oVirt Architecture

Itamar Heim

Presented here by Dan Kenigsberg
danken@redhat.com

Agenda

- oVirt Components
  - Engine
  - Clients
  - Host
    - Engine Agent - VDSM
  - Guest
- Storage Concepts
- Data Warehouse & Reports
- User flows

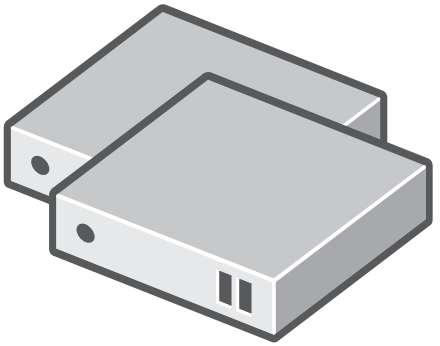
Architecture From 30,000 Feet

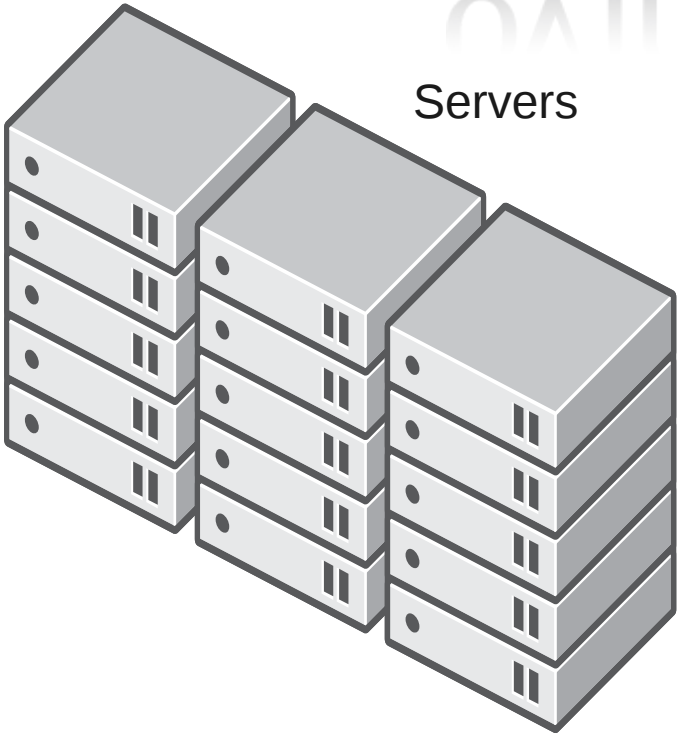
oVirt

Servers

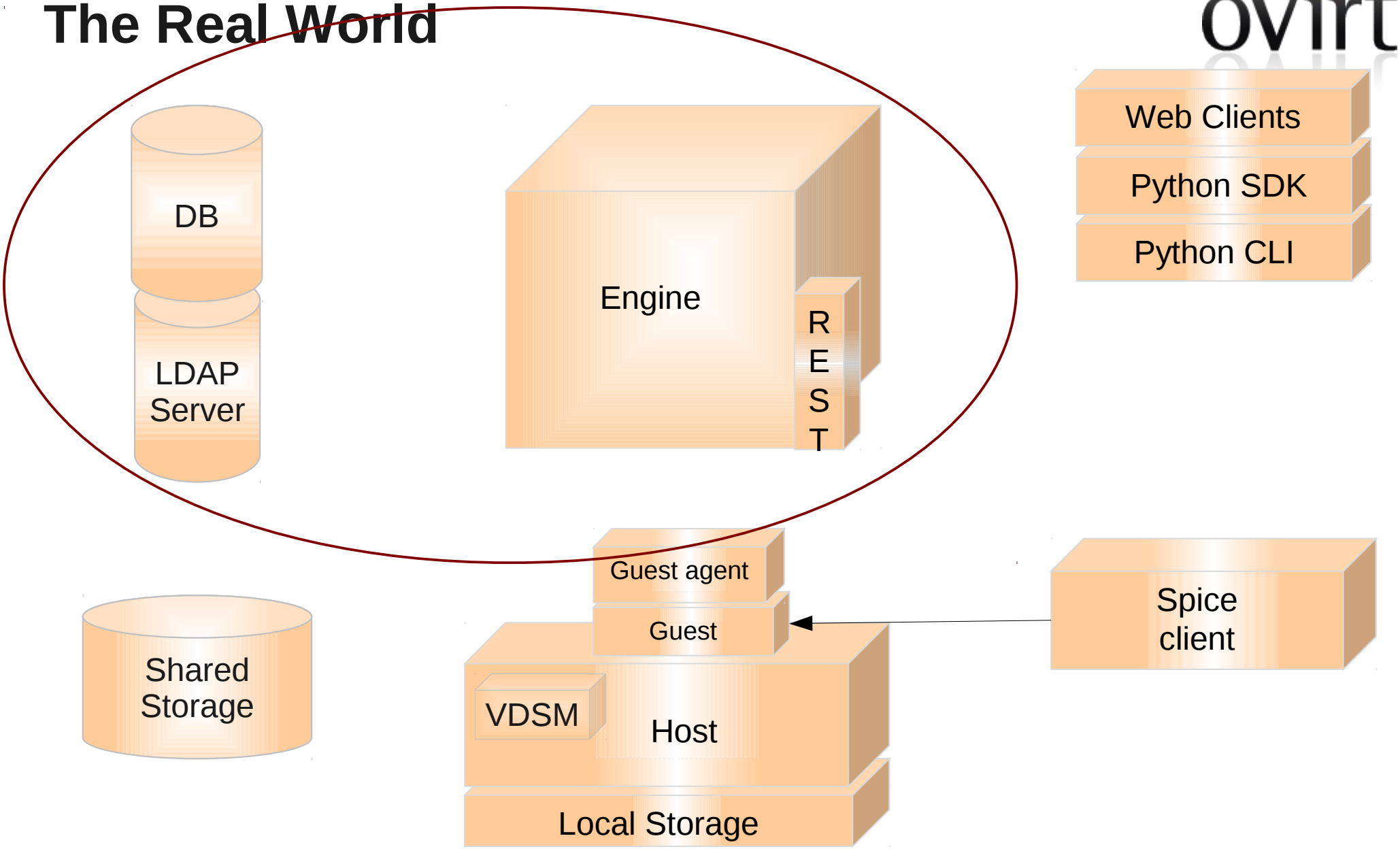
