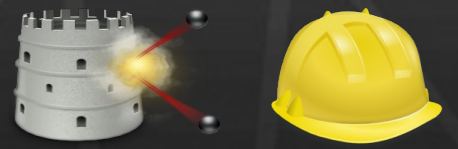
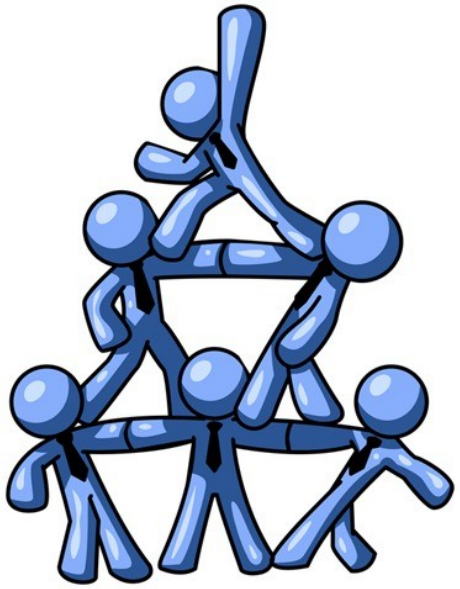
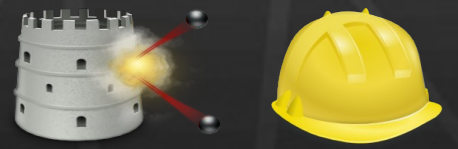


Integrating **oVirt, Foreman And Katello** To Empower Your Data-Center Utilization

Yaniv Bronhaim
Senior Software Engineer,
Maintainer @ RHEV

Red Hat IL, Raanana
March 2016, FOSSASIA, Singapore





Agenda

- oVirt, Foreman and Katello preview
- New Third-party integration In oVirt 3.6
  - Using Foreman in for Bare-Metal Provisioning (Started in 3.5)
  - Using Katello for displaying Errata (update) content information
- oVirt 3.6 Upgrade Manager by otopi
- oVirt 4.0 plans

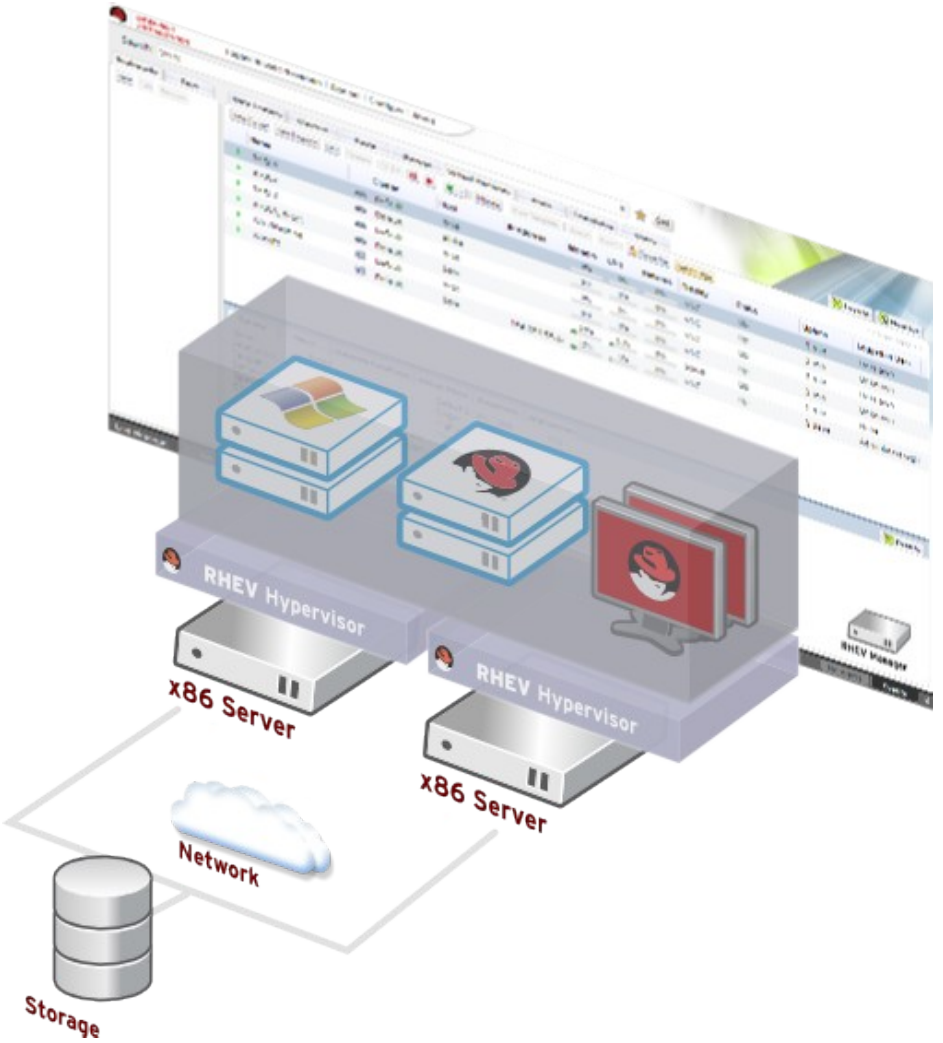
What is oVirt?

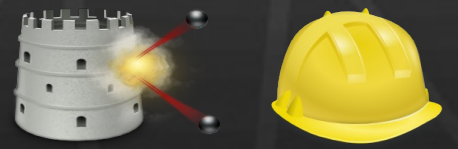
Large scale, centralized management for server and desktop virtualization

Based on leading performance, scalability and security infrastructure technologies

Provide an open source alternative to vCenter/vSphere/Xen

Focus on ease of use/deployment





Performance, Scalability, Security, Privacy, Intuitive for variant users

Maintain a large amount of resources

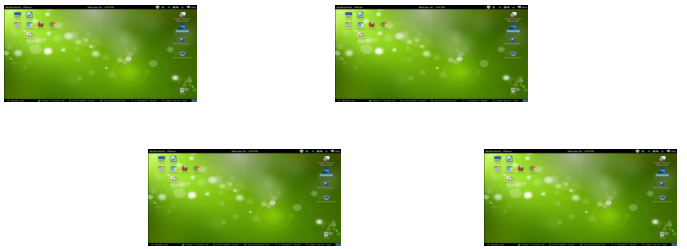
Data Centers

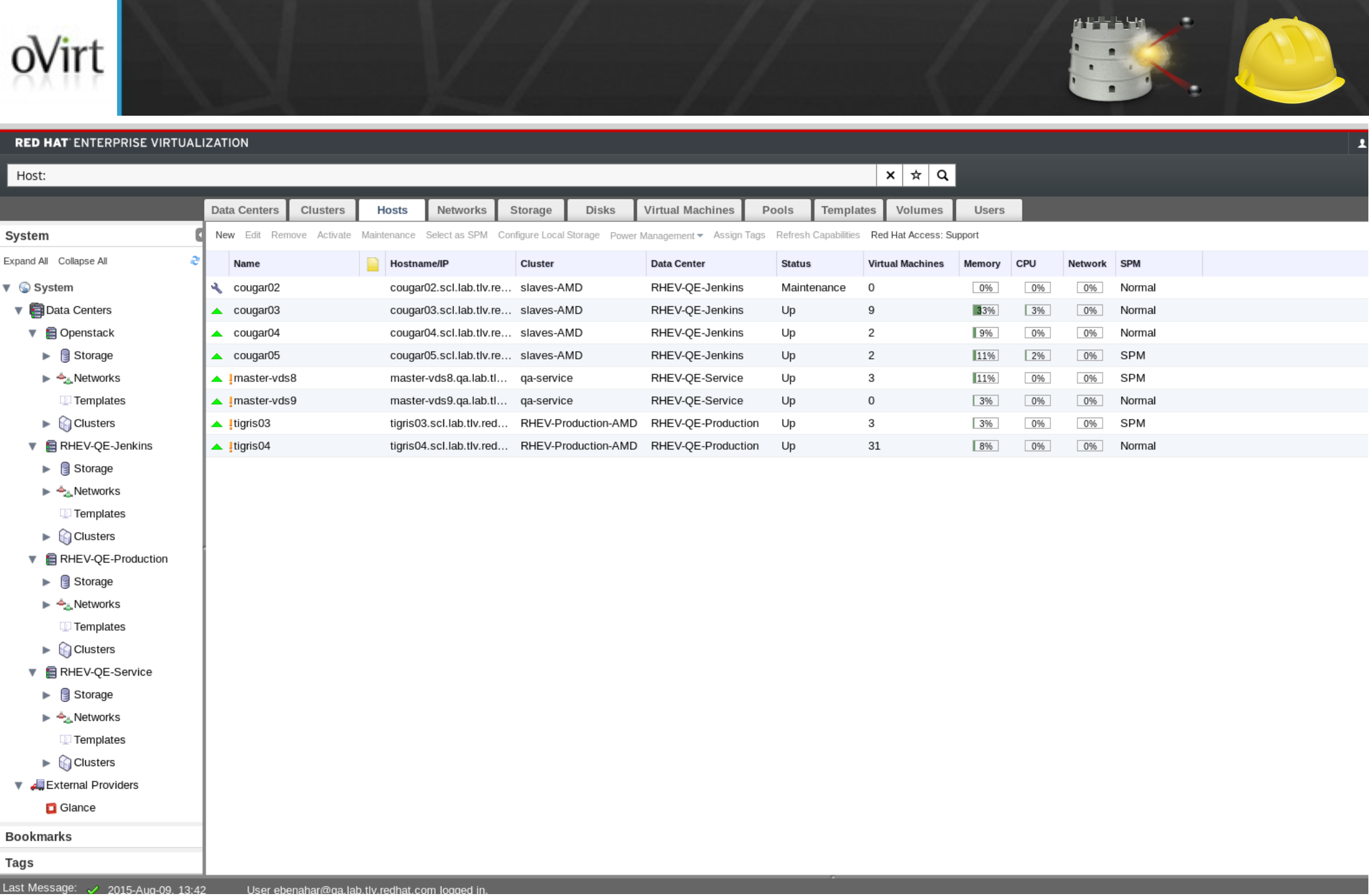
Linux Hypervisors

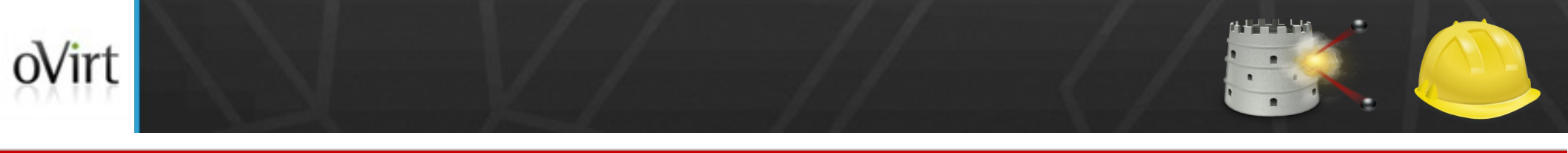
Storage

Network

Guests \ VMs




oVirt
RED HAT ENTERPRISE VIRTUALIZATION
Host:
Data Centers
Clusters
Hosts
Networks
Storage
Disks
Virtual Machines
Pools
Templates
Volumes
Users
System
Expand All
Collapse All
System
Data Centers
Openstack
Storage
Networks
Templates
Clusters
RHEV-QE-Jenkins
Storage
Networks
Templates
Clusters
RHEV-QE-Production
Storage
Networks
Templates
Clusters
RHEV-QE-Service
Storage
Networks
Templates
Clusters
External Providers
Glance
Bookmarks
Tags
New
Edit
Remove
Activate
Maintenance
Select as SPM
Configure Local Storage
Power Management
Assign Tags
Refresh Capabilities
Red Hat Access: Support
Name
Hostname/IP
Cluster
Data Center
Status
Virtual Machines
Memory
CPU
Network
SPM
cougar02 cougar02.scl.lab.tlv.re... slaves-AMD RHEV-QE-Jenkins Maintenance 0 0% 0% 0% Normal
cougar03 cougar03.scl.lab.tlv.re... slaves-AMD RHEV-QE-Jenkins Up 9 3% 3% 0% Normal
cougar04 cougar04.scl.lab.tlv.re... slaves-AMD RHEV-QE-Jenkins Up 2 9% 0% 0% Normal
cougar05 cougar05.scl.lab.tlv.re... slaves-AMD RHEV-QE-Jenkins Up 2 11% 2% 0% SPM
master-vds8 master-vds8.qa.lab.tl... qa-service RHEV-QE-Service Up 3 11% 0% 0% SPM
master-vds9 master-vds9.qa.lab.tl... qa-service RHEV-QE-Service Up 0 3% 0% 0% Normal
tigris03 tigris03.scl.lab.tlv.red... RHEV-Production-AMD RHEV-QE-Production Up 3 3% 0% 0% SPM
tigris04 tigris04.scl.lab.tlv.red... RHEV-Production-AMD RHEV-QE-Production Up 31 8% 0% 0% Normal
Last Message:
2015-Aug-09, 13:42
User ebenahar@qa.lab.tlv.redhat.com logged in.



RED HAT ENTERPRISE VIRTUALIZATION

Vms:

Data Centers | Clusters | Hosts | Networks | Storage | Disks | Virtual Machines | Pools | Templates | Volumes | Users

System

Expand All Collapse All

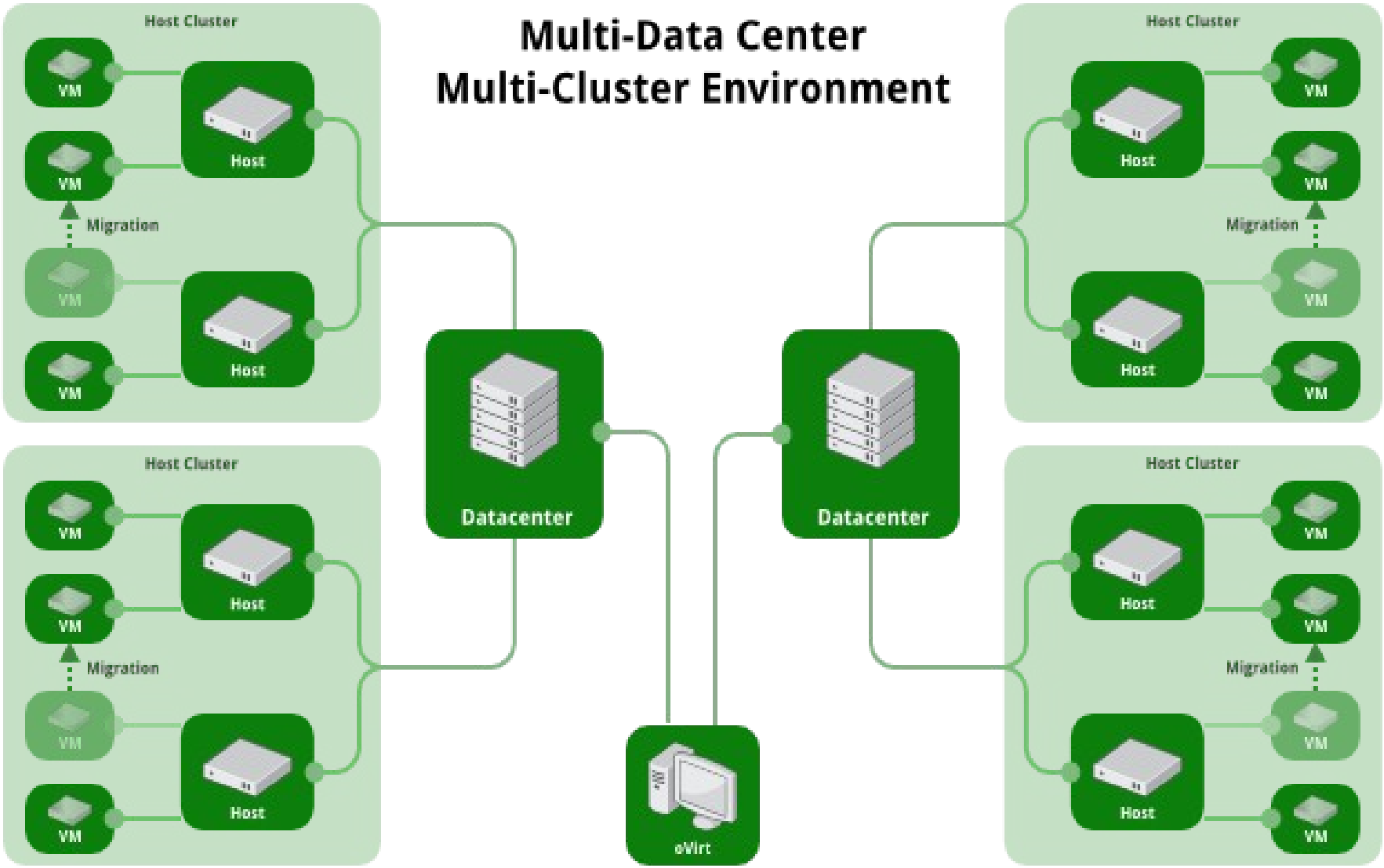
- System
  - Data Centers
    - Openstack
      - Storage
      - Networks
      - Templates
      - Clusters
    - RHEV-QE-Jenkins
      - Storage
      - Networks
      - Templates
      - Clusters
    - RHEV-QE-Production
      - Storage
      - Networks
      - Templates
      - Clusters
    - RHEV-QE-Service
      - Storage
      - Networks
      - Templates
      - Clusters
  - External Providers
    - Glance

Bookmarks

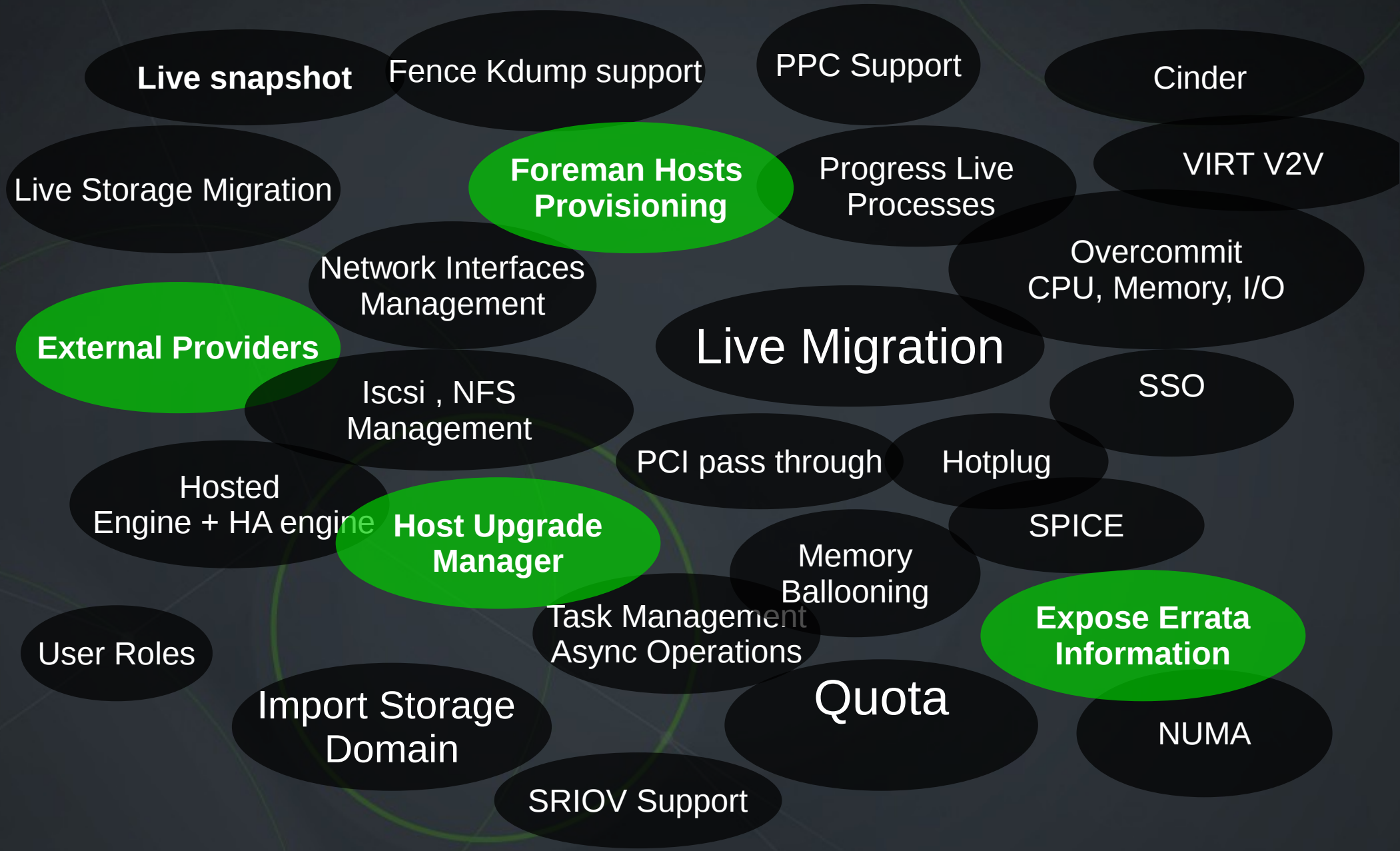
New VM | Edit | Remove | Clone VM | Run Once | Migrate | Cancel Migration | Make Template | Export | Create Snapshot | Change CD | Assign Tags | Guide Me | Red Hat Access: Support

