oVirt: Open Your Virtual Data Center

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Agenda

oVirt

- Who am I
- What is oVirt
- oVirt Anatomy
- Getting oVirt
- Extending oVirt
- What's missing
- Get involved

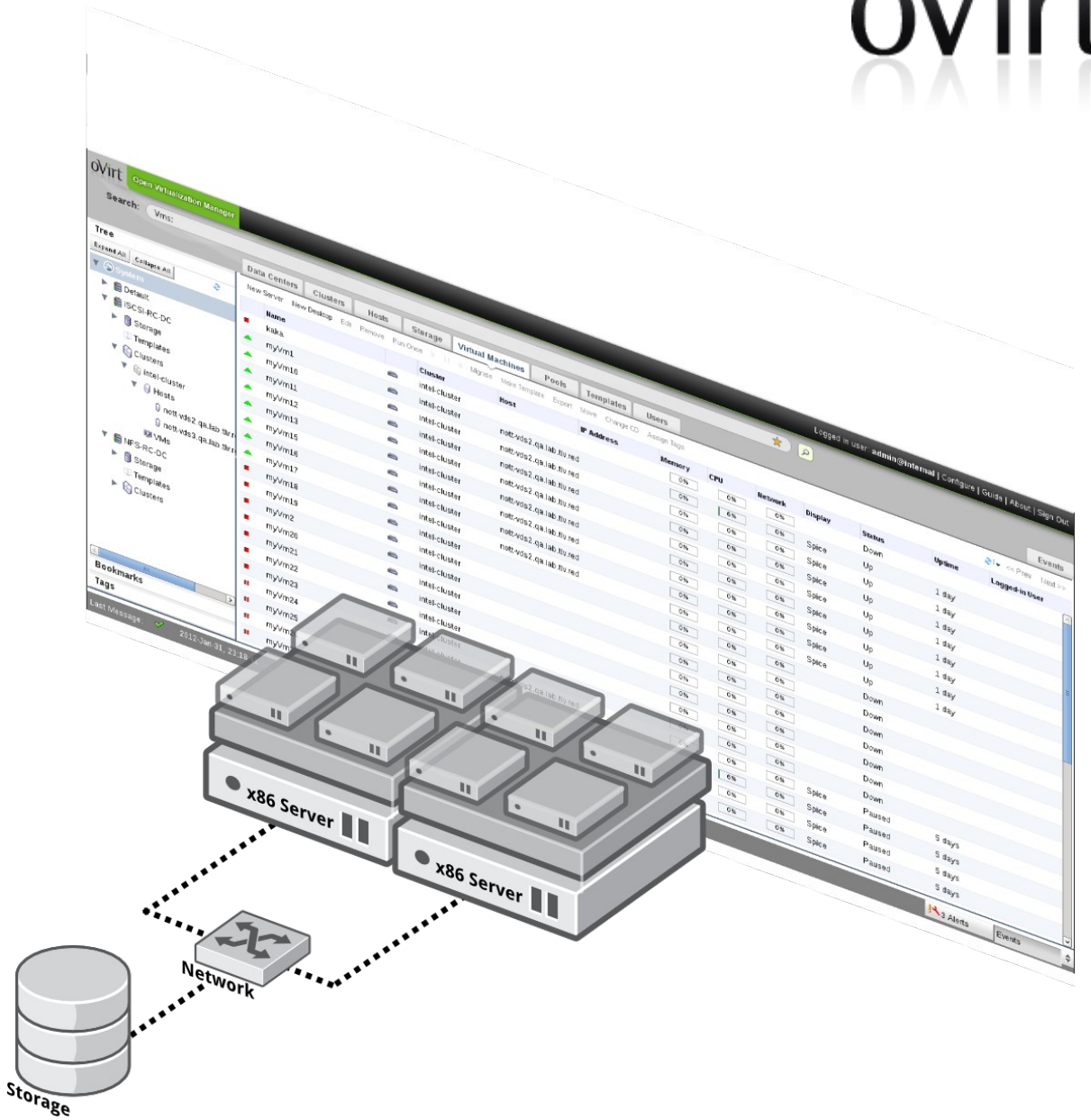
Who am I?

- Tech journalist (until last year)
- Red Hat OSAS (since last year)

- Testing products & projects
- Fan of Virtualization
- Fan of Open Source

In a nutshell

- Large scale, centralized management for server and desktop virtualization
- Provides an open source alternative to vCenter/vSphere
- Upstream for RHEV



Feature highlights

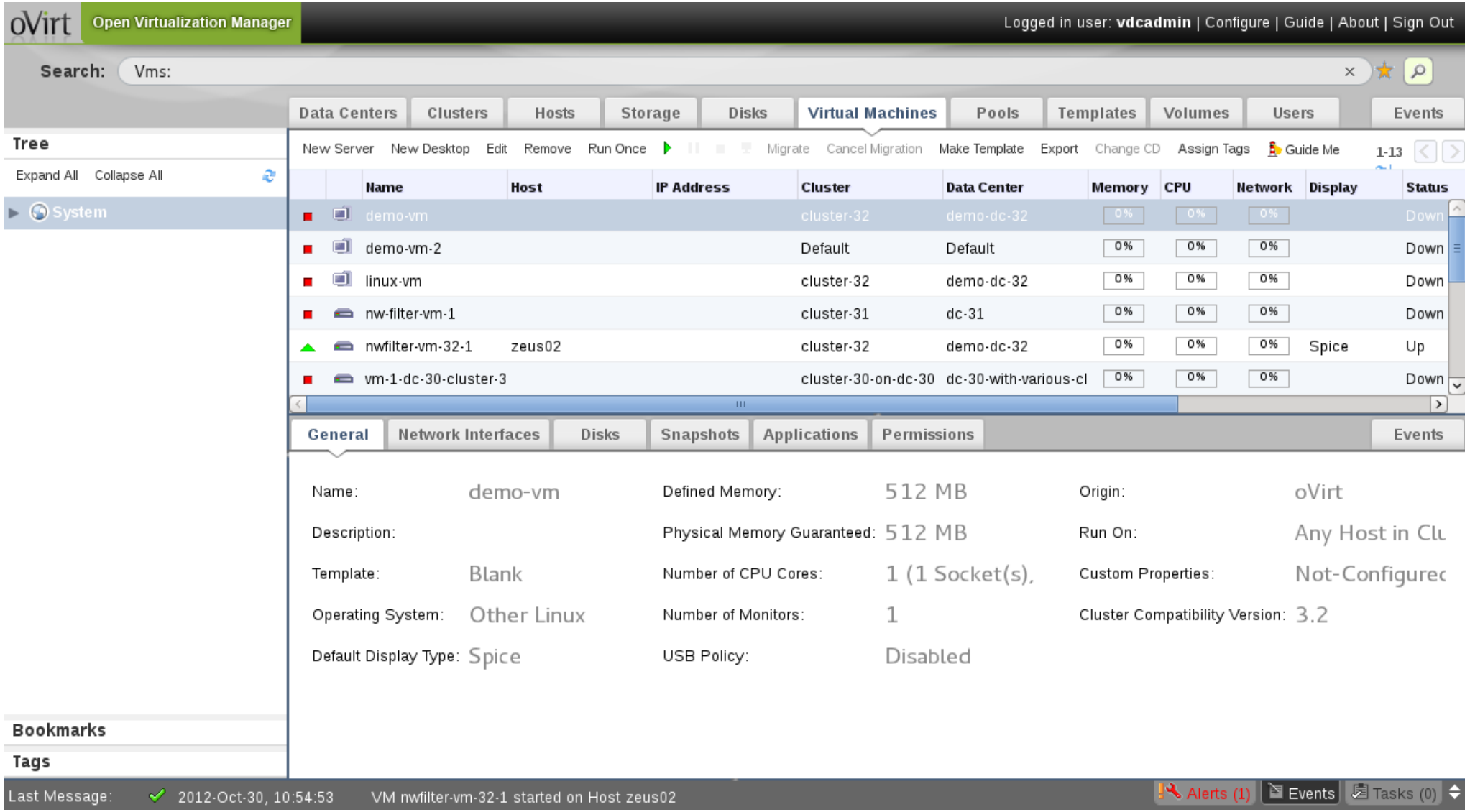
oVirt

- Small footprint, bare metal hypervisor
- Optimized drivers for Linux and Windows guests
- Memory overcommit & page sharing
- High availability
- Live migration: VM & Storage
- Remote console
- iSCSI, NFS, FC, Gluster, local storage support
- CPU, storage & memory quotas
- Enterprise Directory integration
- Thin provisioning
- Live VM snapshots
- VM conversion tools
- OVF import/export
- VM templates
- Web-based admin & user portals

Roots

- **Feb 2007:** Qumranet's KVM becomes part of mainline Linux kernel
- **Sept 2007:** Qumranet's KVM-based Windows VDI product, Solid ICE, ships
- **Oct 2007:** First commit in old oVirt repo (git.et.redhat.com)
- **Feb 2008:** oVirt project emerges publicly (for the 1st time)
- **Sept 2008:** Red Hat acquires Qumranet, Inc.
- **Nov 2009:** RHEV 2.1 ships w/ .NET-based management server
- **Nov 2011:** oVirt Project re-launches w/ Java-based management server
- **Jan 2012:** RHEV 3.0 ships w/ new engine in tech preview
- **Feb 2012:** oVirt 3.0 release (first community release)
- **Aug 2012:** oVirt 3.1 release
- **Feb 2013:** oVirt 3.2 release

Admin Console



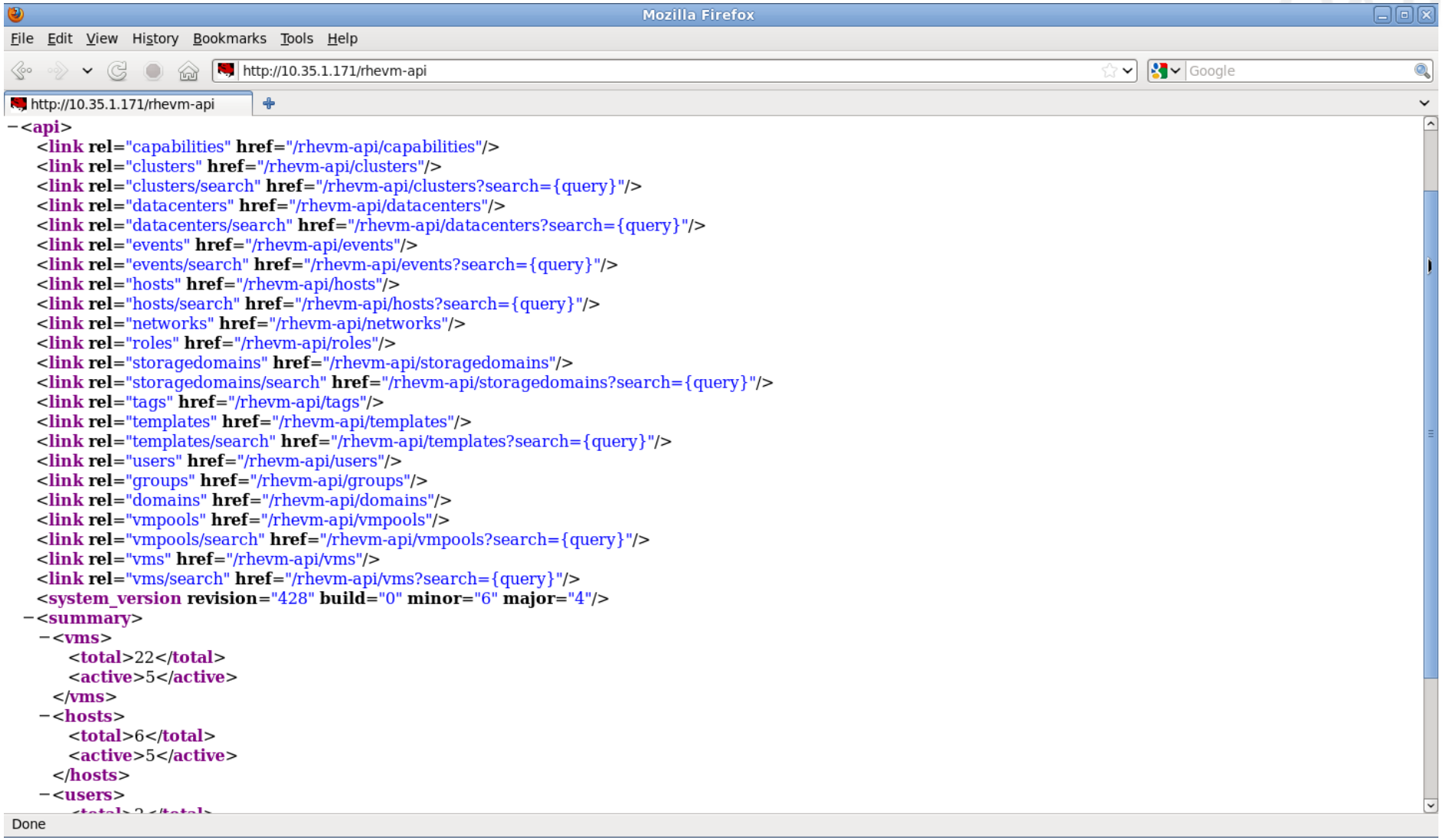
CLI

AVAILABLE COMMANDS

```
    * action          execute an action on an object
    * cd              change directory
    * clear           clear the screen
    * connect         connect to a RHEV manager
    * console         open a console to a VM
    * create          create a new object
    * delete          delete an object
    * disconnect      disconnect from RHEV manager
    * exit            quit this interactive terminal
    * getkey          dump private ssh key
    * help            show help
    * list            list or search objects
    * ping            test the connection
    * pwd             print working directory
    * save            save configuration variables
    * set             set a configuration variable
    * show            show one object
    * status          show status
    * update          update an object
```

```
(oVirt cli) > help connect

USAGE

  connect
  connect <url> <username> <password>

DESCRIPTION

  Connect to a RHEV manager. This command has two forms. In the first
  form, no arguments are provided, and the connection details are rea
  from their respective configuration variables (see 'show'). In
  the second form, the connection details are provided as arguments.

  The arguments are:

   * url          - The URL to connect to.
   * username     - The user to connect as. Important: this needs to
                    in the user@domain format.
   * password     - The password to use.
```

REST API


Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://10.35.1.171/rhevm-api
Google
http://10.35.1.171/rhevm-api
−<api>
<link rel="capabilities" href="/rhevm-api/capabilities"/>
<link rel="clusters" href="/rhevm-api/clusters"/>
<link rel="clusters/search" href="/rhevm-api/clusters?search={query}"/>
<link rel="datacenters" href="/rhevm-api/datacenters"/>
<link rel="datacenters/search" href="/rhevm-api/datacenters?search={query}"/>
<link rel="events" href="/rhevm-api/events"/>
<link rel="events/search" href="/rhevm-api/events?search={query}"/>
<link rel="hosts" href="/rhevm-api/hosts"/>
<link rel="hosts/search" href="/rhevm-api/hosts?search={query}"/>
<link rel="networks" href="/rhevm-api/networks"/>
<link rel="roles" href="/rhevm-api/roles"/>
<link rel="storagedomains" href="/rhevm-api/storagedomains"/>
<link rel="storagedomains/search" href="/rhevm-api/storagedomains?search={query}"/>
<link rel="tags" href="/rhevm-api/tags"/>
<link rel="templates" href="/rhevm-api/templates"/>
<link rel="templates/search" href="/rhevm-api/templates?search={query}"/>
<link rel="users" href="/rhevm-api/users"/>
<link rel="groups" href="/rhevm-api/groups"/>
<link rel="domains" href="/rhevm-api/domains"/>
<link rel="vmpools" href="/rhevm-api/vmpools"/>
<link rel="vmpools/search" href="/rhevm-api/vmpools?search={query}"/>
<link rel="vms" href="/rhevm-api/vms"/>
<link rel="vms/search" href="/rhevm-api/vms?search={query}"/>
<system_version revision="428" build="0" minor="6" major="4"/>
−<summary>
−<vms>
<total>22</total>
<active>5</active>
</vms>
−<hosts>
<total>6</total>
<active>5</active>
</hosts>
−<users>
Done

Python SDK

```
#create proxy
api = API(url='http://localhost:8080', username='user@domain', password='password')

api.
```

```
vms
__init__(url, username, password, key_file, cert_file, port, s
```

