



The Challenge:

Testing the oVirt Project

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Red Hat Virtualization Management

2012



- Introduction
- The Problem – How to test a Virtualization project
- The Solution – Integration & Provisioning
- The Building Blocks
 - **oVirt** – the open virtualization project
 - **Puppet** – configuration management
 - **Foreman** – machine life cycle management
- Jenkins job test case
- Videos & screenshots
- Summary
- Q&A

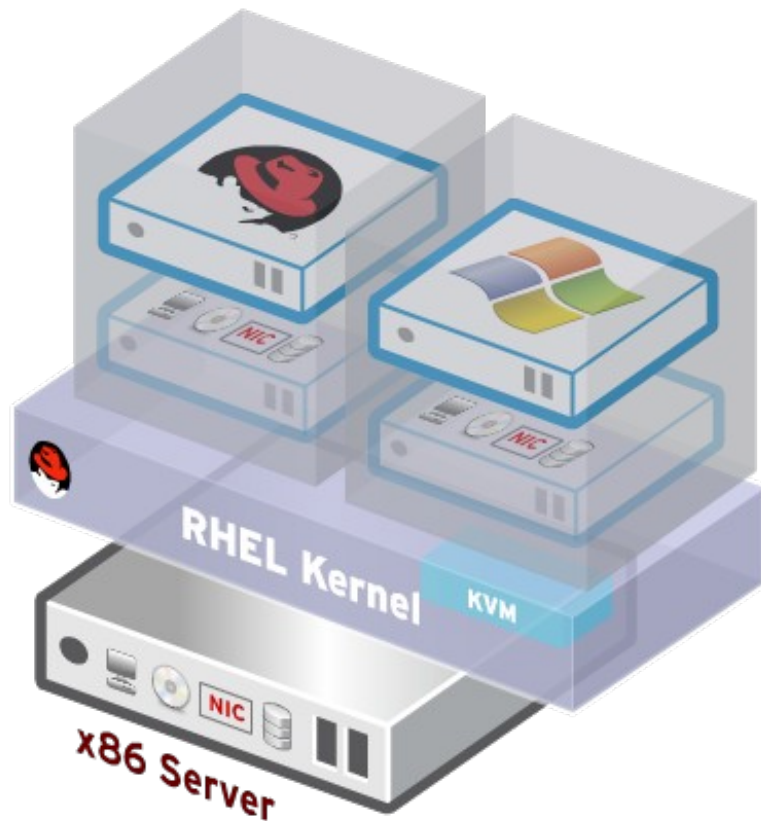


- Tired of spending time installing Jenkins slaves all day?
- Can't get budget from your manager to buy new hosts?
- Do you sleep in the network room waiting for hosts to be installed?
- Does your jenkins environment keep growing ?

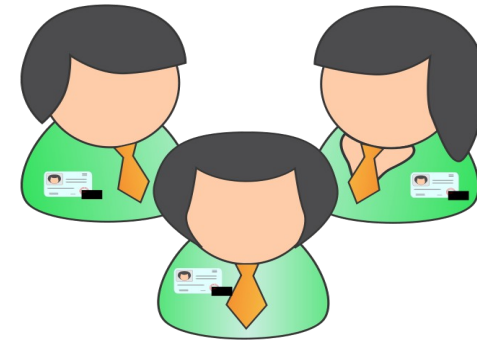
You need a Provisioning Framework!



Physical & Virtual Servers



Multiple teams
collaboration and
effort (IT, ENG, QA,
Integration)



Hours of manual work



Small complexity matrix for testing oVirt/RHEVM

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	OVIRT	RHEVM 3.0	RHEVM 3.1
Project Version	Ovirt 3.1	RHEVM 3.0	RHEVM 3.1
Host OS	Fedora 16/17	RHEL 6.2/6.3	RHEL 6.3
Manager OS	Fedora 16	RHEL 6.2/6.3	RHEL 6.3
Engine git	gerrit.ovirt.org	rhevm:master	engine:build
Jboss Version	7.1 AS	5.1.2 EAP	6.0 EAP
JDK Version	OpenJDK 1.7.0	Sun JDK 6.0	OpenJDK 1.7.0
Maven Version	3.0.X	2.2.1	3.0.x
Vdsm-* rpm	4.9.6-0.63.git258c..	4.9-112.10.el6.x86_64	4.9.6-6.el6.x86_64
Libvirt-* rpm	0.9.10-2.fc16	0.9.4-23.el6_2.4	0.9.10-9.el6