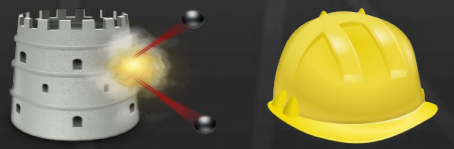
Name	Host	IP Address	FQDN	Cluster	Data Center	Memory	CPU	Network	Migration	Display	Status
ahirshbe_openst…				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
aqua-rhel				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
art-build-srv	master-vds8			qa-service	RHEV-QE-Service	0%	0%	0%	0%	SPICE	Up
art-demo				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
artyom_ovirt_36	tigris04			RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%	SPICE	Wait For Lau
artyom_rhevm_34				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
artyom_rhevm_35				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
asaf				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
asaf2				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
asaf3				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
asaf-vm1				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
asaf-vm2				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
asaf-vm3				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
atest7-sat-lab-tlv…				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
atom-db				qa-service	RHEV-QE-Service	0%	0%	0%	0%		Down
augol-scripts-test				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
bkopilov--1				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
bkopilov--2				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
bkopilov--3				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
bluelogs				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
bshuster-1				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
bshuster-2				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
bshuster-docker				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
bshuster-es-kibana				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down
bshuster-jenkins…				RHEV-Production-AMD	RHEV-QE-Produ…	0%	0%	0%	0%		Down

Prepare Virtual Environment



oVirt

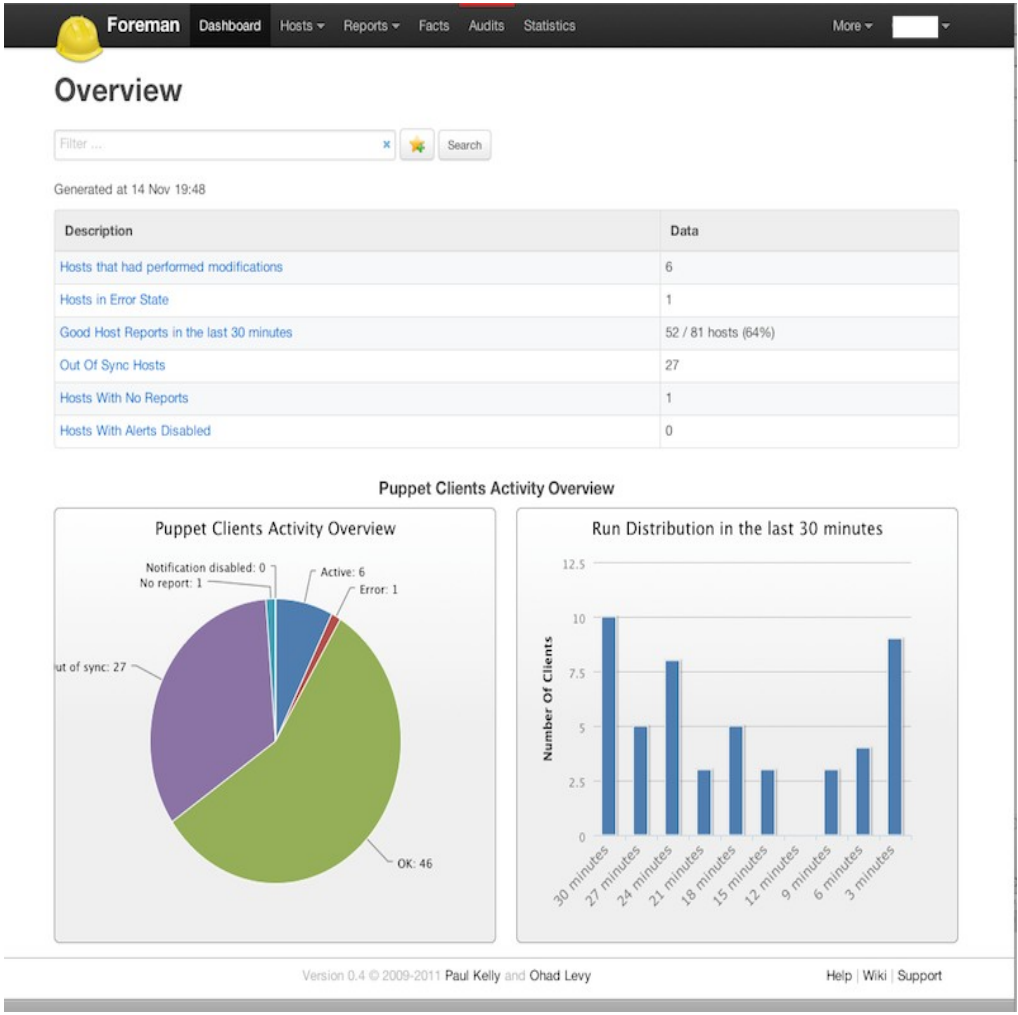

Live snapshot
Fence Kdump support
PPC Support
Cinder
Live Storage Migration
Foreman Hosts Provisioning
Progress Live Processes
VIRT V2V
Network Interfaces Management
Overcommit CPU, Memory, I/O
External Providers
Live Migration
Iscsi , NFS Management
SSO
PCI pass through
Hotplug
Hosted Engine + HA engine
Host Upgrade Manager
SPICE
Memory Ballooning
Task Management Async Operations
Expose Errata Information
User Roles
Import Storage Domain
Quota
NUMA
SRIOV Support

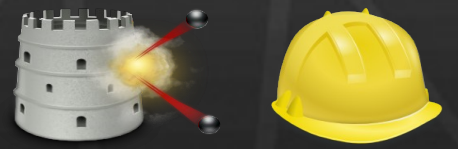


FOREMAN

Complete lifecycle management tool for physical and virtual servers.

Provision, Configure and Monitor server.





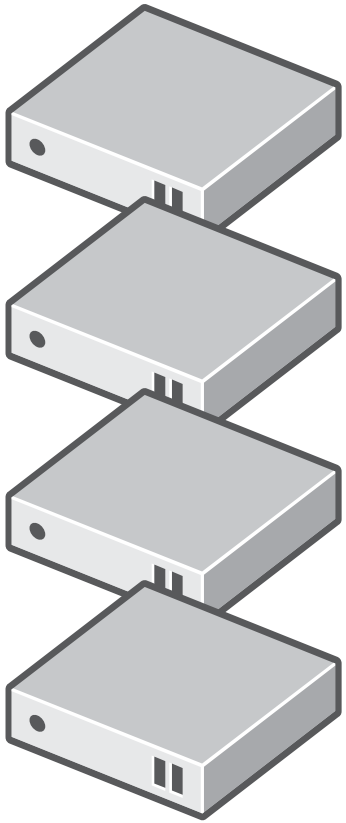
Three Steps For Managing Physical Hardware

Provision
Initial startup

Configure

Monitor

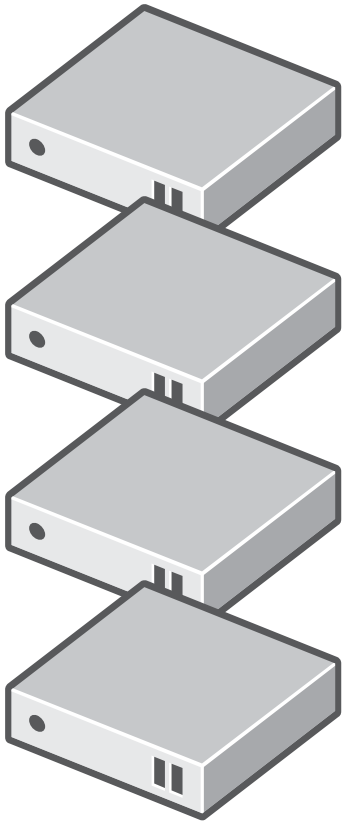
Provision

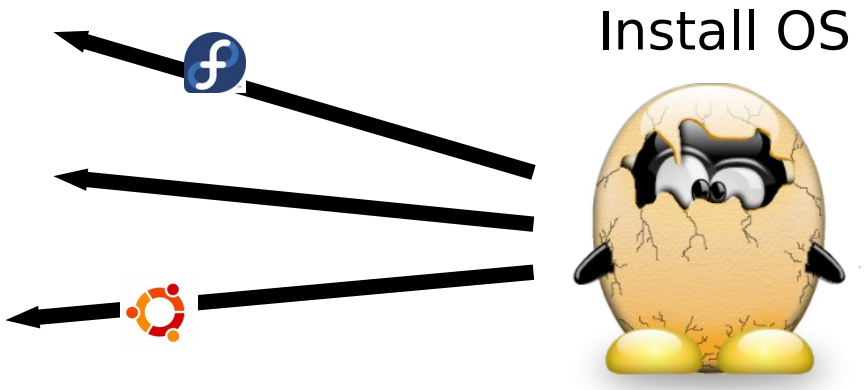


Your Data Center

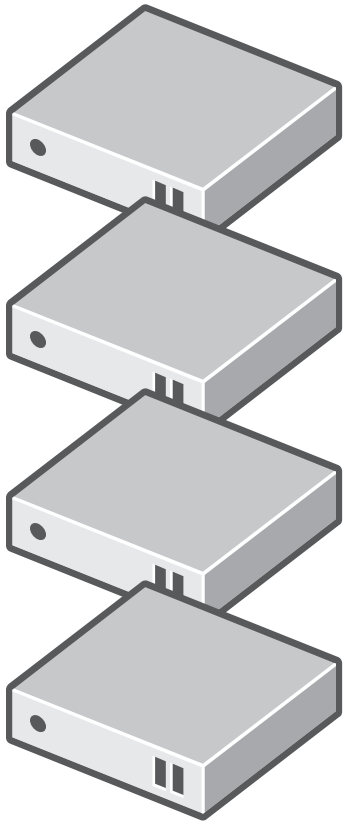
Connect

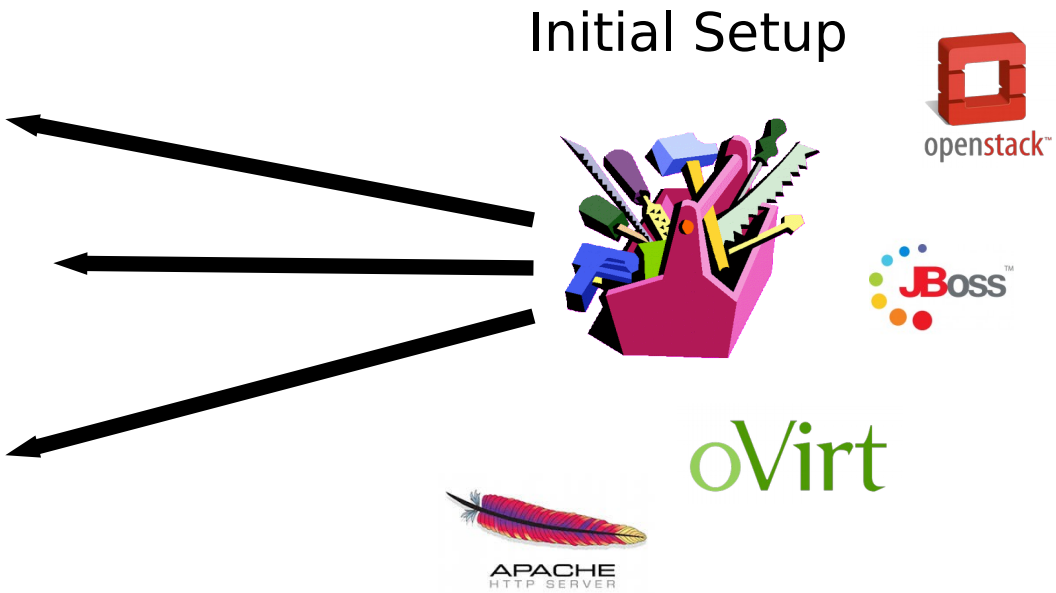
Provision



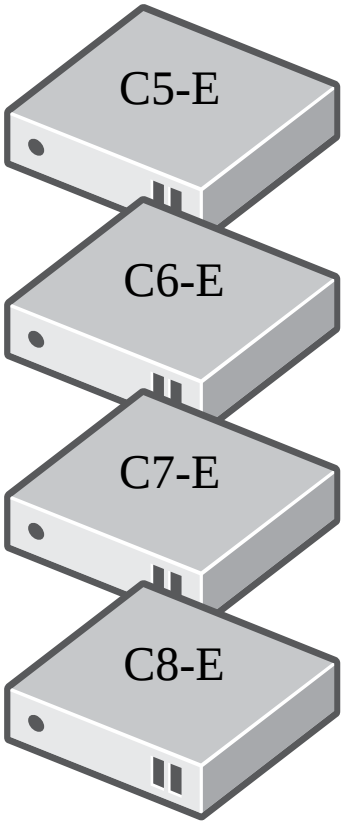


Configure





Configure



S1-A = 00:11:22:33:44:23

S2-A = 0A:1B:C2:CC:44:55

C8-E = A3:AA:C7:92:12:32

C4-E = A3:BB:D7:92:42:32

C5-F = A3:EB:F4:92:12:32

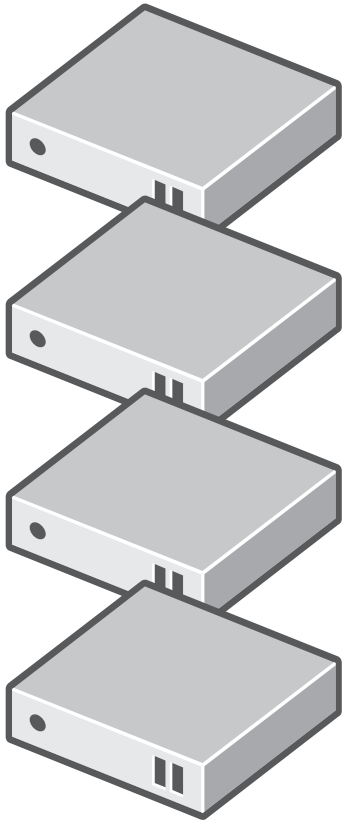
D5-E = A3:BC:D7:92:12:22

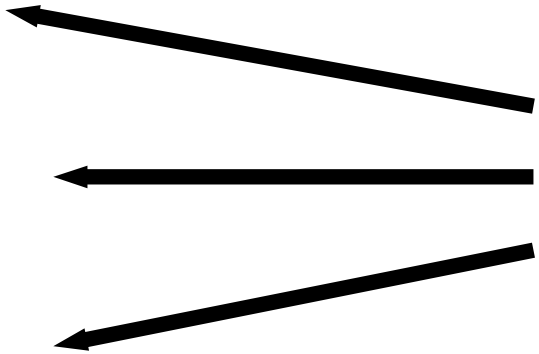
B5-E = A3:BB:D7:92:12:12

Monitor

5

Monitor And Update – Drift Management





How it's being done by Foreman

Foreman Provision

Foreman Configurator

Foreman Management

Foreman
Provision

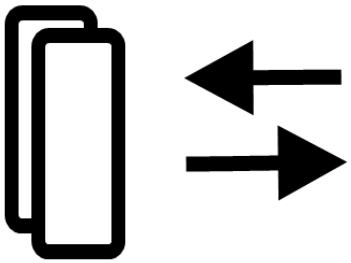
Foreman
Configurator

Foreman
Management

PXE
Boot

Ubunto
RHEL
Fedora
CentOS

DNS
DHCP
TFTP



Smart Proxy

Foreman
Provision

Passwords
Keys
Users
Services

Foreman
Configurator

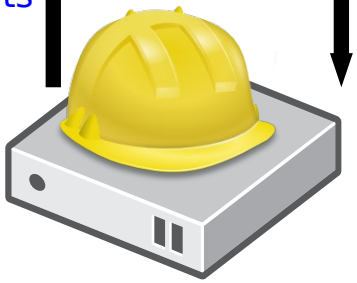
Foreman
Management

Provision templates
Host groups
Puppet classes
Parameters

Configuration
Management

Chef
Puppet

Reports



Foreman

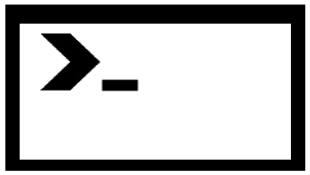
Provision

Foreman

Configurator

Foreman

Management



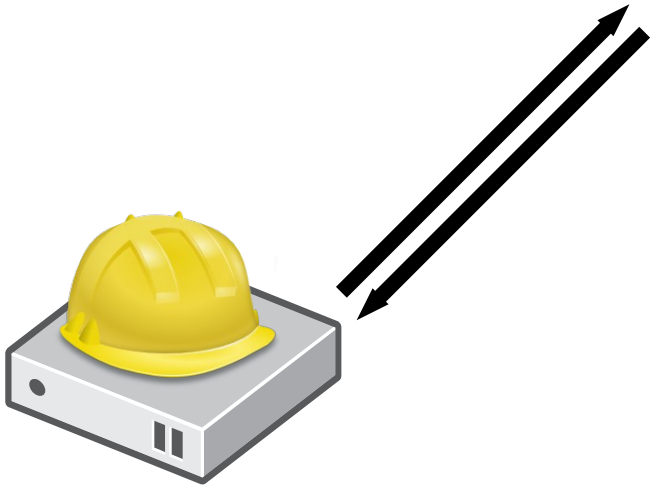
Interface

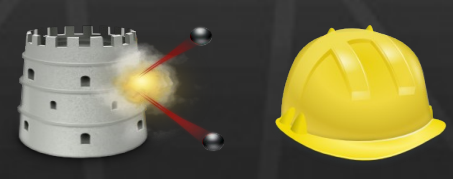
UI, API, Cli

Rest API

Web

Interface





FOREMAN

Yaniv Liberman

Any Context | Monitor | Hosts | Configure | Infrastructure | Administer

Overview

Filter ... | Search

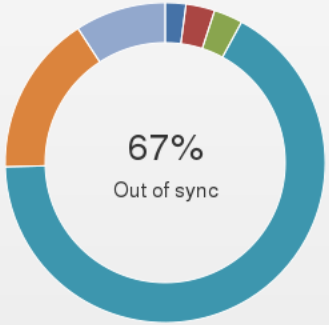
Generated at 12 Aug 14:58 | Manage dashboard

Host Configuration Status

Hosts that had performed modifications without error	5
Hosts in error state	7
Good host reports in the last 35 minutes	7
Hosts that had pending changes	0
Out of sync hosts	160
Hosts with no reports	39
Hosts with alerts disabled	22

Total Hosts: 240

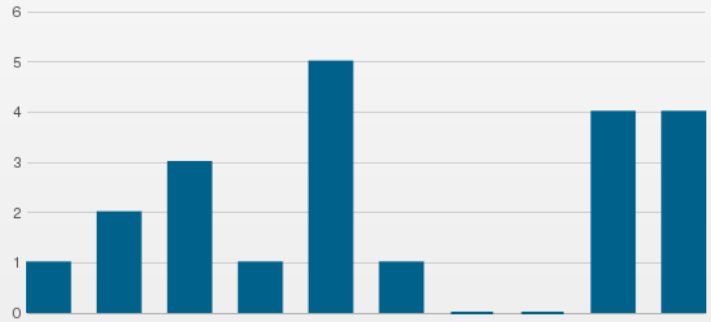
Host Configuration Chart

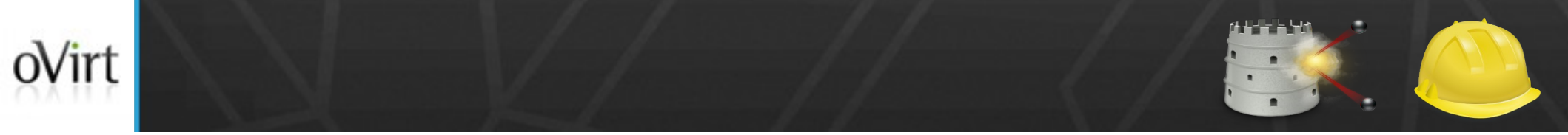


Latest Events

Host	A	R	F	FR	S	P
orange-vdsf...	0	0	2	0	0	0
tigris03.sc...	0	0	0	0	6	0
puma08.scl....	26	1	0	0	0	0
nott-vdsa.q...	0	0	2	0	0	0
orange-vdse...	0	0	2	0	0	0
cougar16.sc...	1	0	2	0	4	0