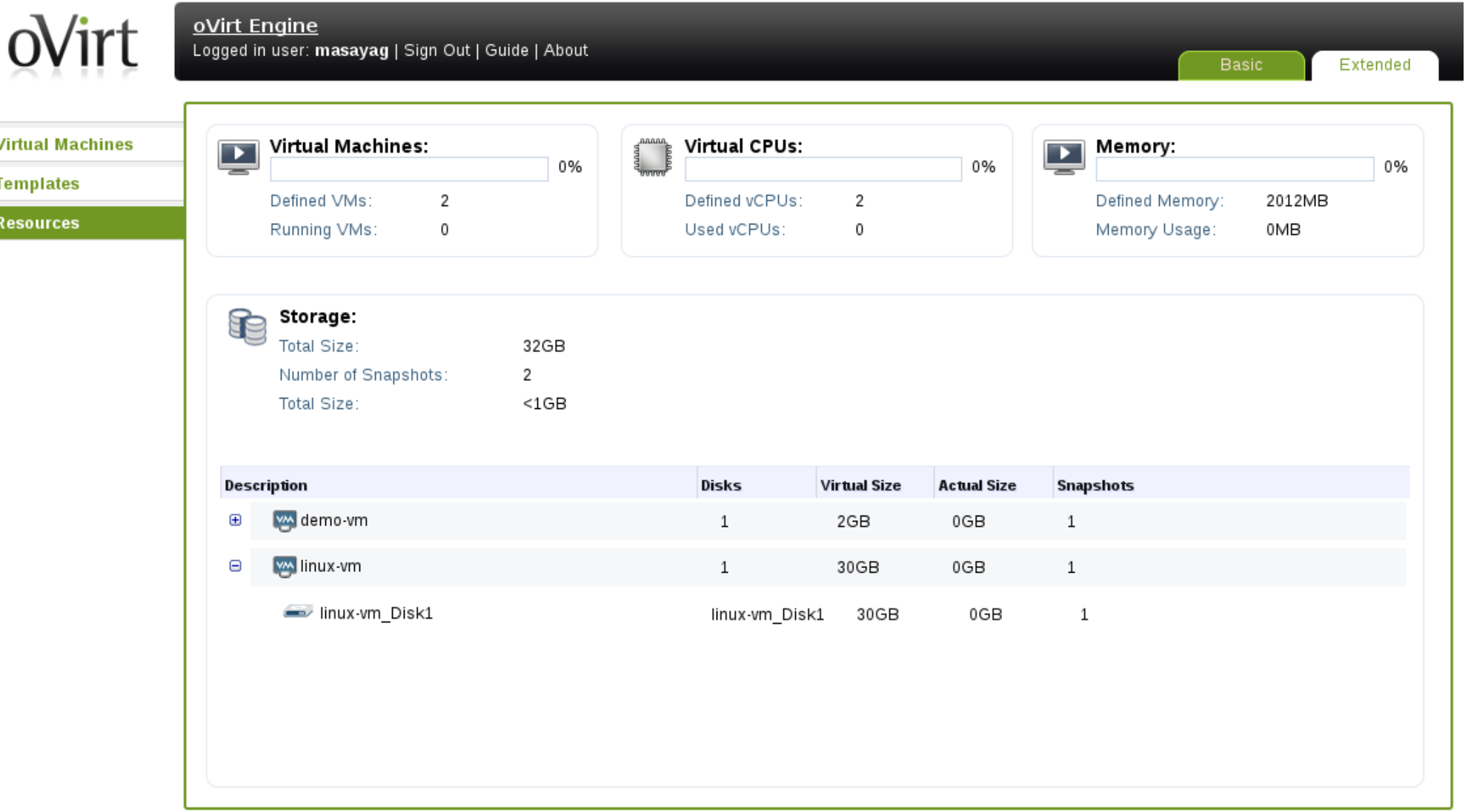
```
api.vms.
```

```
add(vm)
get(name)
list(query)
```

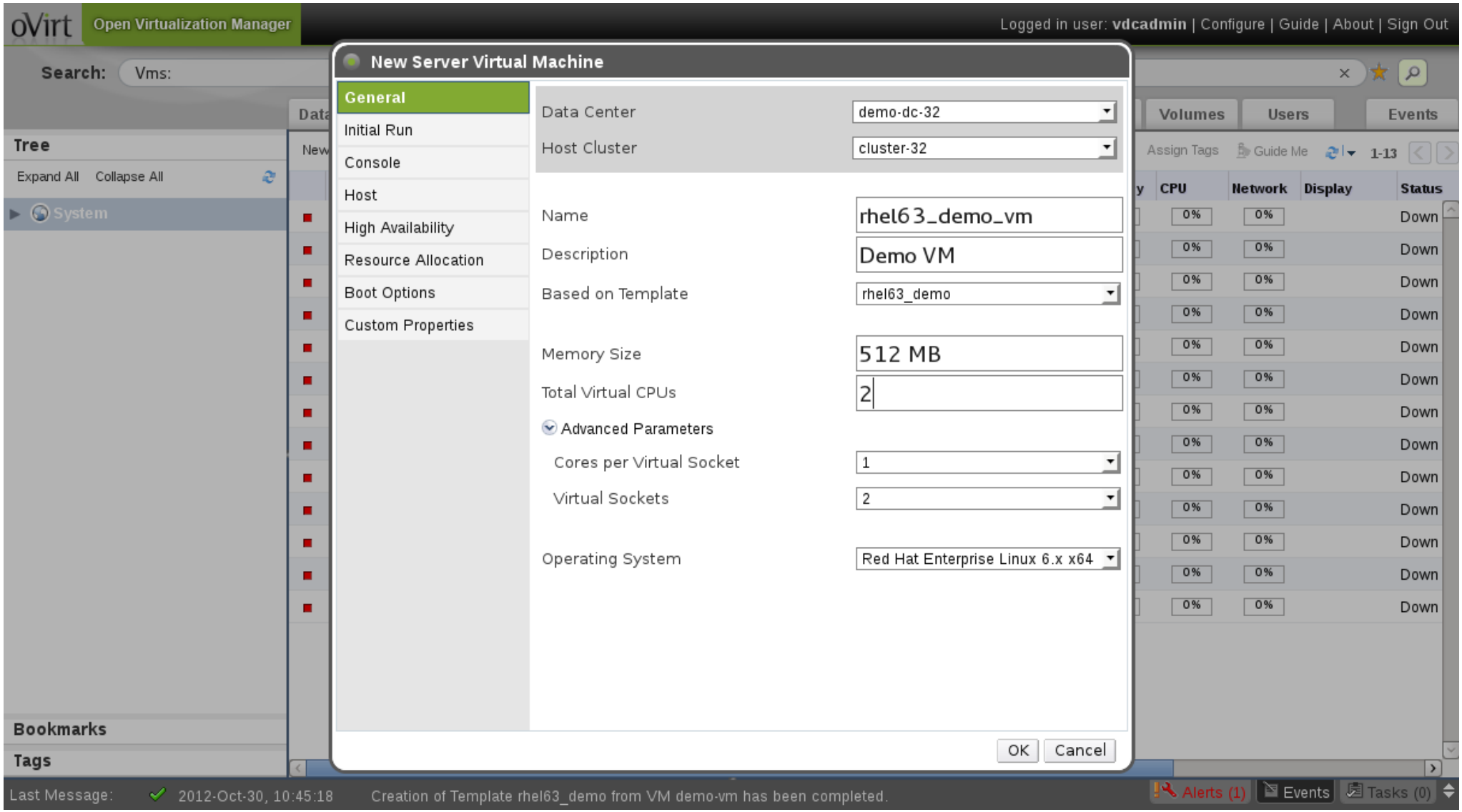
```
#list by query
vms = api.vms.list(query = 'name=python_vm')

#search vms by property constraint
vms = api.vms.list(memory=1073741824)

#get by constraints
vm = api.vms.get(id = '02f0f4a4-9738-4731-83c4-293f3f734782')

vm.st
```

```
start()
start_time
stateless
```

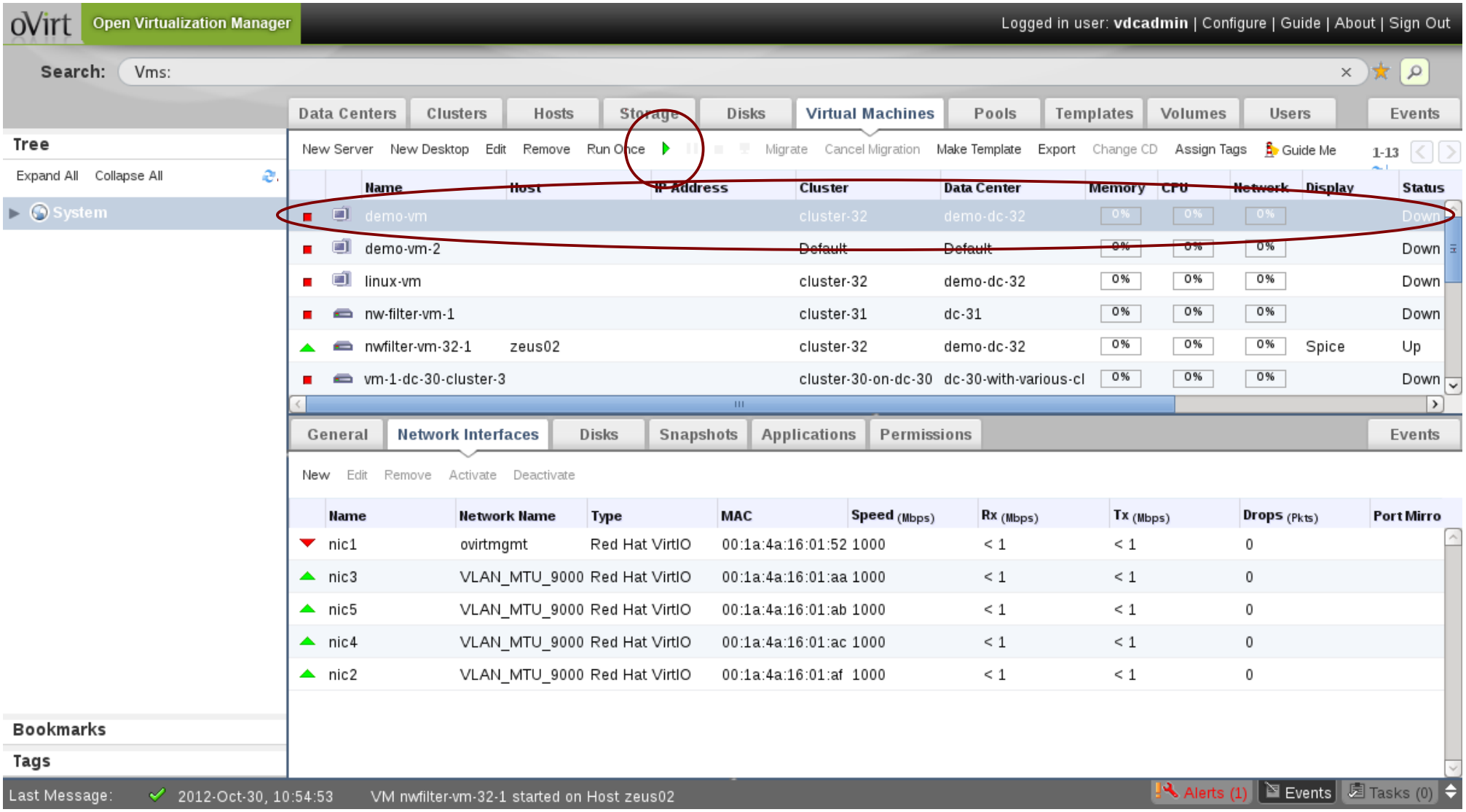
User Portal


oVirt
oVirt Engine
Logged in user: masayag | Sign Out | Guide | About
Basic
Extended
Virtual Machines
Templates
Resources
Virtual Machines:
0%
Defined VMs: 2
Running VMs: 0
Virtual CPUs:
0%
Defined vCPUs: 2
Used vCPUs: 0
Memory:
0%
Defined Memory: 2012MB
Memory Usage: 0MB
Storage:
Total Size: 32GB
Number of Snapshots: 2
Total Size: <1GB
Description
Disks
Virtual Size
Actual Size
Snapshots
demo-vm 1 2GB 0GB 1
linux-vm 1 30GB 0GB 1
linux-vm_Disk1 linux-vm_Disk1 30GB 0GB 1