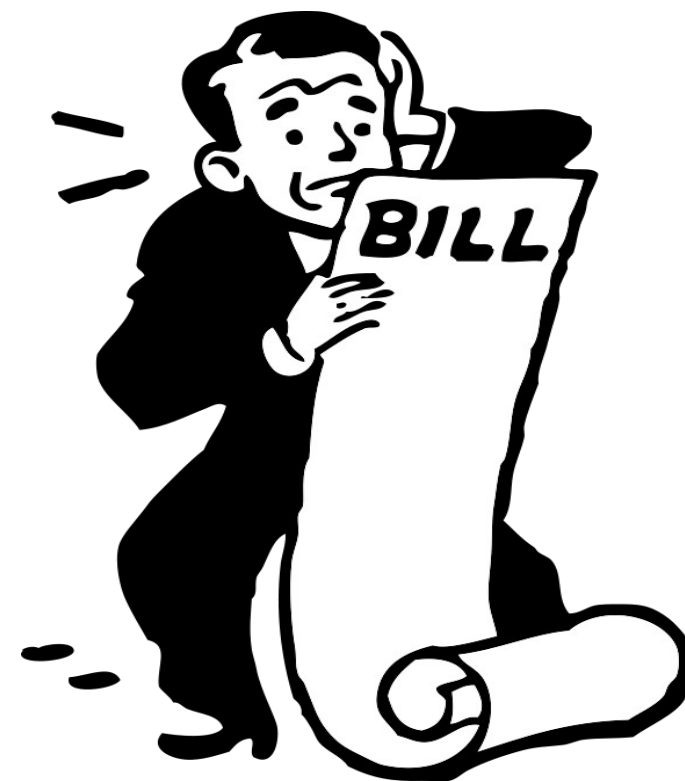


Why bother changing our CI testing framework?

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Time Consuming



Costly



Error Prone

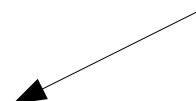
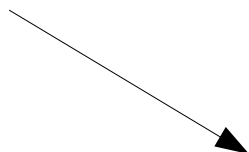


The Solution: Framework Introduction

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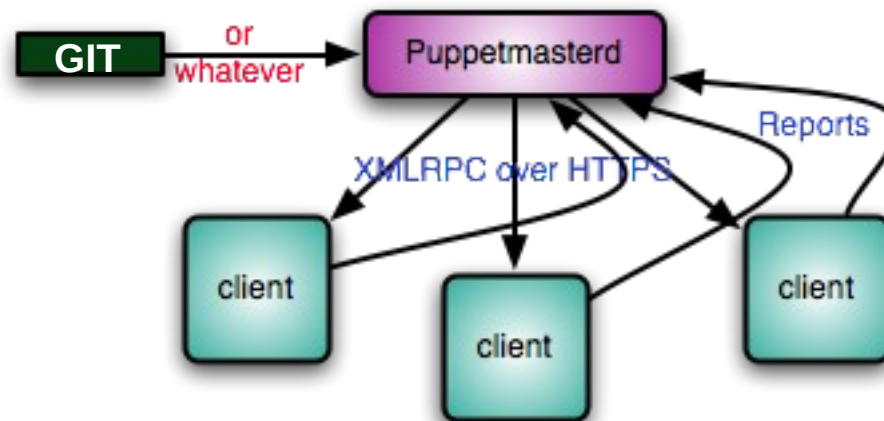
- We combined **Foreman**, **Puppet** & **oVirt** with custom python code to build a testing framework for Jenkins.
- **Foreman** was used for provisioning the hosts or VMs
- **Puppet** configured hosts with our needed profiles.
- **oVirt** enabled us to create VMs for running the tests.







Client – Server implementation



'Adding users', 'installing packages', and 'updating server configurations'

Facter produces a profile of each host, and makes system information available to Puppet as variables.