Engine

Client

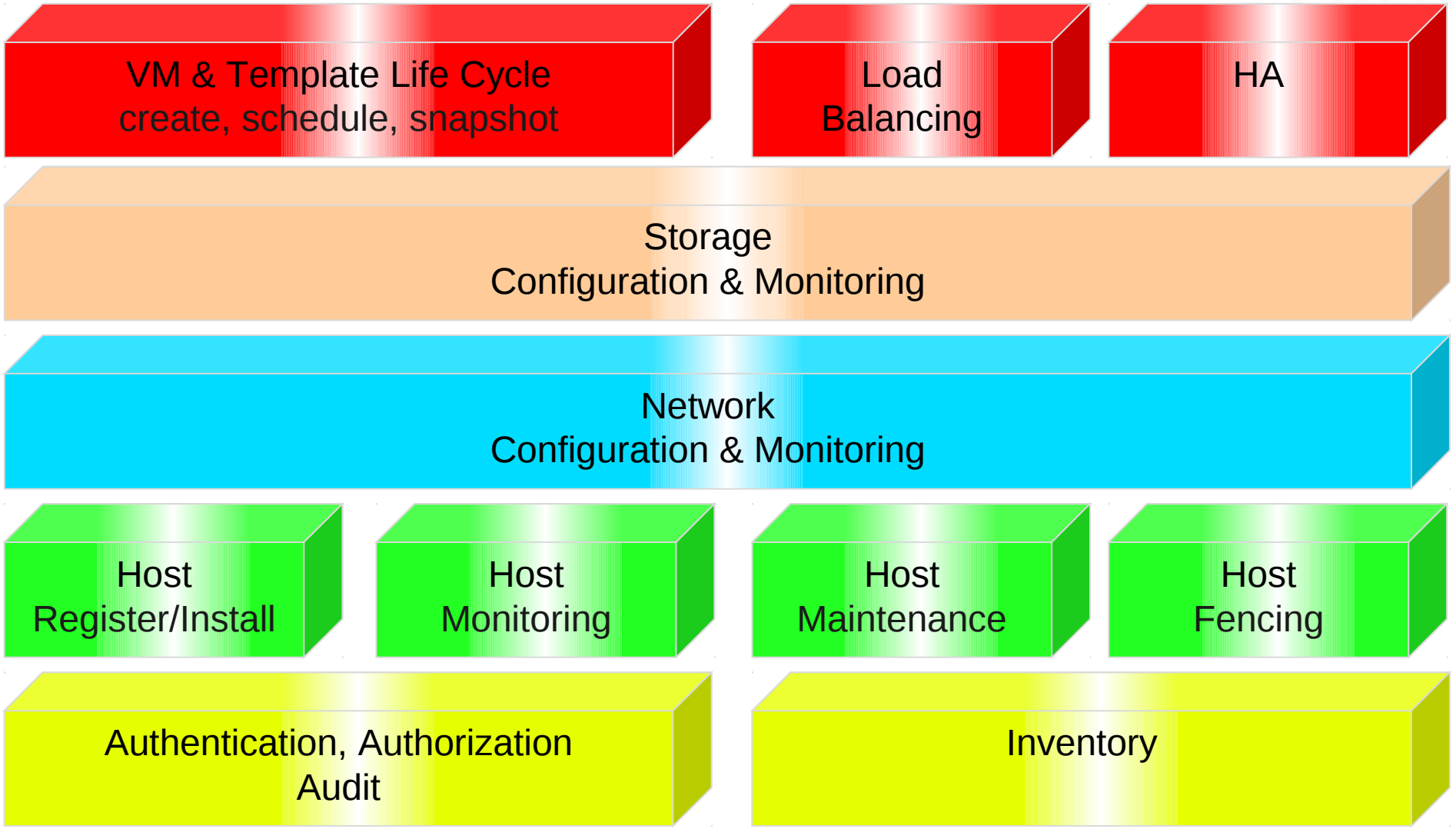




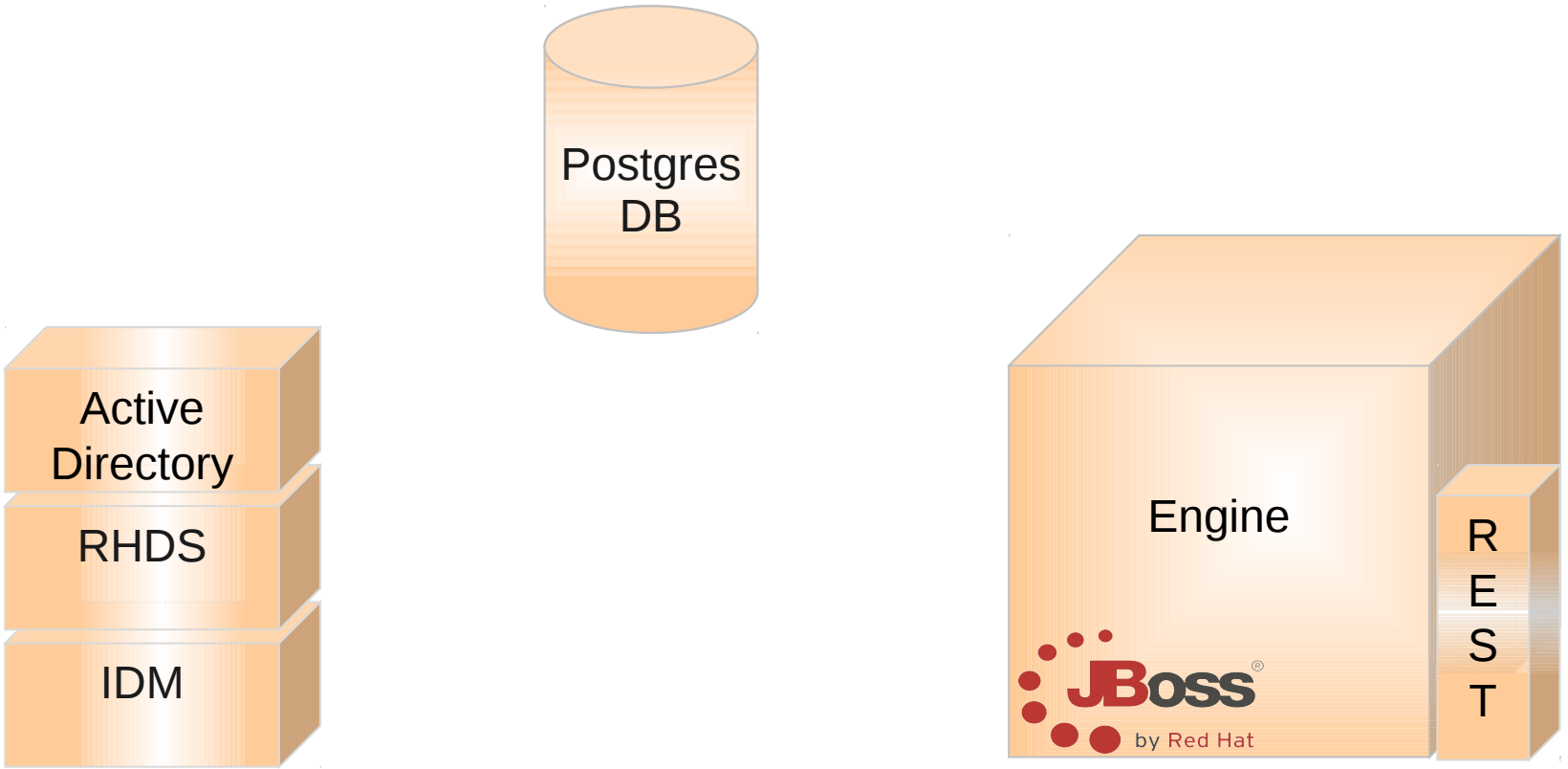
The Real World



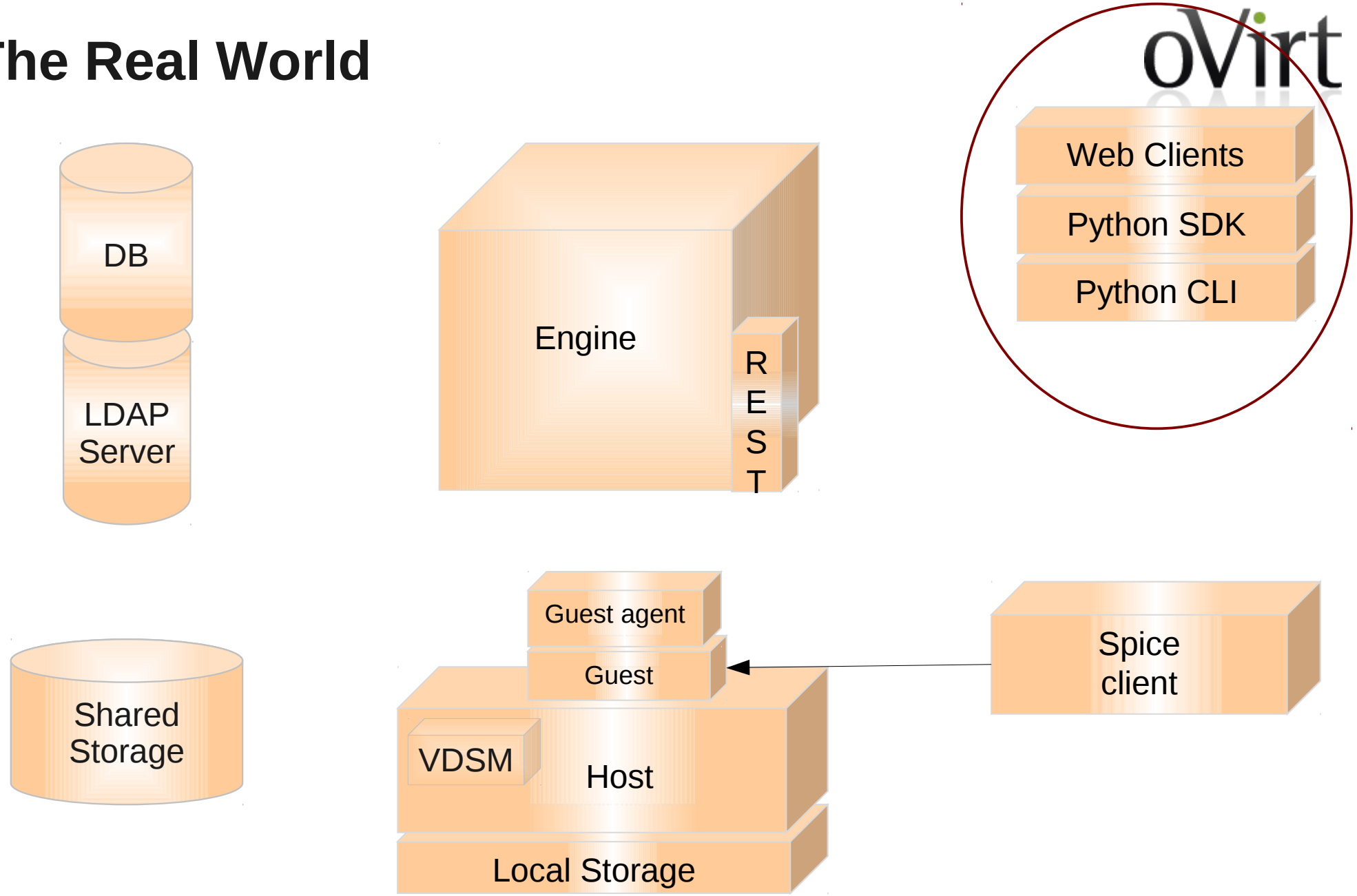
oVirt Engine



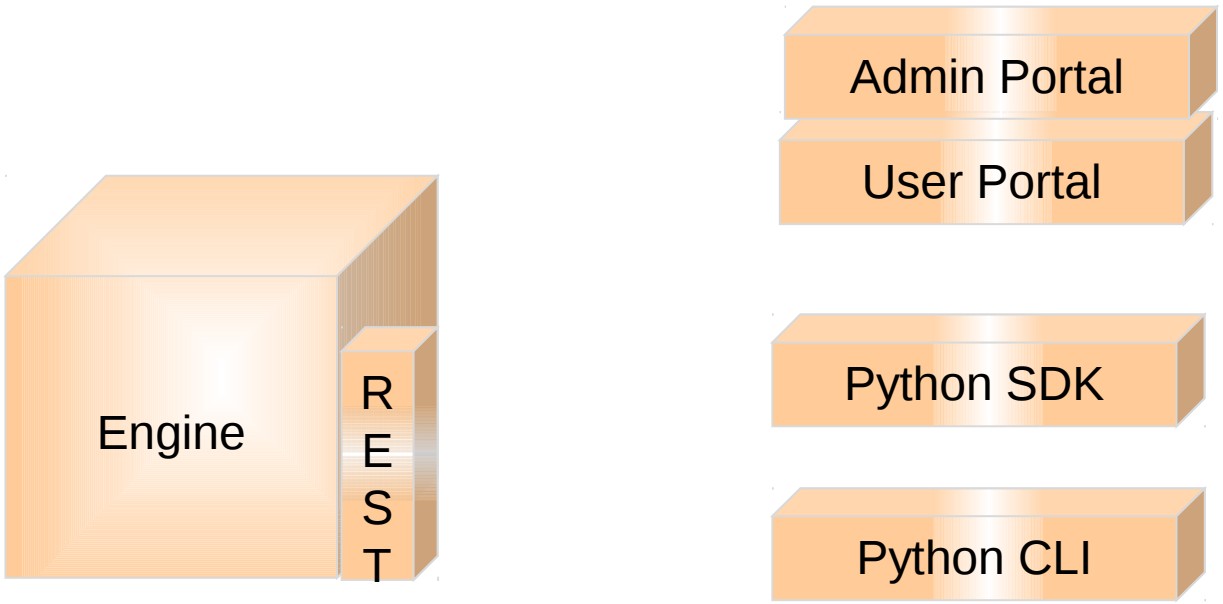
oVirt Engine



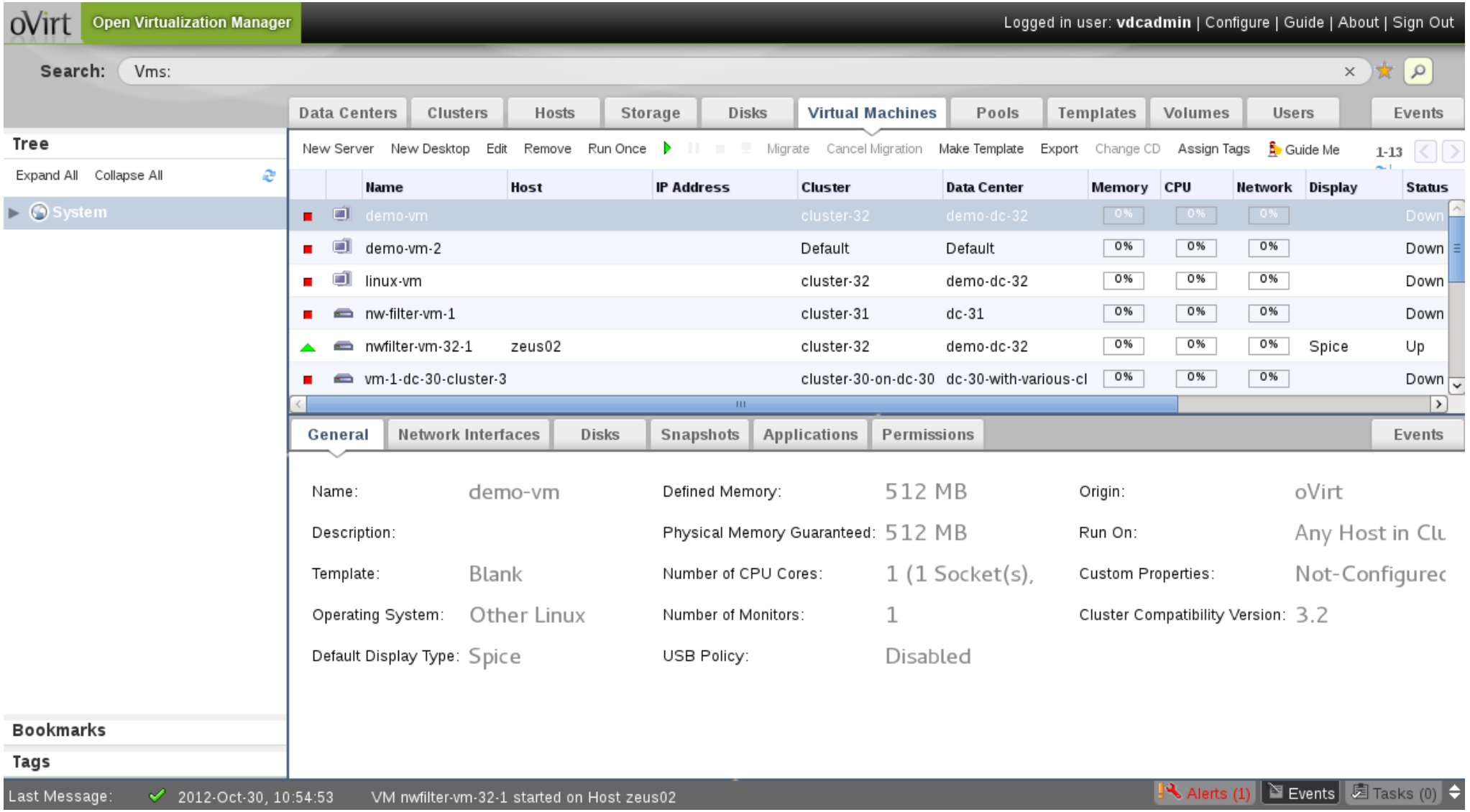
The Real World



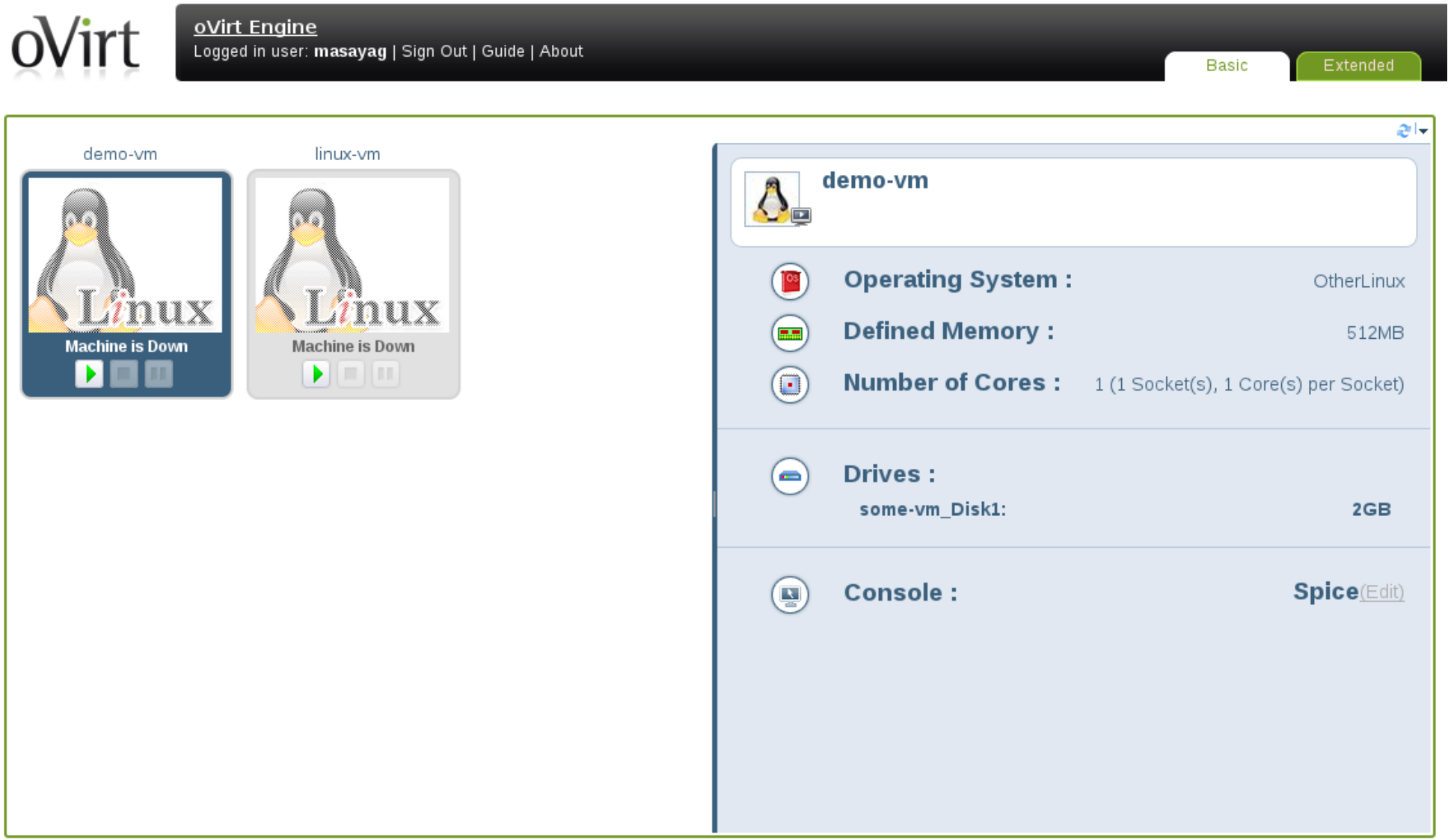
The Clients



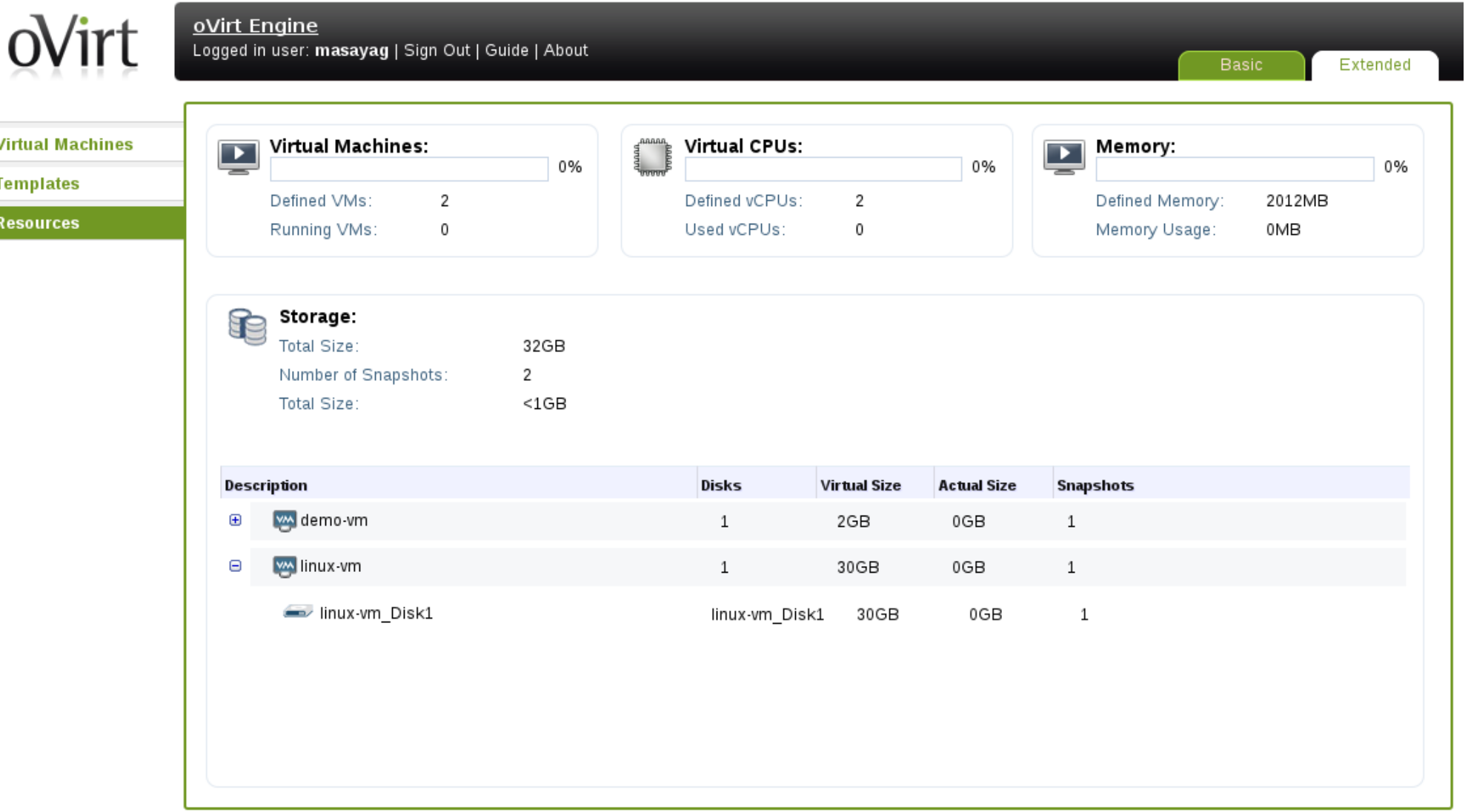