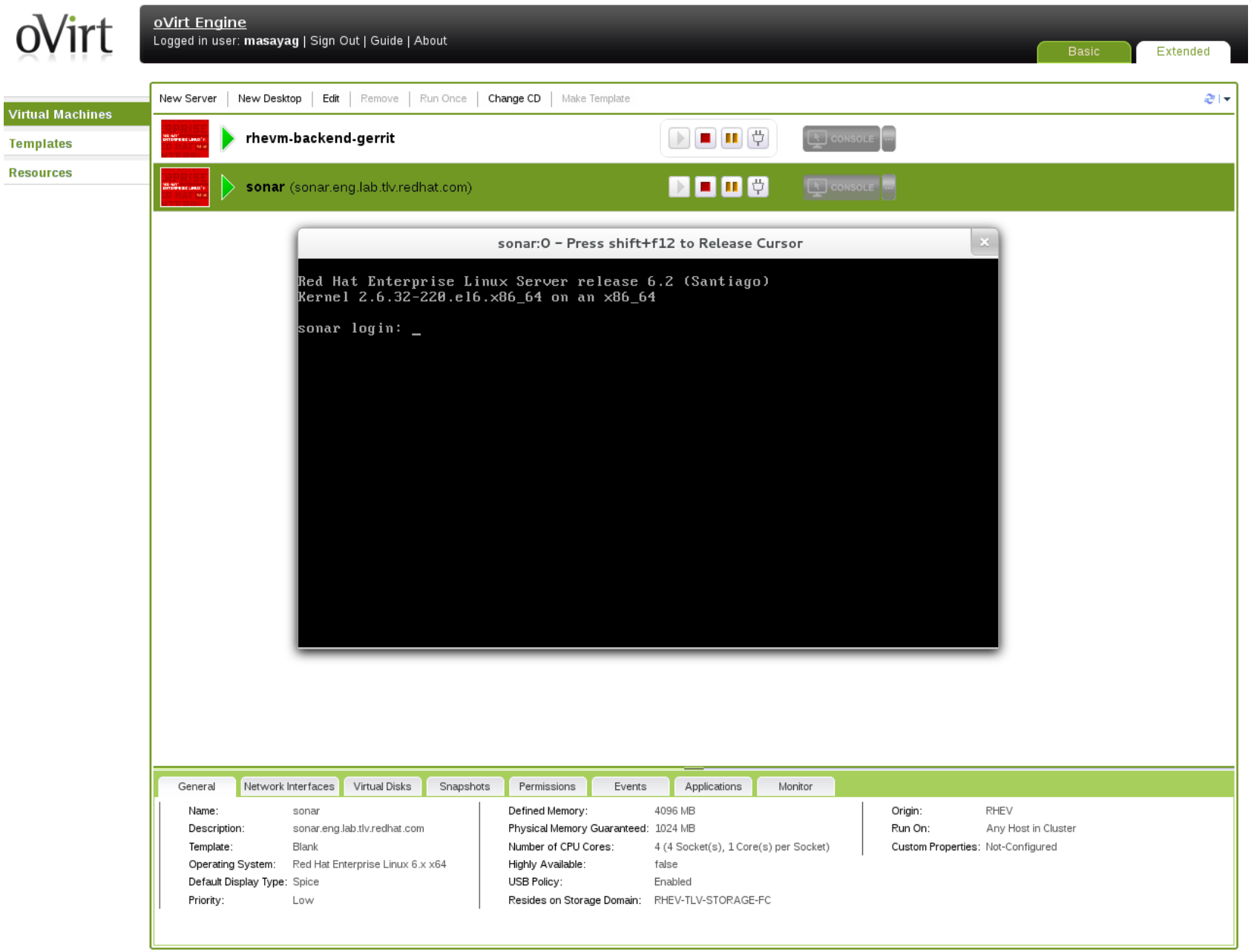
Create VM From Template



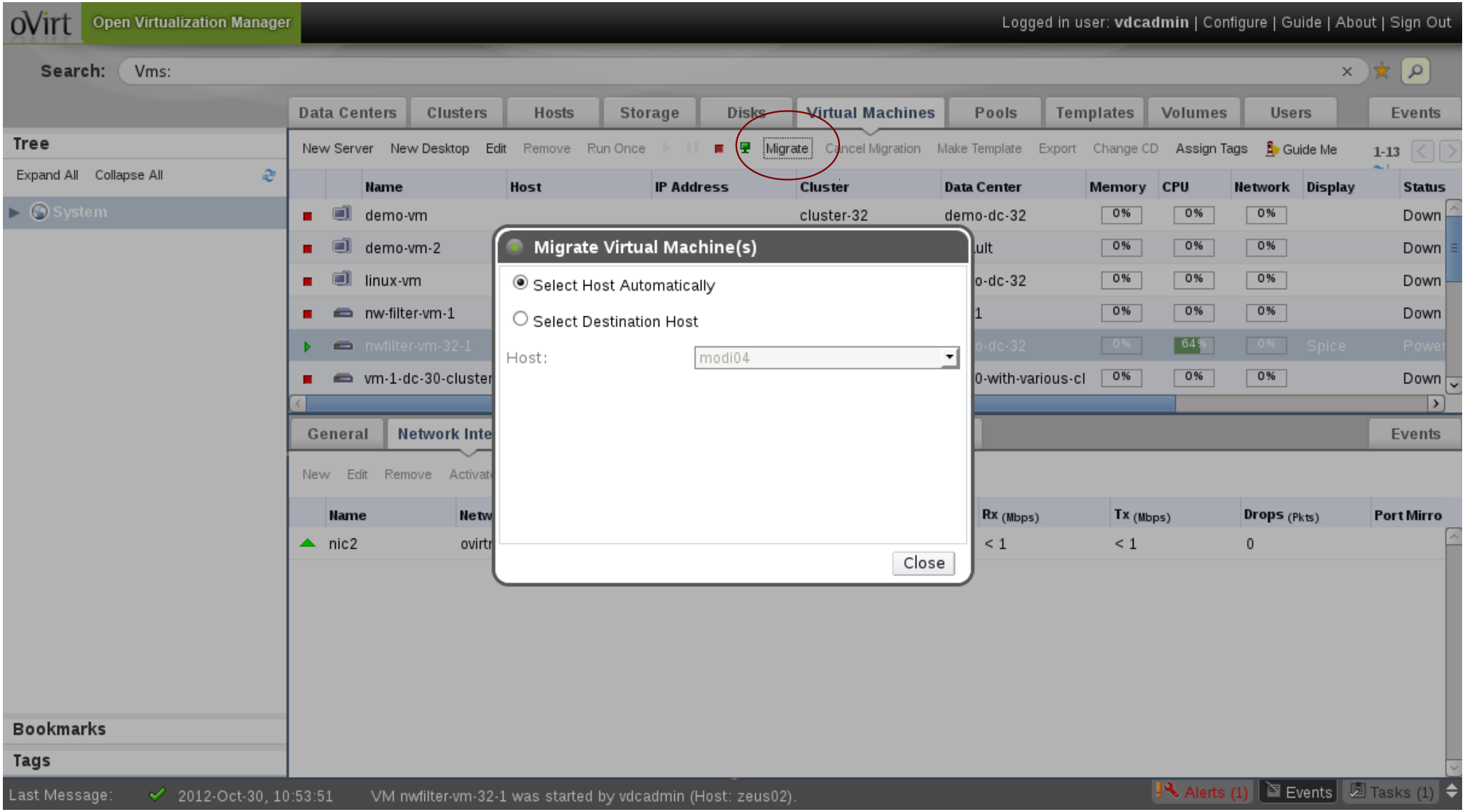
Run a VM


oVirt
Open Virtualization Manager
Logged in user: vdcadmin | Configure | Guide | About | Sign Out
Search: Vms:
Data Centers
Clusters
Hosts
Storage
Disks
Virtual Machines
Pools
Templates
Volumes
Users
Events
Tree
Expand All
Collapse All
System
New Server
New Desktop
Edit
Remove
Run Once
Migrate
Cancel Migration
Make Template
Export
Change CD
Assign Tags
Guide Me
1-13
Name
Host
IP Address
Cluster
Data Center
Memory
CPU
Network
Display
Status
demo-vm
cluster-32
demo-dc-32
Down
demo-vm-2
Default
Default
Down
linux-vm
cluster-32
demo-dc-32
Down
nw-filter-vm-1
cluster-31
dc-31
Down
nwfilter-vm-32-1
zeus02
cluster-32
demo-dc-32
Spice
Up
vm-1-dc-30-cluster-3
cluster-30-on-dc-30
dc-30-with-various-cl
Down
General
Network Interfaces
Disks
Snapshots
Applications
Permissions
Events
New
Edit
Remove
Activate
Deactivate
Name
Network Name
Type
MAC
Speed (Mbps)
Rx (Mbps)
Tx (Mbps)
Drops (Pkts)
Port Mirro
nic1
ovirtmgmt
Red Hat VirtIO
00:1a:4a:16:01:52
1000
< 1
< 1
0
nic3
VLAN_MTU_9000
Red Hat VirtIO
00:1a:4a:16:01:aa
1000
< 1
< 1
0
nic5
VLAN_MTU_9000
Red Hat VirtIO
00:1a:4a:16:01:ab
1000
< 1
< 1
0
nic4
VLAN_MTU_9000
Red Hat VirtIO
00:1a:4a:16:01:ac
1000
< 1
< 1
0
nic2
VLAN_MTU_9000
Red Hat VirtIO
00:1a:4a:16:01:af
1000
< 1
< 1
0
Bookmarks
Tags
Last Message:
2012-Oct-30, 10:54:53
VM nwfilter-vm-32-1 started on Host zeus02
Alerts (1)
Events
Tasks (0)

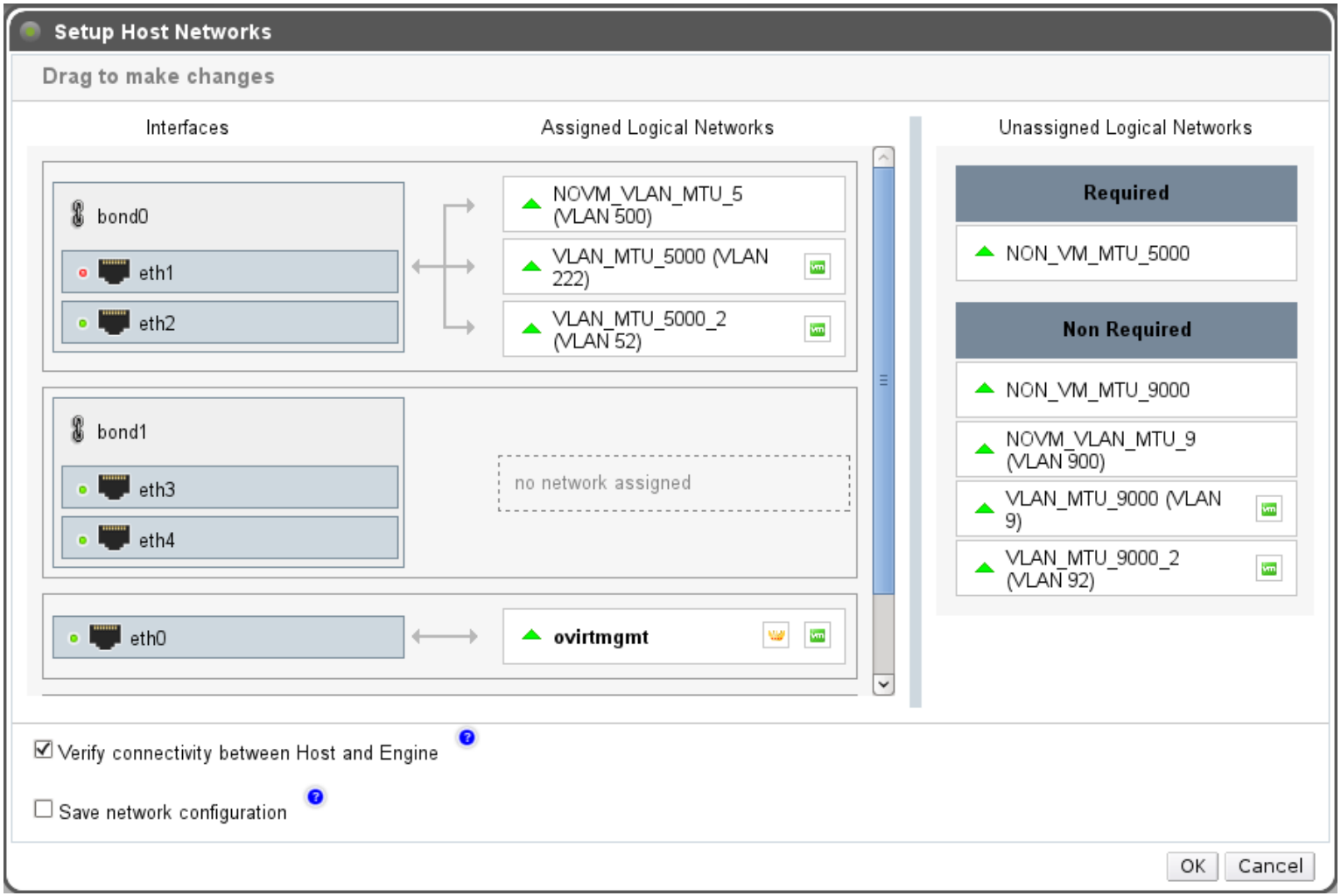
Connect To Guest



VM Migration



Network

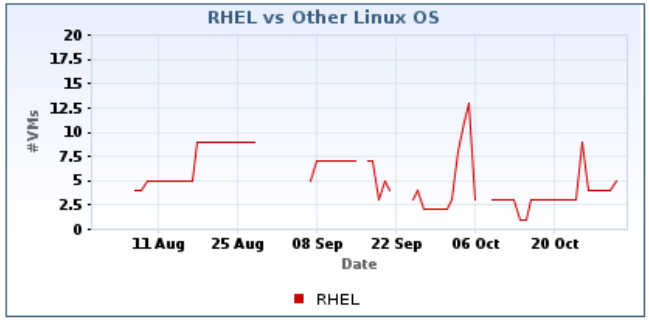

Setup Host Networks
Drag to make changes
Interfaces
Assigned Logical Networks
Unassigned Logical Networks
bond0
eth1
eth2
NOVM_VLAN_MTU_5 (VLAN 500)
VLAN_MTU_5000 (VLAN 222)
VLAN_MTU_5000_2 (VLAN 52)
bond1
eth3
eth4
no network assigned
eth0
ovirtmgmt
Required
NON_VM_MTU_5000
Non Required
NON_VM_MTU_9000
NOVM_VLAN_MTU_9 (VLAN 900)
VLAN_MTU_9000 (VLAN 9)
VLAN_MTU_9000_2 (VLAN 92)
Verify connectivity between Host and Engine
Save network configuration
OK
Cancel

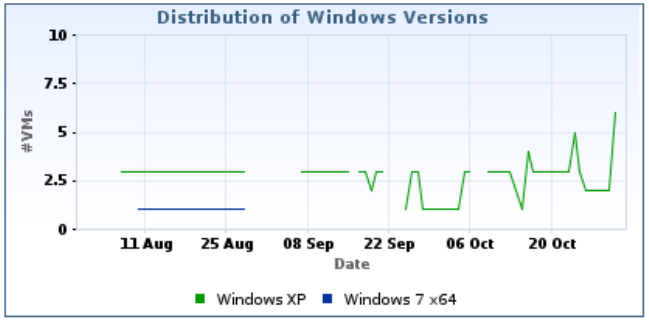
Reports

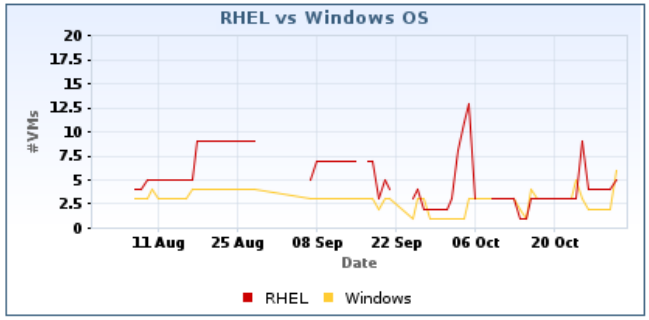
Red Hat Enterprise Virtualization Reports — Dec 5, 2011

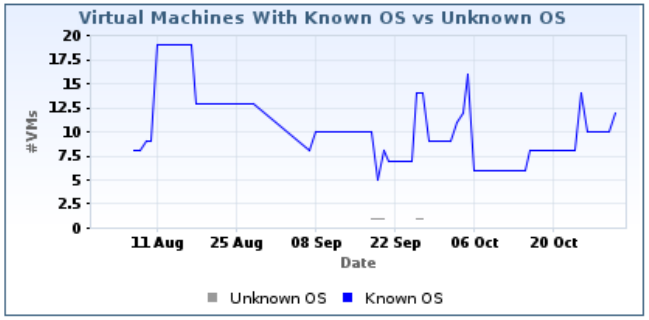
Active Virtual Machines by OS in **Clusters** of **Data Center DC_30_IC136_tiger**

Criteria:			
	Datacenter: DC_30_IC136_tiger	**Date Range:** 2011-08-01 - 2011-10-31	**VM Type:** All
	Cluster: All	**Period:** Quarterly	**Show Deleted Virtual Machines:** Yes









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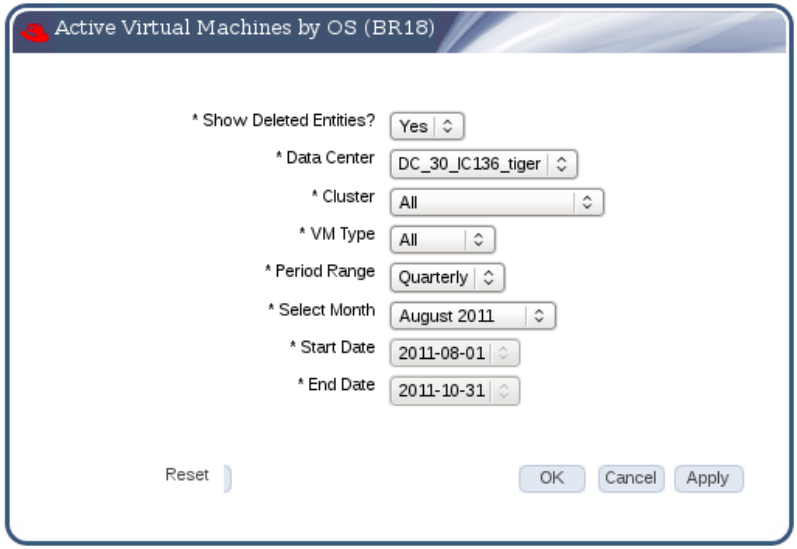
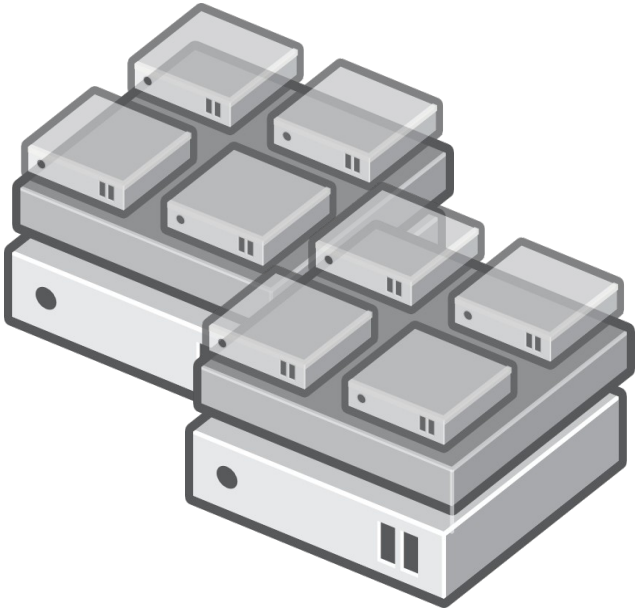


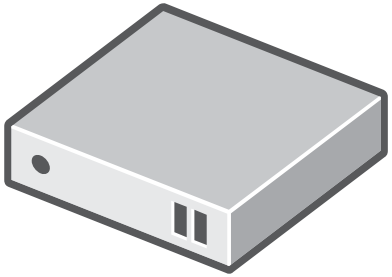
Anatomy

oVirt

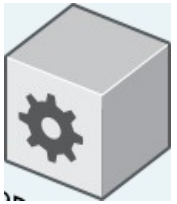
Servers



Engine



DB

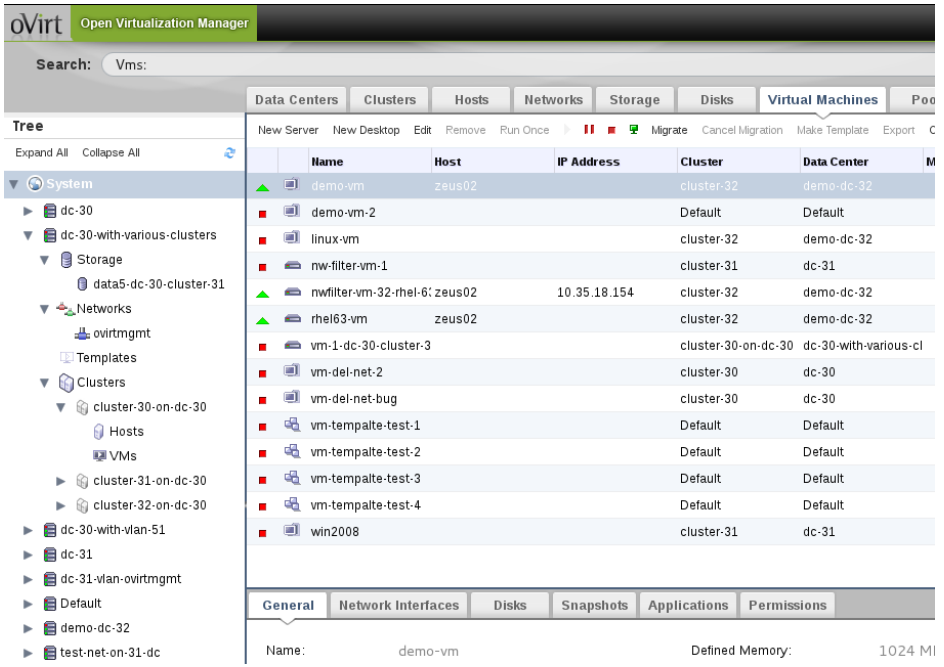


Client

Storage

oVirt Engine

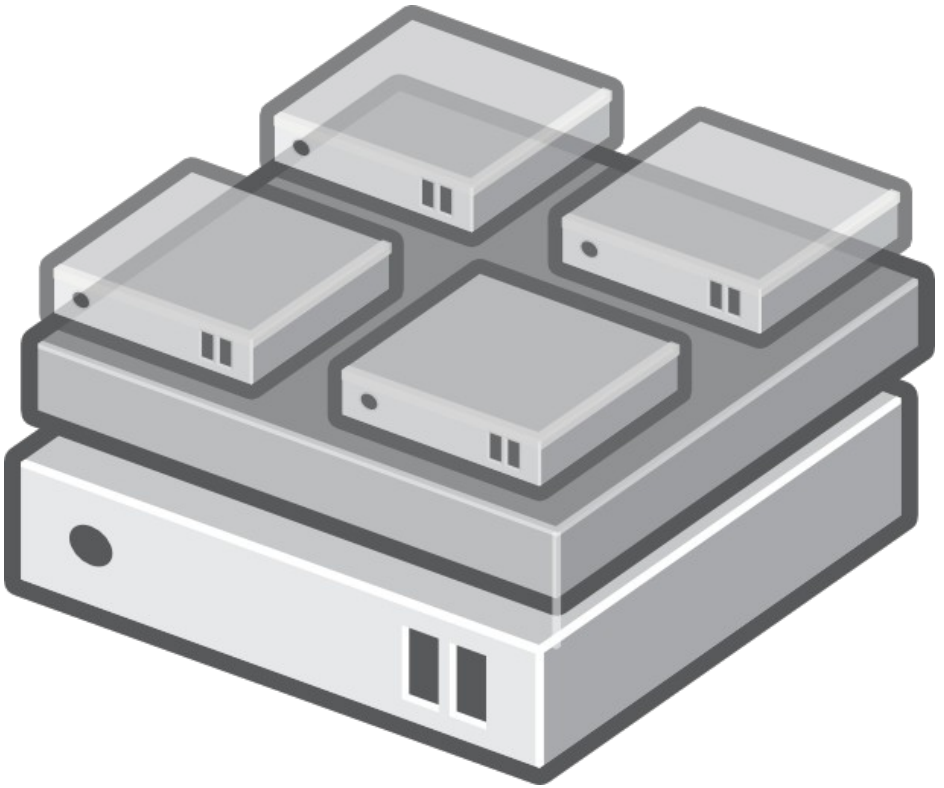
- JBoss-based Java application
- Communicates with hypervisor nodes
- Manages VM lifecycle
- Controlled with:
  - Admin Portal
  - User Portal
  - REST API
  - Python SDK
  - Command Line Shell