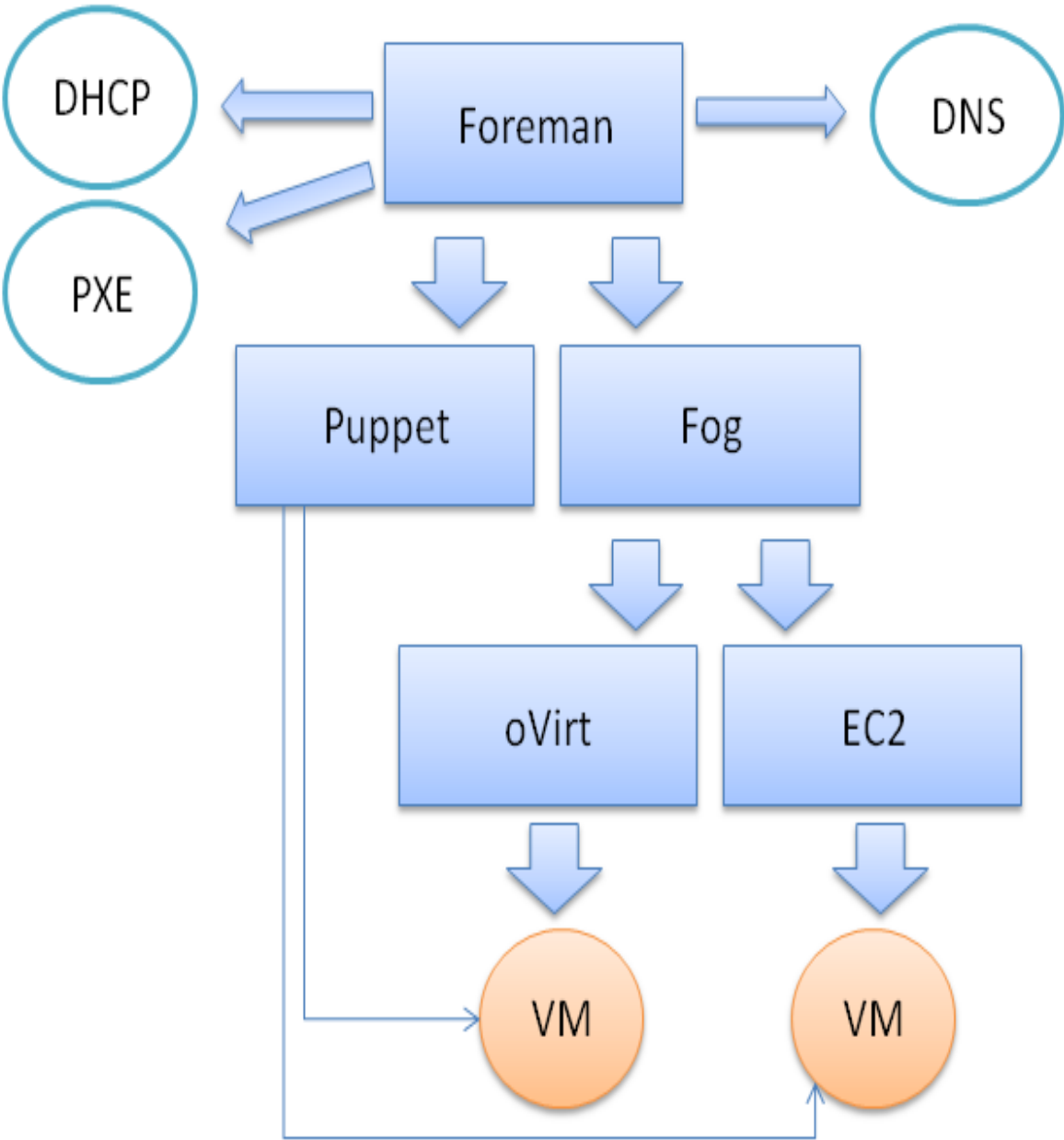
- T
- R
- p

```
1 class ntpd {
2     include ntpd::params
3
4     package { "ntp":
5         ensure => latest,
6     }
7
8     service{"ntp":
9         ensure      => running,
10        enable       => true,
11        hasstatus    => true,
12        hasrestart   => true,
13    }
14
15    file {"/etc/ntp.conf":
16        content => template("ntp/ntp.conf"),
17        mode    => 644,
18    }
19 }
```



Foreman: Machine Life Cycle Management

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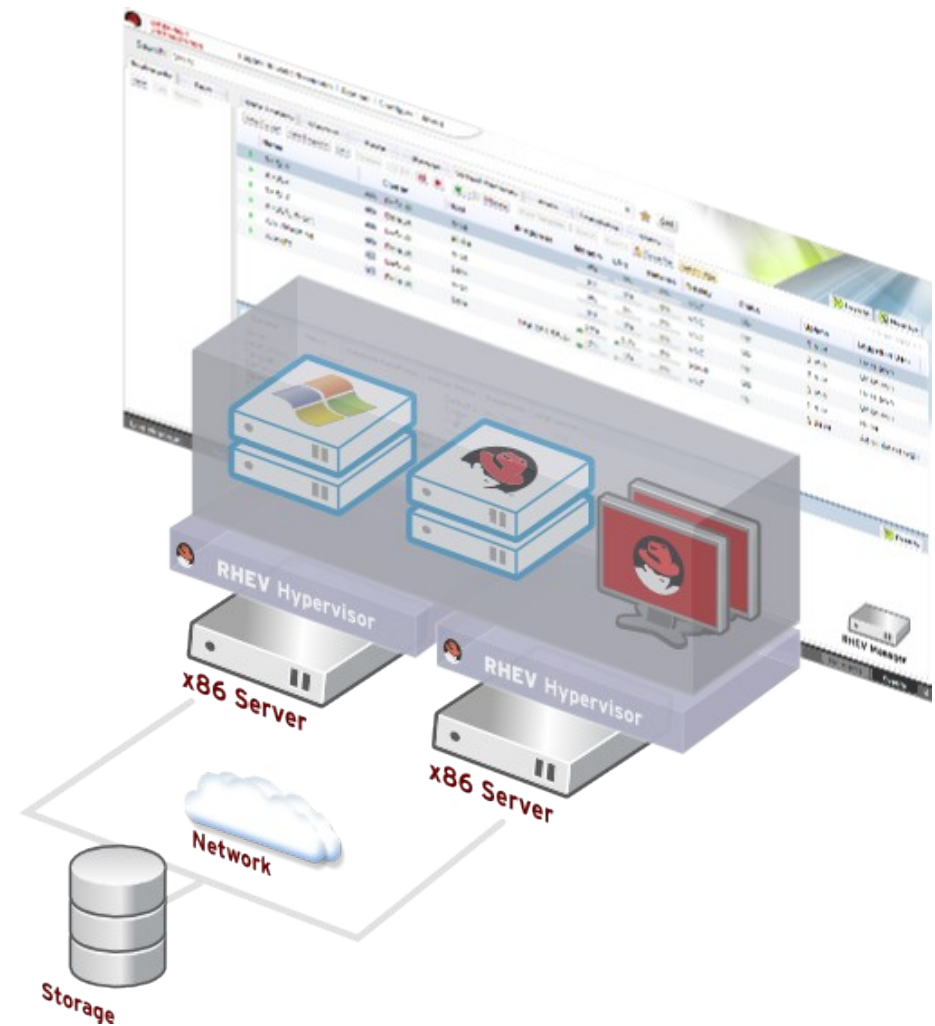
FOREMAN