Admin Portal



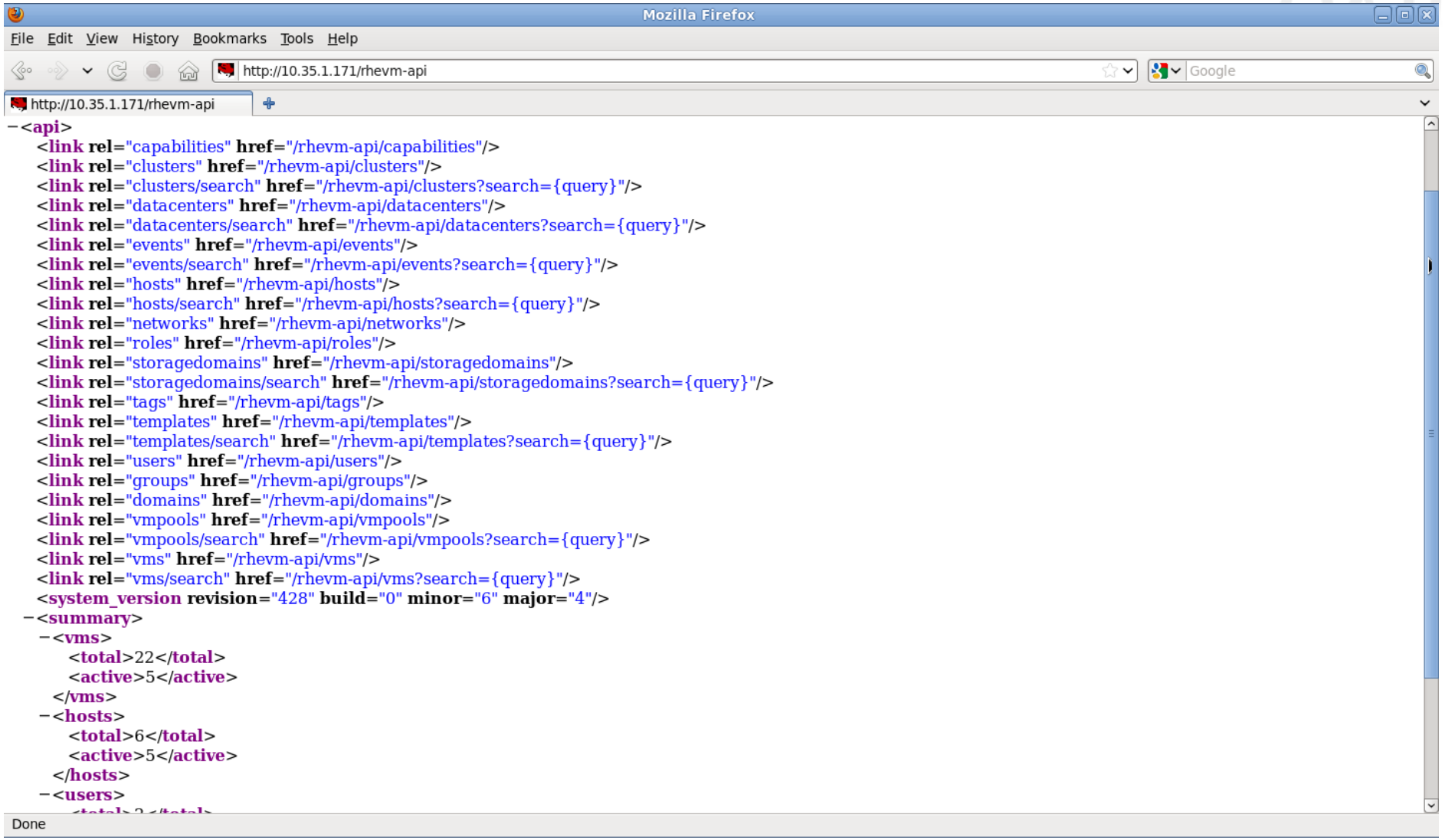
User Portal


oVirt
oVirt Engine
Logged in user: masayag | Sign Out | Guide | About
Basic
Extended
demo-vm
linux-vm
Linux
Machine is Down
Linux
Machine is Down
demo-vm
Operating System :
OtherLinux
Defined Memory :
512MB
Number of Cores :
1 (1 Socket(s), 1 Core(s) per Socket)
Drives :
some-vm_Disk1:
2GB
Console :
Spice(Edit)