Run distribution in the last 30 minutes





FOREMAN

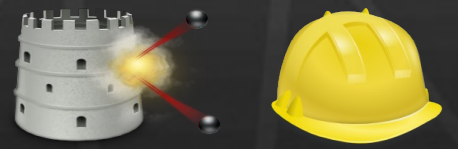
Yaniv Liberman

Any Context | Monitor | Hosts | Configure | Infrastructure | Administer

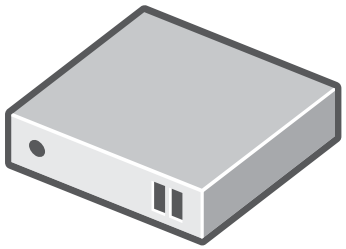
Hosts

Filter ... | Search | New Host

Name	Operating system	Environment	Model	Host group	Last report	
S alma01.qa.lab.tlv.redhat.com	RHEL 6.5	qe_common	PowerEdge C...	qe_common/Compute	about 1 year ago	Edit
B alma02.qa.lab.tlv.redhat.com	RHEL 6.5	qe_common	PowerEdge C...	qe_common/Compute	about 1 year ago	Edit
S alma05.qa.lab.tlv.redhat.com	RHEL 6.5	qe_common	ProLiant DL...		10 months ago	Edit
S alma06.qa.lab.tlv.redhat.com	RHEL 6.5	qe_common	ProLiant DL...		10 months ago	Edit
S aqua-vds1.qa.lab.tlv.redhat...	RHEL 7.1	qe_common	PowerEdge R...	qe_common/OpenStack	2 days ago	Edit
S aqua-vds10.qa.lab.tlv.redha...	RHEL 6.5	production	PowerEdge R...	qe_common/OpenStack	over 1 year ago	Edit
B aqua-vds2.qa.lab.tlv.redhat...	RHEL 6.4	qe_common		qe_common/Core		Edit
B aqua-vds3.qa.lab.tlv.redhat...	RHEL 6.5	qe_common		qe_common/Core		Edit
S aqua-vds4.qa.lab.tlv.redhat...	RHEL 6.6	qe_common	PowerEdge R...	qe_common/Storage	8 months ago	Edit
S aqua-vds5.qa.lab.tlv.redhat...	RHEL 6.5	qe_common	PowerEdge R...	qe_common/Storage	8 months ago	Edit
B aqua-vds6.qa.lab.tlv.redhat...	RHEL 6.5	qe_common		qe_common/Core		Edit
S aqua-vds8.qa.lab.tlv.redhat...	RHEL 7.1	qe_common	PowerEdge R...	qe_common/OpenStack	2 days ago	Edit
S aqua-vds9.qa.lab.tlv.redhat...	RHEL 7.1	qe_common	PowerEdge R...	qe_common/OpenStack	2 days ago	Edit

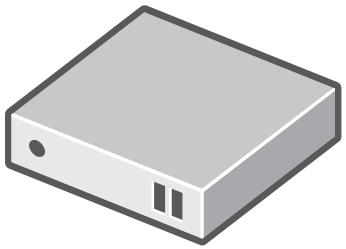


Bare Metal Provisioning



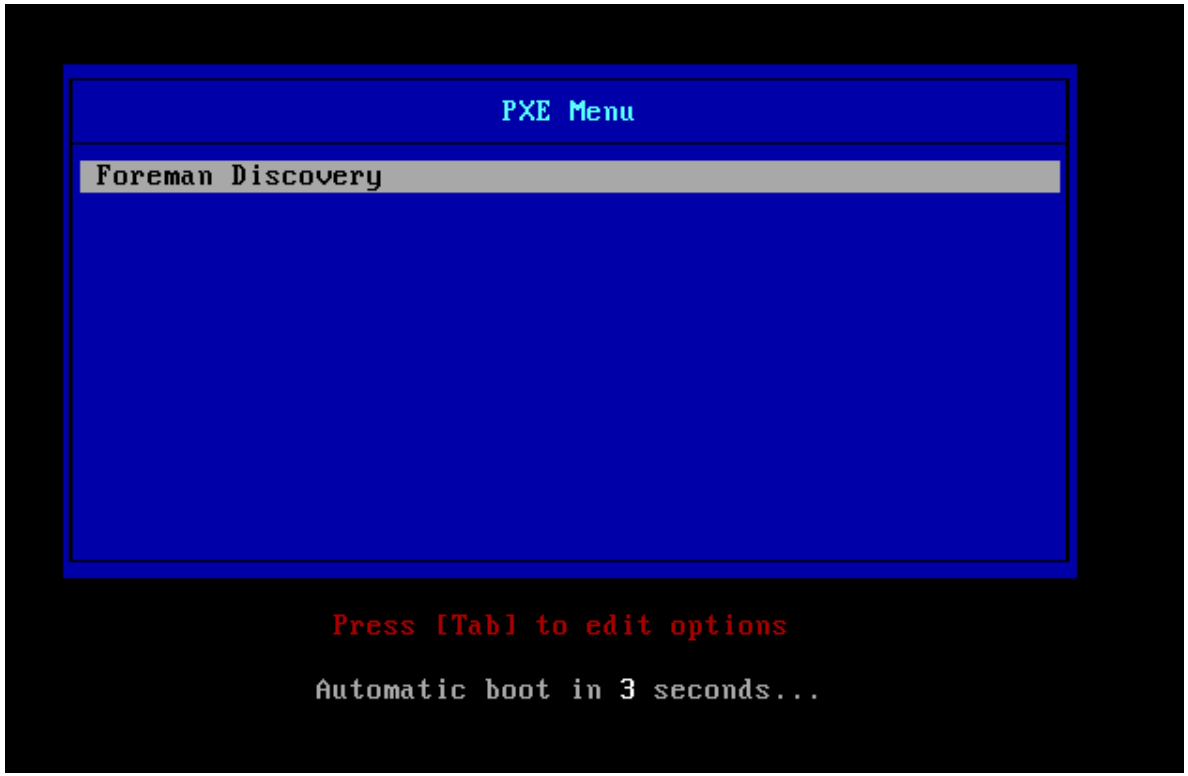
Foreman

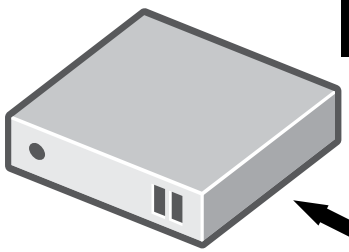
Client (web portals)



Foreman

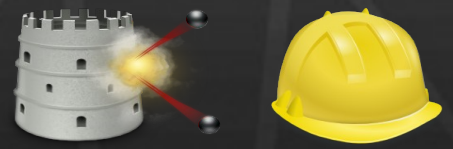
Client (web portals)



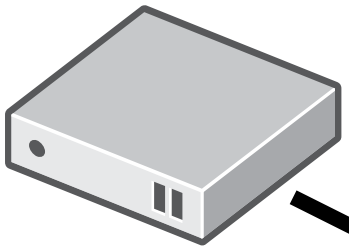


Foreman

Client (web portals)



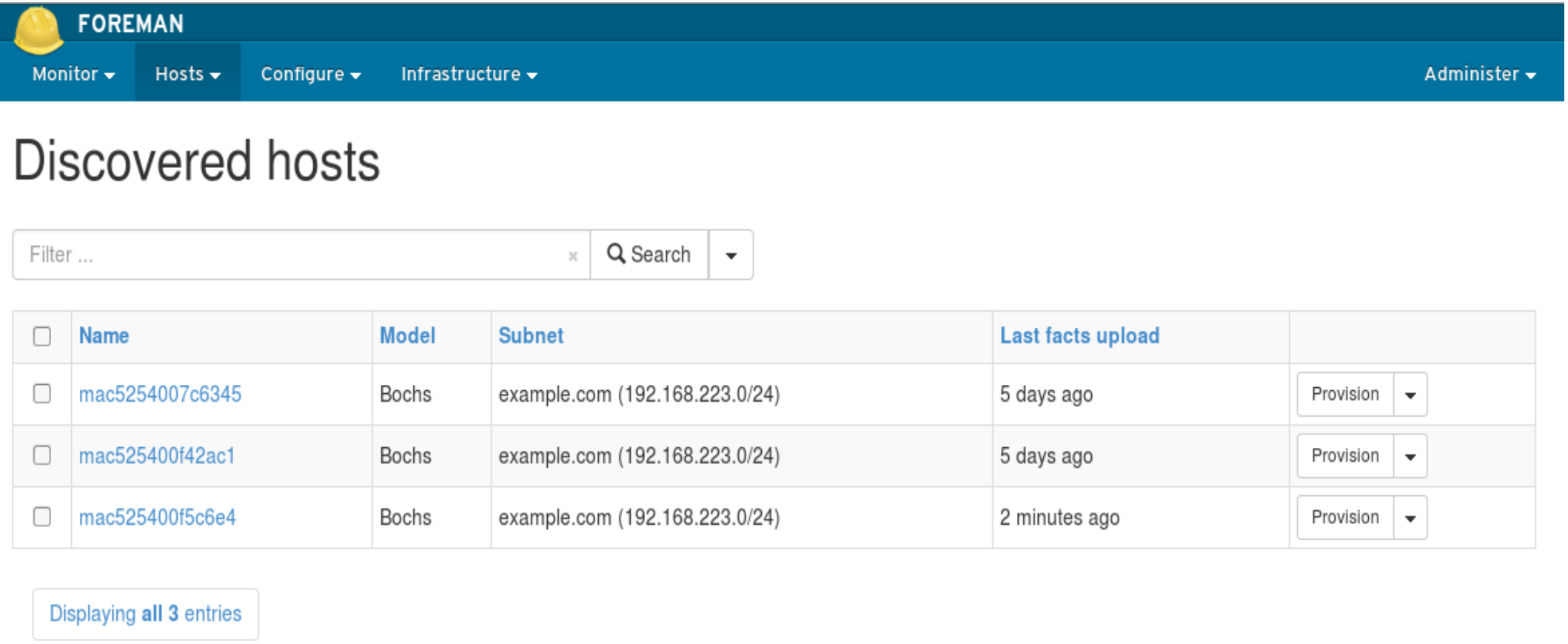
```
[   0]  memorytotal: 868.48 MB
[   0]  productname: Bochs
[   0] Logs from discovery services now follows:
[   0] Fact cache invalid, reloading to foreman
[   0] Parsing kernel line: rootflags=loop initrd=boot/discovery-initrd.img root
=live:/foreman.iso rootfstype=auto ro rd.live.image rd.live.check rd.lvm=0 rootf
lags=ro crashkernel=128M elevator=deadline max_loop=256 rd.luks=0 rd.md=0 rd.dm=
0 nomodeset selinux=0 stateless foreman.url=http://192.168.223.2:3000 BOOTIF=01-
52-54-00-f5-c6-e4 BOOT_IMAGE=boot/discovery-vmlinuz

[   0] Discovered by URL: http://192.168.223.2:3000
[   0] Registering host with Foreman (http://192.168.223.2:3000)
[   5] Response from Foreman 201: {"host":{"architecture_id":null,"build":false,
"certname":null,"comment":null,"compute_profile_id":null,"compute_resource_id":n
ull,"created_at":"2014-06-30T09:38:24Z","disk":null,"domain_id":null,"enabled":t
rue,"environment_id":null,"hostgroup_id":null,"id":121,"image_file":null,"image_
id":null,"installed_at":null,"ip":"192.168.223.244","last_compile":null,"last_fr
eshcheck":null,"last_report":"2014-06-30T09:38:24Z","location_id":null,"mac":"52
:54:00:f5:c6:e4","managed":false,"medium_id":null,"model_id":1,"name":"mac525400
f5c6e4","operatingsystem_id":null,"organization_id":null,"otp":null,"owner_id":n
ull,"owner_type":null,"provision_method":null,"ptable_id":null,"puppet_ca_proxy_
id":null,"puppet_proxy_id":null,"puppet_status":0,"realm_id":null,"root_pass":nu
ll,"serial":null,"source_file_id":null,"subnet_id":1,"updated_at":"2014-06-30T09
:38:29Z","use_image":null,"uuid":null}}
_
```



Foreman

Client (web portals)

Bare Metal Provisioning



Bare Metal Provisioning

FOREMAN

Monitor ▾ | Hosts ▾ | Configure ▾ | Infrastructure ▾ | Administer ▾

Discovered host: mac5254007c6345

Provision | Refresh facts | Delete

Facts discovered on this host

Fact	Value
architecture	x86_64
discovery_bootif	52:54:00:7c:63:45
discovery_version	0.5.4
domain	localdomain
facterversion	1.6.18
fqdn	localhost.localdomain
hardwareisa	x86_64
hardwaremodel	x86_64
hostname	localhost
id	root
interfaces	eth0,lo
ipaddress	192.168.223.238
ipaddress_eth0	192.168.223.238
ipaddress_lo	127.0.0.1
is_virtual	true
lib	/usr/share/ovirt-node-plugin-foreman
lsbdistcodename	RedHatEnterpriseVirtualizationHypervisor

How does Provisioning integrate with oVirt ?

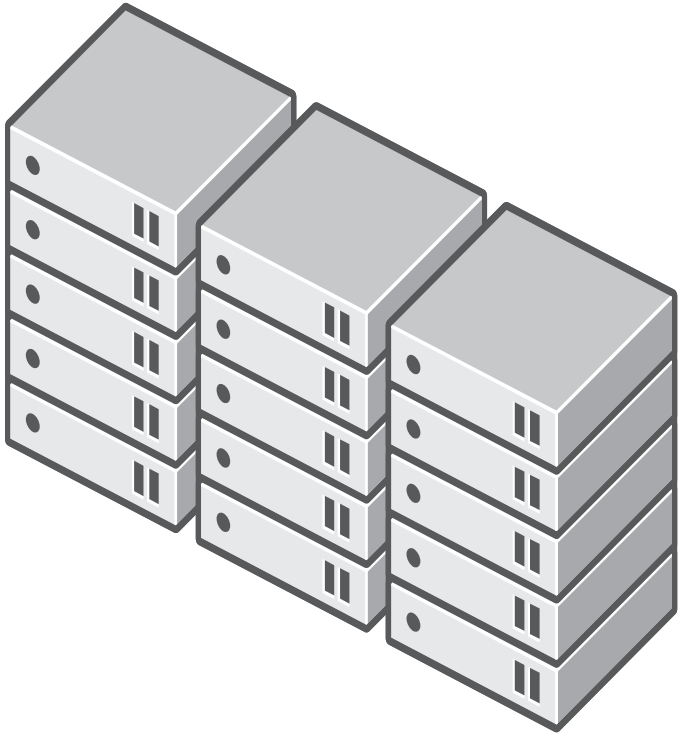
Host
Lifecycle
Management

FOREMAN

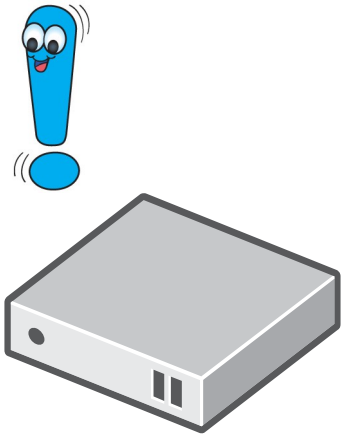
Deploy
Hypervisor

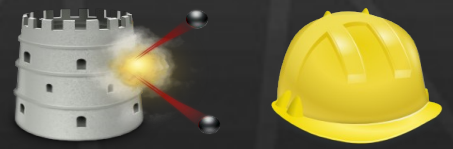
Provision
Bare-Metal
Host

oVirt

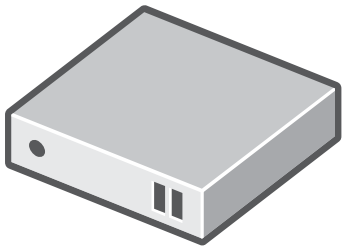


#1 : Provision



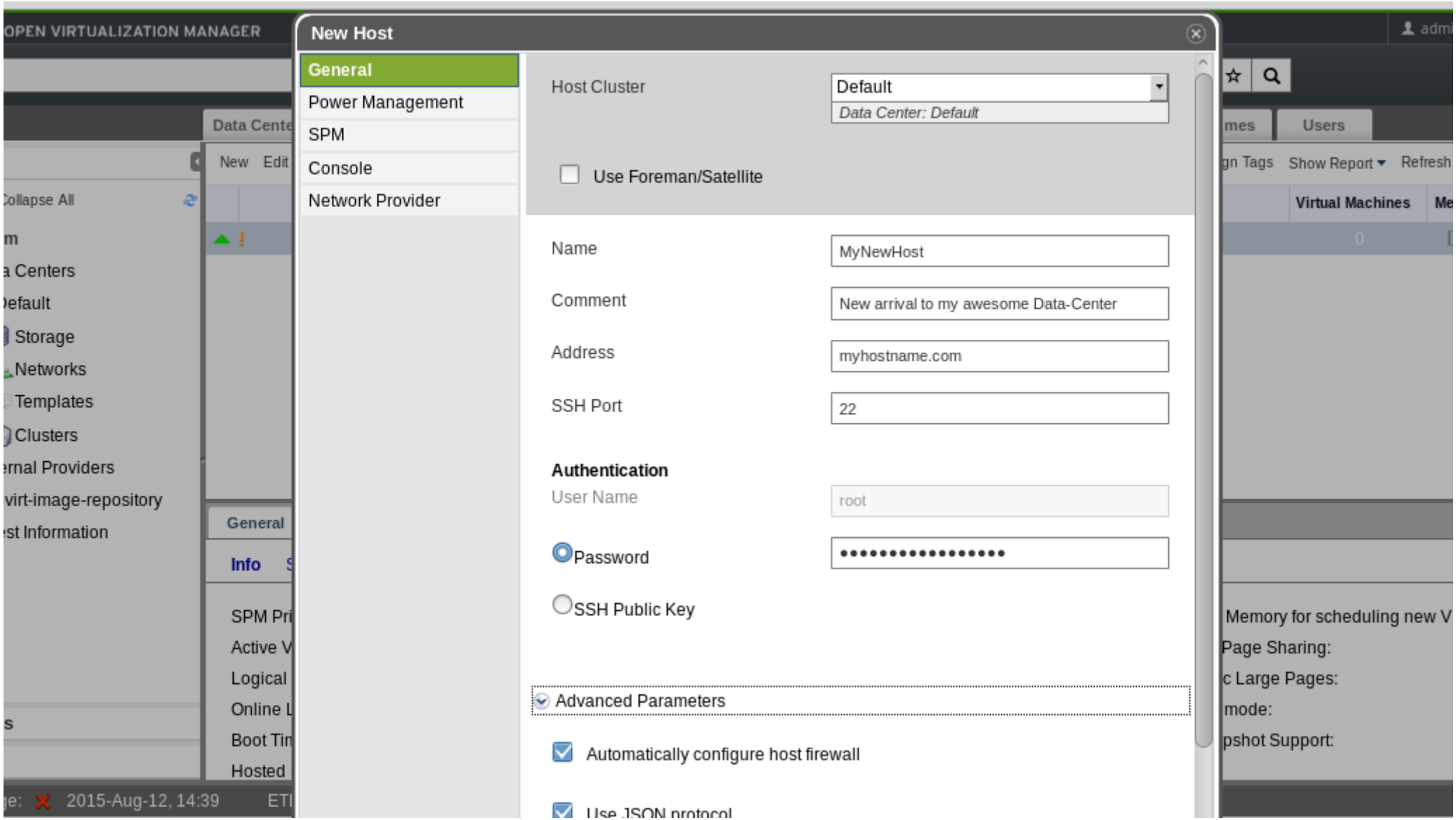


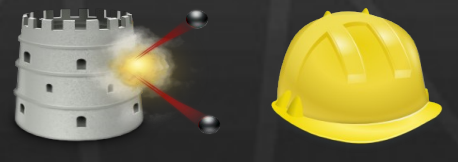
Host Deploy
The Basic Of Utilizing The Hypervisor

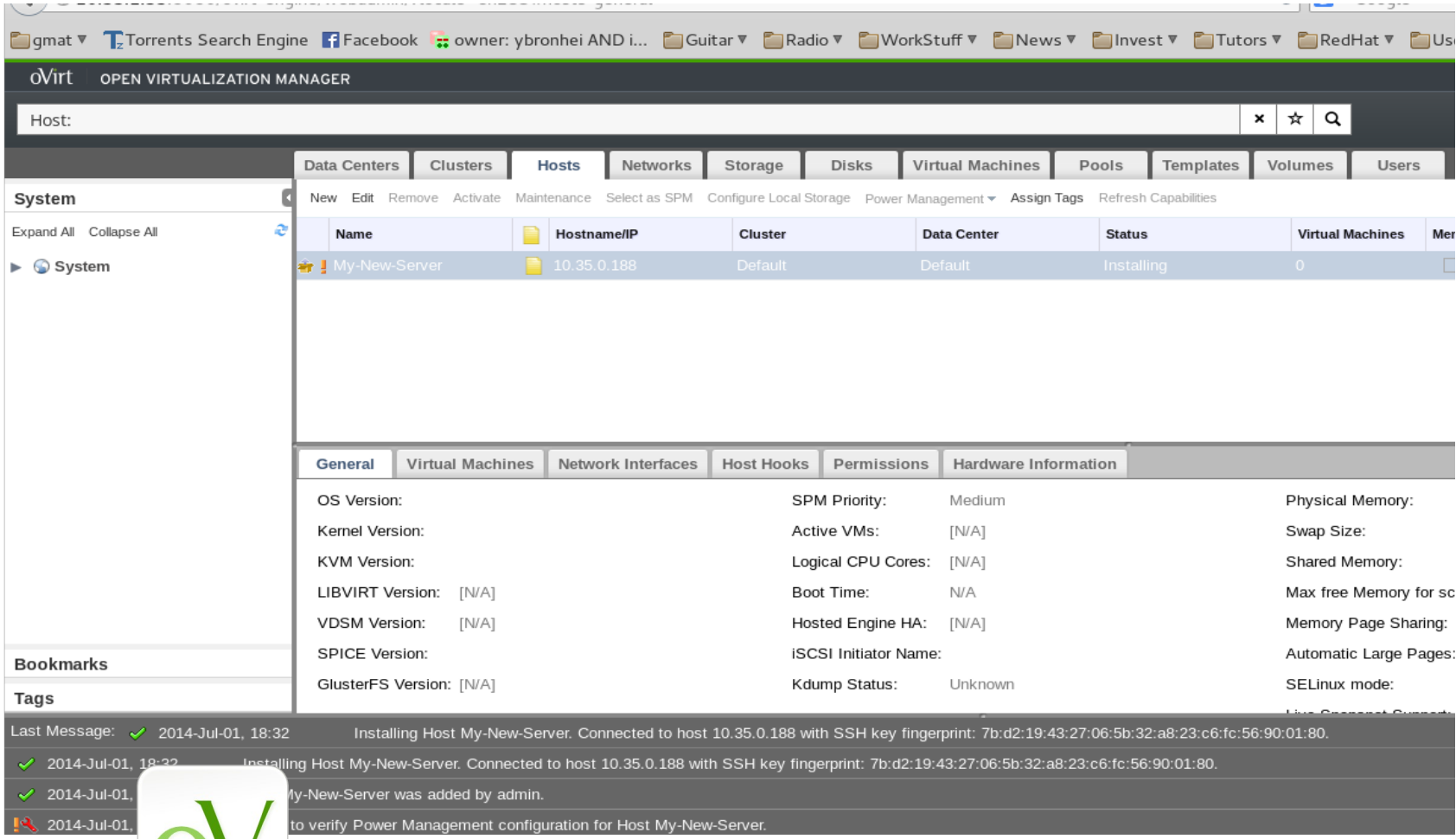


Client (Web Portal)