oVirt: Create and Manage Virtual Machines

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- Large scale, centralized management solution for server and desktop virtualization
- an opensource alternative to vCenter/vSphere
- Has multiple APIs:
 - Python SDK
 - Ruby gem
 - Ovirt CLI
 - REST



So what was the goal of this framework...

To be able to *test a complex virtualization project* in Jenkins with limited resources, time and effort.

And do it in a *reproducible* and *scalable* way.

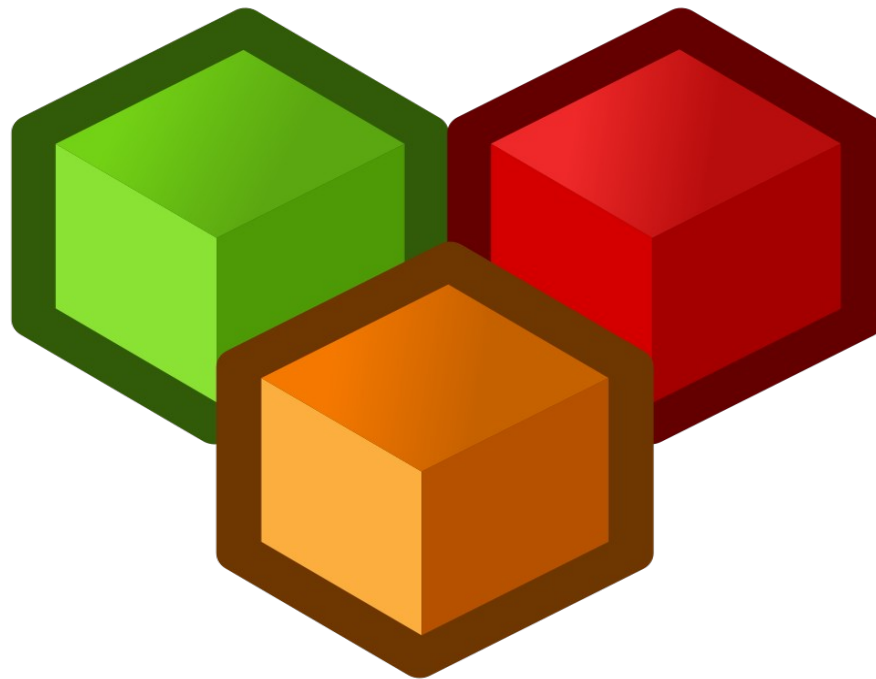


OK,

So how do all these projects integrate with **Jenkins**?



- You guessed it... ,it had to be a ***Jenkins plugin.***
- A ***Jenkins Foreman Plugin*** that will enable any job to request a resource (host or vm) with a specific profile.



- Configure foreman server details in Jenkins.
- All cloud related info will be set inside foreman

Provisioning

foreman url	<input type="text" value="https://foreman.example.com"/>
foreman user	<input type="text" value="jenkins"/>
foreman password	<input type="password" value="*****"/>

configure foreman server credentials.



[Back to Dashboard](#)

[Status](#)

if left blank, vm name will be auto-generated

[Delete Project](#)

Reads automatically available hostgroups from foreman: fedora16, rhel63,ovirt, etc..

[Build History](#) (trend) JDK

[RSS for all](#) [RSS for failures](#)

Project name test_ovirt_engine_setup_using_ovirt_jenkins_plugin

Description Run ovirt 'engine-setup' automatic install.
1. create new slave VM with latest ovirt rpms installed running OS 'x' (foreman profile)
2. run engine-setup with answer file
3. verify install worked

☒ Create a new VM as slave to run on

enter the requested VM name

choose profile for the vm

choose cloud type

☒ Delete VM if job is successful

Discard Old Builds (No new builds will be executed until the project is re-enabled.)

