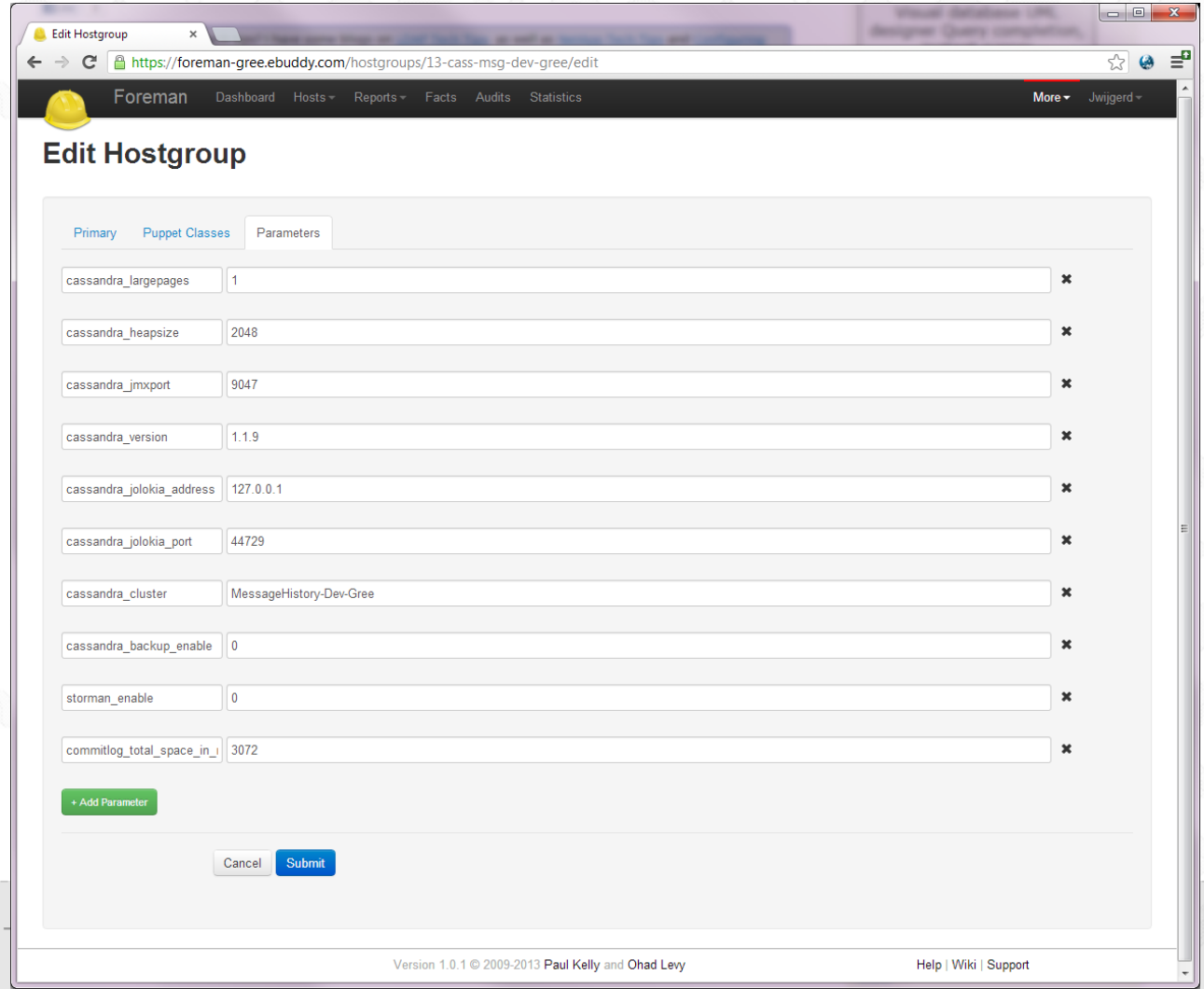
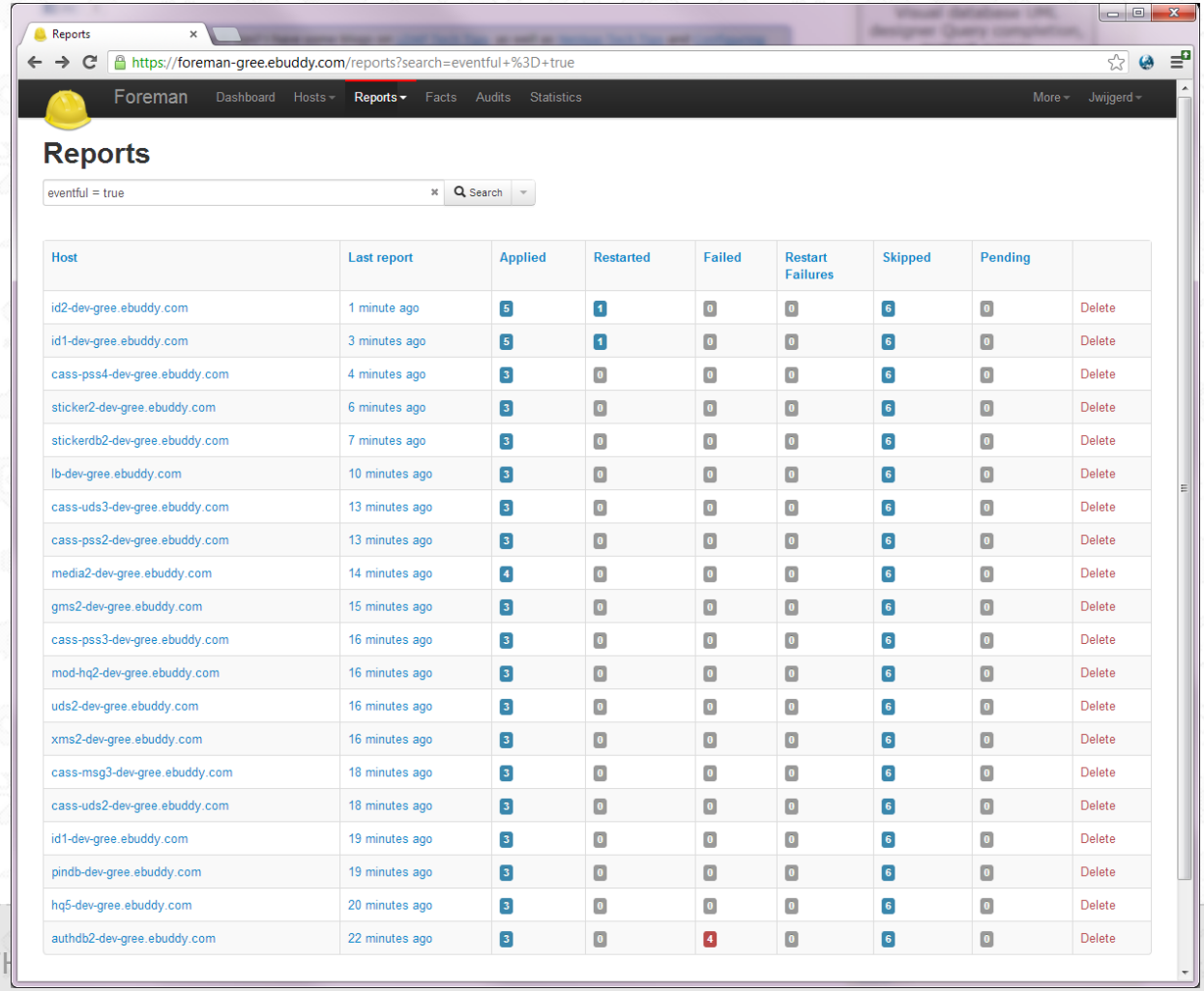