Power User Portal



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>
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<link rel="datacenters" href="/rhevm-api/datacenters"/>
<link rel="datacenters/search" href="/rhevm-api/datacenters?search={query}"/>
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<link rel="events/search" href="/rhevm-api/events?search={query}"/>
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<link rel="storagedomains" href="/rhevm-api/storagedomains"/>
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<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

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

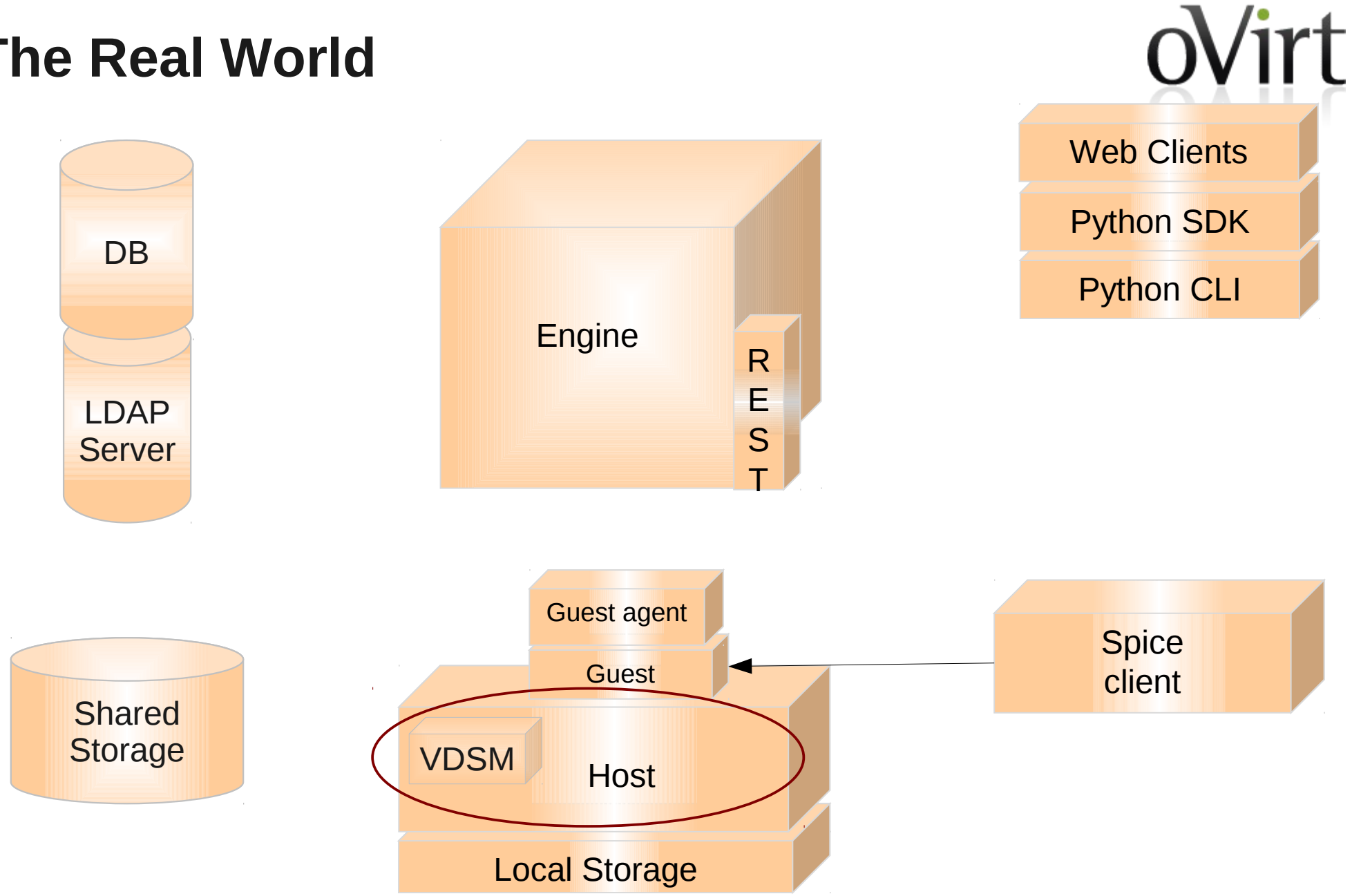
CLI

AVAILABLE COMMANDS

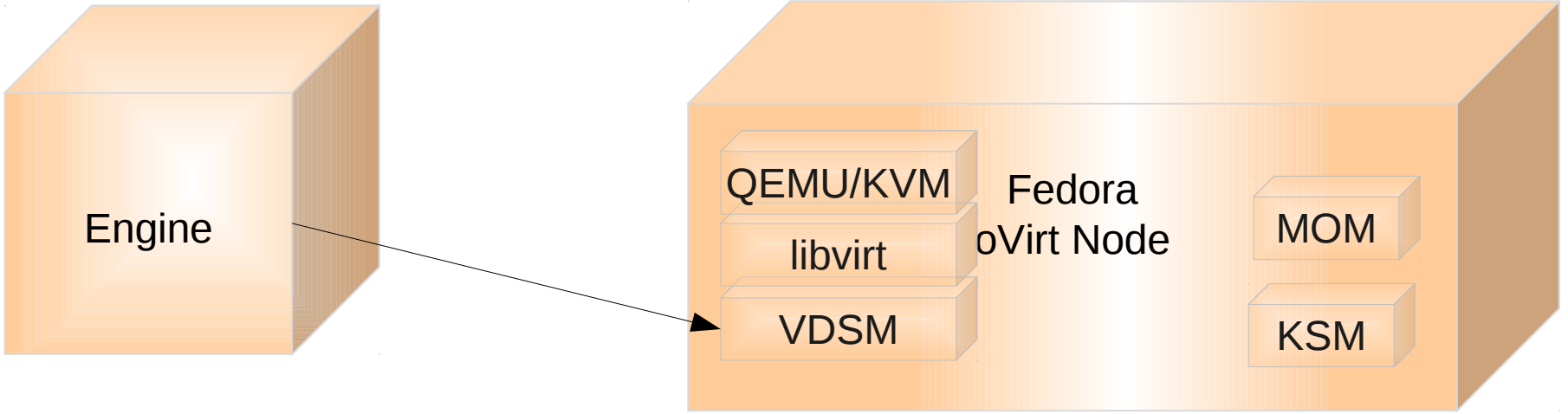
```
    * action          execute an action on an object
    * cd              change directory
    * clear           clear the screen
    * connect         connect to a RHEV manager
    * console         open a console to a VM
    * create          create a new object
    * delete          delete an 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.
```