Execute concurrent builds if necessary

(Default)

JDK to be used for this project

☐ Restrict where this project can be run

☒ Create a new VM as slave to run on

enter the requested VM name

please choose the desired network for the VM

please choose profile for the vm

please choose cloud type

☒ delete VM if job is successful

choose from available cloud provides: Amazon, oVirt, libvirt. default is oVirt.

if left blank, vm name will be auto-generated

Reads automatically available hostgroups from foreman

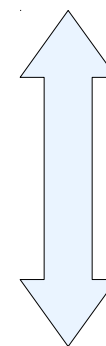
Reads available networks from foreman

choose from available cloud provides: Amazon, oVirt, libvirt. default is oVirt.

- Foreman 'Physical Hosts Pool Feature'



RESERVED



FREE



Provision Host CLI

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Usage: provision_host.py [options]

Options:

- h, --help show this help message and exit
- n AMOUNT, --num-of-hosts=AMOUNT
number of hosts for provisioning, default is 1
- p PROVISION_PROFILE, --profile=PROVISION_PROFILE
provisioning profile name to use on host, use '-s'
option to see list of profiles
- s, --show-profiles list of profile names available for provisioning
- d, --debug show debug messages on stdout
- l, --list-hosts list current free hosts and profiles
- r, --list-reserved-hosts
list current reserved hosts and reason/failure
- f HOSTS_TO_FREE, --free-host-list=HOSTS_TO_FREE
csv list of hosts to free for provisioning
- o OUTPUT_FILENAME, --output-file=OUTPUT_FILENAME
outfile file to write a csv list of hosts ready for
use after provisioning

Host Pool: show profiles

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- Show me the list of available *profiles* to use (which are in fact 'host-groups' in foreman)

```
1 ./provision_host.py -s
2 2012-06-07 17:29:40,495 - provision_host - INFO - Initializing ssh client..
3 2012-06-07 17:29:40,495 - provision_host - INFO - Retrieving list of provisioning profiles...
4
5 Available profiles for provisioning:
6 *****
7 P-RHEL63-CANDIDATE
8 P-RHEL62-BASE
9 P-F16-OVIRT-DEV-LATEST
0 P-RHEL63-RHEVM3.1-DEV-LATEST
1 P-RHEL62-RHEVM3.0-Z
2 P-F16-BASE
3 P-F17-BASE
4 P-RHEL63-RHEVM3.1-HOST
5 *****
```

- Show me the list of available *hosts* in pool currently free for use

```
./provision_host.py -l
2012-06-07 17:32:15,739 - provision_host - INFO - Initializing ssh client..
2012-06-07 17:32:15,739 - provision_host - INFO - Retrieving list of available hosts for provisioning...

Available hosts for provisioning:
*****
cinteg27.ci.lab.tlv.redhat.com
cinteg31.ci.lab.tlv.redhat.com
cinteg32.ci.lab.tlv.redhat.com
cinteg33.ci.lab.tlv.redhat.com
cinteg34.ci.lab.tlv.redhat.com
cinteg35.ci.lab.tlv.redhat.com
cinteg36.ci.lab.tlv.redhat.com
cinteg37.ci.lab.tlv.redhat.com
cinteg38.ci.lab.tlv.redhat.com
cinteg40.ci.lab.tlv.redhat.com
*****
```

- Show me the list of *reserved hosts* in pool currently used. (due to job/debug/error/static assignment)

```
./provision_host.py -r
2012-06-07 17:39:29,411 - provision_host - INFO - Initializing ssh client..
2012-06-07 17:39:29,411 - provision_host - INFO - Retrieving list of reserved hosts ...

Reserved hosts:

Name                Reason:
*****
cinteg04.ci.lab.tlv.redhat.com    staticly assigned for rest api tests
cinteg05.ci.lab.tlv.redhat.com    in debugging to verify bug #555943
cinteg06.ci.lab.tlv.redhat.com    testing f17 (eedri)
cinteg15.ci.lab.tlv.redhat.com    error rebooting server cinteg15.ci.lab.tlv.redhat.com: [Errno 111] Connection refused
cinteg28.ci.lab.tlv.redhat.com    host cinteg28.ci.lab.tlv.redhat.com failed to be installed:
cinteg39.ci.lab.tlv.redhat.com    used for network 3.1 tests (static)
cinteg40.ci.lab.tlv.redhat.com    taken to run jenkins job ${JOB_NAME}, running build ${BUILD_NUM} @ [21-06-12 14:30:33]
*****
```



- Request 1 host with profile 'P-RHEL63-CANDIDATE'

```
./provision_host.py -p P-RHEL63-CANDIDATE -n 1
```

Client requests '1' physical host with 'RHEL 6.3' profile

Foreman finds 'cinteg27' server available

Foreman applies new profile to the server & start provisioning

Client polls foreman for status

Client verifies ssh access to host

Host is ready to use with new profile (RESERVED)

```
*****HOSTS READY FOR USE *****
hosts:cinteg27.ci.lab.tlv.redhat.com
*****
```