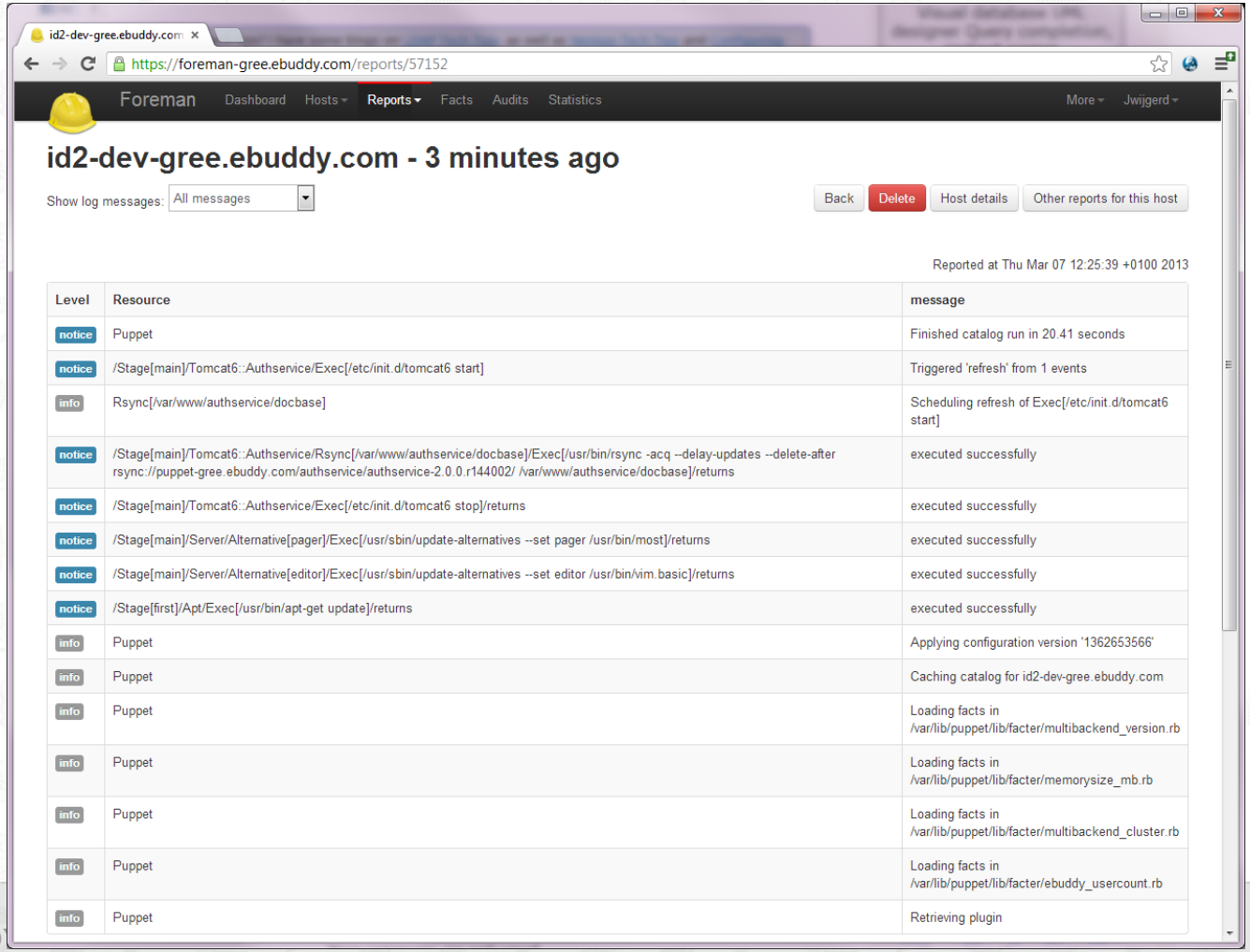