Virtualization Host

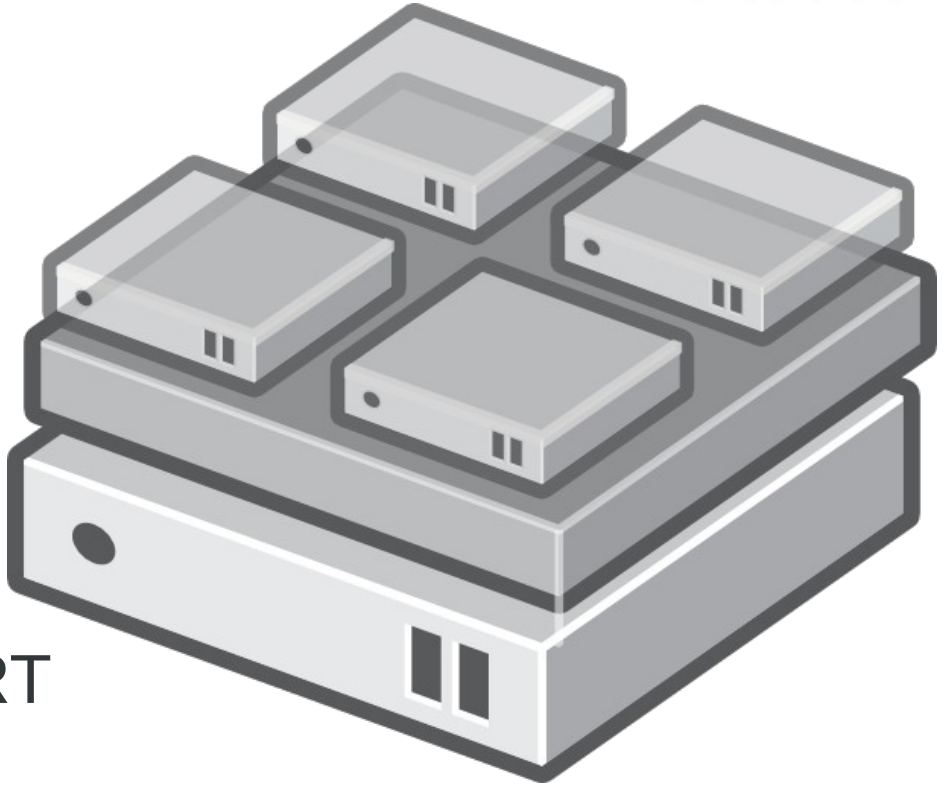
oVirt

- Machine w/ Intel VT/AMD-V CPUs
- Linux OS – bits for network, storage, etc.
- KVM – hypervisor, part of Linux kernel
- libvirt – virtualization API
- **vdsm – virtualization node management**



oVirt Node

- Dedicated hypervisor
- JEOS
- Built on Fedora
- Firmware
  - Install and forget about it
  - Similar to ESXi or OpenWRT
- Small Footprint (< 200MB)



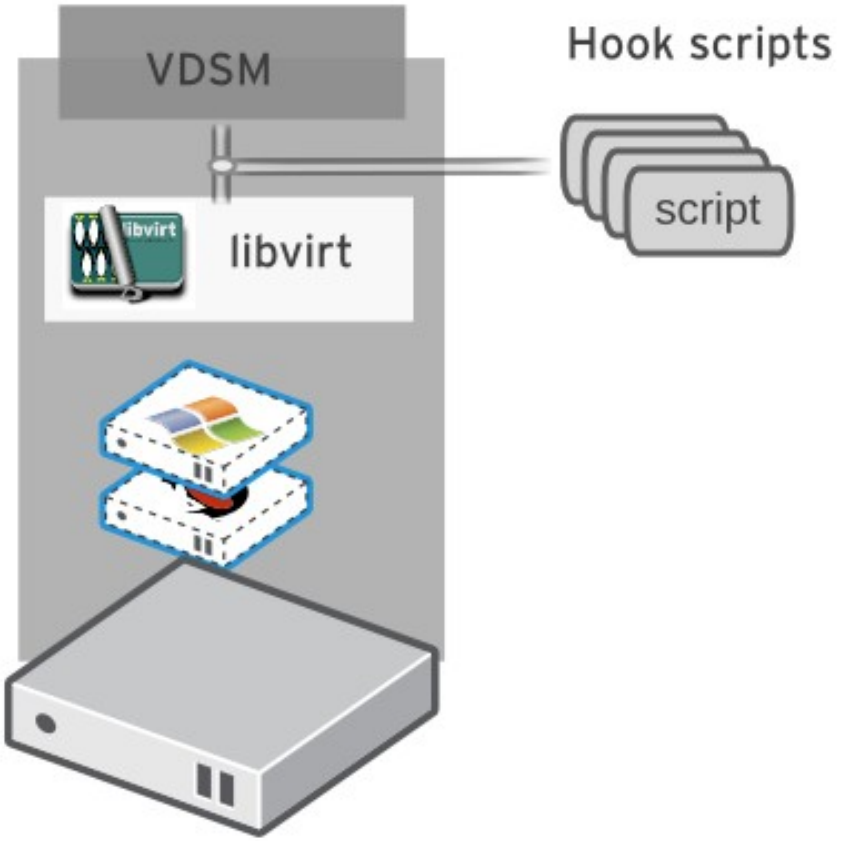
Getting oVirt

- oVirt Live: http://wiki.ovirt.org/wiki/OVirt_Live
- All in One: ovirt-engine-setup-plugin-allinone
- Engine + oVirt Node(s)

- Packaged releases target latest Fedora
- Community-provided packages for CentOS
- oVirt 3.1 in F18 and F17 repos
- Build from source

Vdsm hooks

- A mechanism for customization
- Allows the administrator to manipulate the VM life cycle
- Points of manipulation
  - Before / after VM start
  - Before / after VM migration in/out
  - On VM stop
  - Etc.

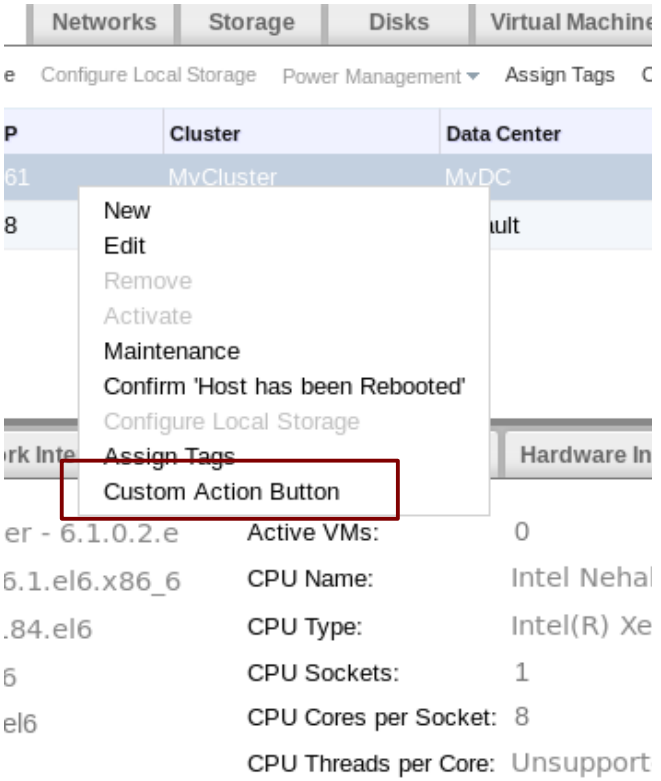


Nested KVM hook

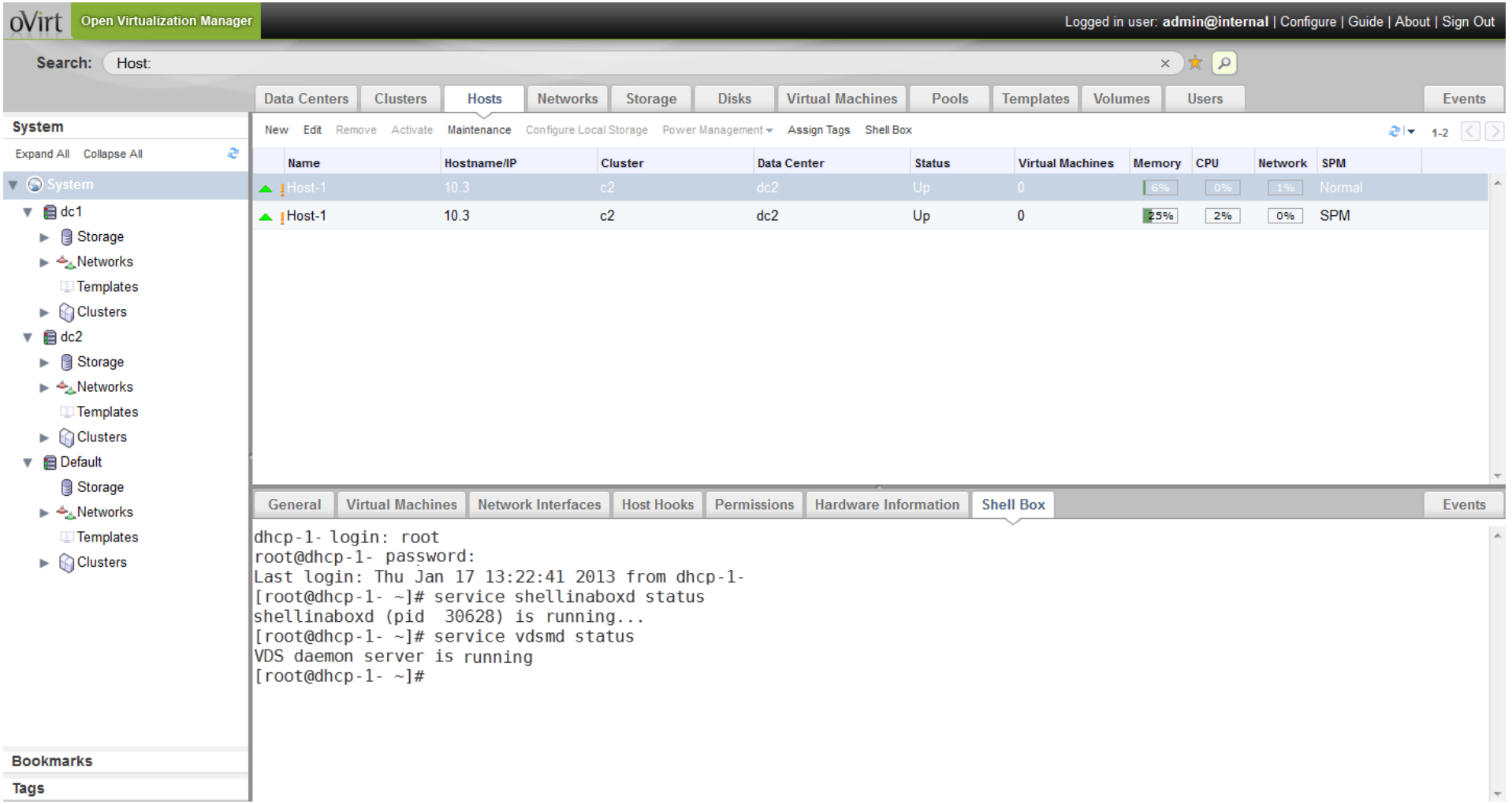
```
import hooking

cpu_nested_features = {
    "kvm_intel": "vmx",
    "kvm_amd": "svm",
}

for kvm_mod in ("kvm_intel", "kvm_amd"):
    kvm_mod_path = "/sys/module/%s/parameters/nested" % kvm_mod
    try:
        with file(kvm_mod_path) as f:
            if f.readline().strip() == "Y":
                break
    except IOError:
        pass
else:
    kvm_mod = None

if kvm_mod:
    domxml = hooking.read_domxml()
    feature_vmx = domxml.createElement("feature")
    feature_vmx.setAttribute("name", cpu_nested_features[kvm_mod])
    feature_vmx.setAttribute("policy", "require")
    domxml.getElementsByTagName("cpu")[0].appendChild(feature_vmx)
    hooking.write_domxml(domxml)
```

UI Plugins

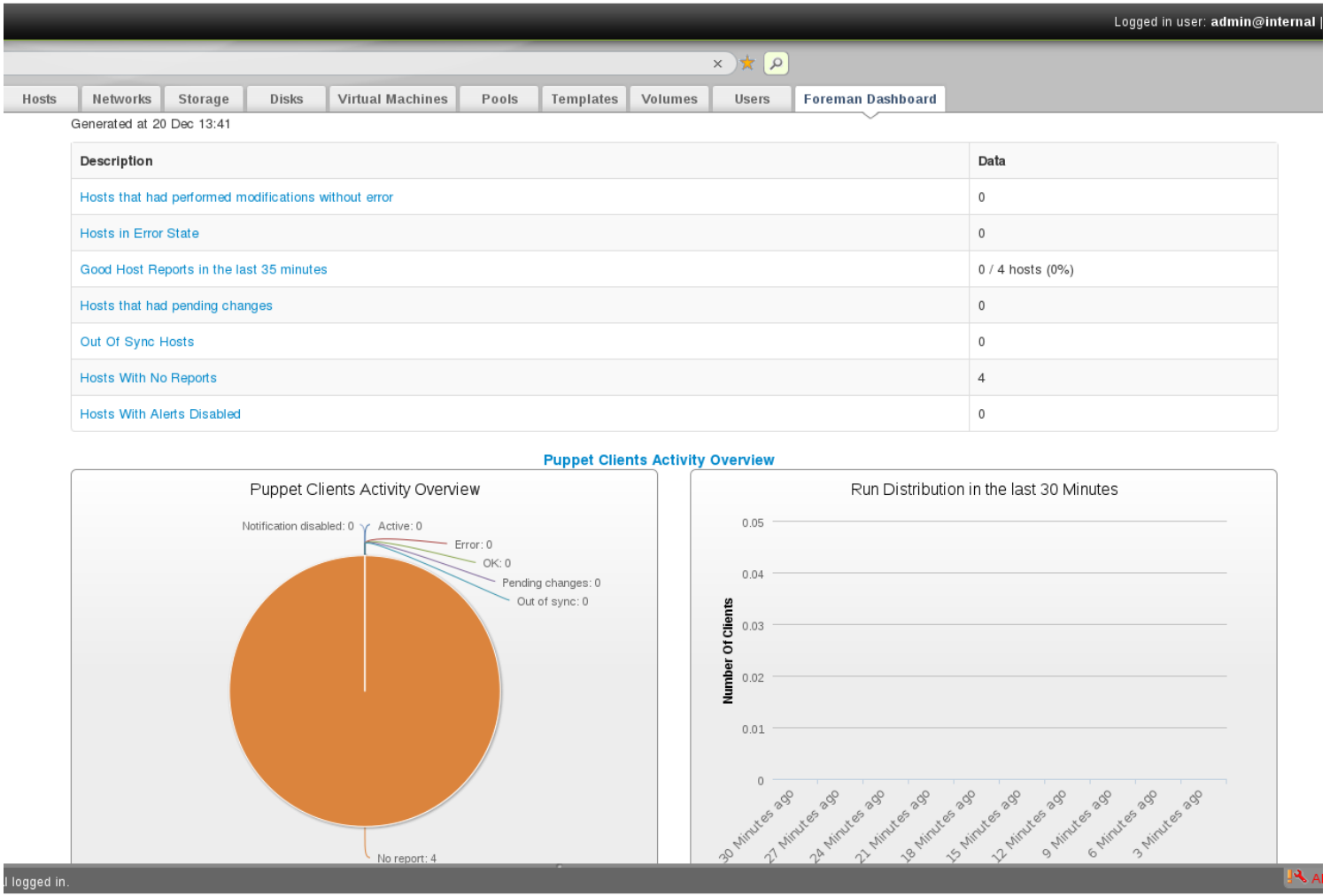
- New in oVirt 3.2
- Extend or customize oVirt Engine functionality by adding UI components to the Admin Portal (Webadmin)
- Plugins integrate with the Admin Portal on the client side using JavaScript
- Plugins can be packaged and distributed for use with the oVirt Engine