2 Patch is reviewed, verified and approved

Gerrit code Review

Reviewer	Verified	Code-Review
Eyal Edri	✓	✓

3 merge patch in the ovirt-engine master branch

+++ git

Poll SCM

4 Found new commit -> trigger job A

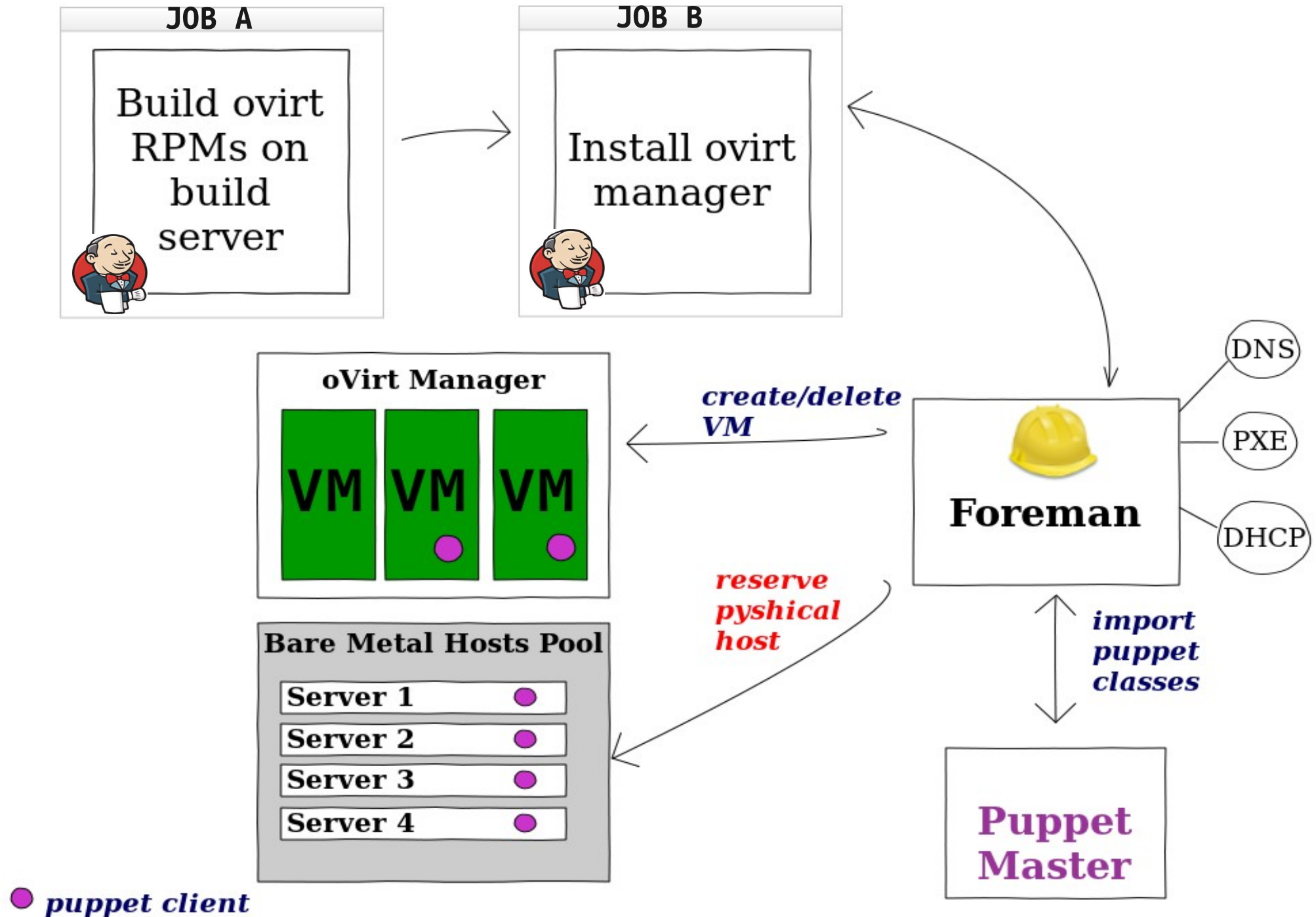
1 Sends a git patch in ovirt-engine for review

oVirt contributor



Example Flow Diagram in Jenkins

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LIVE DEMO

- Foreman provisioning
- Ovirt UI
- Foreman CLI code



Foreman web server provisioning..

- installing webserver via foreman



oVirt: How does it look like?