Edit Hostgroup
https://foreman-gree.ebuddy.com/hostgroups/13-cass-msg-dev-gree/edit
Foreman
Dashboard
Hosts
Reports
Facts
Audits
Statistics
More
Jwijgerd
Edit Hostgroup
Primary
Puppet Classes
Parameters
cassandra_largepages
1
cassandra_heapsize
2048
cassandra_jmxport
9047
cassandra_version
1.1.9
cassandra_jolokia_address
127.0.0.1
cassandra_jolokia_port
44729
cassandra_cluster
MessageHistory-Dev-Gree
cassandra_backup_enable
0
storman_enable
0
commitlog_total_space_in_
3072
+ Add Parameter
Cancel
Submit
Version 1.0.1 © 2009-2013 Paul Kelly and Ohad Levy
Help | Wiki | Support


Reports
https://foreman-gree.ebuddy.com/reports?search=eventful+%3D+true
Foreman
Dashboard
Hosts
Reports
Facts
Audits
Statistics
More
Jwijgerd
Reports
eventful = true
Search
Host
Last report
Applied
Restarted
Failed
Restart Failures
Skipped
Pending
id2-dev-gree.ebuddy.com 1 minute ago 5 1 0 0 6 0 Delete
id1-dev-gree.ebuddy.com 3 minutes ago 5 1 0 0 6 0 Delete
cass-pss4-dev-gree.ebuddy.com 4 minutes ago 3 0 0 0 6 0 Delete
sticker2-dev-gree.ebuddy.com 6 minutes ago 3 0 0 0 6 0 Delete
stickerdb2-dev-gree.ebuddy.com 7 minutes ago 3 0 0 0 6 0 Delete
lb-dev-gree.ebuddy.com 10 minutes ago 3 0 0 0 6 0 Delete
cass-uds3-dev-gree.ebuddy.com 13 minutes ago 3 0 0 0 6 0 Delete
cass-pss2-dev-gree.ebuddy.com 13 minutes ago 3 0 0 0 6 0 Delete
media2-dev-gree.ebuddy.com 14 minutes ago 4 0 0 0 6 0 Delete
gms2-dev-gree.ebuddy.com 15 minutes ago 3 0 0 0 6 0 Delete
cass-pss3-dev-gree.ebuddy.com 16 minutes ago 3 0 0 0 6 0 Delete
mod-hq2-dev-gree.ebuddy.com 16 minutes ago 3 0 0 0 6 0 Delete
uds2-dev-gree.ebuddy.com 16 minutes ago 3 0 0 0 6 0 Delete
xms2-dev-gree.ebuddy.com 16 minutes ago 3 0 0 0 6 0 Delete
cass-msg3-dev-gree.ebuddy.com 18 minutes ago 3 0 0 0 6 0 Delete
cass-uds2-dev-gree.ebuddy.com 18 minutes ago 3 0 0 0 6 0 Delete
id1-dev-gree.ebuddy.com 19 minutes ago 3 0 0 0 6 0 Delete
pindb-dev-gree.ebuddy.com 19 minutes ago 3 0 0 0 6 0 Delete
hq5-dev-gree.ebuddy.com 20 minutes ago 3 0 0 0 6 0 Delete
authdb2-dev-gree.ebuddy.com 22 minutes ago 3 0 4 0 6 0 Delete