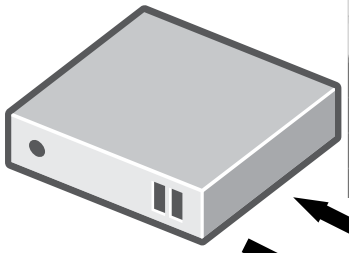
Deploy Host Flow







New Host



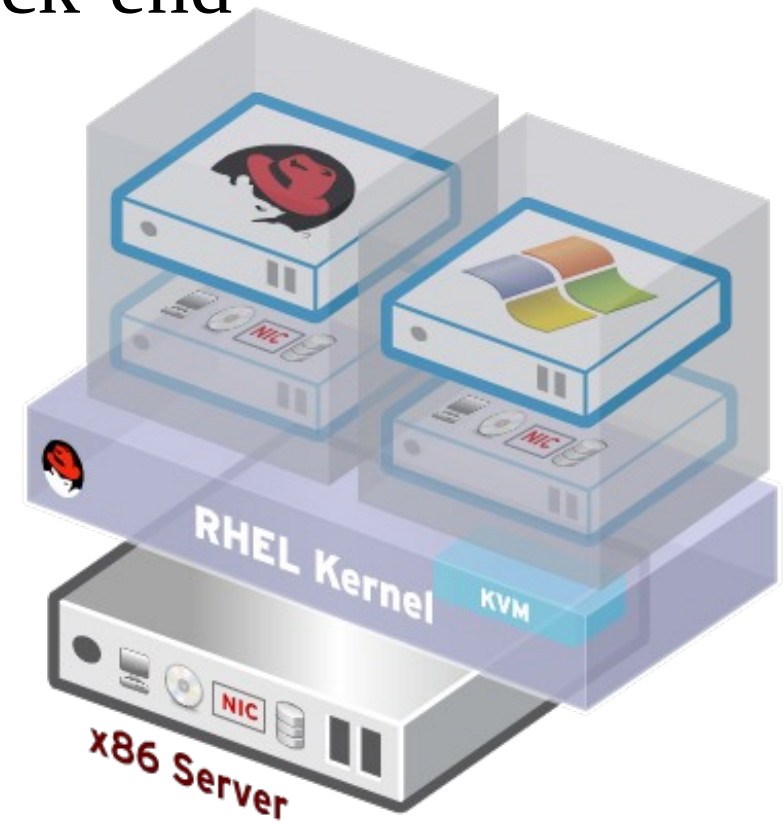
Deploy

(Configure)

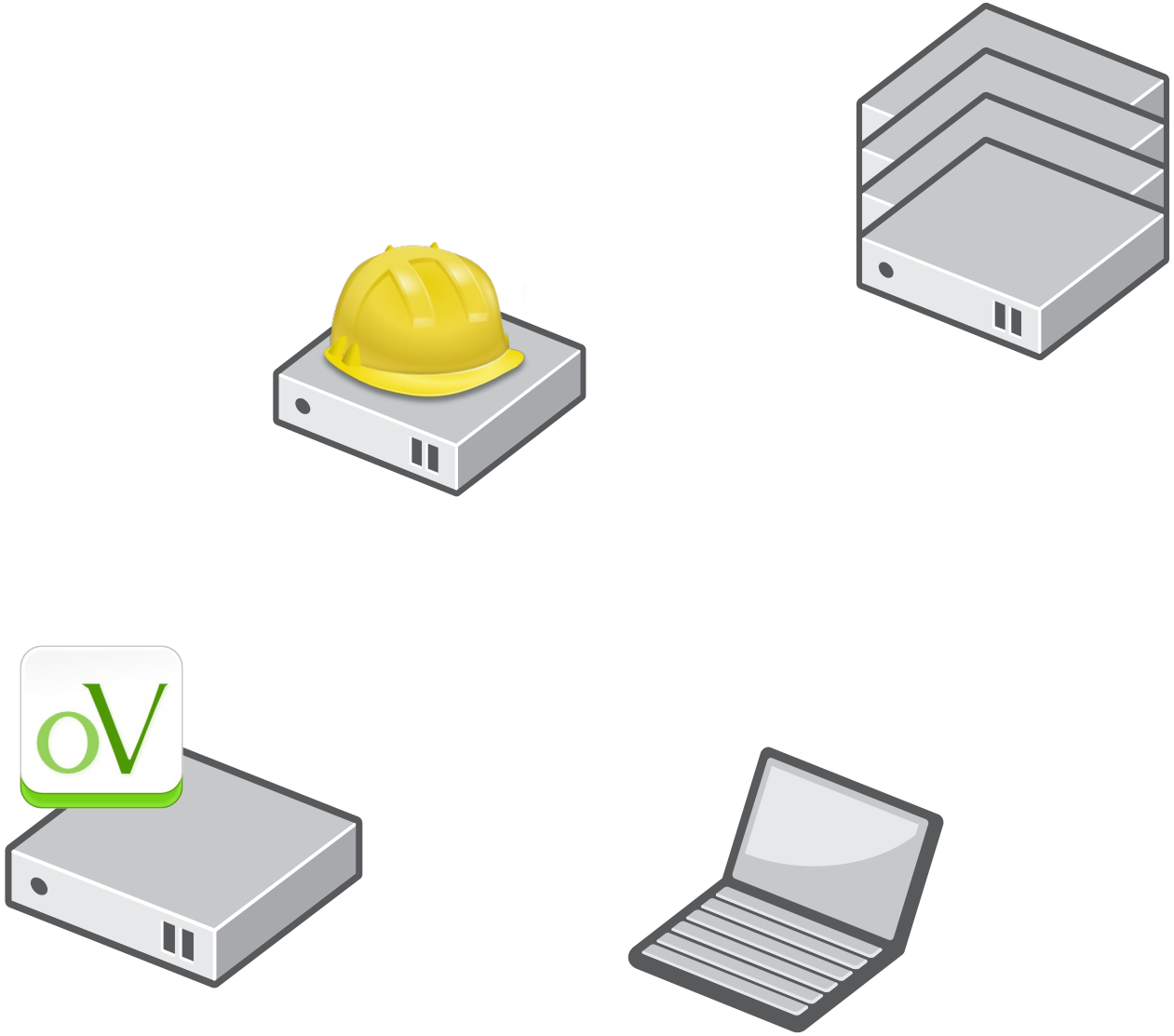
Host Deployment

The process of preparing an operating system environment suitable to host virtual machines and to be managed by the ovirt back-end

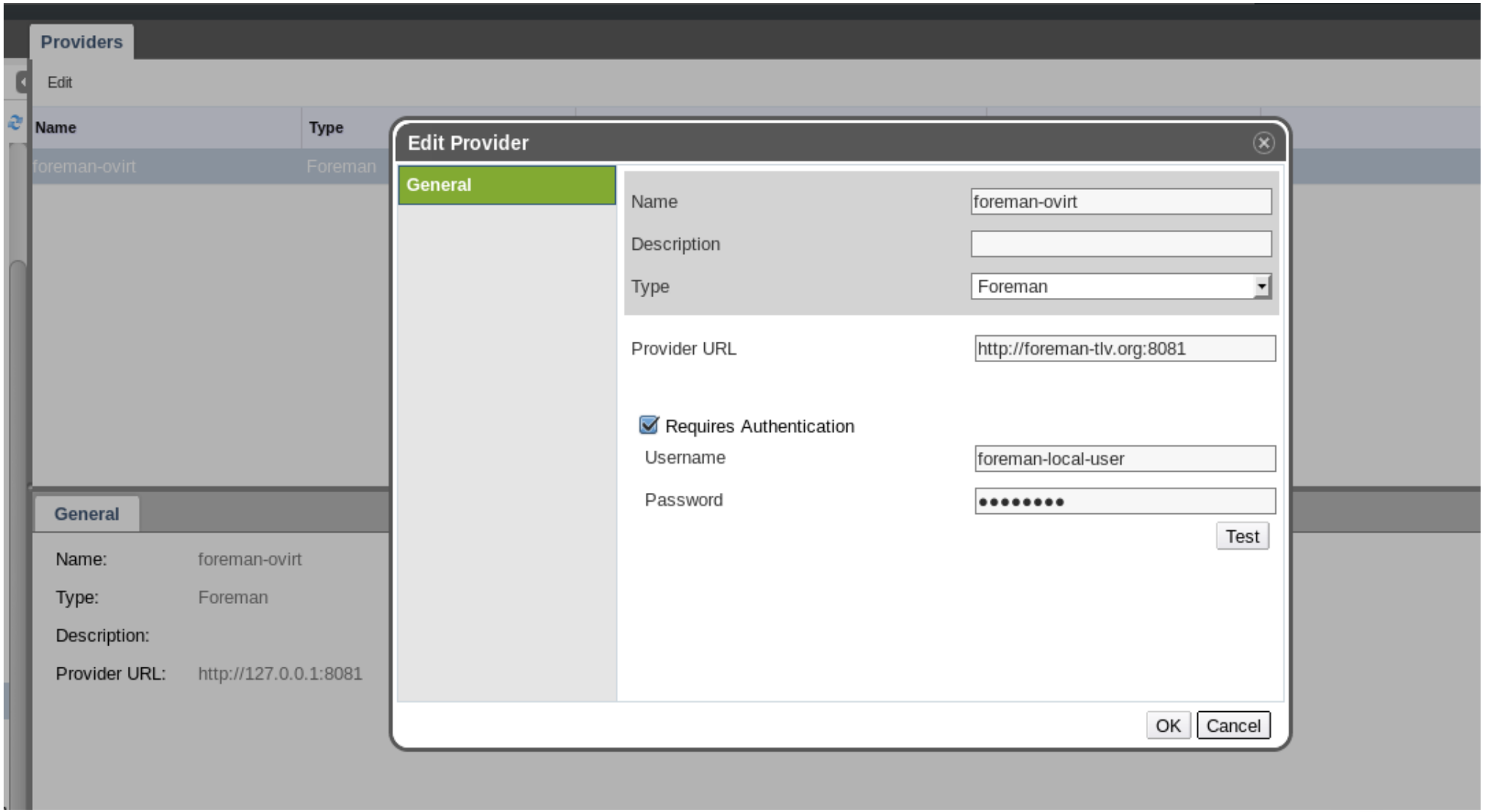
- VDSM packages are installed.
- Clock is 'soft' synchronized.
- Management bridge created.
- Firewall rules applied.
- SSH trust obtained.
- PKI trust obtained.
- VDSM certificate issued.
- Services' boot state set.
- Host tuned for virtualization.