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Activities Firefox Fri 22:13 en [Icons] Itamar Heim

oVirt Enterprise Virtualization Engine Web Administration - Mozilla Firefox

File Edit View History Bookmarks Tools Help

oVirt Enterprise Virtualization E... +

hateya-fed16.qa.lab.tlv.redhat.com:8080/webadmin/webadmin/WebAdmin.html#vms

oVirt Open Virtualization Manager

Logged in user: admin@internal | Configure | Guide | About | Sign Out

Search: Vms: [Star] [Magnifying Glass]

Data Centers Clusters Hosts Storage **Virtual Machines** Pools Templates Users Events

Tree

- Expand All Collapse All
- System
 - Default
 - ISCSI-RC-DC
 - Storage
 - Templates
 - Clusters
 - intel-cluster
 - Hosts
 - nott-vds2.qa.lab.tlv.red
 - nott-vds3.qa.lab.tlv.red
 - VMs
 - NFS-RC-DC
 - Storage
 - Templates
 - Clusters

Bookmarks

Tags

New Server New Desktop Edit Remove Run Once [Icons] Migrate Make Template Export Move Change CD Assign Tags

Name	Cluster	Host	IP Address	Memory	CPU	Network	Display	Status	Uptime	Logged-in User
kaka	intel-cluster			0%	0%	0%		Down		
myVm1	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	6%	0%	Spice	Up	1 day	
myVm10	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	0%	0%	Spice	Up	1 day	
myVm11	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	0%	0%	Spice	Up	1 day	
myVm12	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	0%	0%	Spice	Up	1 day	
myVm13	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	0%	0%	Spice	Up	1 day	
myVm15	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	0%	0%	Spice	Up	1 day	
myVm16	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	0%	0%	Spice	Up	1 day	
myVm17	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	0%	0%	Spice	Up	1 day	
myVm18	intel-cluster			0%	0%	0%		Down		
myVm19	intel-cluster			0%	0%	0%		Down		
myVm2	intel-cluster			0%	0%	0%		Down		
myVm20	intel-cluster			0%	0%	0%		Down		
myVm21	intel-cluster			0%	0%	0%		Down		
myVm22	intel-cluster			0%	0%	0%		Down		
myVm23	intel-cluster			0%	0%	0%		Down		
myVm24	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	0%	0%	Spice	Paused	5 days	
myVm25	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	6%	0%	Spice	Paused	5 days	
myVm26	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	0%	0%	Spice	Paused	5 days	
myVm27	intel-cluster	nott-vds2.qa.lab.tlv.red		0%	0%	0%	Spice	Paused	5 days	


Last Message: [Green Checkmark] 2012-Jan-31, 23:18:41 User admin@internal logged in. [3 Alerts] Events

Hosts

https://puppet/hosts

Google

[pearltrees](#)
[pixelpaton](#)
[Apple](#)
[Yahoo!](#)
[YouTube](#)
[Google Maps](#)
[News \(722\)](#)
[Popular](#)
[Wikipedia](#)
[SpringAhead:Login](#)



[Foreman](#)
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[Statistics](#)
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Hosts

Filter ...

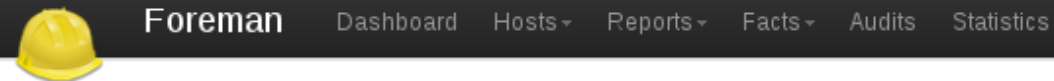
Search

Select Actions

New Host

<input checked="" type="checkbox"/>	Name	Operating system	Environment	Model	Host Group	Last report	
<input type="checkbox"/>	 puppet	 CentOS 6.0	production	VMware Virtual Platfo	default	27 minutes ago	Edit Clone Delete
<input checked="" type="checkbox"/>	 puppetagent1	 CentOS 6.0	production		default		Edit Clone Delete
<input checked="" type="checkbox"/>	 puppetagent3	 CentOS 6.0	production		default		Edit Clone Delete
<input type="checkbox"/>	 puppetmaster	 CentOS 6.0	production		default		Edit Clone Delete
<input checked="" type="checkbox"/>	 rhel4raidtest	 CentOS 4.8	production		default		Edit Clone Delete
<input type="checkbox"/>	 winagent1	windows 6.1	production	VMware Virtual Platfo		about 8 hours ago	Edit Clone Delete

Displaying all 6 hosts - 13 Selected

Build a host-group by selecting existing **puppet** classes

Edit Hostgroup

[Primary](#) [Puppet Classes](#) [Network](#) [Operating System](#) [Parameters](#)

Included Classes

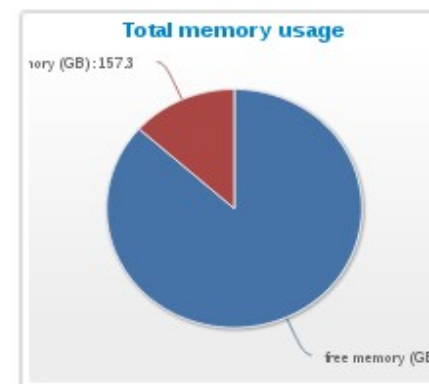
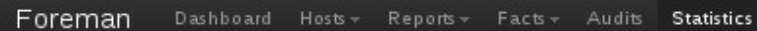
- koji_repos -
- libvirt -
- libvirt::config -
- libvirt::install -
- libvirt::service -
- nightly_repos -
- vdsm-cli-nightly -
- vdsm-cli-nightly::install -
- vdsm-nightly -
- vdsm-nightly::install -
- vdsm-nightly::service -
- autofs
- base
- puppet::cron
- ganglia
- motd
- myselinux
- ntpd
- myselinux::params
- ntpd::params
- puppet
- ssh
- vim
- yum