The Real World

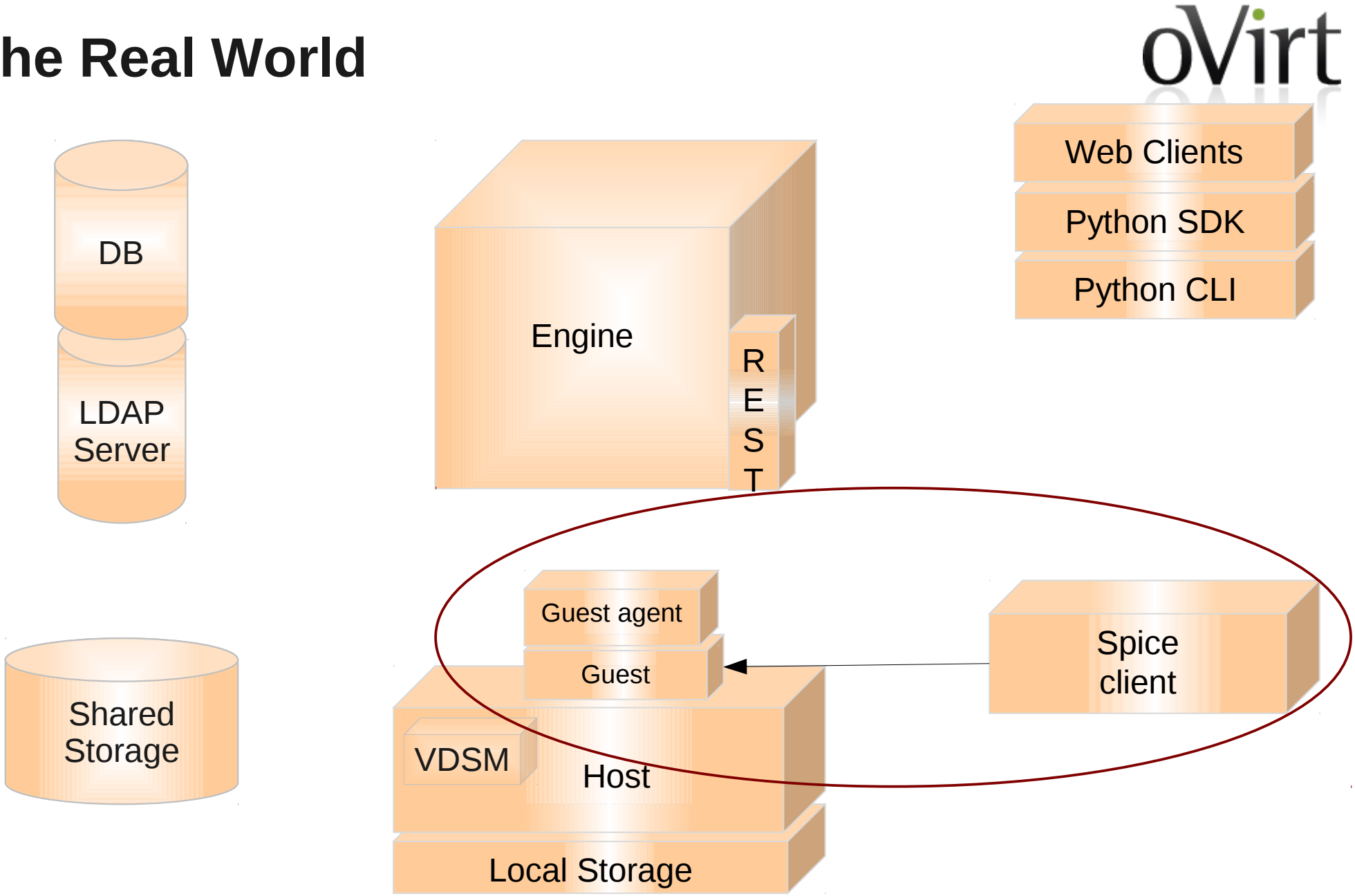


The Host

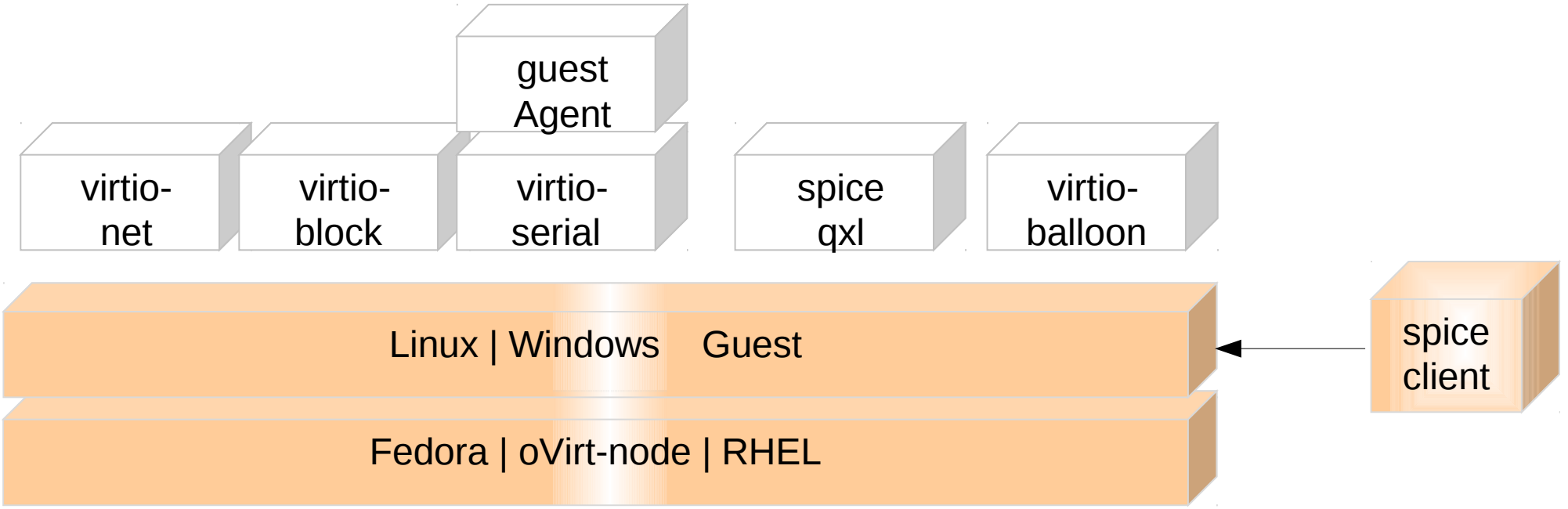


Configuration Monitoring :
Network, Storage, Host, VMs

The Real World



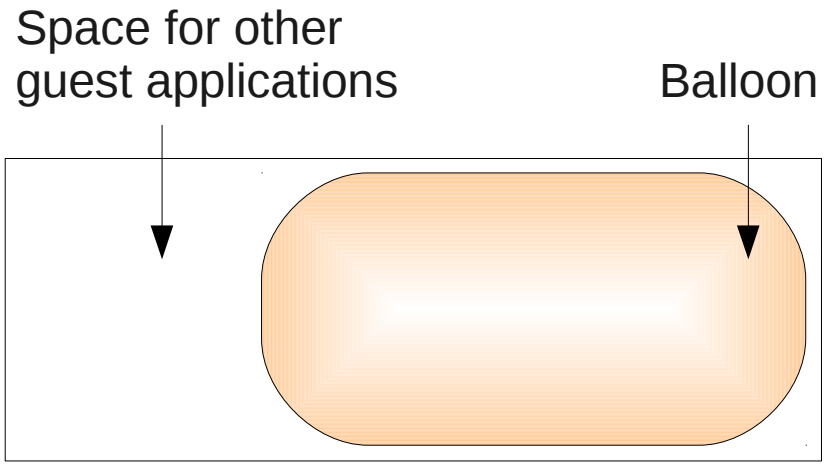
The Guest


guest
Agent
virtio-
net
virtio-
block
virtio-
serial
spice
qxl
virtio-
balloon
Linux | Windows Guest
spice
client
Fedora | oVirt-node | RHEL

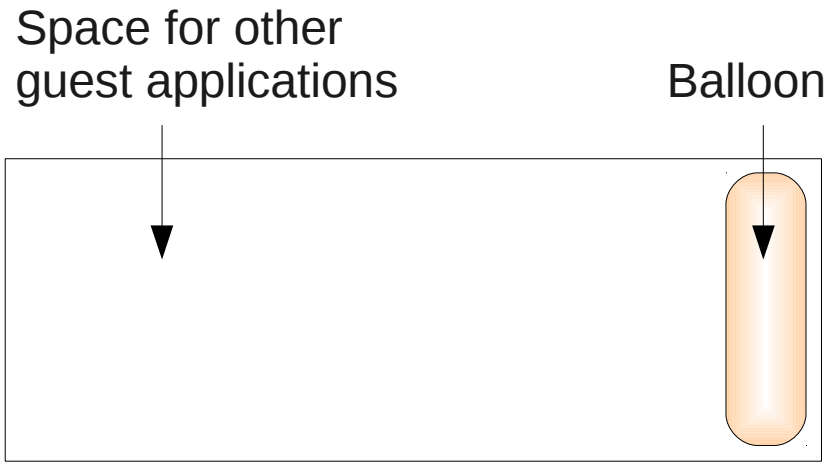
Virtio Balloon

Guest Memory space:

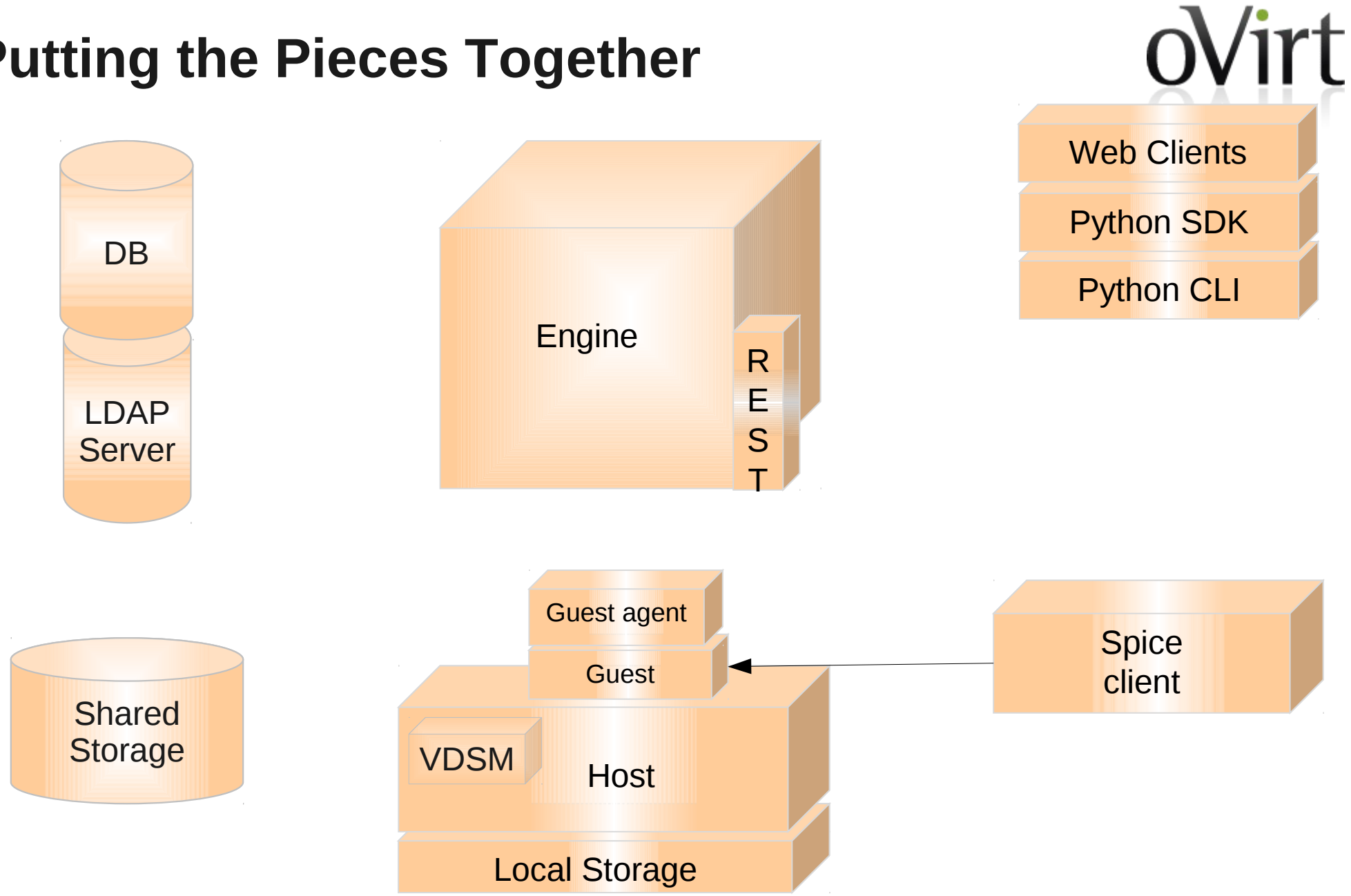
Inflate



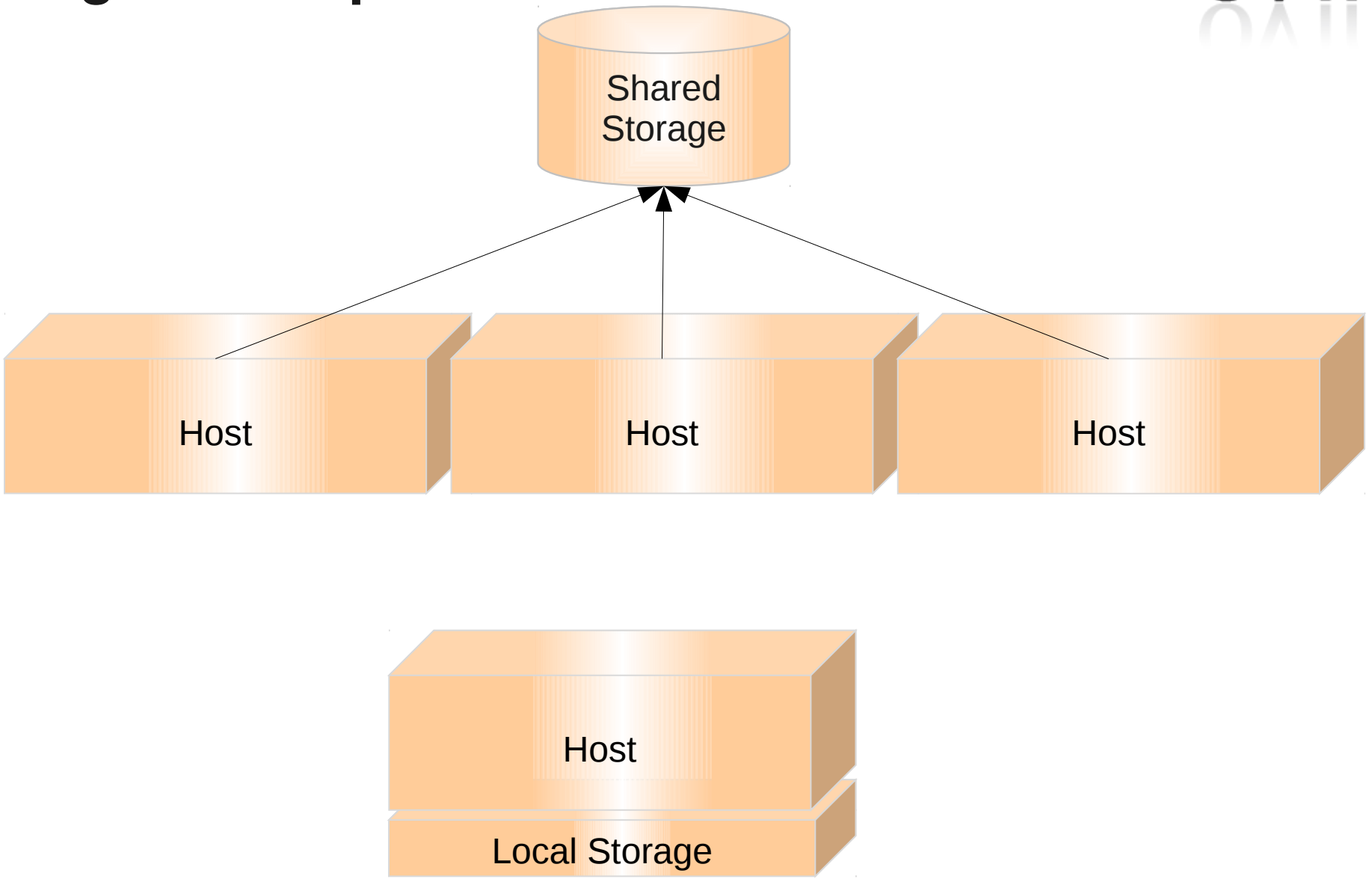
deflate



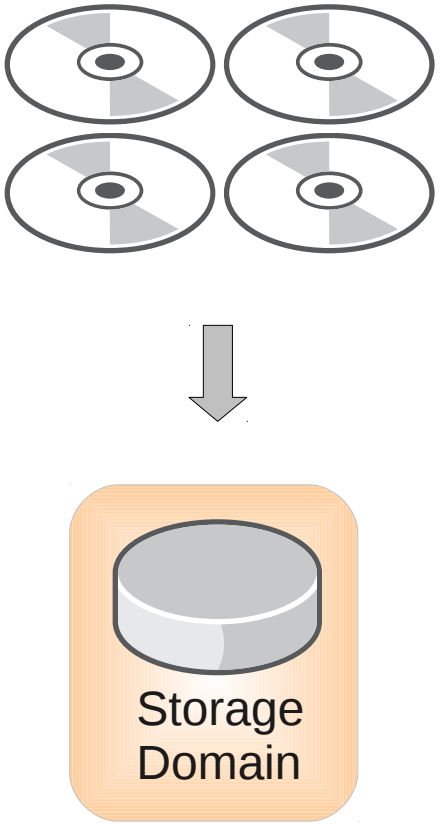
Putting the Pieces Together

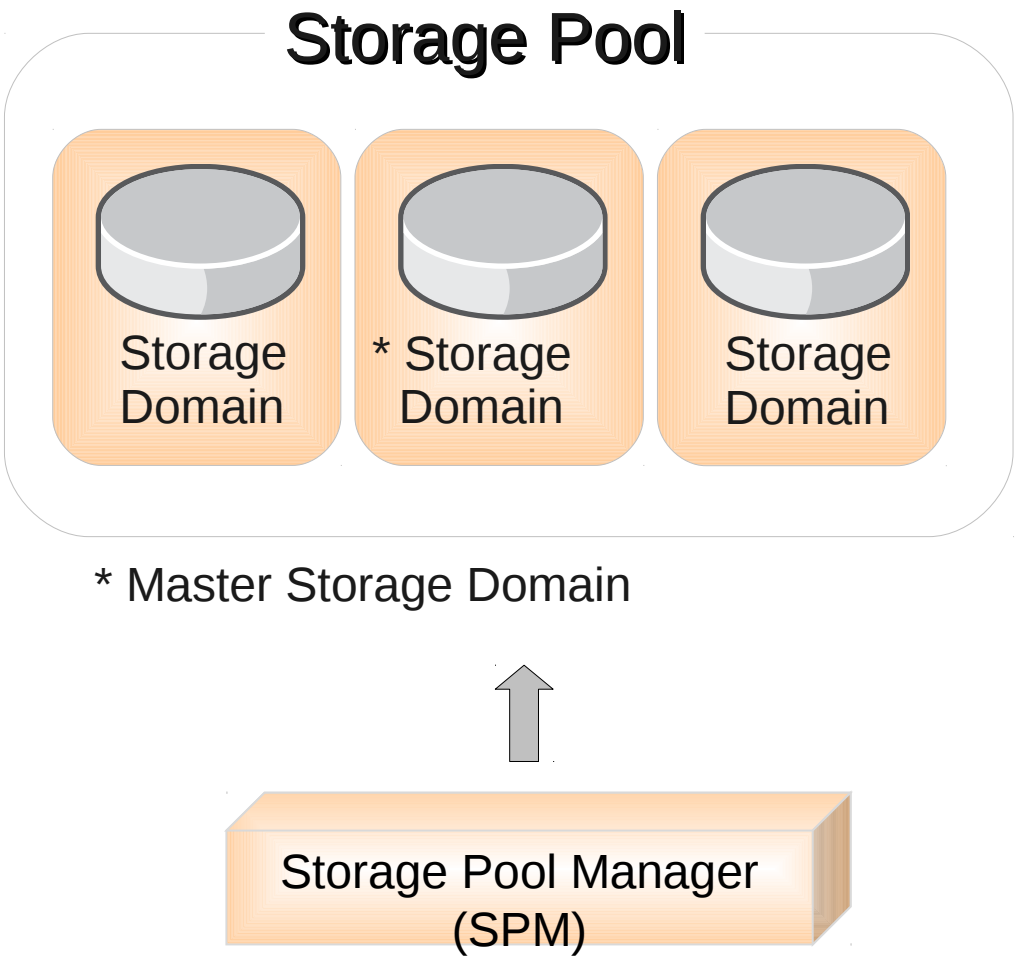


Storage Concepts

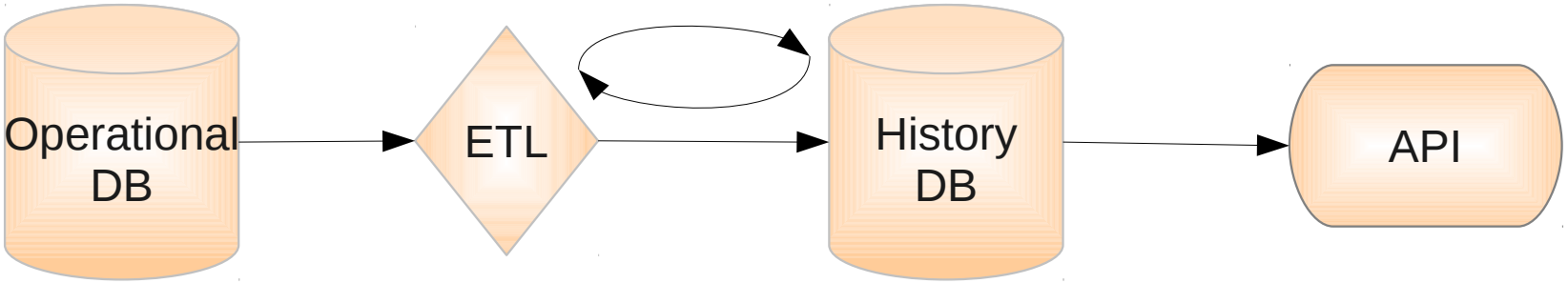


Storage Concepts

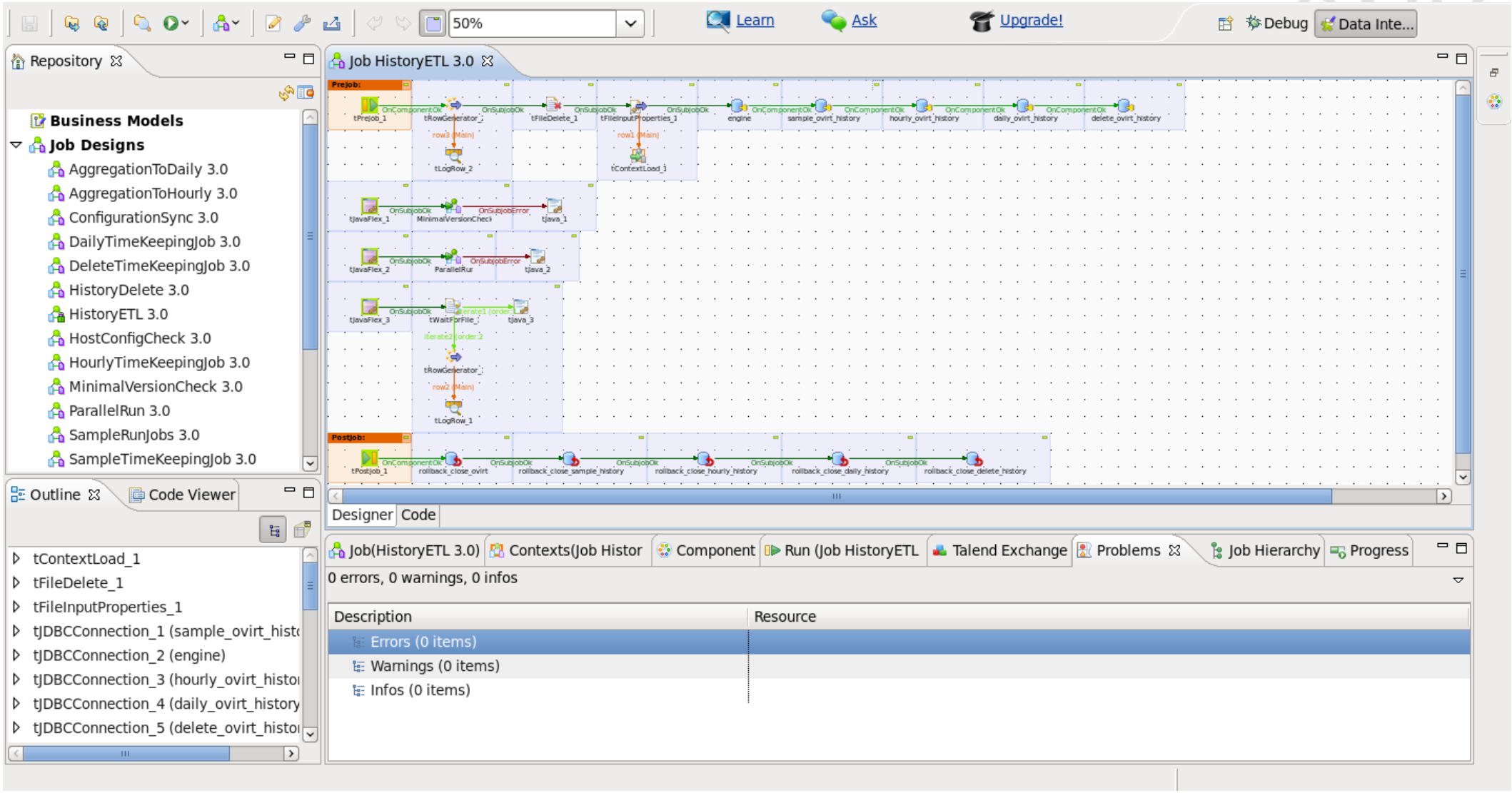




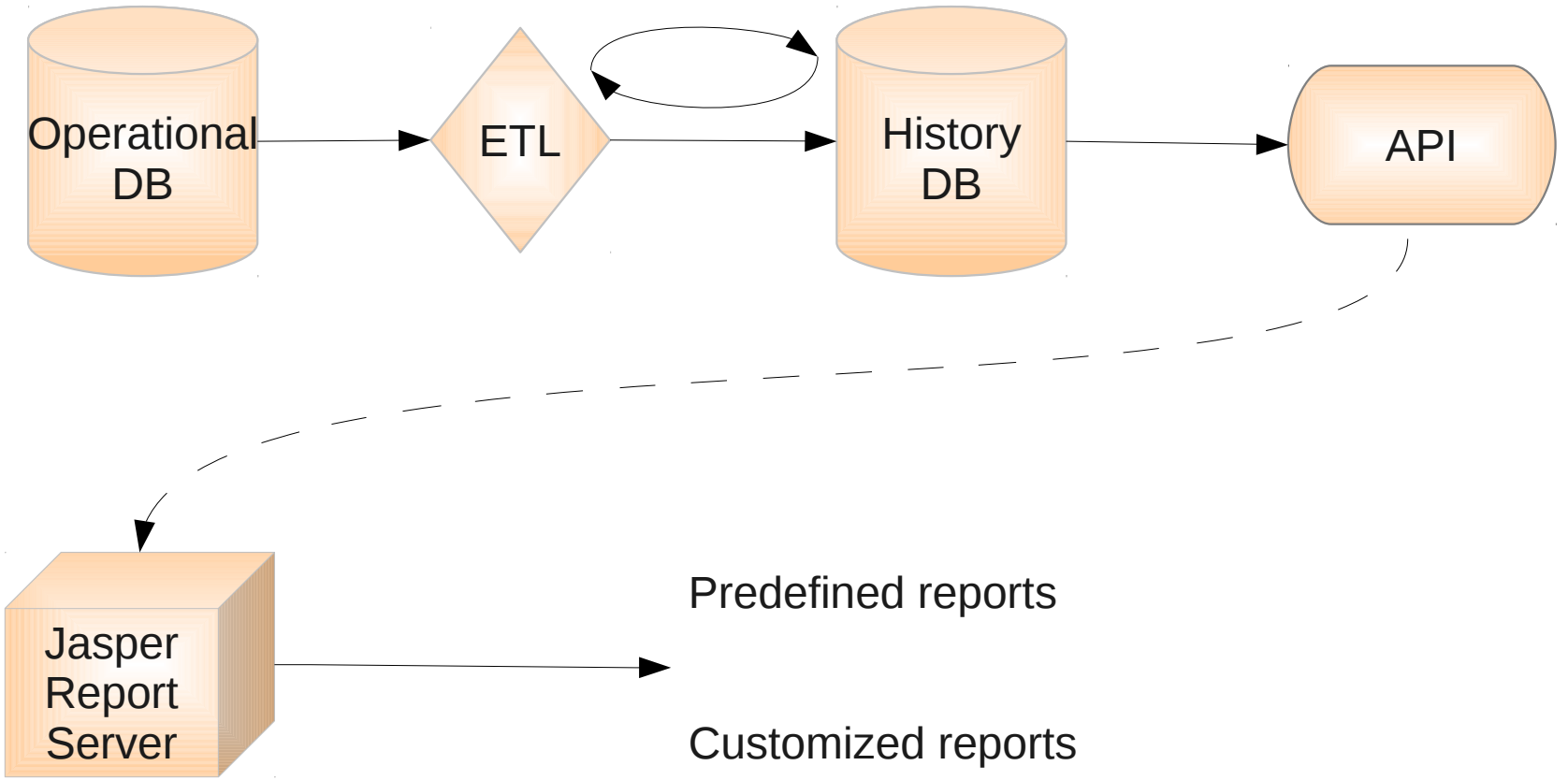
Data Warehouse



Talend Open Studio