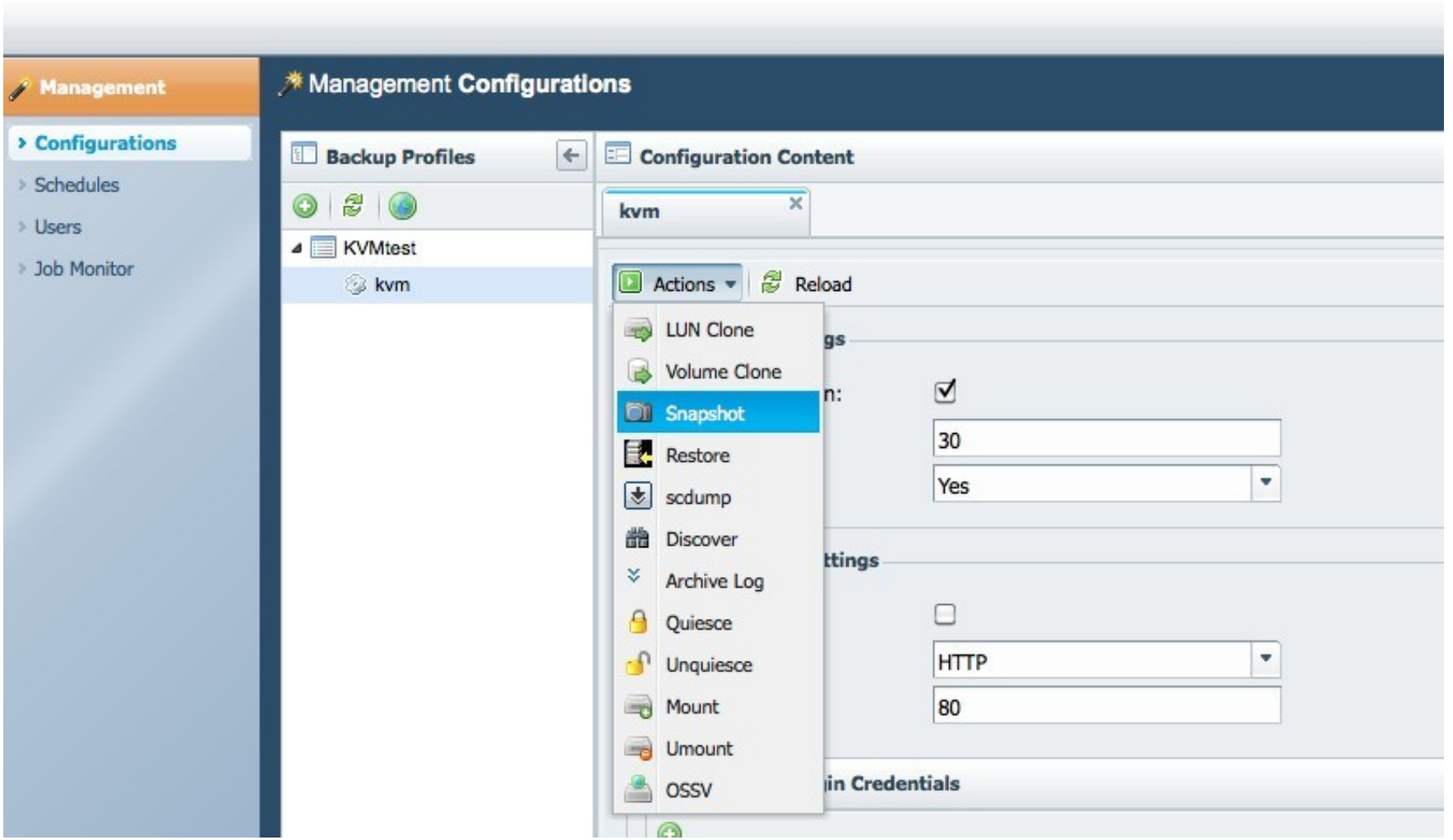
Shell-in-a-Box



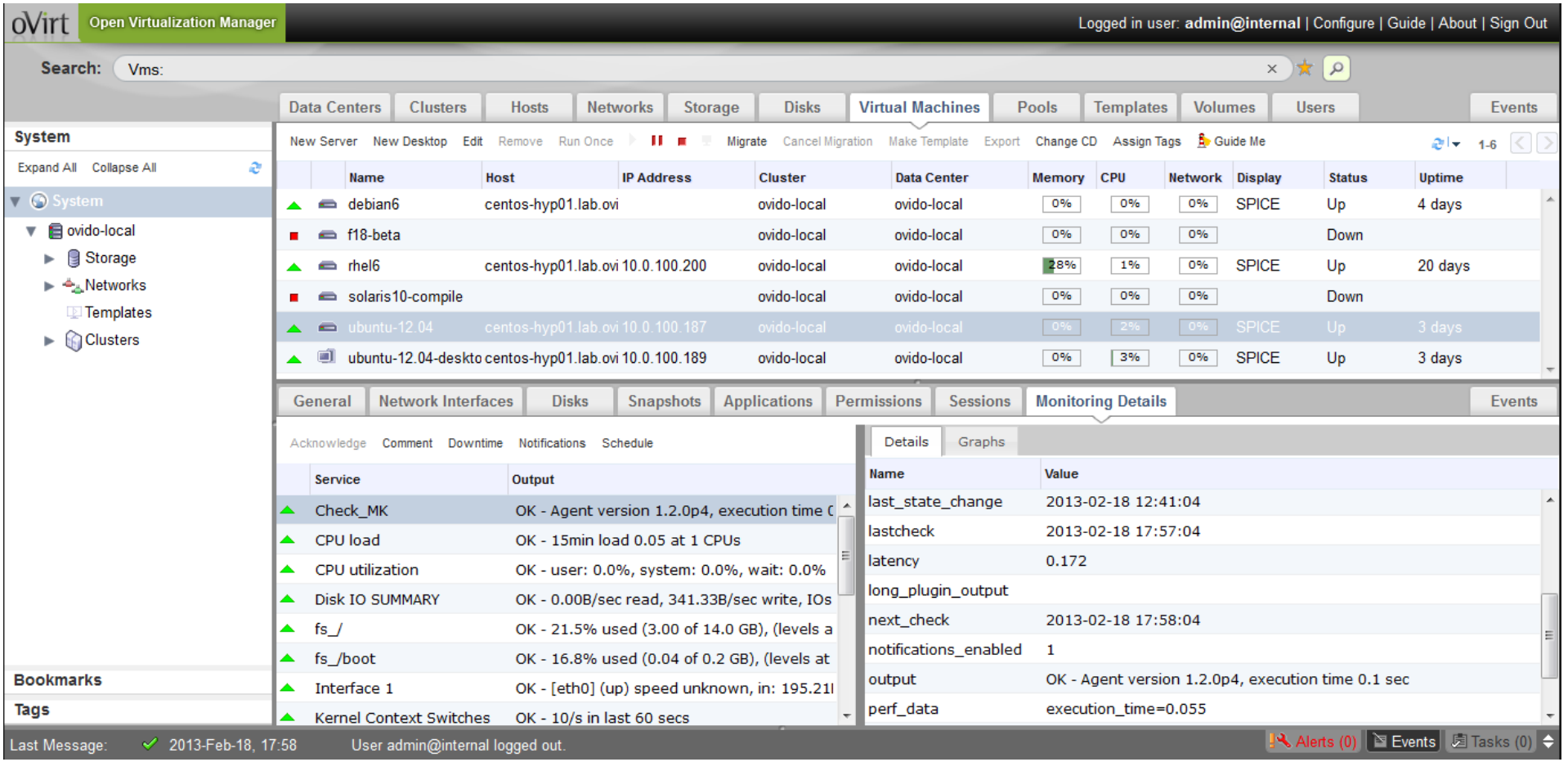
Foreman plugin



NetApp Virtual Storage Console

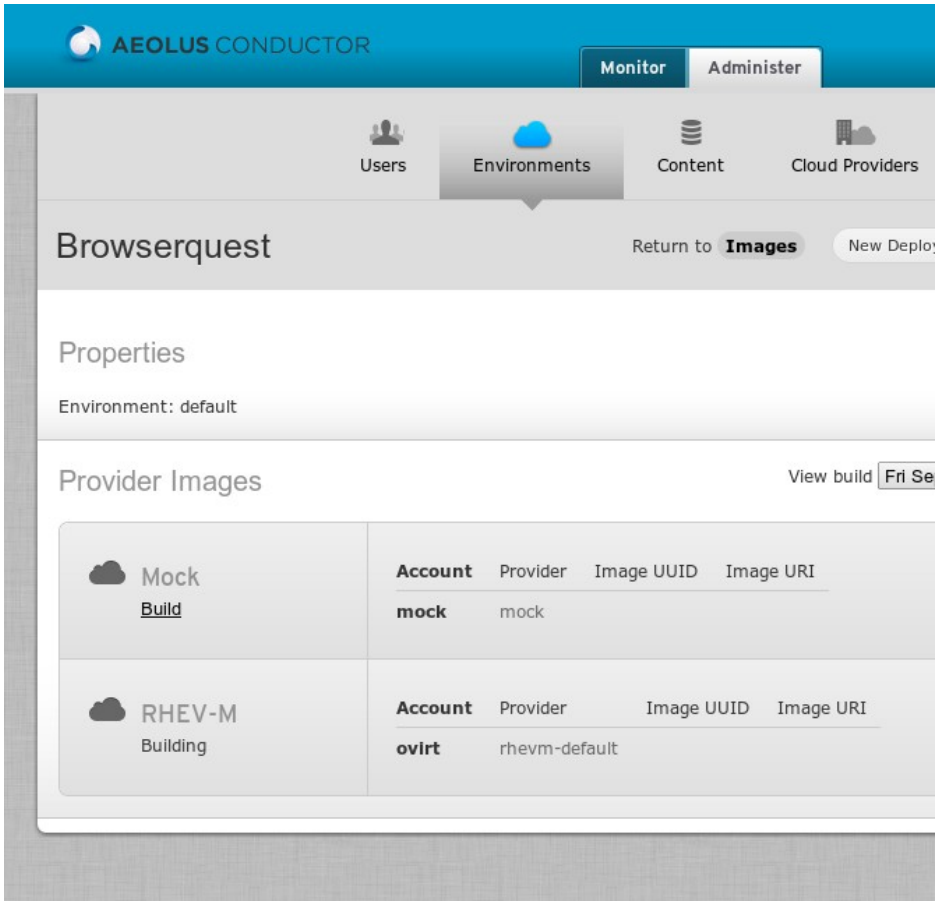


Nagios monitoring



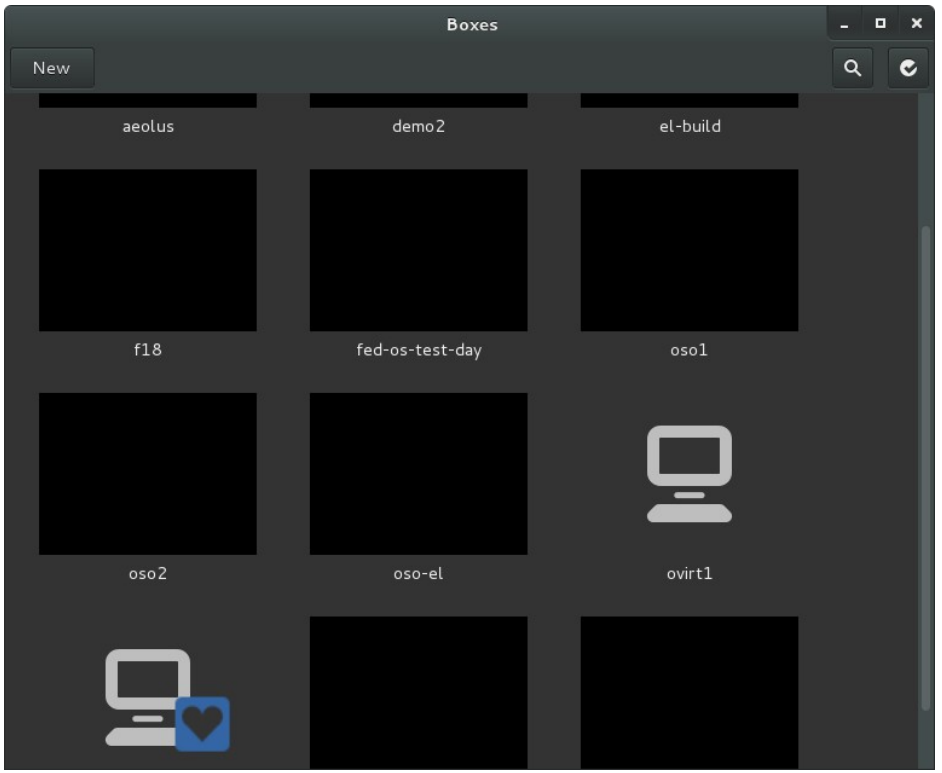
Deltacloud & Aeolus

- Deploy Deltacloud server
- Manipulate oVirt via:
  - EC2 API
  - CIMI API
  - Deltacloud API
- Aeolus Project
  - Create & manage cloud resources across multiple providers...
  - ... including oVirt



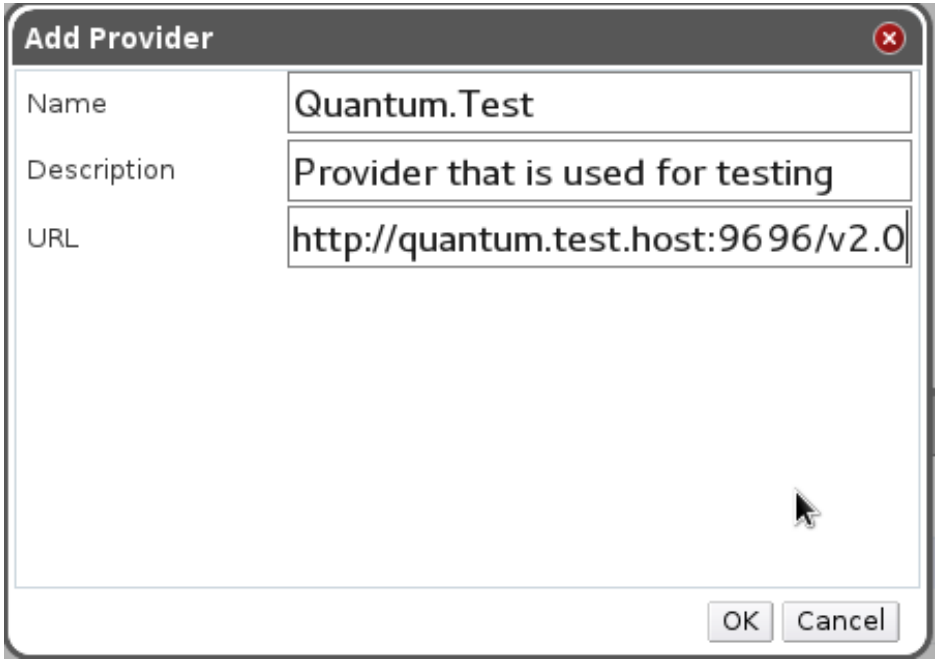
govirt & GNOME Boxes

- govirt: C library to access the oVirt REST API
- Boxes: A simple GNOME 3 application to access remote or virtual systems
  - Creates and manages local KVM virtual machines using libvirt
  - Remote machine access through SPICE or VNC



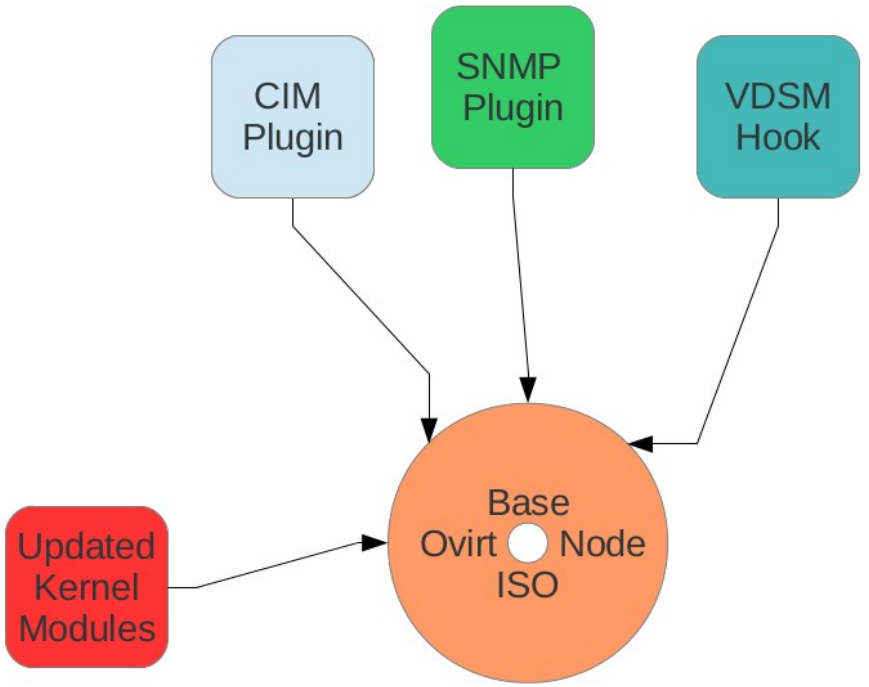
OpenStack Quantum integration

- Early stage work
- Quantum provides network connectivity-as-a-service
  - Quantum for managing VM networks
  - oVirt for managing infrastructure networks (Migration network, storage network etc.)
- External networks can be discovered in oVirt and then can be used within oVirt for example in VMs.