Available Classes

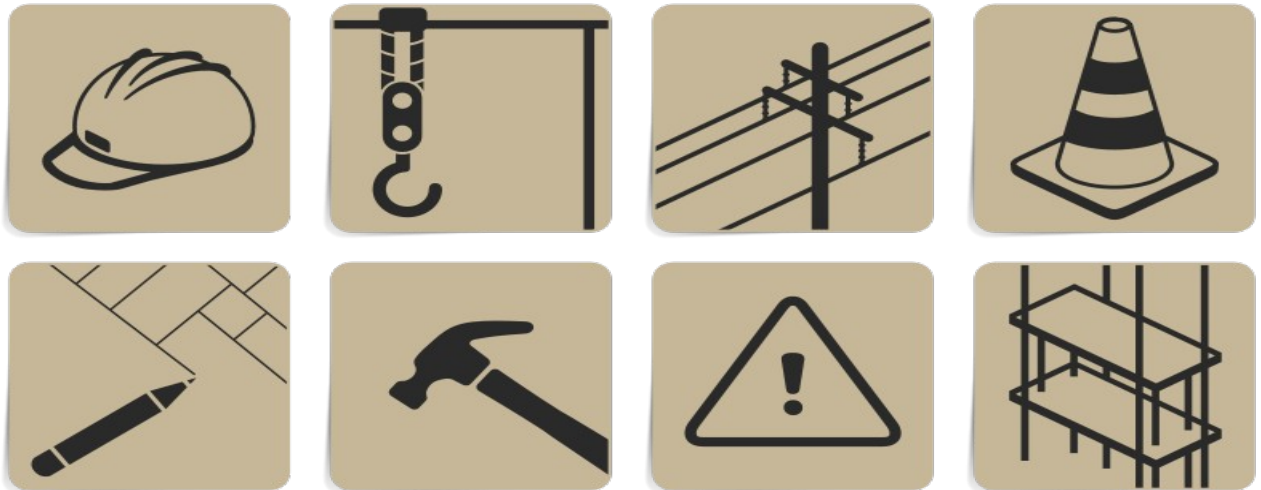
- ant
- apache
- autofs
- automation_repos
- base
- brew_repos
- console
- device-mapper-multipath
- epel-repos
- foreman
- foreman_proxy
- ganglia
- git
- iptables
- iscsi-initiator-utils
- java-openjdk
- jenkins-jnlp-slave
- koji_repos
- libvirt
- maven3
- motd
- myselinux
- nightly_repos
- ntpd
- ovirt-engine
- ovirt_31
- ovirt_repos
- passenger
- postgres
- puppet
- python-dateutil
- python-paramiko
- python-tools
- qemu
- redhat-brew-repos
- redhat-yum-repos
- rhel_63_repos
- rhel_repos
- rhev-m-atf
- rhev-m_30
- rhev-m_31
- rhn
- rpm-tools
- ruby_packages
- rubygem-json
- ruth-agent-nightly
- ruth-nightly
- ssh
- ssh-authorized-keys
- stable-repos
- staf
- stdlib
- sudoers
- ttf
- users
- users-ssh
- vdsm
- vdsm-bootstrap
- vdsm-bootstrap-nightly
- vdsm-cli
- vdsm-cli-nightly
- vdsm-cli-rhev-m-30
- vdsm-cli-stable
- vdsm-fixed
- vdsm-hook-faqemu
- vdsm-nightly
- vdsm-rhev-m-30
- vdsm-rhev-m-30-repos
- vdsm-stable
- vim
- xinetd
- yum

Cancel

Submit



- Jenkins Foreman plugin
- Foreman (Jenkins) slaves manager plugin
- Jenkins Custom Testing Plugin
- Control Jenkins jobs via puppet (job as a resource)
- Extending Jenkinsapi python library



Summary: Join the fun - Contribute!

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- You can get into the action and join any of those projects, patches are welcome :)

Foreman	https://github.com/theforeman/foreman
oVirt	http://www.ovirt.org/project/community/
Puppet	http://www.ovirt.org/project/community/



- <http://ovirt.org>
- <http://theforeman.org>
- <http://puppetlabs.com/community/overview/>
- <http://jenkins-ci.org>
- <https://github.com/eedri/foreman>



Still awake..? Good!

Any Questions?



**Platinum
Sponsors**



**Silver
Sponsor**





Eyal edri

eedri@redhat.com



irc.freenode.net

#ovirt, #theforeman, #jenkins