DWH & Reports

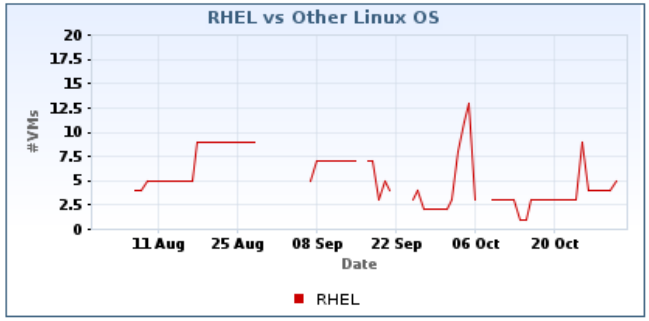

Operational DB
ETL
History DB
API
Jasper Report Server
Predefined reports
Customized reports

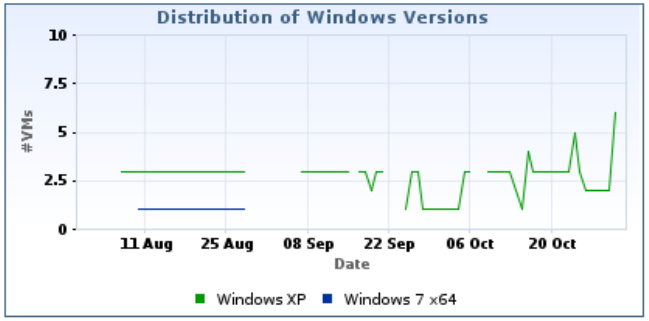
Example Report

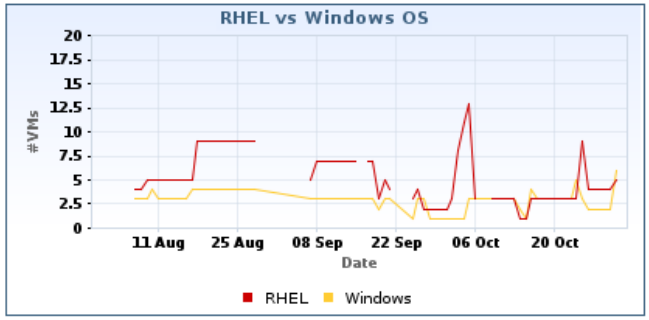
Red Hat Enterprise Virtualization Reports — Dec 5, 2011

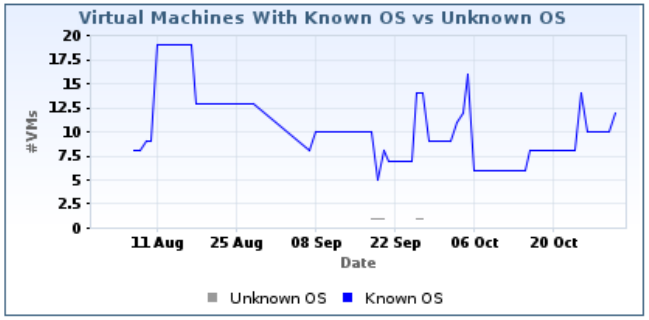
Active Virtual Machines by OS in **Clusters** of **Data Center DC_30_IC136_tiger**