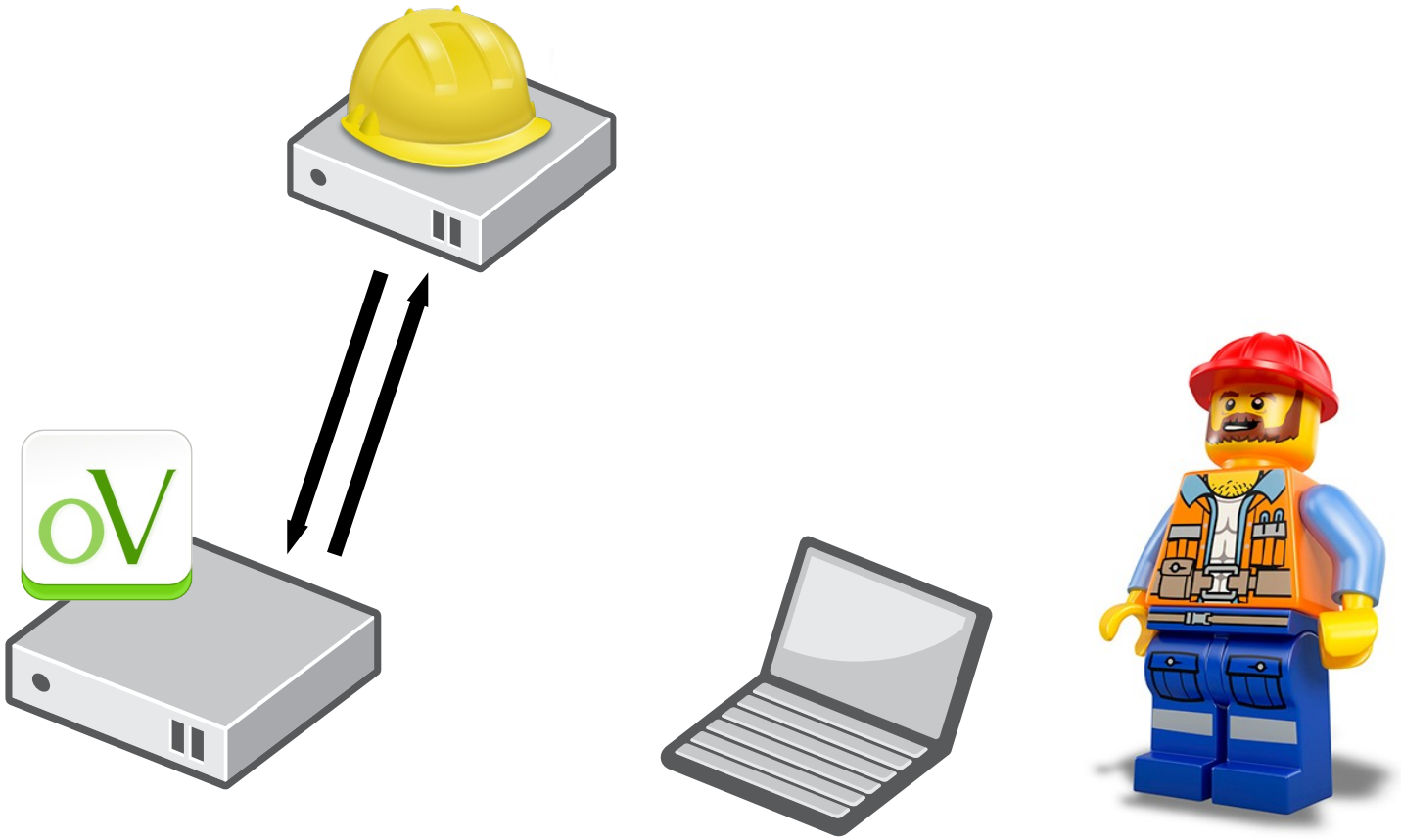


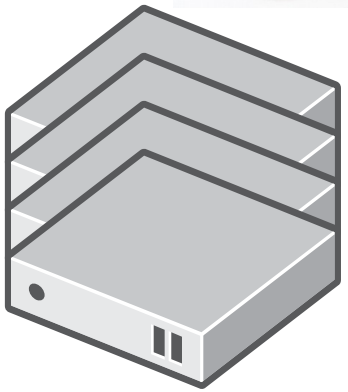
Adding New Host – Discovered Hosts



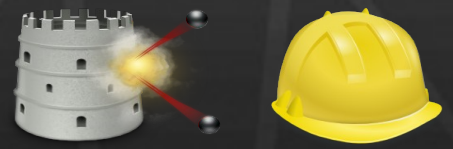
Adding External Provider

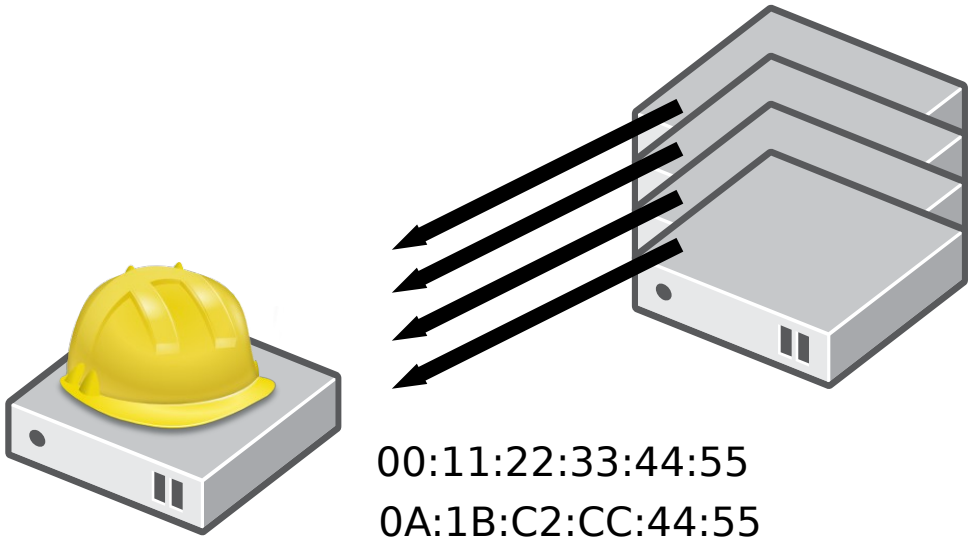




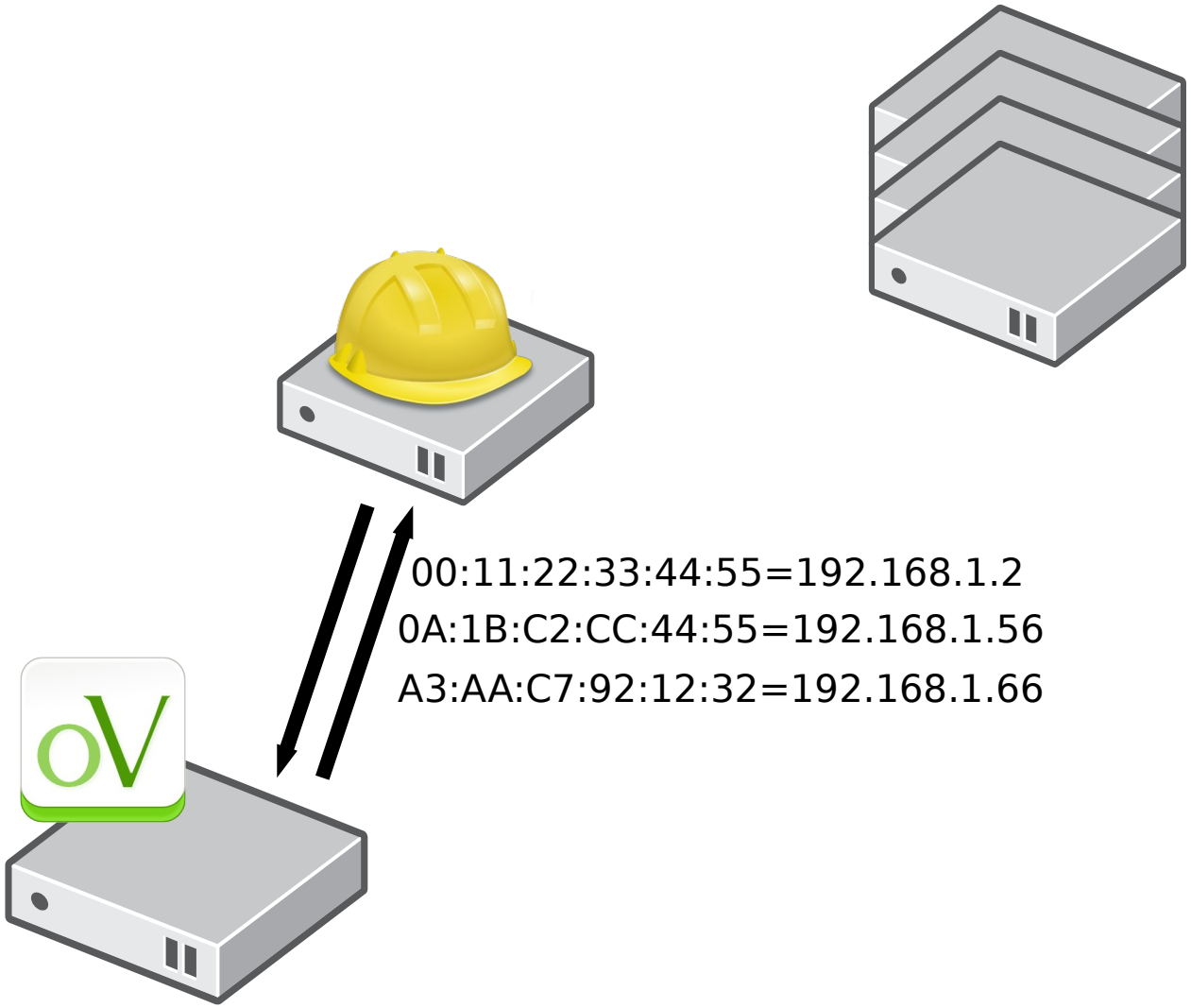


oV

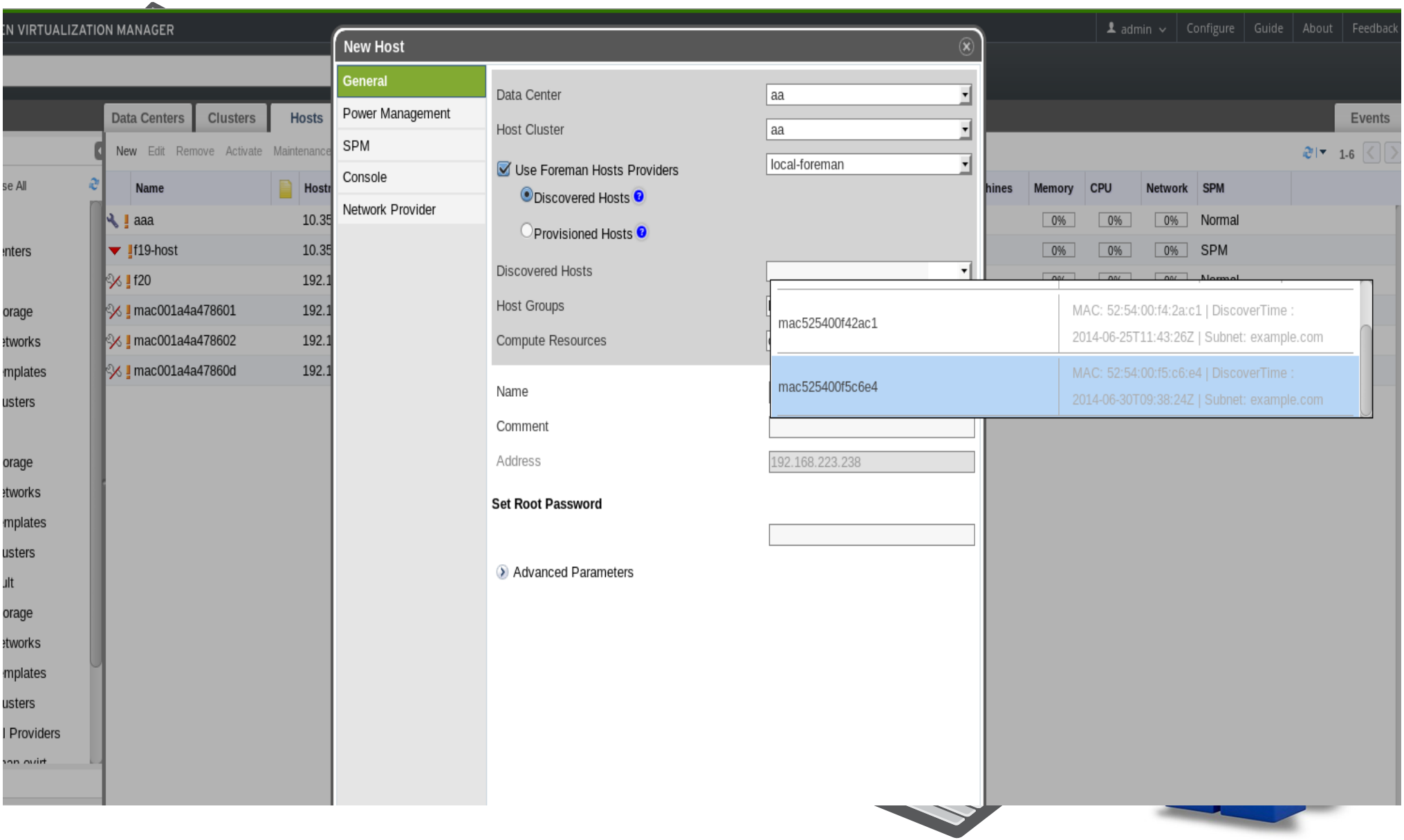


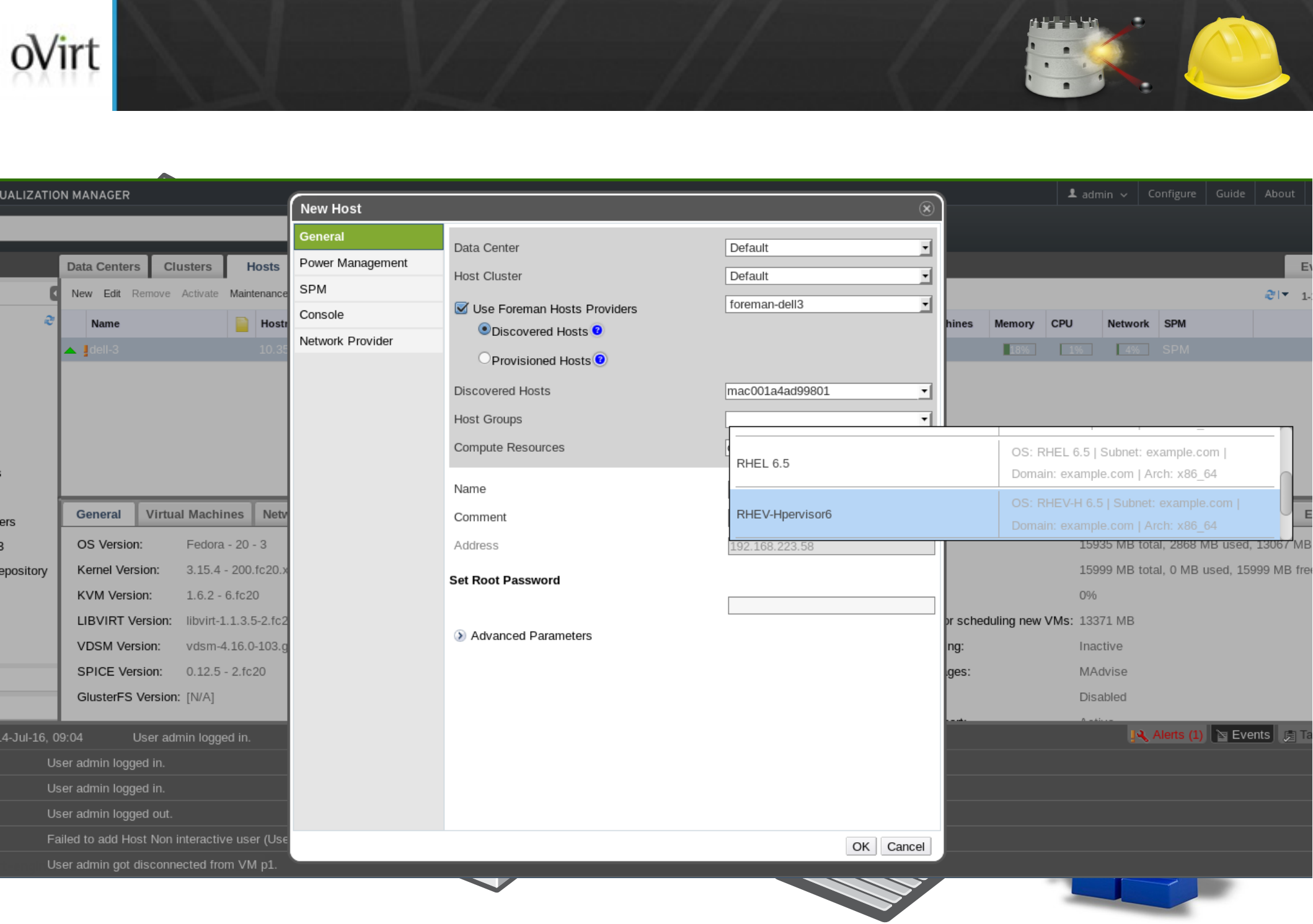


00:11:22:33:44:55
0A:1B:C2:CC:44:55
A3:AA:C7:92:12:32

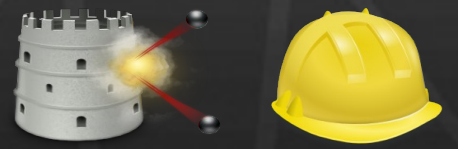

00:11:22:33:44:55=192.168.1.2
0A:1B:C2:CC:44:55=192.168.1.56
A3:AA:C7:92:12:32=192.168.1.66

oVirt


N VIRTUALIZATION MANAGER
admin
Configure
Guide
About
Feedback
Data Centers
Clusters
Hosts
Events
New
Edit
Remove
Activate
Maintenance
Name
aaa
f19-host
f20
mac001a4a478601
mac001a4a478602
mac001a4a47860d
Memory
CPU
Network
SPM
Normal
SPM
New Host
General
Power Management
SPM
Console
Network Provider
Data Center
aa
Host Cluster
aa
Use Foreman Hosts Providers
local-foreman
Discovered Hosts
Provisioned Hosts
Discovered Hosts
Host Groups
Compute Resources
mac525400f42ac1
MAC: 52:54:00:f4:2a:c1 | DiscoverTime : 2014-06-25T11:43:26Z | Subnet: example.com
mac525400f5c6e4
MAC: 52:54:00:f5:c6:e4 | DiscoverTime : 2014-06-30T09:38:24Z | Subnet: example.com
Name
Comment
Address
192.168.223.238
Set Root Password
Advanced Parameters



FOSSASIA, March 2016



FOREMAN

Admin User

Monitor | Hosts | Configure | Infrastructure | Administer

- Host groups
- Global parameters

PUPPET

- Environments
- Puppet classes
- Config groups
- Smart variables

Edit hg-fed

Host Group | Pu | ork | Operating System | Parameters

Par

Name: hg-fedora

Environment: production

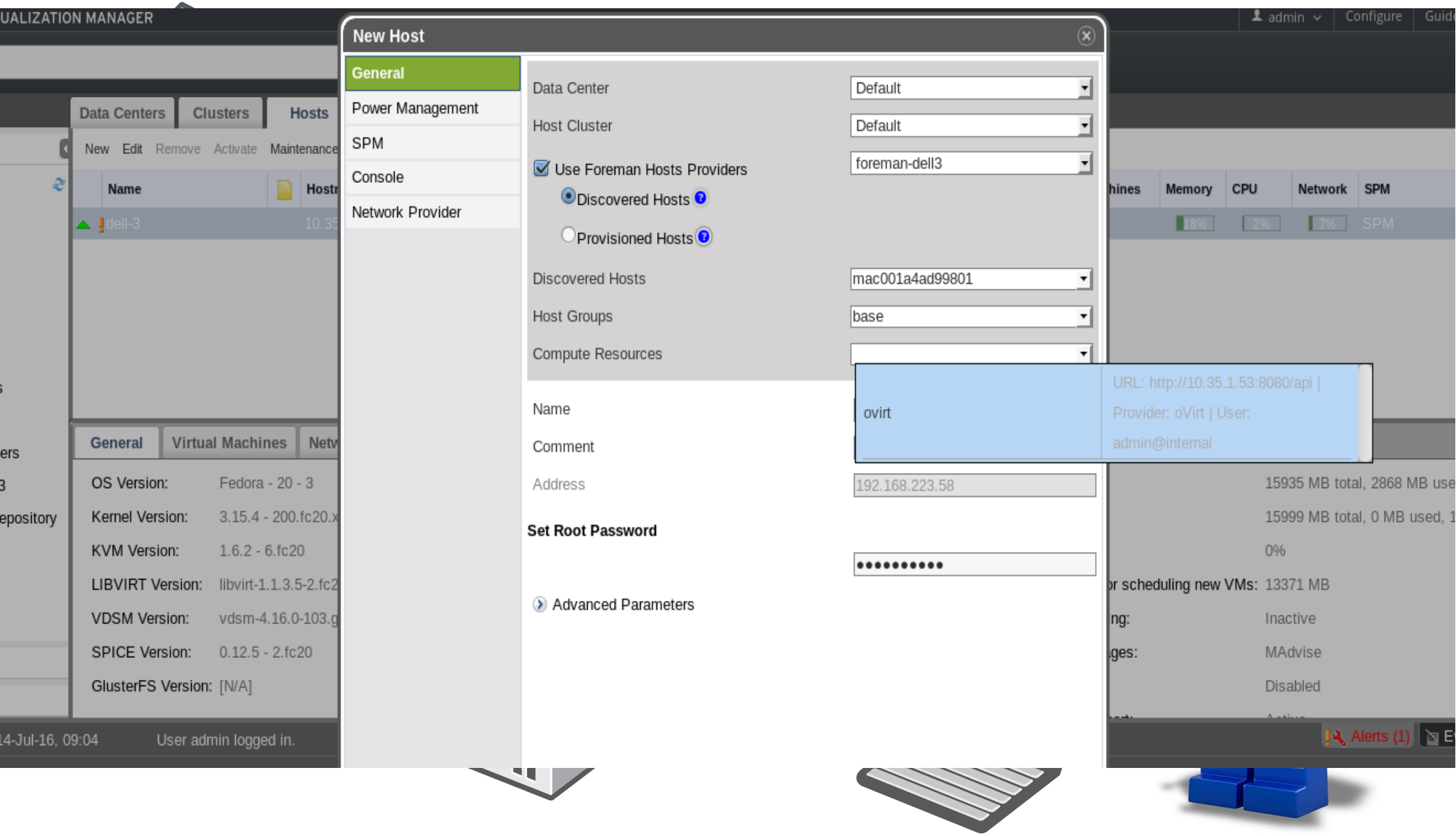
Puppet CA: masayag-foreman.usersys.redhat.com — Use this puppet server as a CA server

Puppet Master: masayag-foreman.usersys.redhat.com — Use this puppet server as an initial Puppet Server or to execute puppet runs

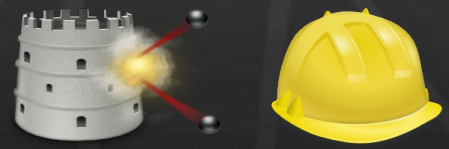
ubmit

eman.usersys.redhat.com/hostgroups

oVirt



FOSSASIA, March 2016



FOREMAN

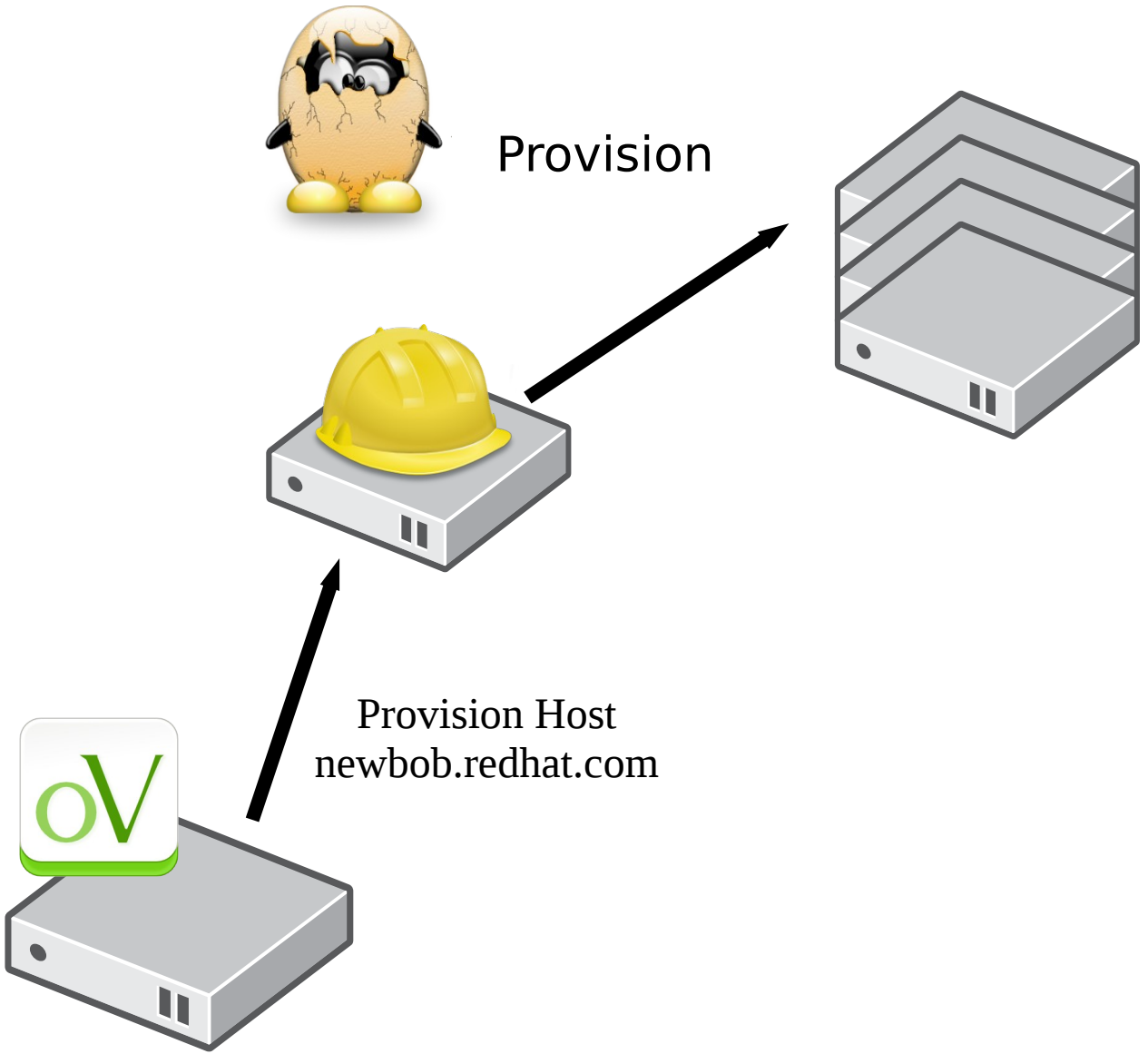
Admin User

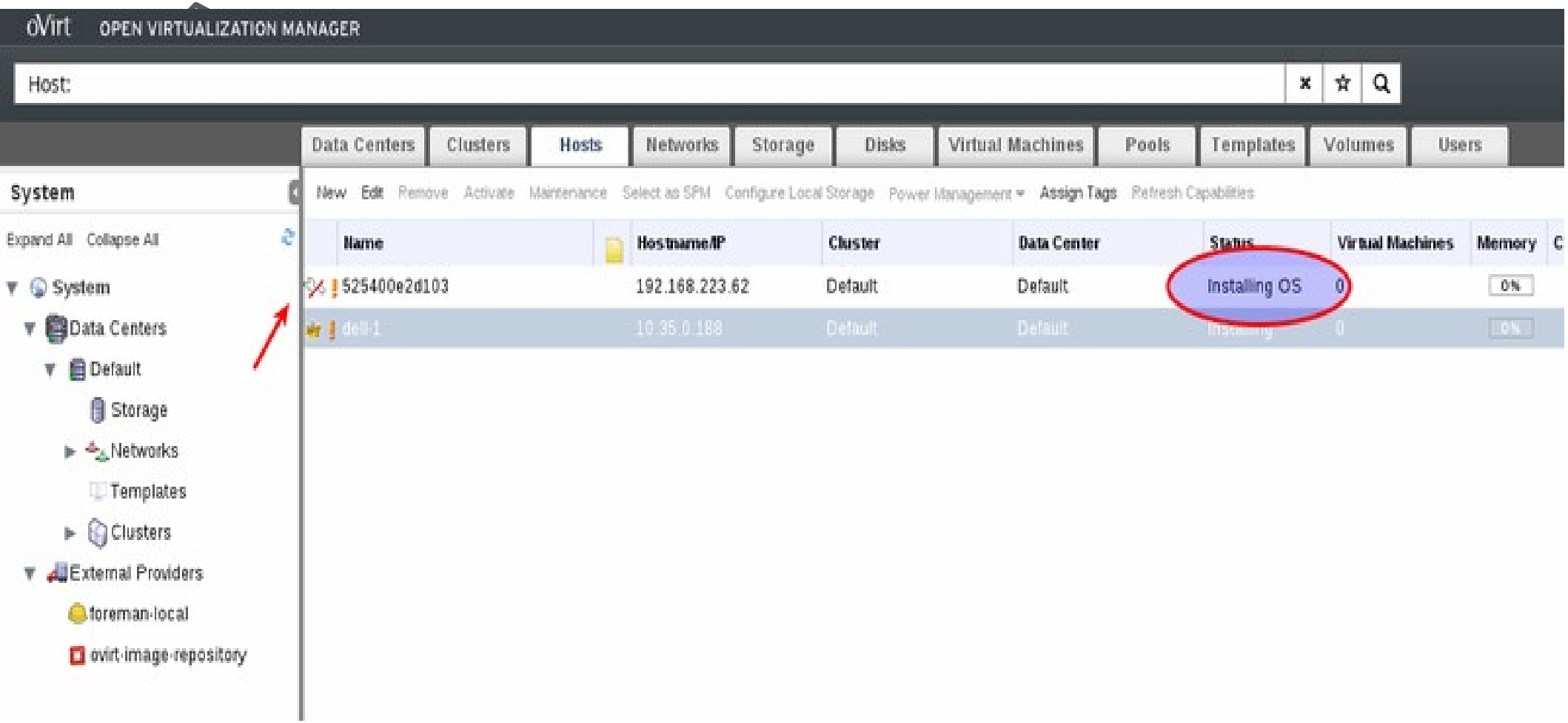
Monitor | Hosts | Configure | Infrastructure | Administer