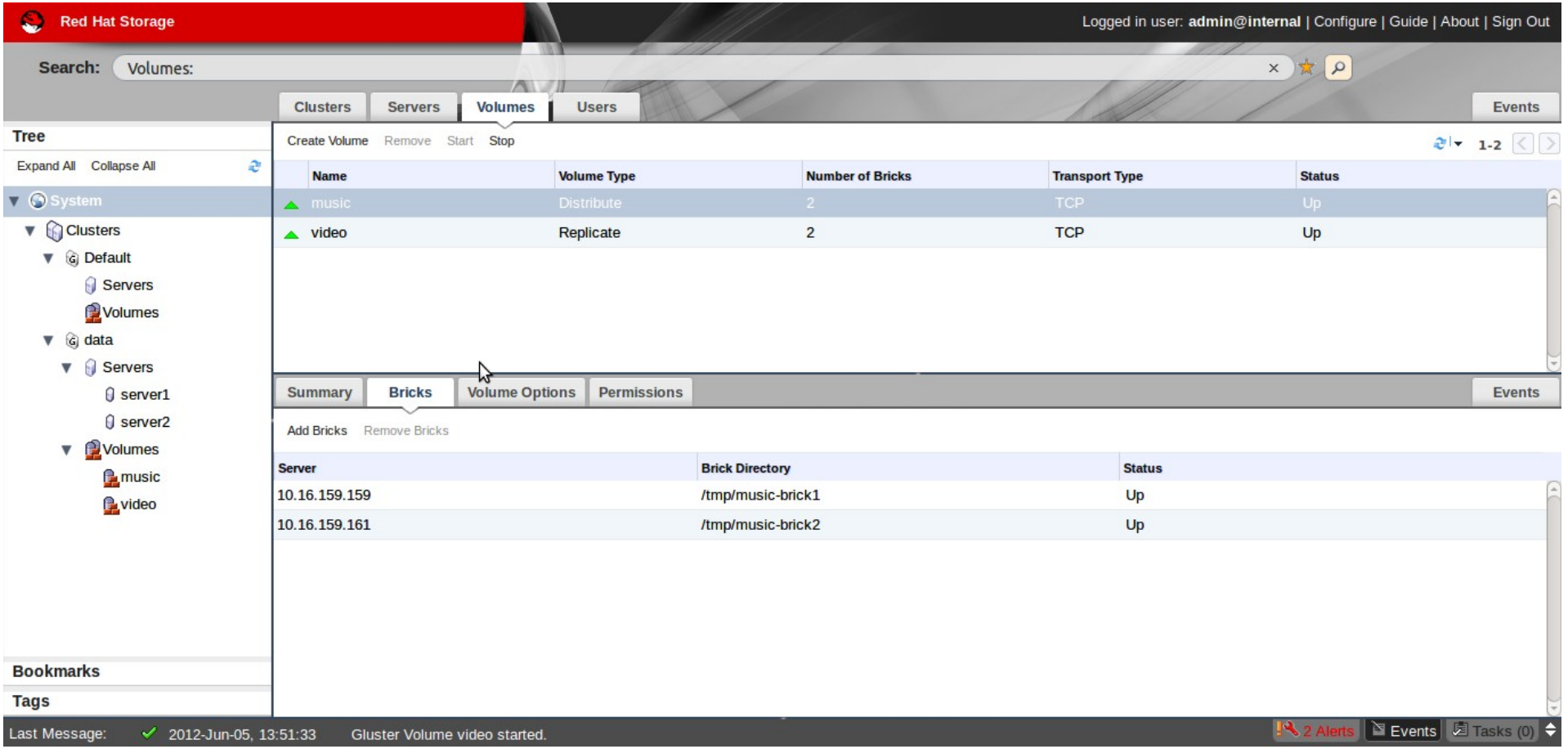


Node plugins

- Adds functionality not included in the base image
  - Install or update packages
  - Install new kernel modules
  - Add vdsm hooks
- Non-oVirt uses
  - OpenStack POC
  - YOUR PROJECT HERE



Engine, sans oVirt



Top feature requests

1. Allow disk resize
2. Integrate Nagios/Zabbix monitoring
3. Highly Available engine
4. Open vSwitch integration
5. Allow cloning VMs without template
6. Enable hypervisor upgrade/updates through engine
7. Allow engine on an oVirt hosted VM
8. Enable guest configuration (root password, SSH keys, network) via guest agent in engine
9. Integrate v2v into engine
10. Bond/extend ovirtmgmt with a second network for HA/increased bandwidth
11. Integrate scheduling of snapshots and VM export for backups in engine
12. Spice Support in Chrome

Get Involved!

- Wiki
  - http://www.ovirt.org
- Mailing lists
  - users@ovirt.org — oVirt user list
  - announce@ovirt.org — oVirt announce list
  - engine-devel@ovirt.org — oVirt engine devel list
  - node-devel@ovirt.org — oVirt node devel list
- IRC
  - #ovirt on irc.oftc.net

oVirt

THANK YOU !

twitter: @jasonbrooks
google+: superlongURL
email: jbrooks@redhat.com
irc: jbrooks on #ovirt
blog: blog.jebpages.com

http://www.ovirt.org

oVirt: Open Your Virtual Data Center

Jason Brooks
jbrooks@redhat.com

Agenda

oVirt

- Who am I
- What is oVirt
- oVirt Anatomy
- Getting oVirt
- Extending oVirt
- What's missing
- Get involved

Who am I?

oVirt

- Tech journalist (until last year)
- Red Hat OSAS (since last year)

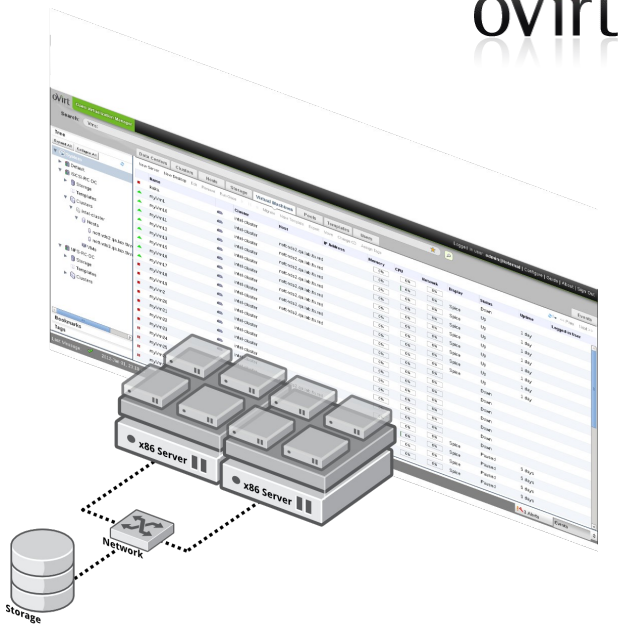
- Testing products & projects
- Fan of Virtualization
- Fan of Open Source

image credit:
http://www.flickr.com/photos/oxygeon/238163317/

In a nutshell

oVirt

- Large scale, centralized management for server and desktop virtualization
- Provides an open source alternative to vCenter/vSphere
- Upstream for RHEV



Cloud is of course cloudy, and oVirt can be part of a cloud, but the primary focus here is the VMware-style, virtual infrastructure-type deal – IT people familiar w/ vSphere will feel comfy

Cloud style is the new hotness, why pay attn to virtual infrastructure

Less sexy, perhaps, but the community of VMware users is HUGE, and they need free software, too!

Feature highlights

oVirt

- Small footprint, bare metal hypervisor
- Optimized drivers for Linux and Windows guests
- Memory overcommit & page sharing
- High availability
- Live migration: VM & Storage
- Remote console
- iSCSI, NFS, FC, Gluster, local storage support
- CPU, storage & memory quotas
- Enterprise Directory integration
- Thin provisioning
- Live VM snapshots
- VM conversion tools
- OVF import/export
- VM templates
- Web-based admin & user portals

wall of text, selected items from a Versus vSphere/Hyper-V doc for RHEV 3.1

from:
http://www.redhat.com/rhecm/rest-rhecm/jcr/repository/collaboration/jcr:system/jcr:versionStorage/cd52a6990a070d54046a777e73fd41d5/58/jcr:frozenNode/rh:resourceFile

Roots

oVirt

- **Feb 2007:** Qumranet's KVM becomes part of mainline Linux kernel
- **Sept 2007:** Qumranet's KVM-based Windows VDI product, Solid ICE, ships
- **Oct 2007:** First commit in old oVirt repo (git.et.redhat.com)
- **Feb 2008:** oVirt project emerges publicly (for the 1st time)
- **Sept 2008:** Red Hat acquires Qumranet, Inc.
- **Nov 2009:** RHEV 2.1 ships w/ .NET-based management server
- **Nov 2011:** oVirt Project re-launches w/ Java-based management server
- **Jan 2012:** RHEV 3.0 ships w/ new engine in tech preview
- **Feb 2012:** oVirt 3.0 release (first community release)
- **Aug 2012:** oVirt 3.1 release
- **Feb 2013:** oVirt 3.2 release

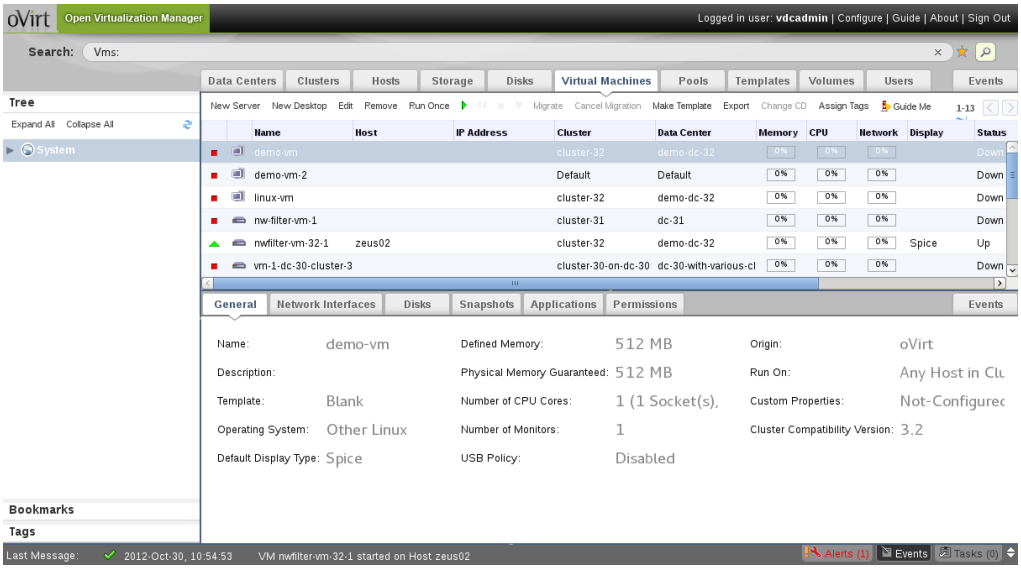
- **June 2010:** RHEV 2.2 (still .NET)
- **Dec 2012:** RHEV 3.1 ships w/ new engine as default

Another wall of text, some back story to the hows and whys of oVirt, for instance, why is oVirt (a new project) mature-looking (solely my view from the outside, BTW)

more interesting background on SolidICE to RHEV: http://nthadani.wordpress.com/2012/02/02/a-retrospective-analysis-on-the-road-to-red-hat/

.NET to Java management server background: http://lpeer.blogspot.com/2010/04/switching-from-c-to-java.html

Admin Console



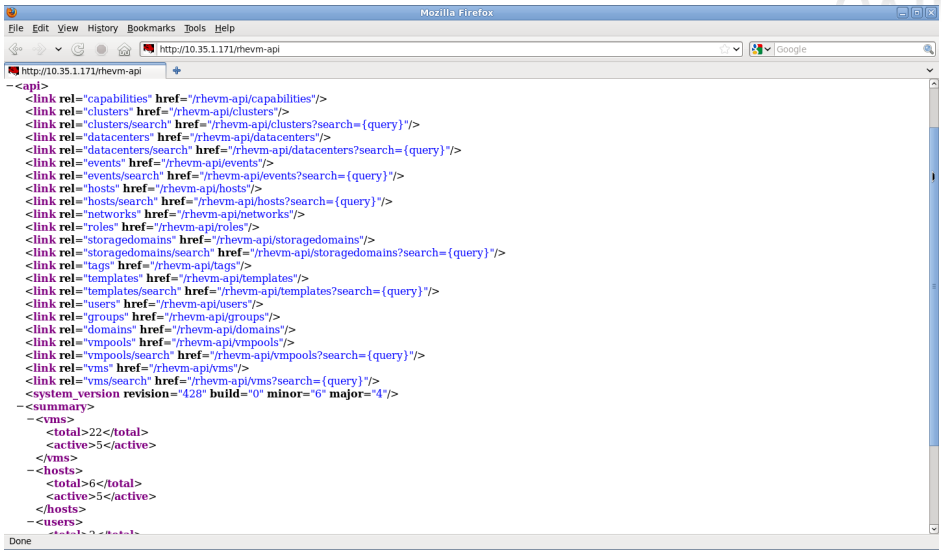
UI made w/ Google Web Toolkit

CLI

```
AVAILABLE COMMANDS

    * action           execute an action on an object
    * cd               change directory
    * clear            clear the screen
    * connect          connect to a RHEV manager
    * console          open a console to a VM
    * create           create a new object
    * delete           delete an object
    * disconnect       disconnect from RHEV manager
    * exit             quit this interactive terminal
    * getkey           dump private ssh key
    * help             show help
    * list             list or search objects
    * ping             test the connection
    * pwd              print working directory
    * save             save configuration variables
    * set              set a configuration variable
    * show             show one object
    * status           show status
    * update           update an object
```

```
(oVirt cli) > help connect

USAGE

  connect
  connect <url> <username> <password>

DESCRIPTION

  Connect to a RHEV manager. This command has two forms. In the firs
  form, no arguments are provided, and the connection details are rea
  from their respective configuration variables (see 'show'). In
  the second form, the connection details are provided as arguments.

  The arguments are:

   * url          - The URL to connect to.
   * username     - The user to connect as. Important: this needs to
                    in the user@domain format.
   * password     - The password to use.
```

REST API




```
<api>
  <link rel="capabilities" href="/rhevm-api/capabilities"/>
  <link rel="clusters" href="/rhevm-api/clusters"/>
  <link rel="clusters/search" href="/rhevm-api/clusters?search={query}"/>
  <link rel="datacenters" href="/rhevm-api/datacenters"/>
  <link rel="datacenters/search" href="/rhevm-api/datacenters?search={query}"/>
  <link rel="events" href="/rhevm-api/events"/>
  <link rel="events/search" href="/rhevm-api/events?search={query}"/>
  <link rel="hosts" href="/rhevm-api/hosts"/>
  <link rel="hosts/search" href="/rhevm-api/hosts?search={query}"/>
  <link rel="networks" href="/rhevm-api/networks"/>
  <link rel="roles" href="/rhevm-api/roles"/>
  <link rel="storagedomains" href="/rhevm-api/storagedomains"/>
  <link rel="storagedomains/search" href="/rhevm-api/storagedomains?search={query}"/>
  <link rel="tags" href="/rhevm-api/tags"/>
  <link rel="templates" href="/rhevm-api/templates"/>
  <link rel="templates/search" href="/rhevm-api/templates?search={query}"/>
  <link rel="users" href="/rhevm-api/users"/>
  <link rel="groups" href="/rhevm-api/groups"/>
  <link rel="domains" href="/rhevm-api/domains"/>
  <link rel="vmpools" href="/rhevm-api/vmpools"/>
  <link rel="vmpools/search" href="/rhevm-api/vmpools?search={query}"/>
  <link rel="vms" href="/rhevm-api/vms"/>
  <link rel="vms/search" href="/rhevm-api/vms?search={query}"/>
  <system_version revision="428" build="0" minor="6" major="4"/>
  <summary>
    <vms>
      <total>22</total>
      <active>5</active>
    </vms>
    <hosts>
      <total>6</total>
      <active>5</active>
    </hosts>
    <users>
```

Python SDK

```
#create proxy
api = API(url='http://localhost:8080', username='user@domain', password='password')

api.
```

vms
__init__(url, username, password, key_file, cert_file, port, s

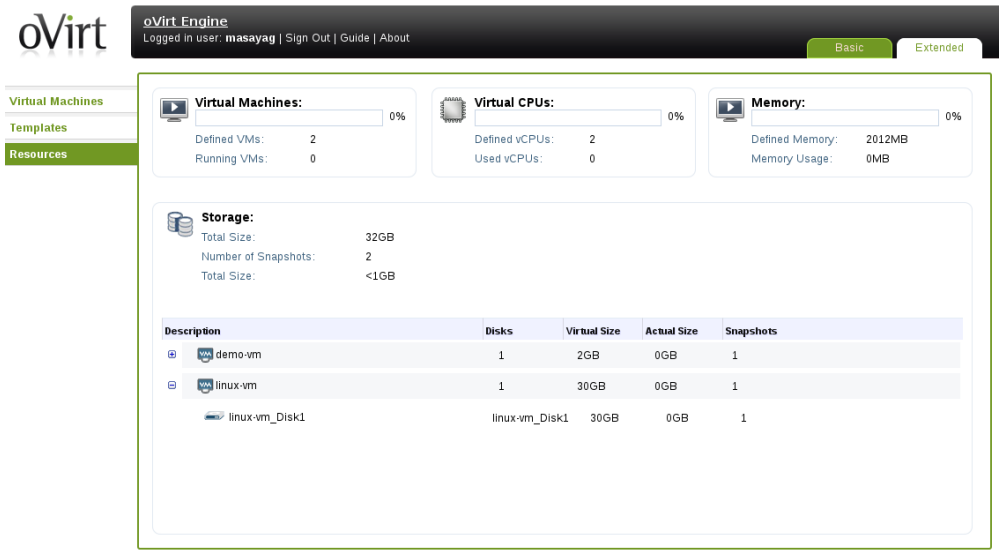
```
api.vms.
```

add(vm)
get(name)
list(query)