id2-dev-gree.ebuddy.com
https://foreman-gree.ebuddy.com/reports/57152
Foreman
Dashboard
Hosts
Reports
Facts
Audits
Statistics
More
Jwijgerd
id2-dev-gree.ebuddy.com - 3 minutes ago
Show log messages:
All messages
Back
Delete
Host details
Other reports for this host
Reported at Thu Mar 07 12:25:39 +0100 2013
Level
Resource
message
notice
Puppet
Finished catalog run in 20.41 seconds
notice
/Stage[main]/Tomcat6::Authservice/Exec[/etc/init.d/tomcat6 start]
Triggered 'refresh' from 1 events
info
Rsync[/var/www/authservice/docbase]
Scheduling refresh of Exec[/etc/init.d/tomcat6 start]
notice
/Stage[main]/Tomcat6::Authservice/Rsync[/var/www/authservice/docbase]/Exec[/usr/bin/rsync -acq --delay-updates --delete-after rsync://puppet-gree.ebuddy.com/authservice/authservice-2.0.0.r144002/ /var/www/authservice/docbase]/returns
executed successfully
notice
/Stage[main]/Tomcat6::Authservice/Exec[/etc/init.d/tomcat6 stop]/returns
executed successfully
notice
/Stage[main]/Server/Alternative[pager]/Exec[/usr/sbin/update-alternatives --set pager /usr/bin/most]/returns
executed successfully
notice
/Stage[main]/Server/Alternative[editor]/Exec[/usr/sbin/update-alternatives --set editor /usr/bin/vim.basic]/returns
executed successfully
notice
/Stage[first]/Apt/Exec[/usr/bin/apt-get update]/returns
executed successfully
info
Puppet
Applying configuration version '1362653566'
info
Puppet
Caching catalog for id2-dev-gree.ebuddy.com
info
Puppet
Loading facts in /var/lib/puppet/lib/facter/multibackend_version.rb
info
Puppet
Loading facts in /var/lib/puppet/lib/facter/memorysize_mb.rb
info
Puppet
Loading facts in /var/lib/puppet/lib/facter/multibackend_cluster.rb
info
Puppet
Loading facts in /var/lib/puppet/lib/facter/ebuddy_usercount.rb
info
Puppet
Retrieving plugin

Demo

Future Plans

Future Plans

- Complete automatic provisioning with Foreman
  - Fill in MAC address and Host Group.. Et Voila!
- Refactor for Puppet 3.x and Hiera
  - Completely separate Data and Code
  - To support multiple environments from a single codebase
- Implement staged Git repo approach with Pull Requests and Code Reviews
- Unsupervised application deployment

Q & A

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