- Provisioning setup
- Smart proxies
- Compute resources
- Compute profiles
- Subnets
- Domains
- Realms

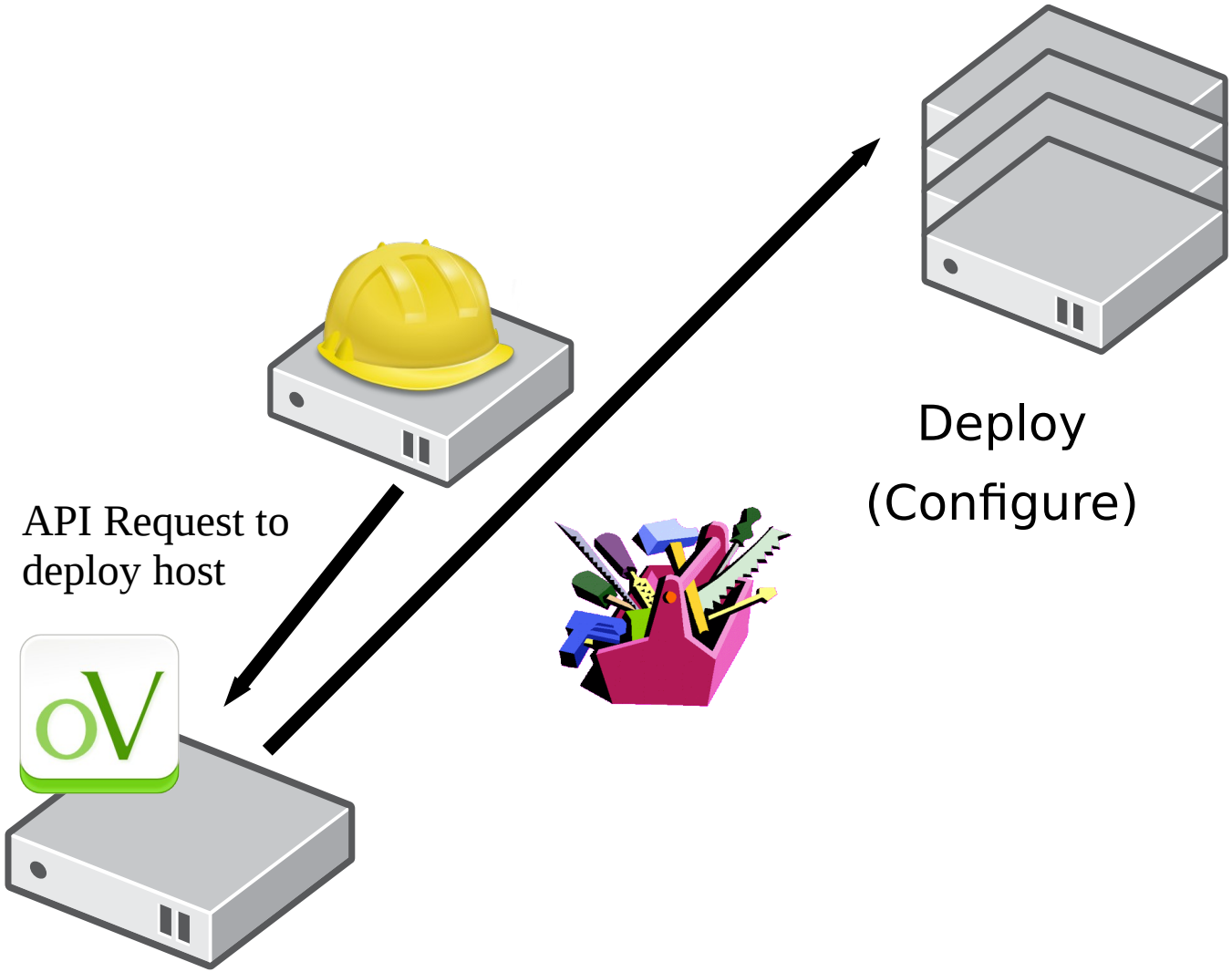
Edit ovirt

Name	ovirt
Provider	oVirt
Description	
URL	http://10.35.7.110:8080/api
	e.g. https://ovirt.example.com:8443/api
Username	admin@internal
	e.g. admin@internal
Password	********
Datacenter	Load Datacenters

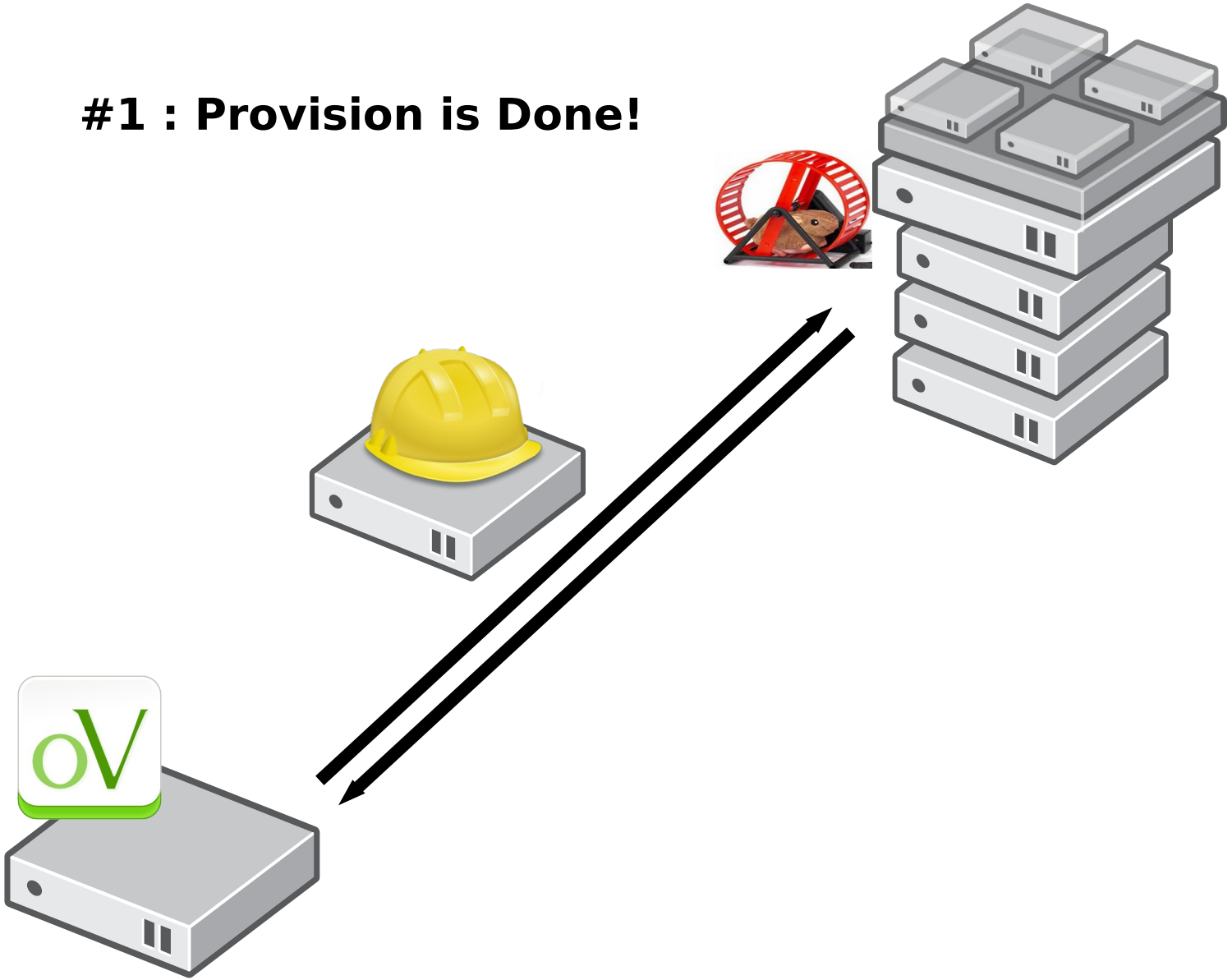

Provision
Provision Host
newbob.redhat.com


oVirt OPEN VIRTUALIZATION MANAGER
Host:
Data Centers
Clusters
Hosts
Networks
Storage
Disks
Virtual Machines
Pools
Templates
Volumes
Users
System
New
Edit
Remove
Activate
Maintenance
Select as SPM
Configure Local Storage
Power Management
Assign Tags
Refresh Capabilities
Expand All
Collapse All
Name
Hostname/IP
Cluster
Data Center
Status
Virtual Machines
Memory
525400e2d103
192.168.223.62
Default
Default
Installing OS
0
0%
System
Data Centers
Default
Storage
Networks
Templates
Clusters
External Providers
foreman-local
ovirt-image-repository

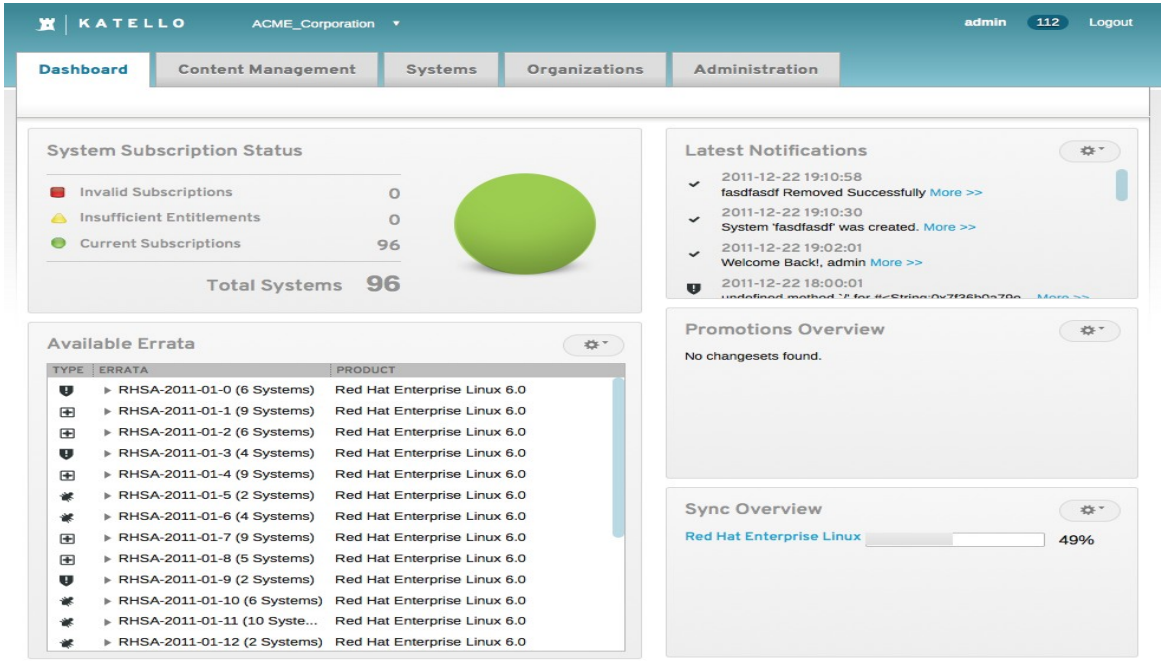
oVirt Provision Plugin



#1 : Provision is Done!



- Create, organize, and manage local yum and puppet repositories
- Sync remote repositories
- Create custom Content Views
- Install package and errata updates



oVirt

Subscriptions ▾ Repositories ▾ Sync Management ▾ Content Search **System Templates** Changeset Management ▾

Eligible Content

+ New Template

- PuppetEnterprise noarch
- EPEL noarch
- OpenShift Origin noarch
- Red Hat Enterprise Linux Server x86_64
- Red Hat CloudForms x86_64

System Templates

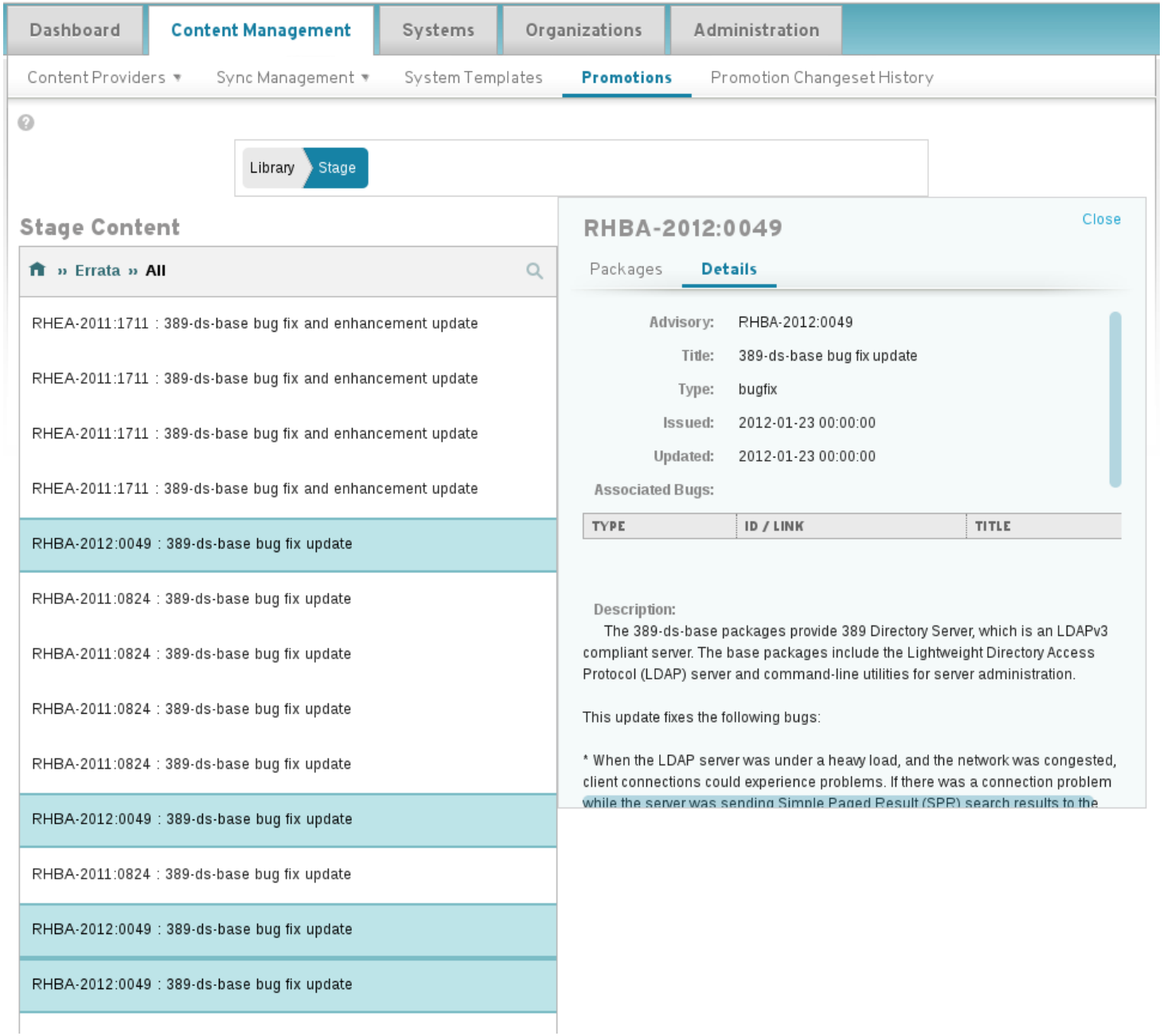
» PuppetExample » **Packages**

Search available package names... + Add

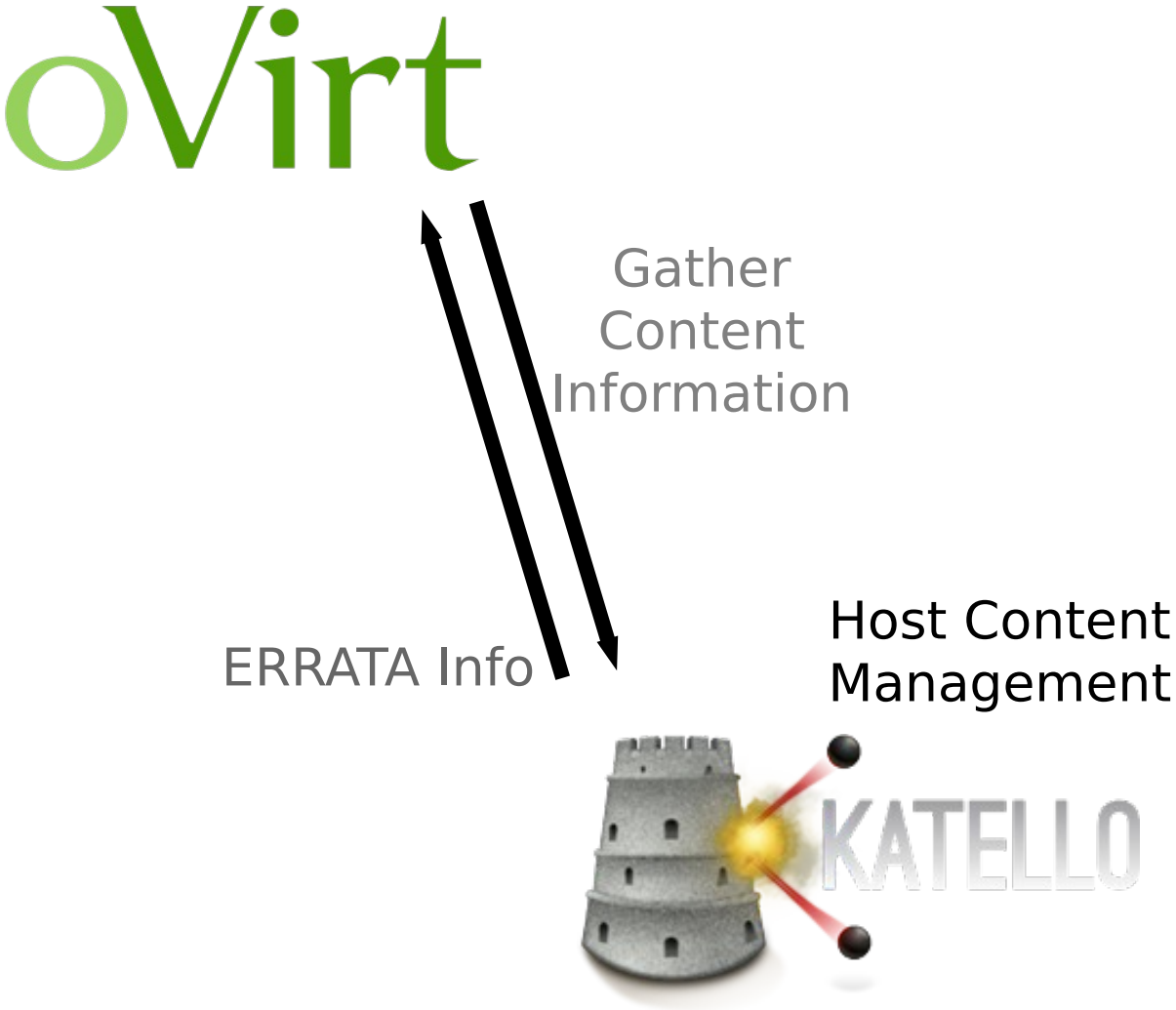
pe-augeas	Remove
pe-augeas-libs	Remove
pe-facter	Remove
pe-mcollective	Remove
pe-mcollective-common	Remove
pe-puppet	Remove
pe-puppet-enterprise-release	Remove
pe-ruby	Remove

Edit Details | Remove | Save | Download

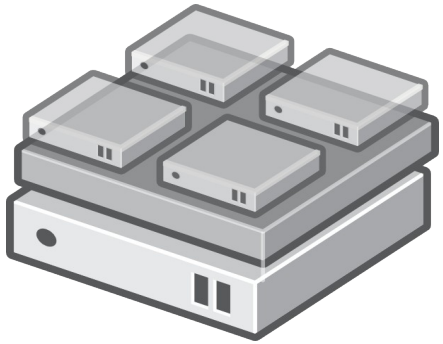
- Product Info
- Updates Type

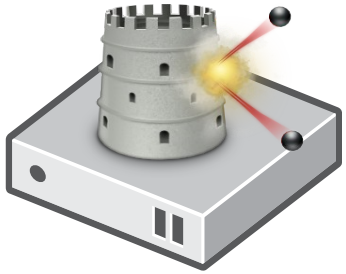


How does Content Management integrate with oVirt ?