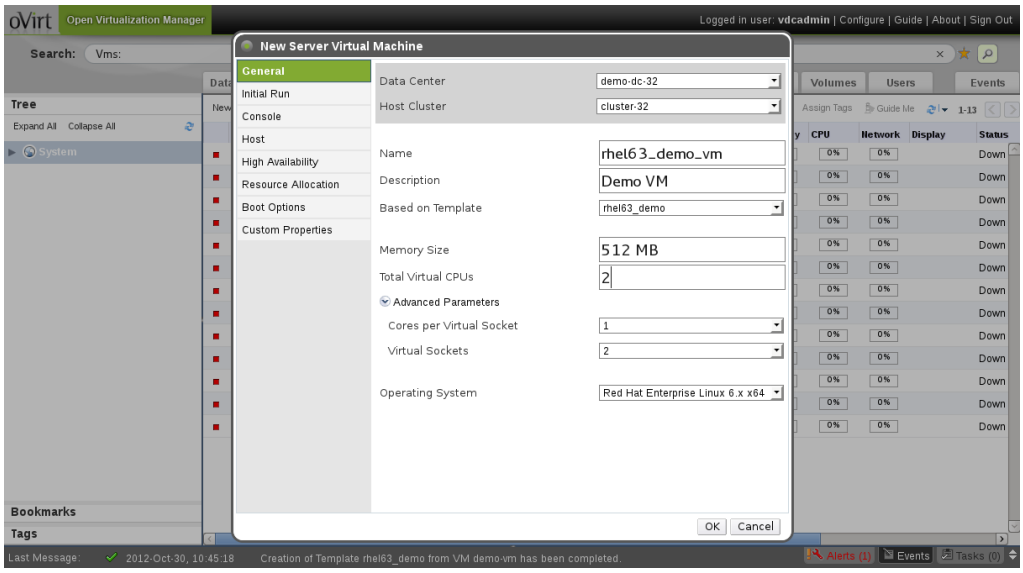
```
#list by query
vms = api.vms.list(query = 'name=python_vm')

#search vms by property constraint
vms = api.vms.list(memory=1073741824)

#get by constraints
vm = api.vms.get(id = '02f0f4a4-9738-4731-83c4-293f3f734782')

vm.st
```

start()
start_time
stateless

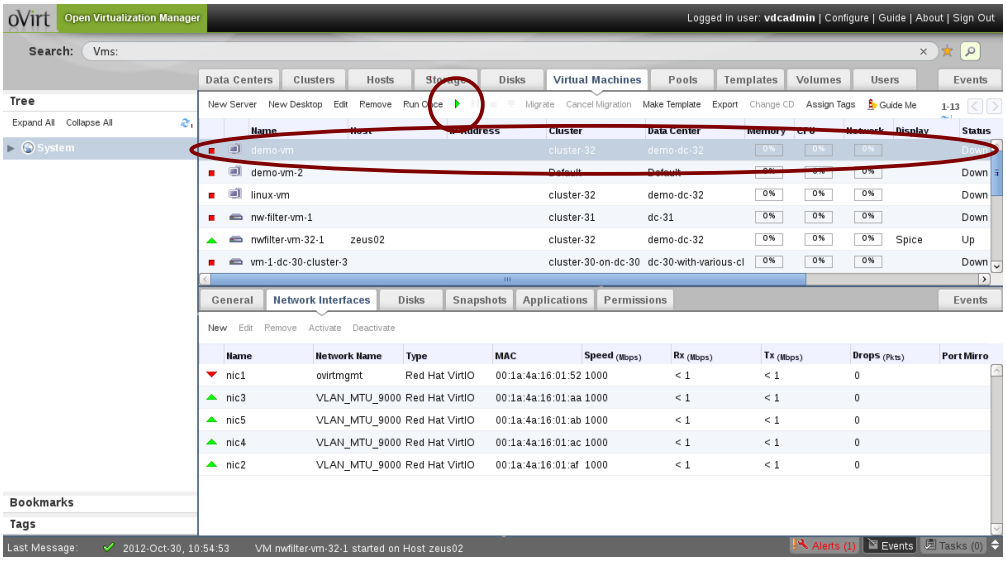
User Portal


oVirt
oVirt Engine
Logged in user: masayag | Sign Out | Guide | About
Basic
Extended
Virtual Machines
Templates
Resources
Virtual Machines:
0%
Defined VMs: 2
Running VMs: 0
Virtual CPUs:
0%
Defined vCPUs: 2
Used vCPUs: 0
Memory:
0%
Defined Memory: 2012MB
Memory Usage: 0MB
Storage:
Total Size: 32GB
Number of Snapshots: 2
Total Size: <1GB
Description
Disks
Virtual Size
Actual Size
Snapshots
demo-vm 1 2GB 0GB 1
linux-vm 1 30GB 0GB 1
linux-vm_Disk1 linux-vm_Disk1 30GB 0GB 1

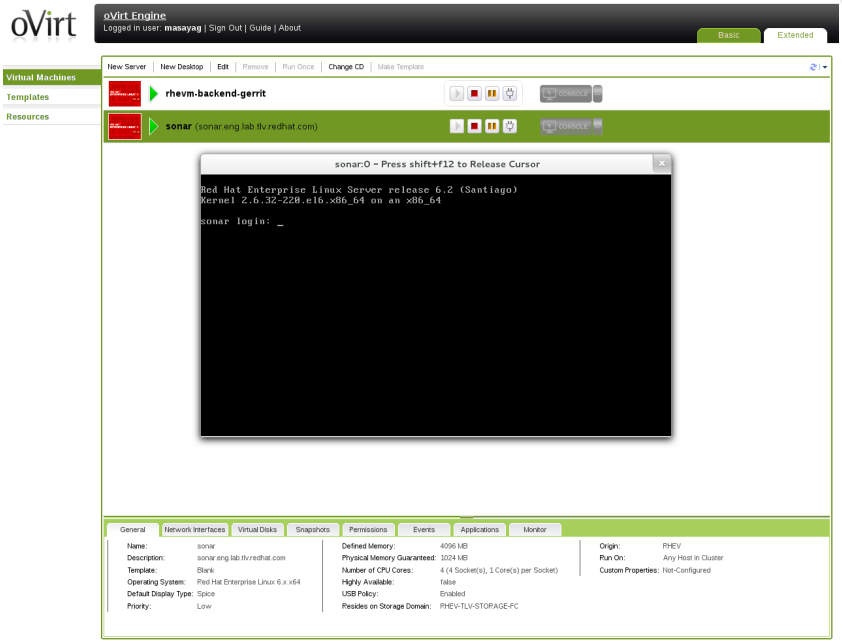
Create VM From Template



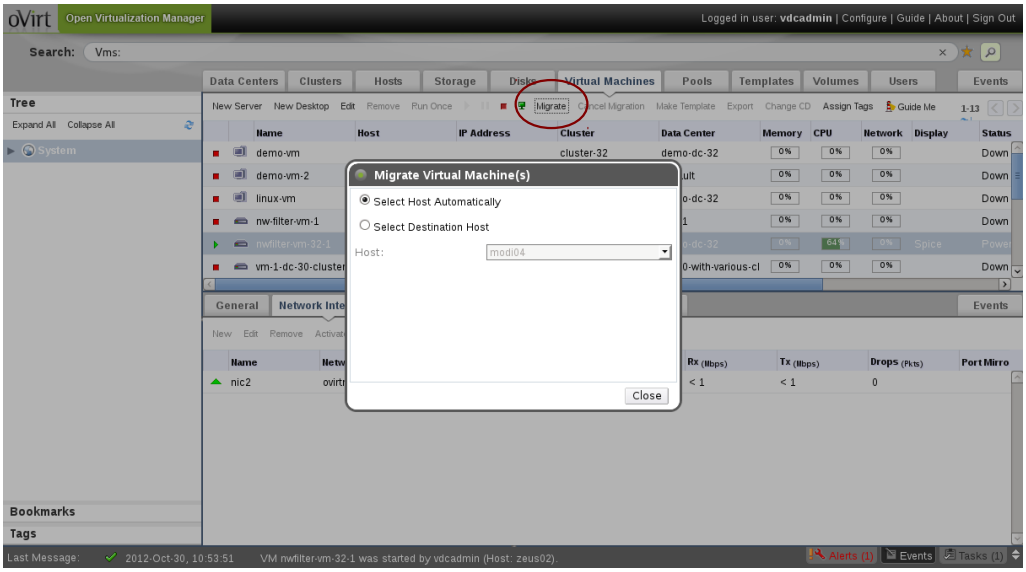
Run a VM


oVirt
Open Virtualization Manager
Logged in user: vdcadmin | Configure | Guide | About | Sign Out
Search: Vms:
Data Centers
Clusters
Hosts
Storage
Disks
Virtual Machines
Pools
Templates
Volumes
Users
Events
Tree
Expand All
Collapse All
System
New Server
New Desktop
Edit
Remove
Run Once
Migrate
Cancel Migration
Make Template
Export
Change CD
Assign Tags
Guide Me
1-13
Name
Host
IP Address
Cluster
Data Center
Memory
CPU
Network
Display
Status
demo-vm
cluster-32
demo-dc-32
demo-vm-2
Default
Down
linux-vm
cluster-32
demo-dc-32
Down
nw-filter-vm-1
cluster-31
dc-31
Down
nwfilter-vm-32-1
zeus02
cluster-32
demo-dc-32
Spice
Up
vm-1-dc-30-cluster-3
cluster-30-on-dc-30
dc-30-with-various-cl
Down
General
Network Interfaces
Disks
Snapshots
Applications
Permissions
Events
New
Edit
Remove
Activate
Deactivate
Name
Network Name
Type
MAC
Speed (Mbps)
Rx (Mbps)
Tx (Mbps)
Drops (Pkts)
Port Mirro
nic1
ovirtmgmt
Red Hat VirtIO
00:1a:4a:16:01:52
1000
< 1
< 1
0
nic3
VLAN_MTU_9000
Red Hat VirtIO
00:1a:4a:16:01:aa
1000
< 1
< 1
0
nic5
VLAN_MTU_9000
Red Hat VirtIO
00:1a:4a:16:01:ab
1000
< 1
< 1
0
nic4
VLAN_MTU_9000
Red Hat VirtIO
00:1a:4a:16:01:ac
1000
< 1
< 1
0
nic2
VLAN_MTU_9000
Red Hat VirtIO
00:1a:4a:16:01:af
1000
< 1
< 1
0
Bookmarks
Tags
Last Message:
2012-Oct-30, 10:54:53
VM nwfilter-vm-32-1 started on Host zeus02
Alerts (1)
Events
Tasks (0)

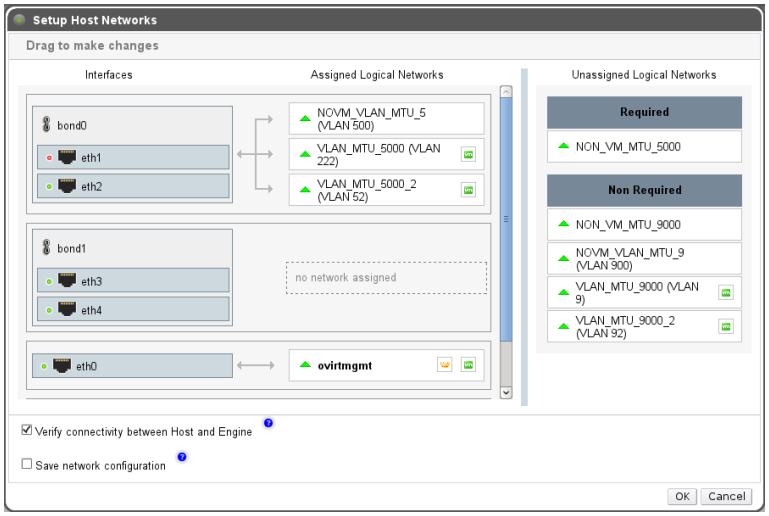
Connect To Guest



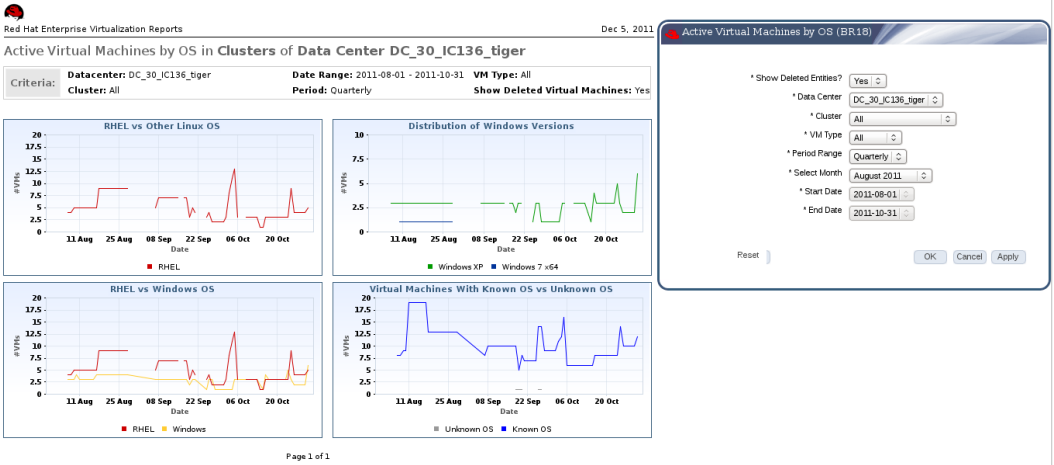
VM Migration



Network


Setup Host Networks
Drag to make changes
Interfaces
Assigned Logical Networks
Unassigned Logical Networks
bond0
eth1
eth2
NOVM_VLAN_MTU_5 (VLAN 500)
VLAN_MTU_5000 (VLAN 222)
VLAN_MTU_5000_2 (VLAN 52)
bond1
eth3
eth4
no network assigned
eth0
ovirtmgmt
Required
NON_VM_MTU_5000
Non Required
NON_VM_MTU_9000
NOVM_VLAN_MTU_9 (VLAN 900)
VLAN_MTU_9000 (VLAN 9)
VLAN_MTU_9000_2 (VLAN 92)
Verify connectivity between Host and Engine
Save network configuration
OK
Cancel

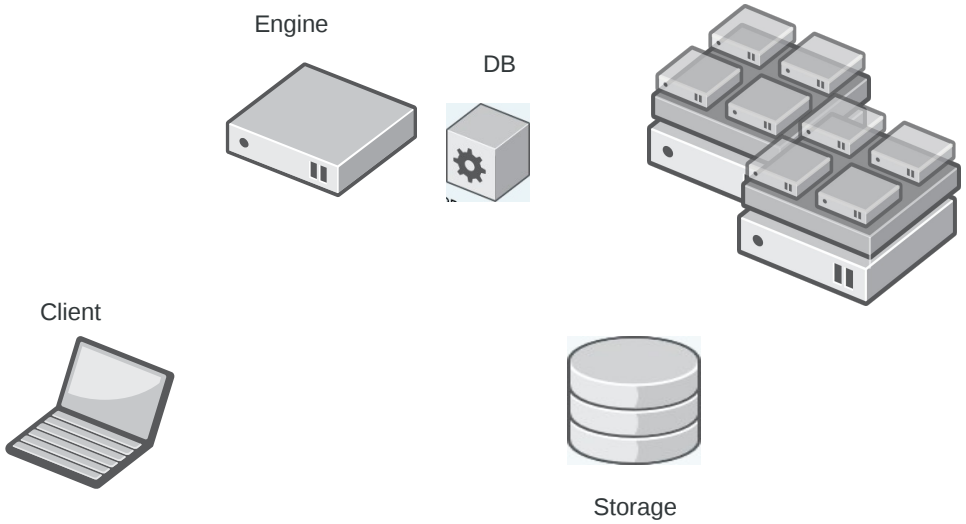
Reports



based on jaspersoft reports – this screen shows RHEV, but reports are now part of oVirt, as of 3.2

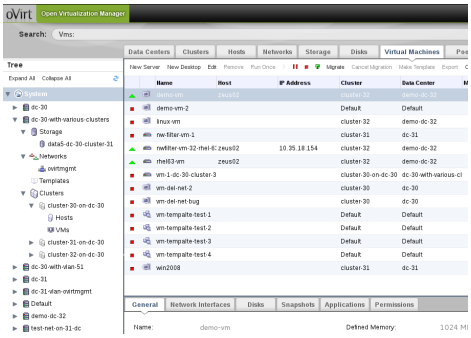
Anatomy

oVirt



oVirt Engine

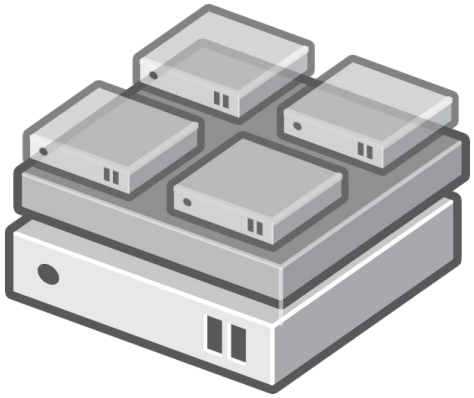
- JBoss-based Java application
- Communicates with hypervisor nodes
- Manages VM lifecycle
- Controlled with:
  - Admin Portal
  - User Portal
  - REST API
  - Python SDK
  - Command Line Shell