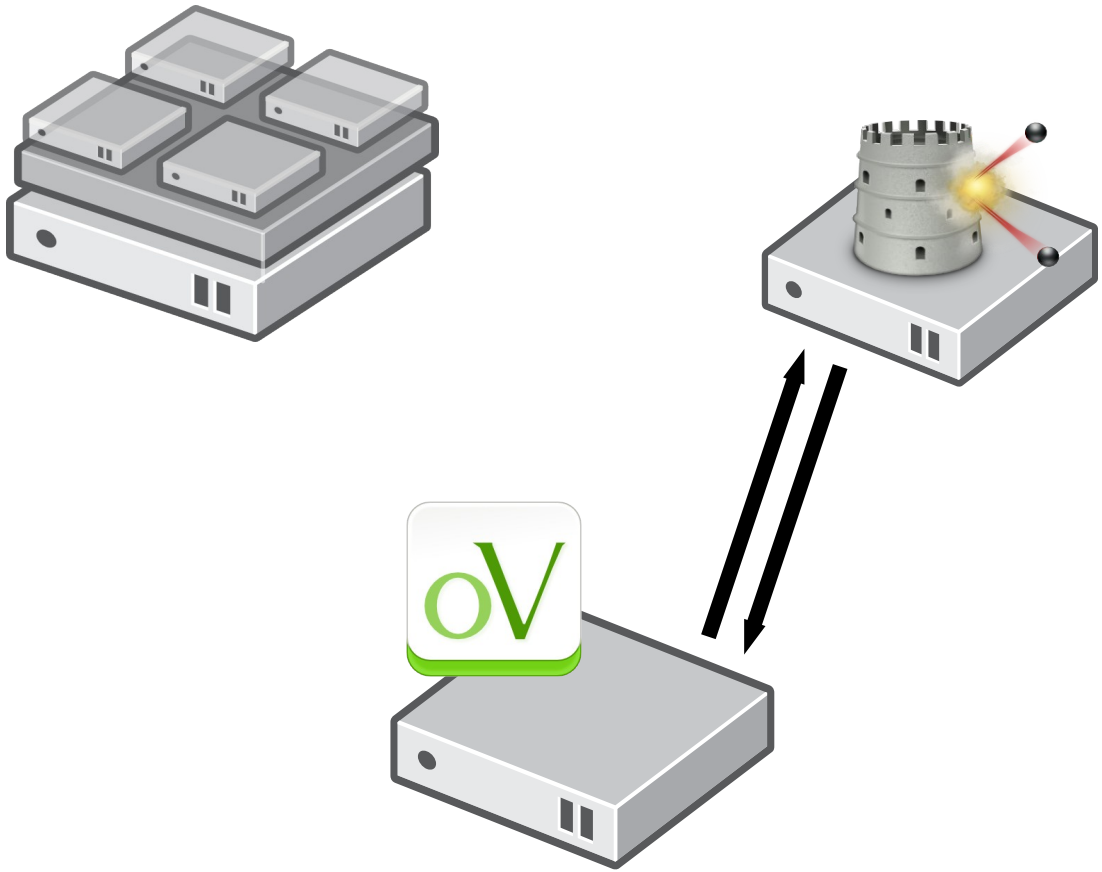


#2 : Host Content Information

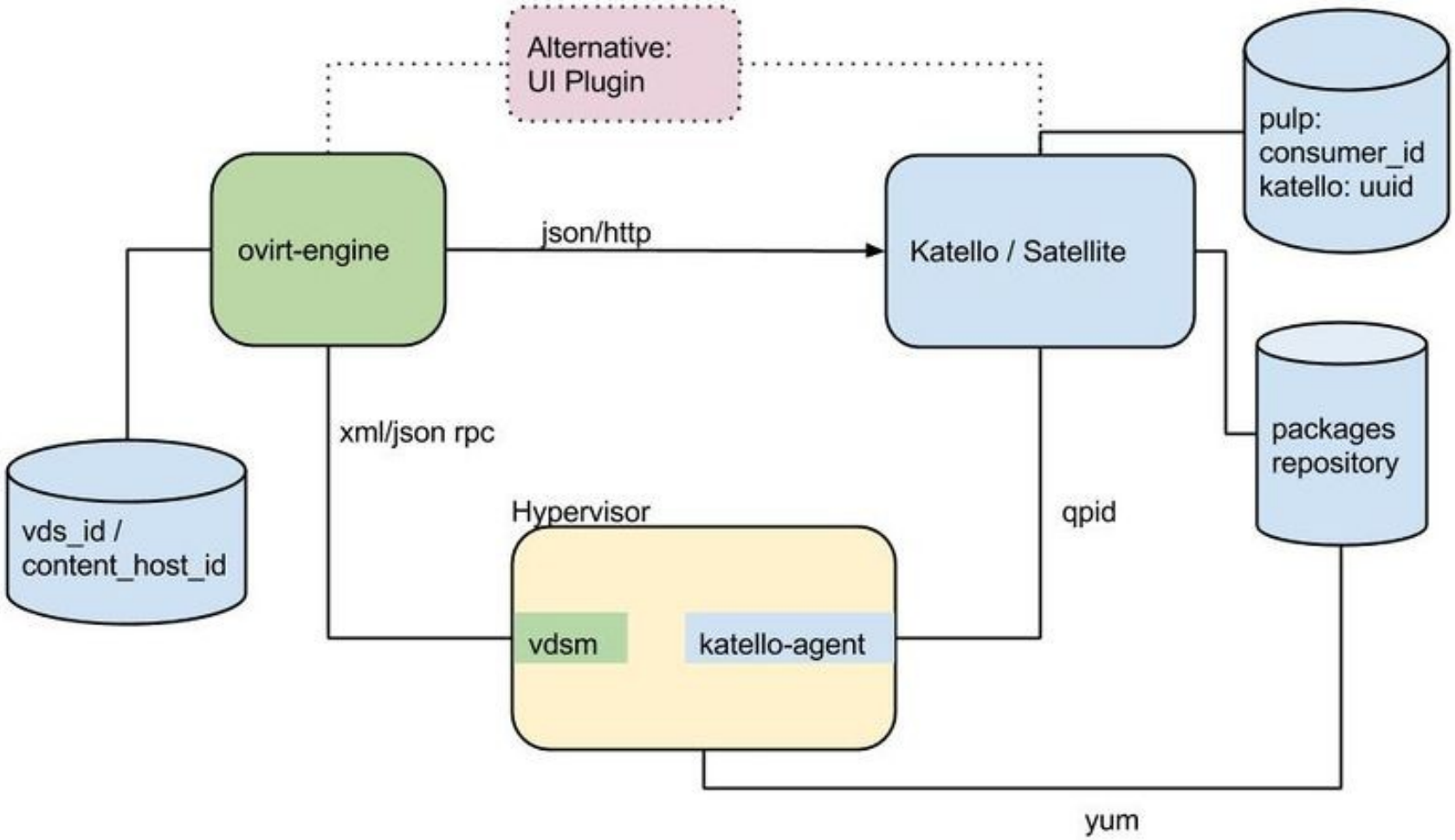




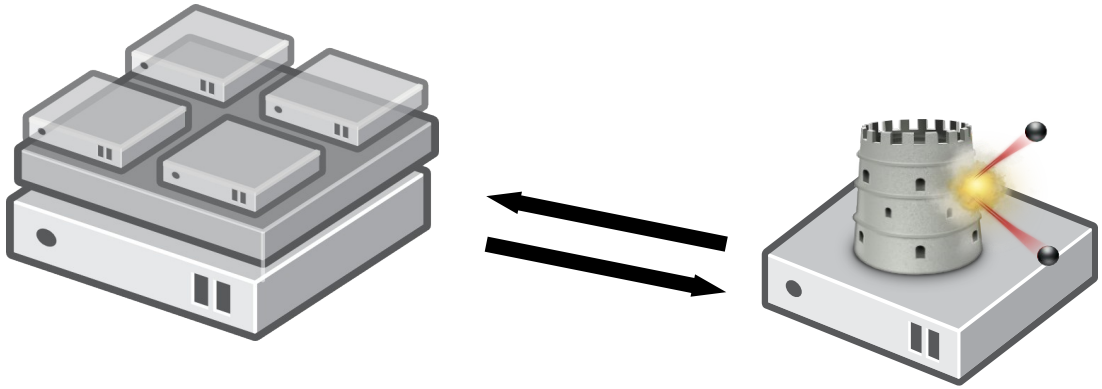
API Request To Gather Information About Host Or Virtiual Machine



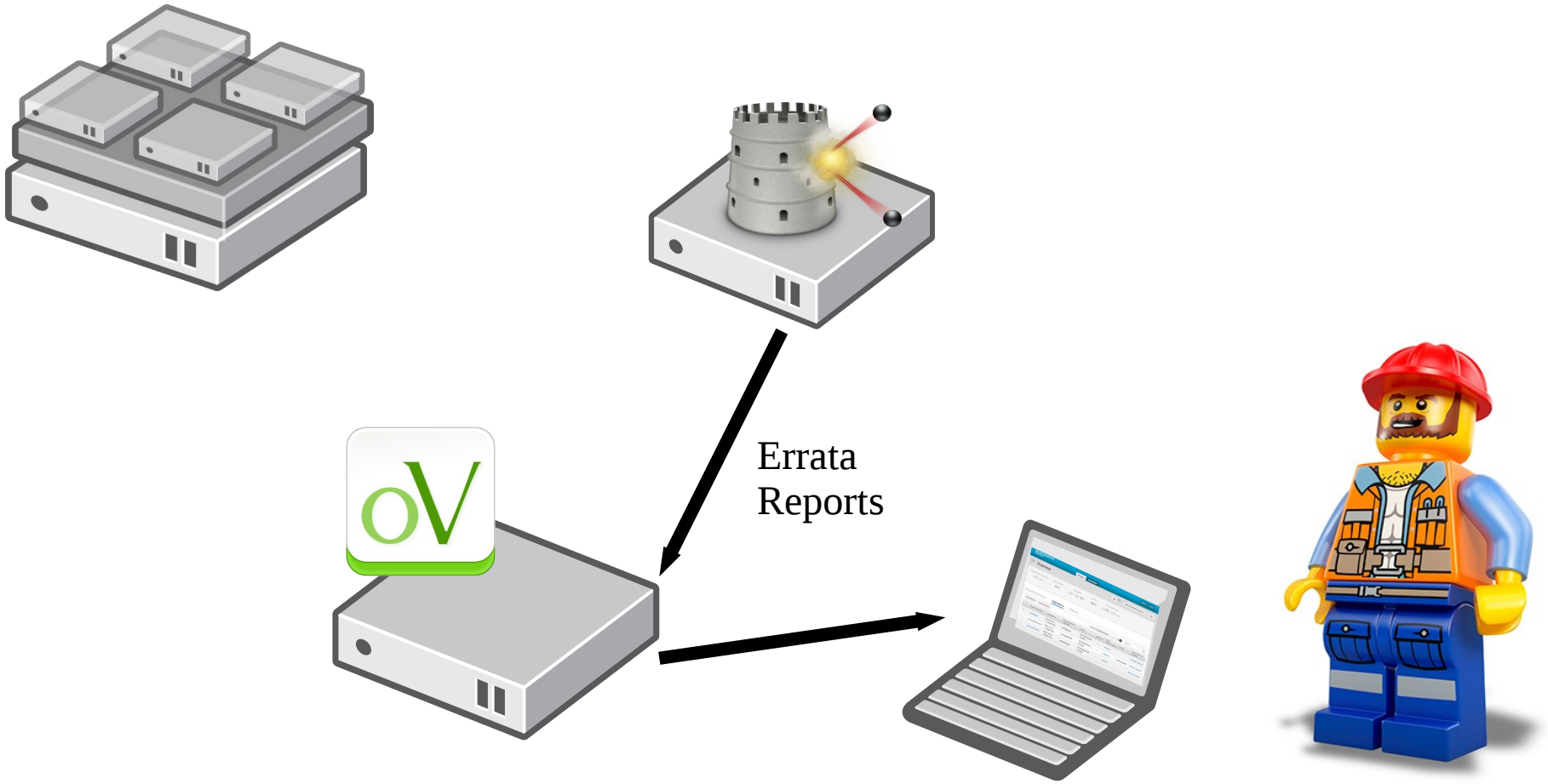
Collecting Content Flow:

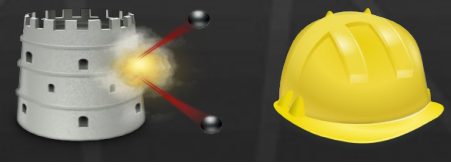


Reads And Reports Content Status By Using Katello Agent

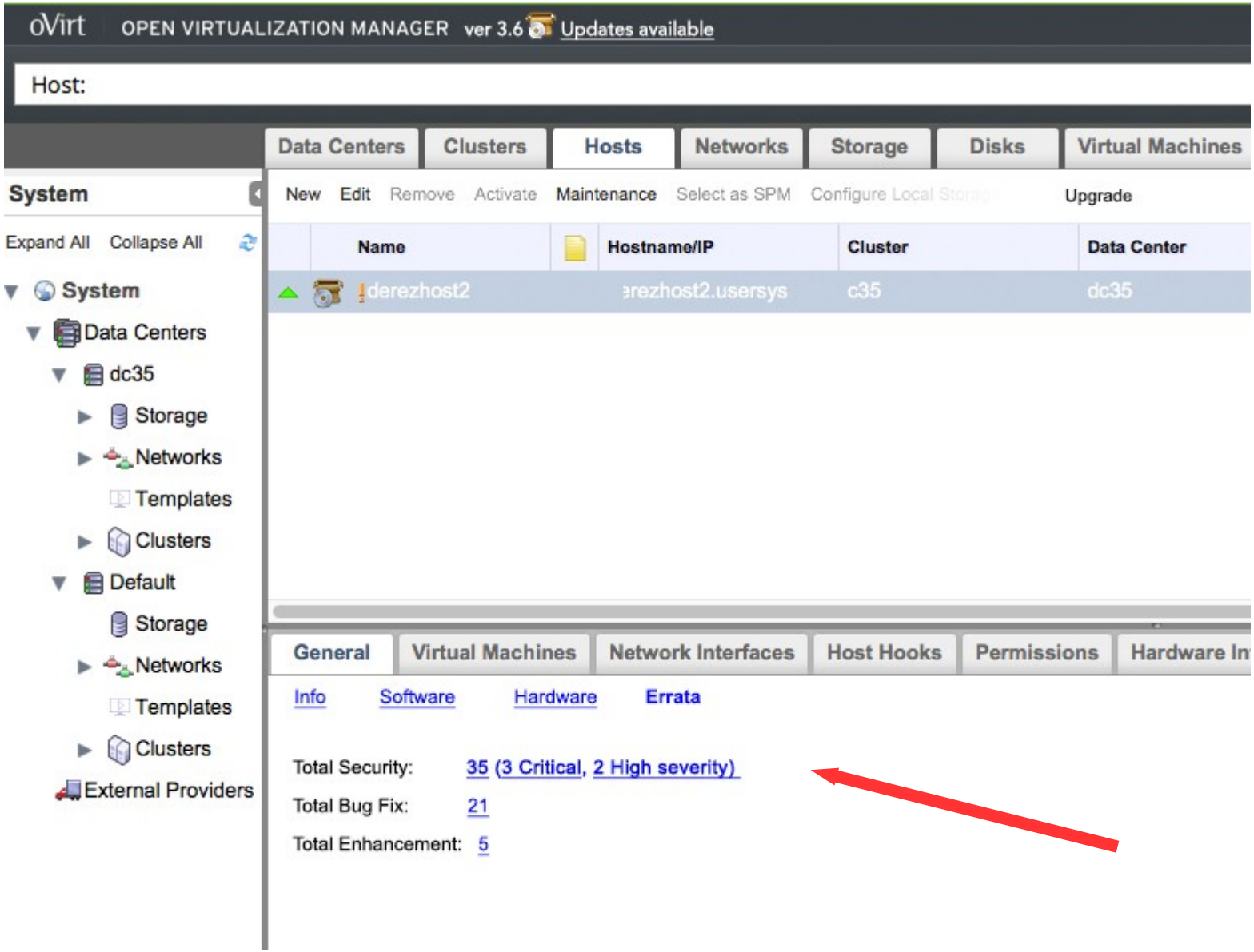


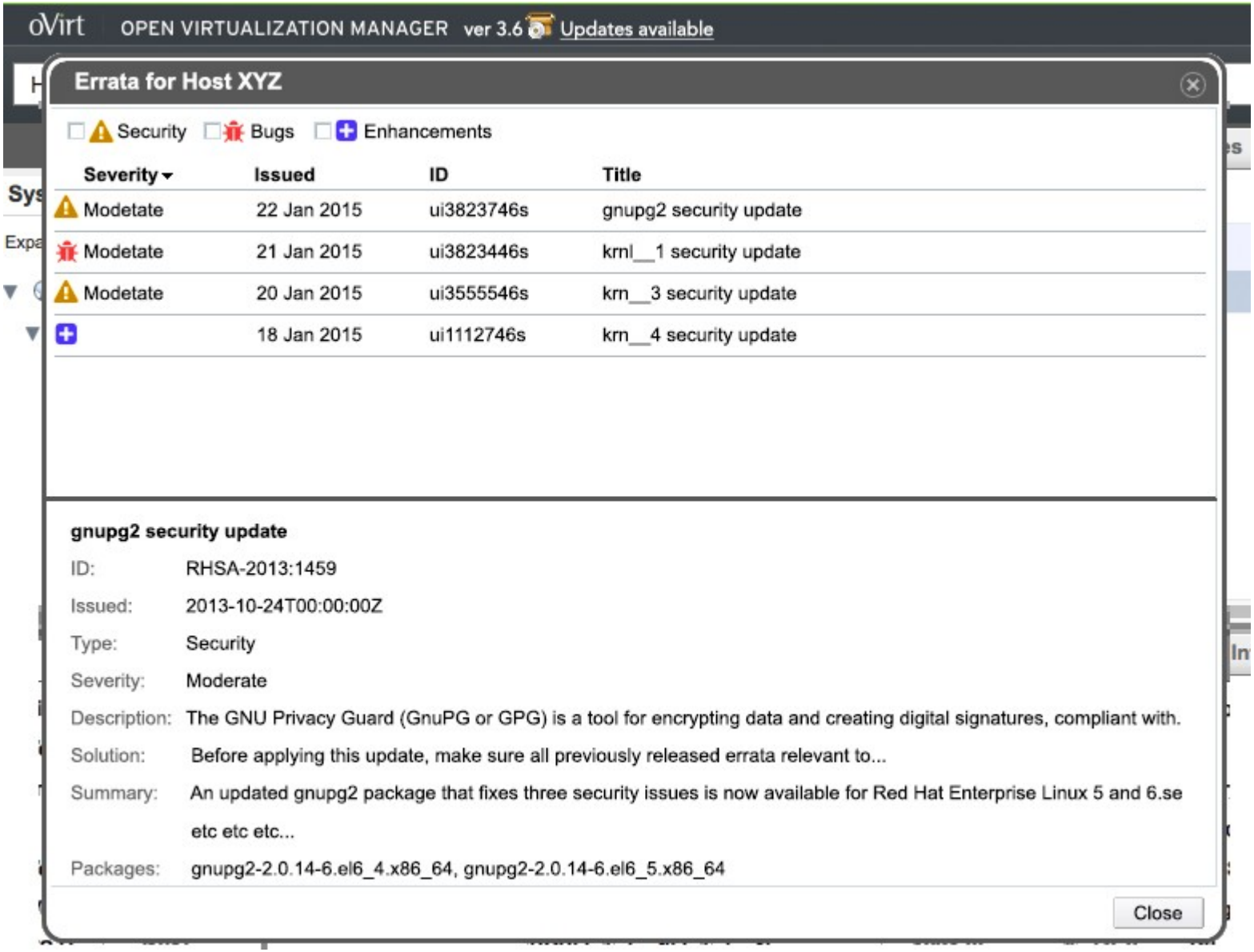
#2 : Host Content Information



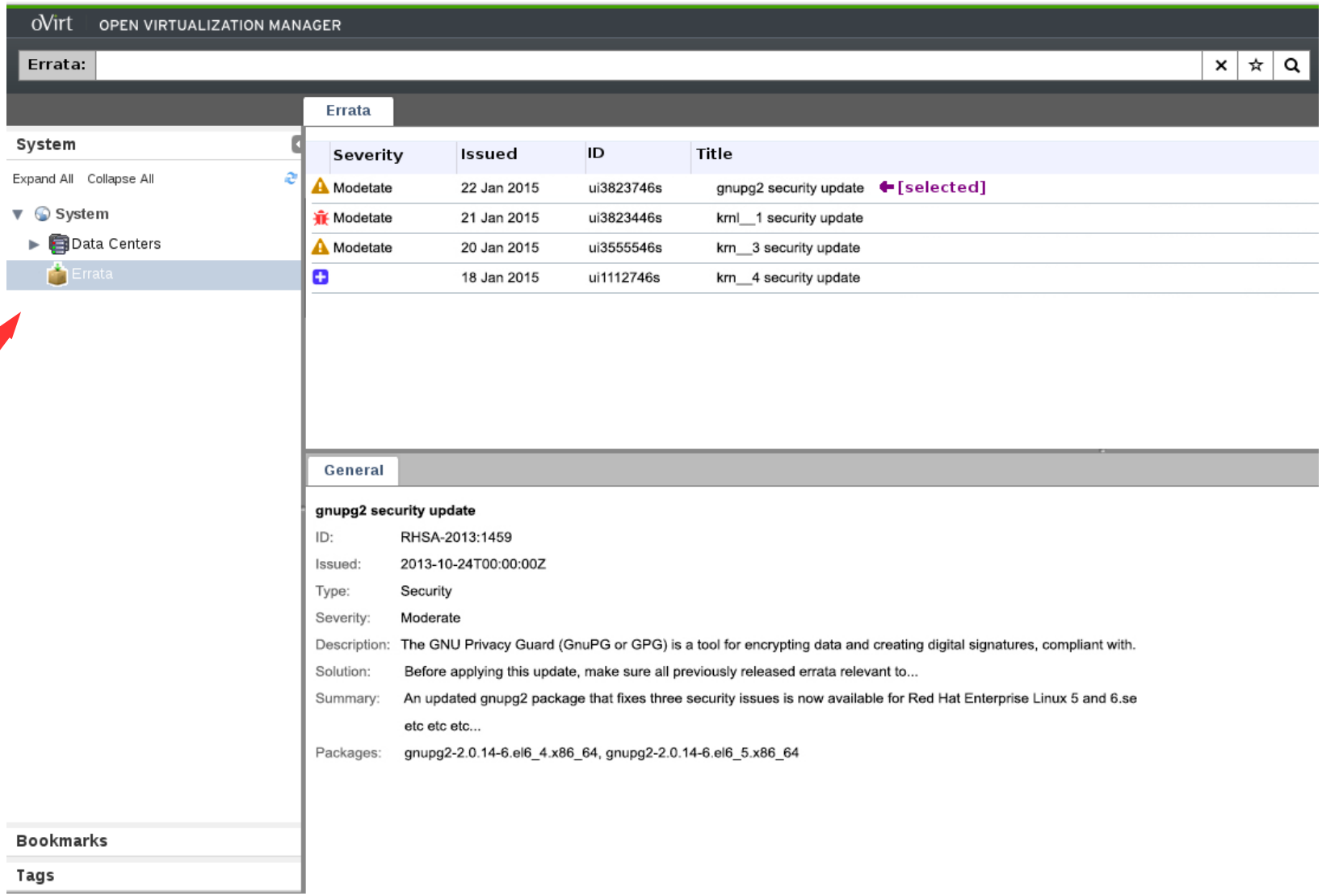


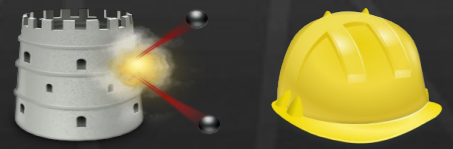
Host\VM Content Information



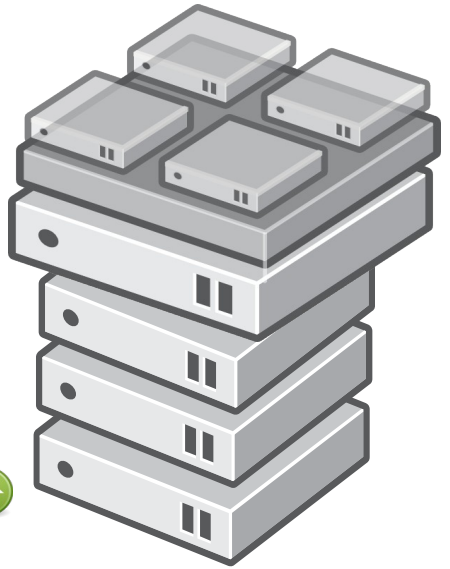

oVirt OPEN VIRTUALIZATION MANAGER ver 3.6 Updates available
Errata for Host XYZ
Security Bugs Enhancements
Severity Issued ID Title
Modetate 22 Jan 2015 ui3823746s gnupg2 security update
Modetate 21 Jan 2015 ui3823446s krnl__1 security update
Modetate 20 Jan 2015 ui3555546s krn__3 security update
18 Jan 2015 ui1112746s krn__4 security update
gnupg2 security update
ID: RHSA-2013:1459
Issued: 2013-10-24T00:00:00Z
Type: Security
Severity: Moderate
Description: The GNU Privacy Guard (GnuPG or GPG) is a tool for encrypting data and creating digital signatures, compliant with.
Solution: Before applying this update, make sure all previously released errata relevant to...
Summary: An updated gnupg2 package that fixes three security issues is now available for Red Hat Enterprise Linux 5 and 6.se
etc etc etc...
Packages: gnupg2-2.0.14-6.el6_4.x86_64, gnupg2-2.0.14-6.el6_5.x86_64
Close

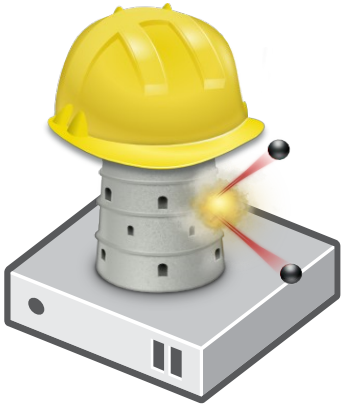
Engine Content

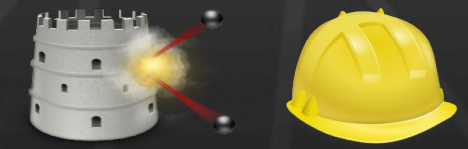


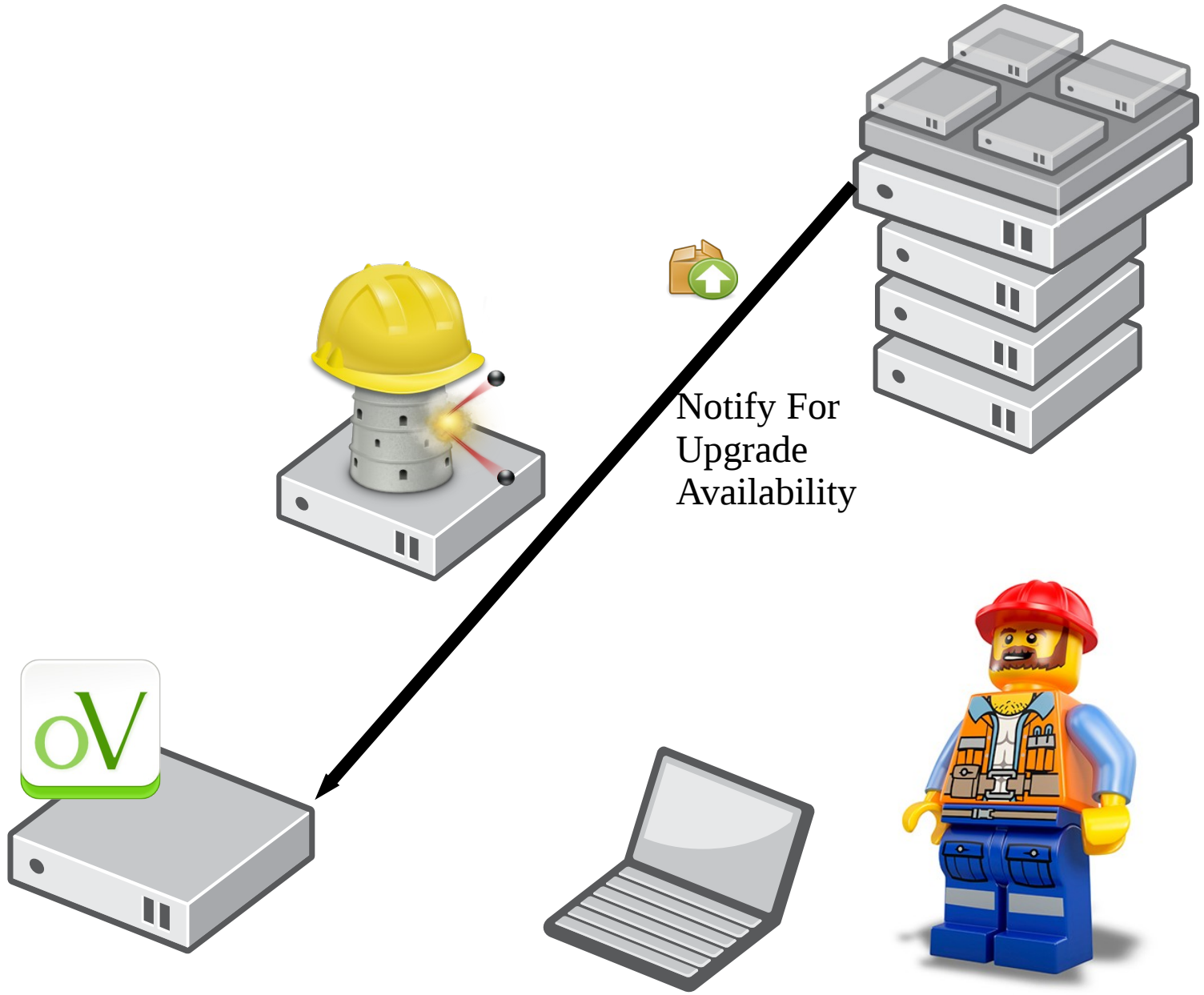


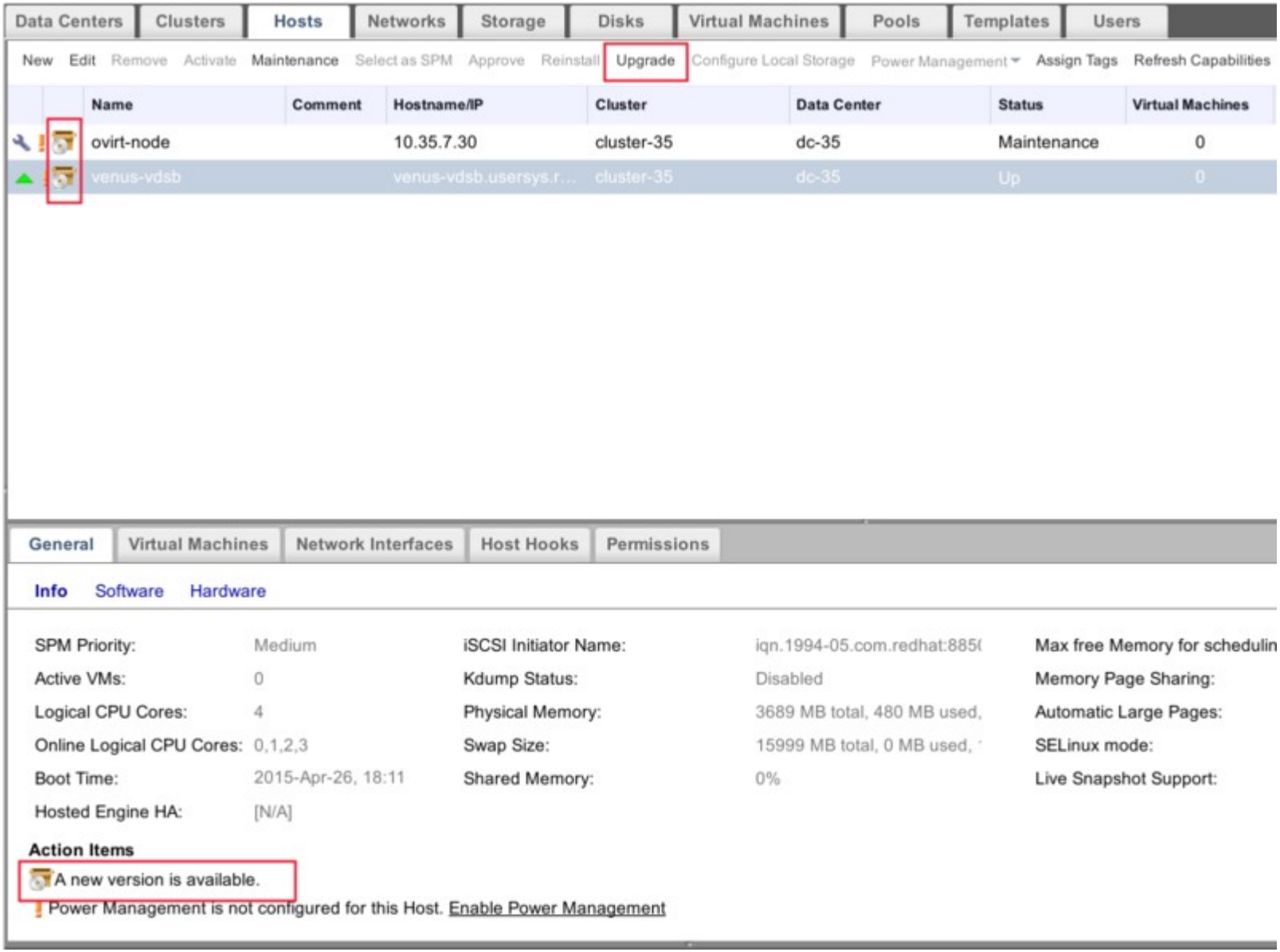
#3 : Upgrade Manager

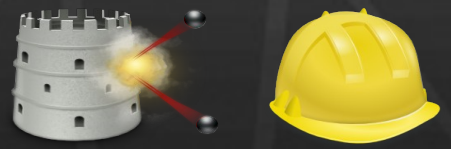


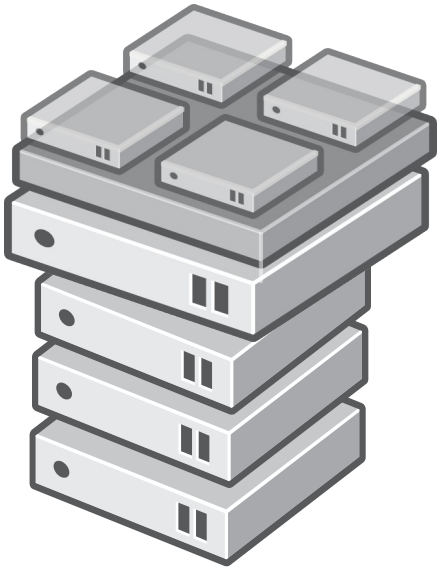





Notify For
Upgrade
Availability


Data Centers
Clusters
Hosts
Networks
Storage
Disks
Virtual Machines
Pools
Templates
Users
New
Edit
Remove
Activate
Maintenance
Select as SPM
Approve
Reinstall
Upgrade
Configure Local Storage
Power Management
Assign Tags
Refresh Capabilities
Name
Comment
Hostname/IP
Cluster
Data Center
Status
Virtual Machines
ovirt-node
10.35.7.30
cluster-35
dc-35
Maintenance
0
venus-vdsb
venus-vdsb.usersys.r...
cluster-35
dc-35
Up
0
General
Virtual Machines
Network Interfaces
Host Hooks
Permissions
Info
Software
Hardware
SPM Priority:
Medium
Active VMs:
0
Logical CPU Cores:
4
Online Logical CPU Cores:
0,1,2,3
Boot Time:
2015-Apr-26, 18:11
Hosted Engine HA:
[N/A]
iSCSI Initiator Name:
iqn.1994-05.com.redhat:885(
Kdump Status:
Disabled
Physical Memory:
3689 MB total, 480 MB used,
Swap Size:
15999 MB total, 0 MB used,
Shared Memory:
0%
Max free Memory for schedulin
Memory Page Sharing:
Automatic Large Pages:
SELinux mode:
Live Snapshot Support:
Action Items
A new version is available.
Power Management is not configured for this Host. Enable Power Management



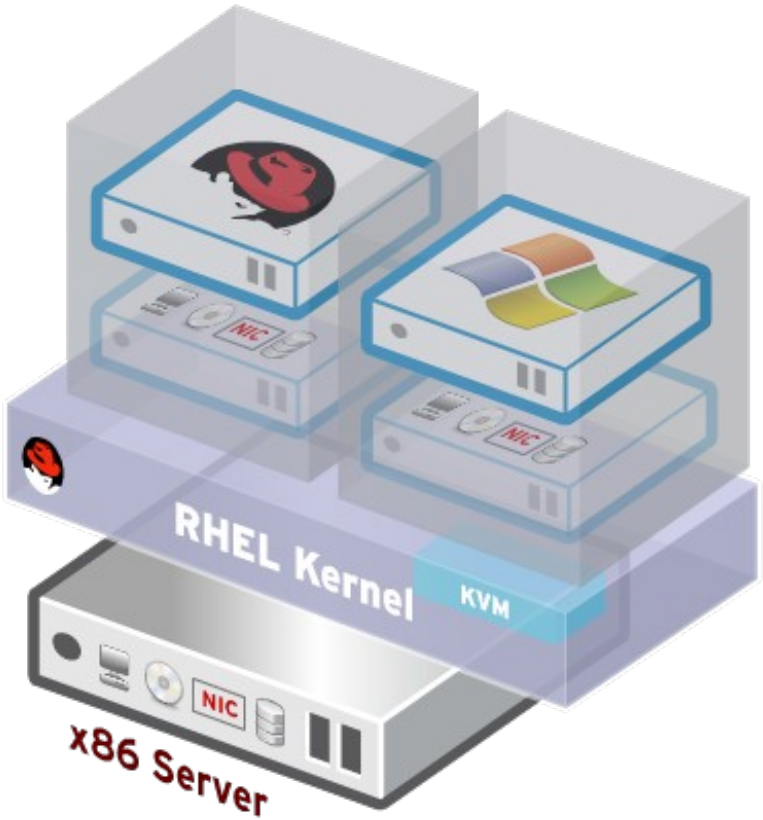


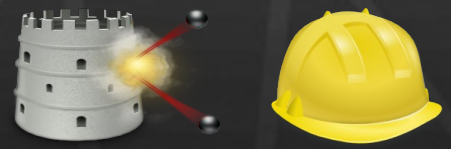
oVirt Host
Mgmt
Process

Host Management

The process of upgrading content environment for suitable cluster (usually VDSM version upgrade)

- Direct SSH trust obtained.
- Allows to retrieve current installed packages information.
- Perform YUM\DNF operations for specific virst packages.

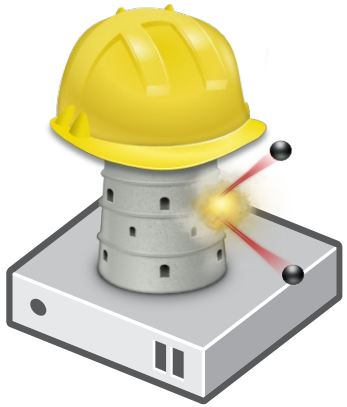


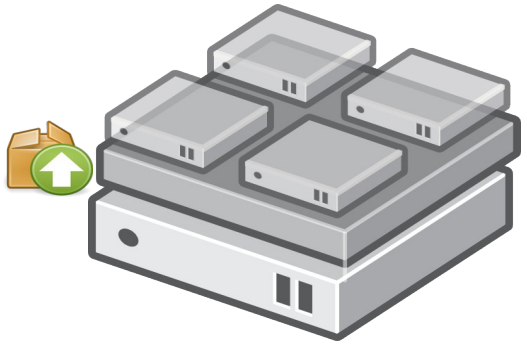


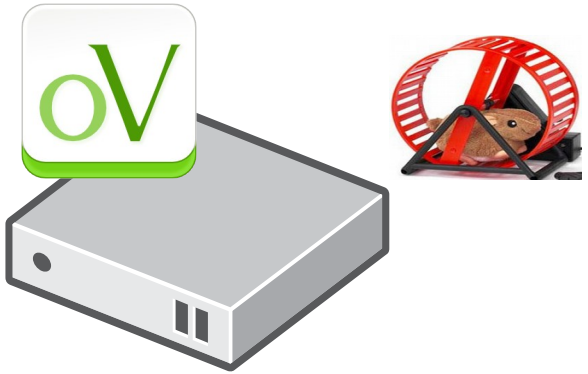
Provision New Host

Gather Errata Information

Direct Yum Upgrade With oVirt-Host-Mgmt Plugin







- Homepage
  http://ovirt.org
- Overall Projects
  http://gerrit.ovirt.org
- Mails lists
  users@ovirt.org
  devel@ovirt.org
- #ovirt on OFTC

- Homepage
  http://theforeman.org
- Overall Projects
  Github.com/theforeman
- #theforeman on freenode

- Homepage
  http://katello.org
- Overall Projects
  Github.com/Katello
- #katello on freenode

Summary

- Katello, Foreman, oVirt

oVirt

- Discover new hosts and utilizing them

- Manage content and updates

The feature pages:

- http://www.ovirt.org/Features/ForemanIntegration
- http://www.ovirt.org/Home/Features/KatelloIntegration
- http://www.ovirt.org/Home/Features/UpgradeManager

Questions?

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bronhaim@gmail.com
ybronhei@redhat.com

redhat.

oVirt

THANK YOU !

Yaniv Bronhaim.

http://www.ovirt.org
ybronhei@redhat.com