Virtualization Host

oVirt

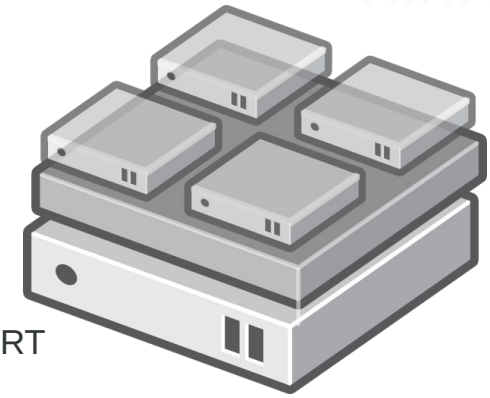
- Machine w/ Intel VT/AMD-V CPUs
- Linux OS – bits for network, storage, etc.
- KVM – hypervisor, part of Linux kernel
- libvirt – virtualization API
- **vdsm – virtualization node management**



vdsm is the new bit in here – it's like a management agent for the engine, the engine talks to vdsm, vdsm controls VM lifecycle operations through libvirt, and it handles other configuration duties, like to network & storage

this last bit introduces some distro-specificity – it's the main reason that ovirt's attached to the RH family right now – work is underway to make these operations distro-agnostic – multi-distro is a priority for the project

oVirt Node



- Dedicated hypervisor
- JEOS
- Built on Fedora
- Firmware
  - Install and forget about it
  - Similar to ESXi or OpenWRT
- Small Footprint (< 200MB)

Getting oVirt

- oVirt Live: http://wiki.ovirt.org/wiki/OVirt_Live
- All in One: ovirt-engine-setup-plugin-allinone
- Engine + oVirt Node(s)

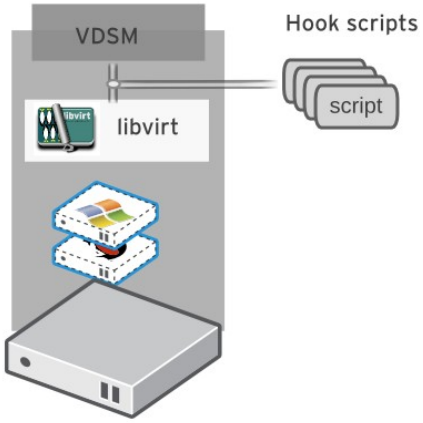
- Packaged releases target latest Fedora
- Community-provided packages for CentOS
- oVirt 3.1 in F18 and F17 repos
- Build from source

setting up all in one:
http://blog.jebpages.com/archives/up-and-running-with-ovirt-3-2-edition

Vdsm hooks

oVirt

- A mechanism for customization
- Allows the administrator to manipulate the VM life cycle
- Points of manipulation
  - Before / after VM start
  - Before / after VM migration in/out
  - On VM stop
  - Etc.



http://www.ovirt.org/VDSM-Hooks

Nested KVM hook

oVirt

```
import hooking

cpu_nested_features = {
    "kvm_intel": "vmx",
    "kvm_amd": "svm",
}

for kvm_mod in ("kvm_intel", "kvm_amd"):
    kvm_mod_path = "/sys/module/%s/parameters/nested" % kvm_mod
    try:
        with file(kvm_mod_path) as f:
            if f.readline().strip() == "Y":
                break
    except IOError:
        pass
else:
    kvm_mod = None

if kvm_mod:
    domxml = hooking.read_domxml()
    feature_vmx = domxml.createElement("feature")
    feature_vmx.setAttribute("name", cpu_nested_features[kvm_mod])
    feature_vmx.setAttribute("policy", "require")
    domxml.getElementsByTagName("cpu")[0].appendChild(feature_vmx)
    hooking.write_domxml(domxml)
```

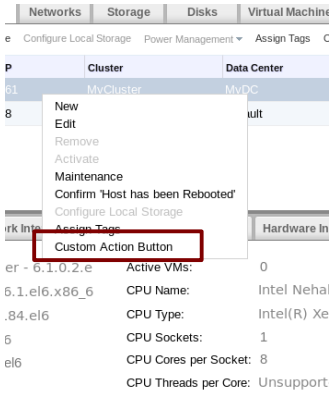

Nested KVM is really cool – lets you host VMs on VMs, there's a performance hit, but it's not crazy-bad

It's pretty simple, boils down to having your KVM module loaded w/ the nested option on, and on including a bit in the xml that defines the VM.

http://blog.jebpages.com/archives/ovirt-on-ovirt-nested-kvm-fu/

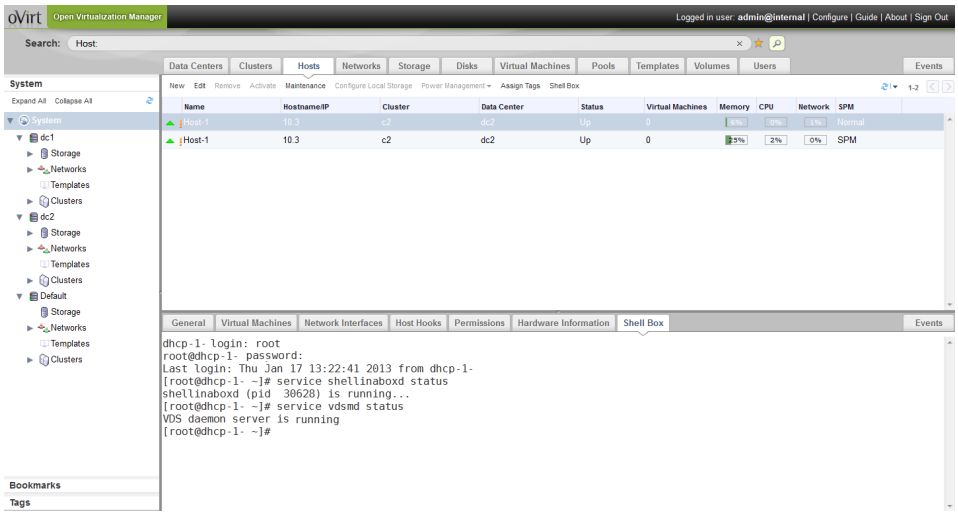
UI Plugins

- New in oVirt 3.2
- Extend or customize oVirt Engine functionality by adding UI components to the Admin Portal (Webadmin)
- Plugins integrate with the Admin Portal on the client side using JavaScript
- Plugins can be packaged and distributed for use with the oVirt Engine



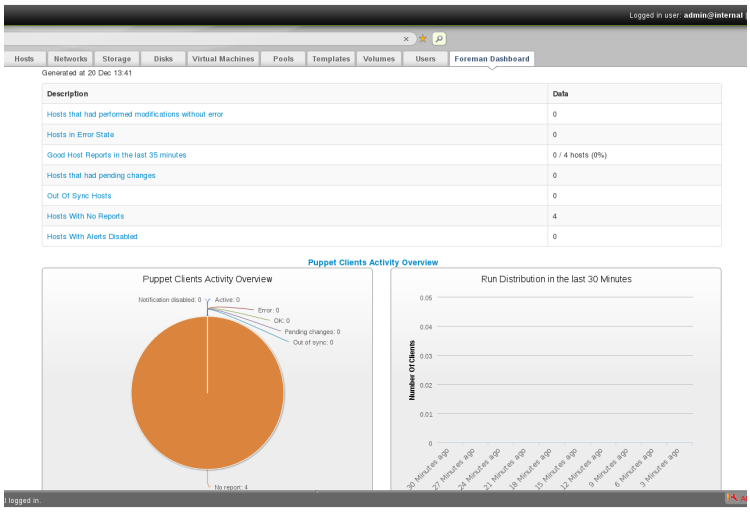
http://www.ovirt.org/Features/UIPlugins

Shell-in-a-Box



http://derezvir.blogspot.com/2013/01/ovirt-webadmin-shellinabox-ui-plugin.html

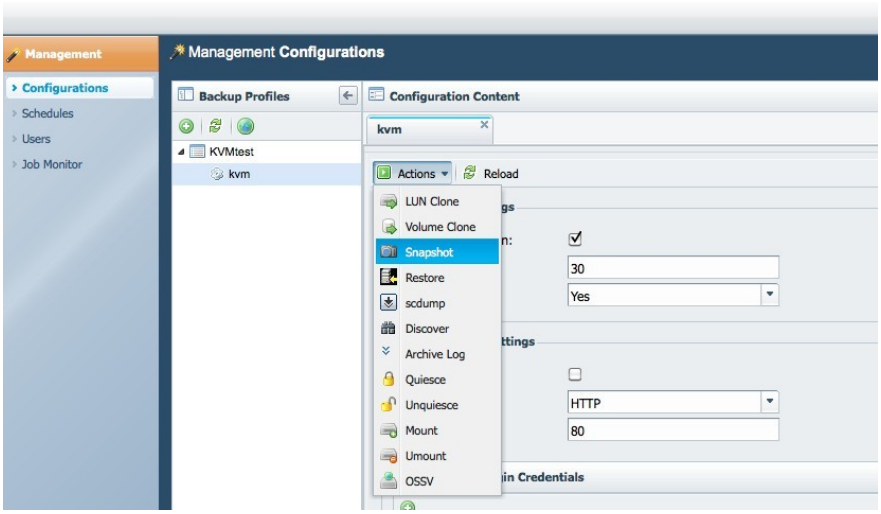
Foreman plugin



The Foreman is a complete lifecycle management tool for physical and virtual servers. Works with Puppet.

http://ovedou.blogspot.com/2012/12/ovirt-foreman-ui-plugin.html

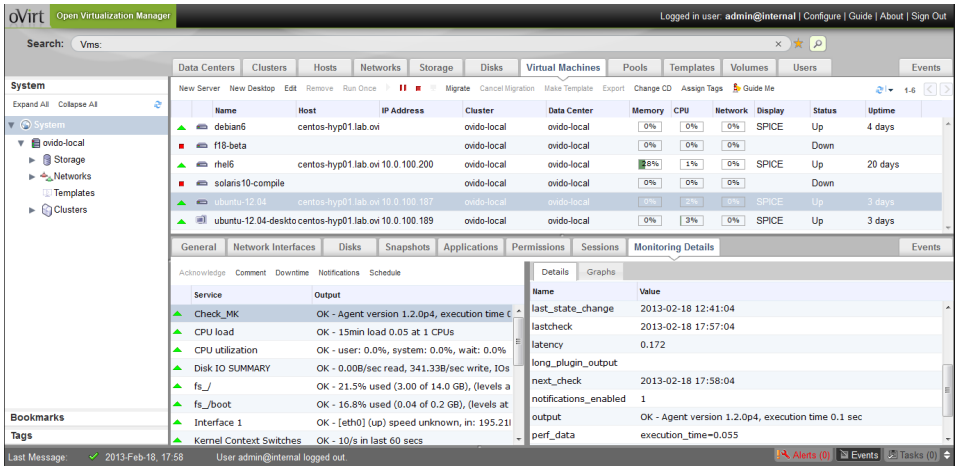
NetApp Virtual Storage Console



Netapp working to integrate management of some of their NetApp-specific features into oVirt UI, like hardware-side clone offloading – relatively early stage – saw this demoed last month at an oVirt workshop at their campus.

www.ovirt.org/images/c/cd/VSC_on_oVirt.pdf

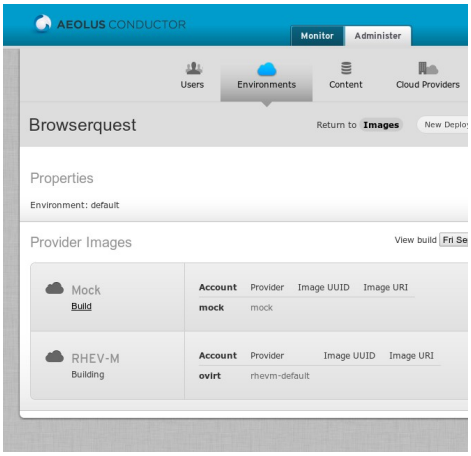
Nagios monitoring



https://labs.ovido.at/monitoring/wiki/ovirt-monitoring-ui-plugin

Deltacloud & Aeolus

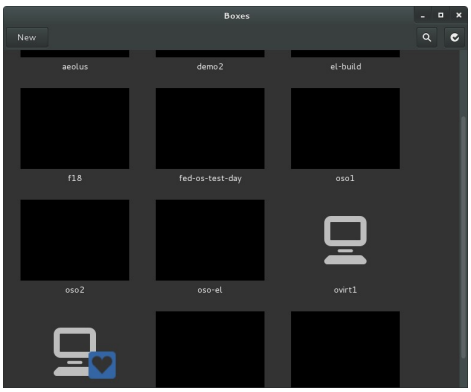
- Deploy Deltacloud server
- Manipulate oVirt via:
  - EC2 API
  - CIMI API
  - Deltacloud API
- Aeolus Project
  - Create & manage cloud resources across multiple providers...
  - ... including oVirt



http://ovedou.blogspot.com/2012/11/working-with-ovirt-via-ec2cimi-apis.html

govirt & GNOME Boxes

- govirt: C library to access the oVirt REST API
- Boxes: A simple GNOME 3 application to access remote or virtual systems
  - Creates and manages local KVM virtual machines using libvirt
  - Remote machine access through SPICE or VNC



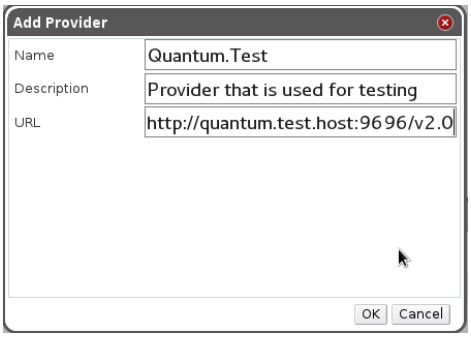
www.ovirt.org/images/6/6c/Fergeau-ovirt-boxes.pdf

http://cgit.freedesktop.org/~teuf/gnome-boxes/log/?h=ovirt

OpenStack Quantum integration

oVirt

- Early stage work
- Quantum provides network connectivity-as-a-service
  - Quantum for managing VM networks
  - oVirt for managing infrastructure networks (Migration network, storage network etc.)
- External networks can be discovered in oVirt and then can be used within oVirt for example in VMs.



http://www.ovirt.org/Quantum_and_oVirt

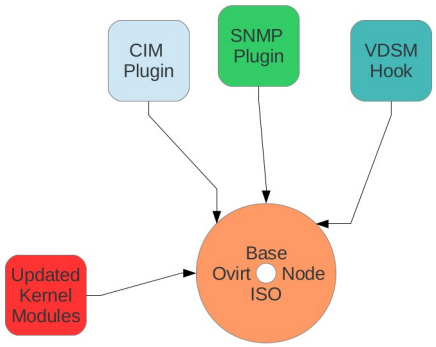
demo screencast:

http://www.youtube.com/watch?v=yXqN17KktjE
http://www.youtube.com/watch?v=uW3vrY2Y3xc

Node plugins

oVirt

- Adds functionality not included in the base image
  - Install or update packages
  - Install new kernel modules
  - Add vdsm hooks
- Non-oVirt uses
  - OpenStack POC
  - YOUR PROJECT HERE

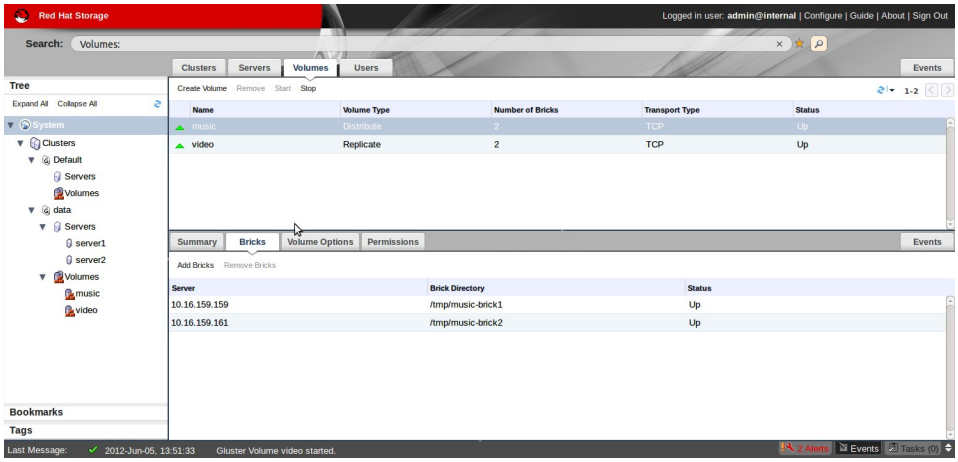


http://www.ovirt.org/Node_plugins

http://lists.ovirt.org/pipermail/node-devel/2012-October/000327.html

https://gitorious.org/ovirt/ovirt-node-openstack-plugin

Engine, sans oVirt



Top feature requests

1. Allow disk resize
2. Integrate Nagios/Zabbix monitoring
3. Highly Available engine
4. Open vSwitch integration
5. Allow cloning VMs without template
6. Enable hypervisor upgrade/updates through engine
7. Allow engine on an oVirt hosted VM
8. Enable guest configuration (root password, SSH keys, network) via guest agent in engine
9. Integrate v2v into engine
10. Bond/extend ovirtmgmt with a second network for HA/increased bandwidth
11. Integrate scheduling of snapshots and VM export for backups in engine
12. Spice Support in Chrome

Get Involved!

oVirt

- Wiki
  - http://www.ovirt.org
- Mailing lists
  - users@ovirt.org — oVirt user list
  - announce@ovirt.org — oVirt announce list
  - engine-devel@ovirt.org — oVirt engine devel list
  - node-devel@ovirt.org — oVirt node devel list
- IRC
  - #ovirt on irc.oftc.net

oVirt

THANK YOU !

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http://www.ovirt.org