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

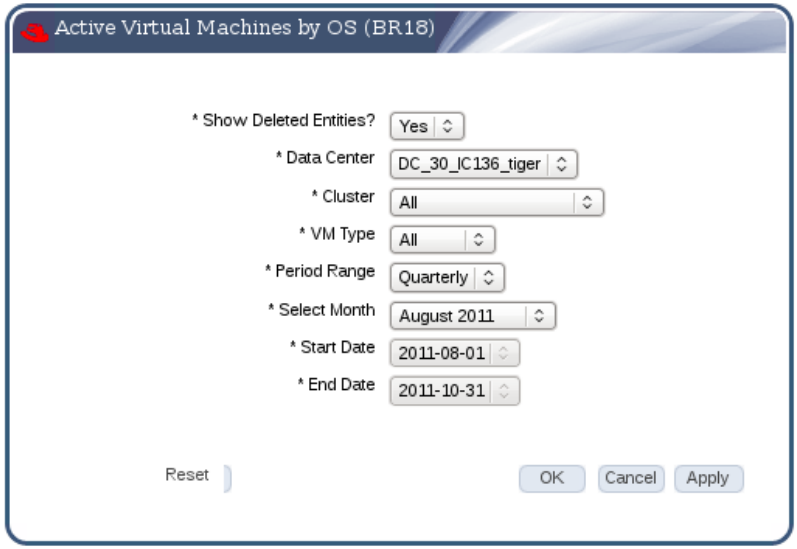


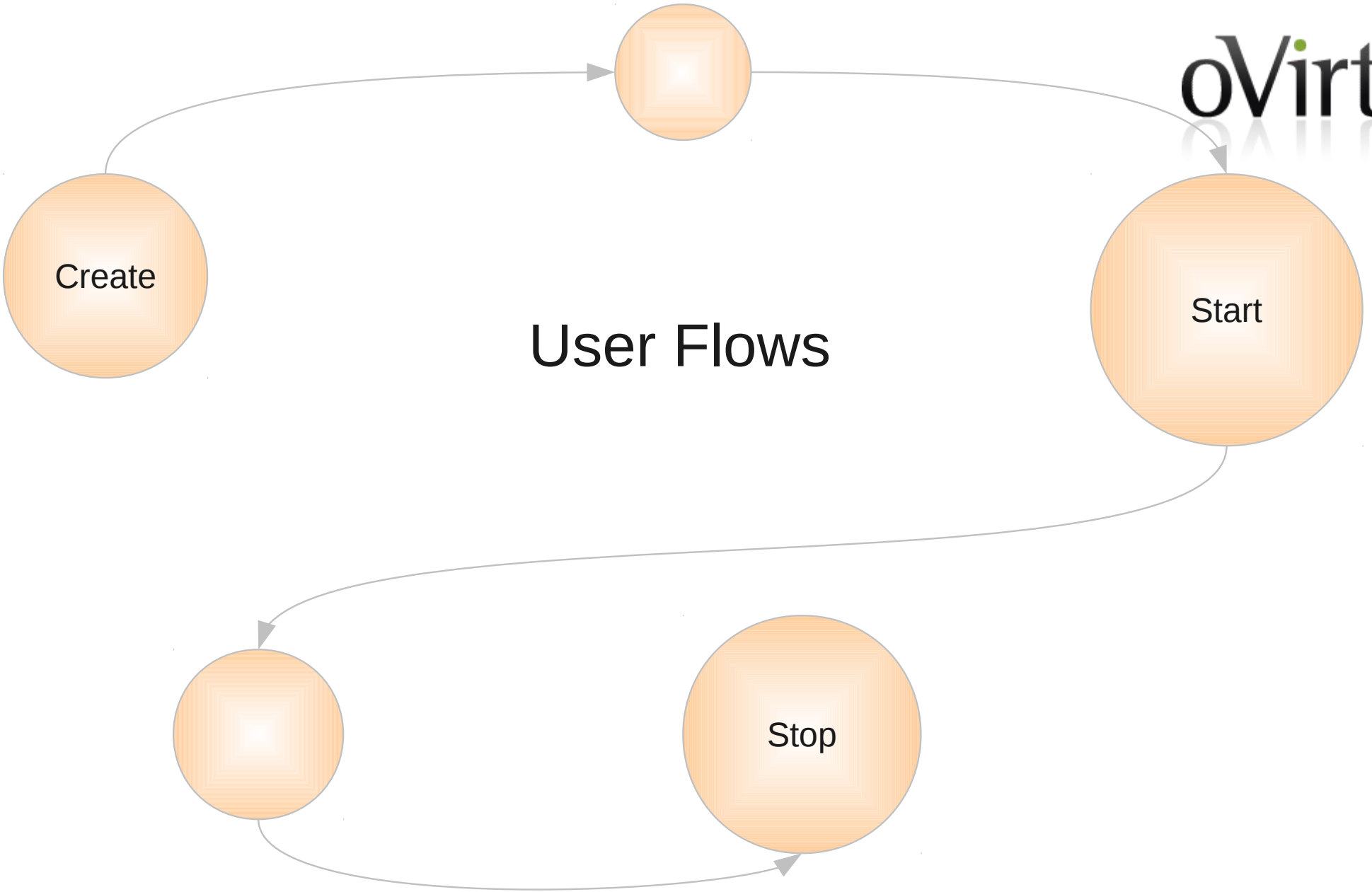




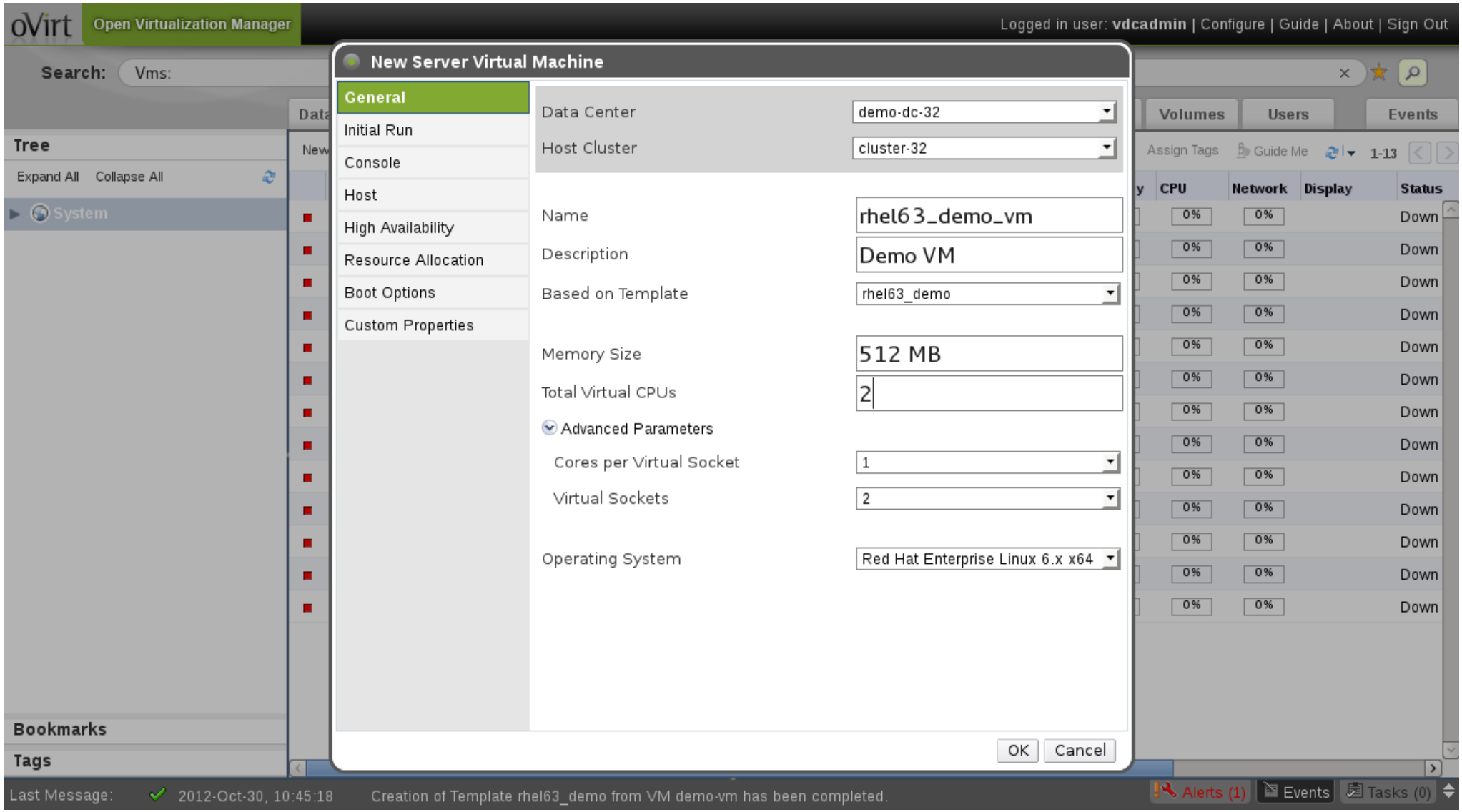


Page 1 of 1

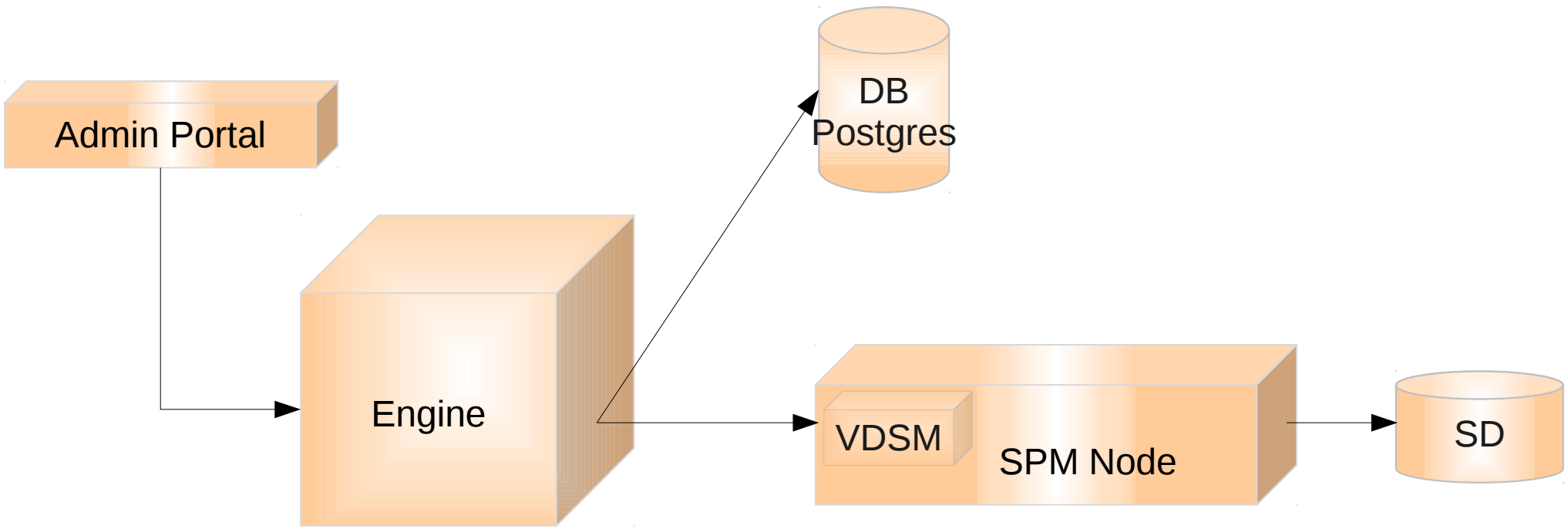



Create
User Flows
Start
Stop

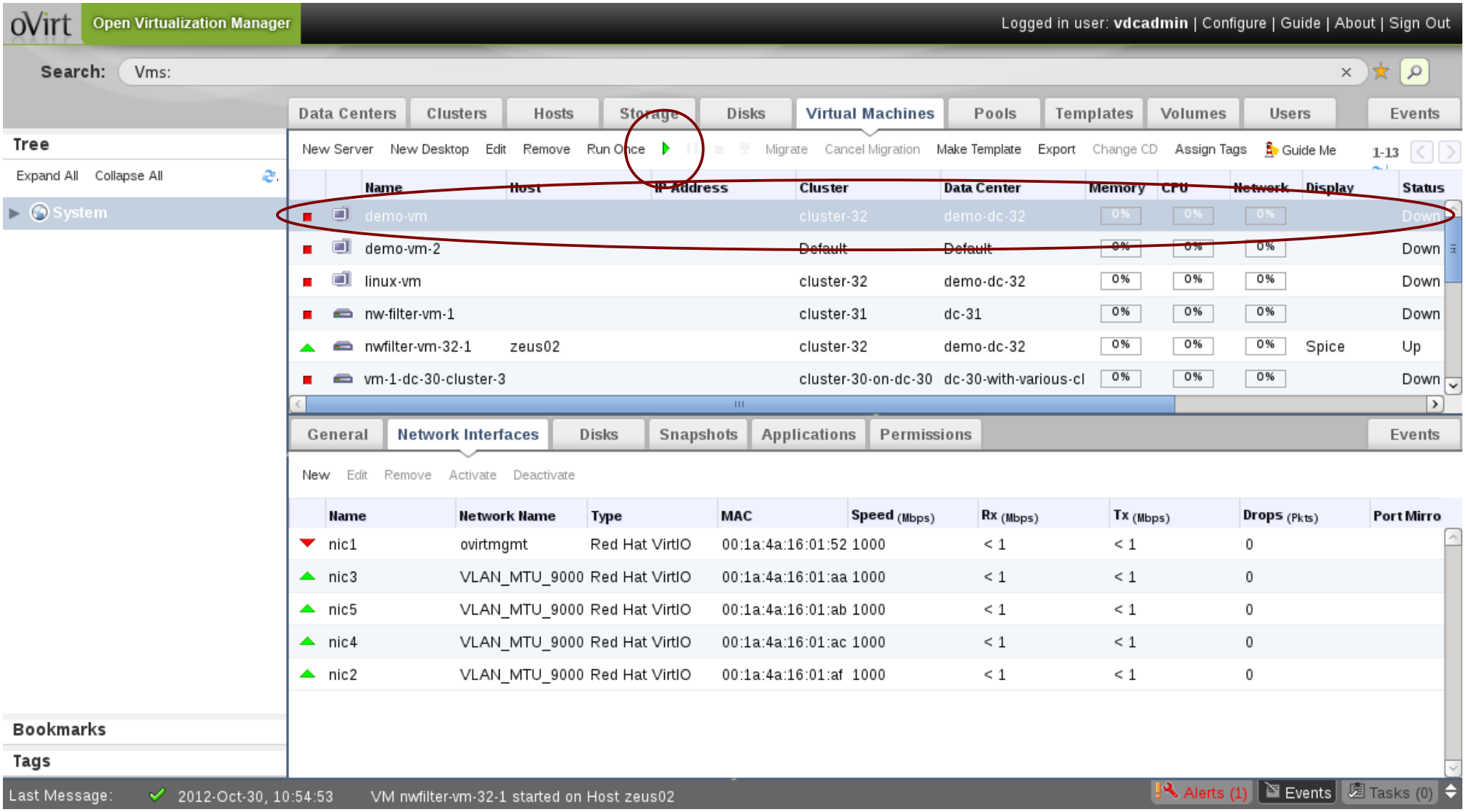
Create VM From Template



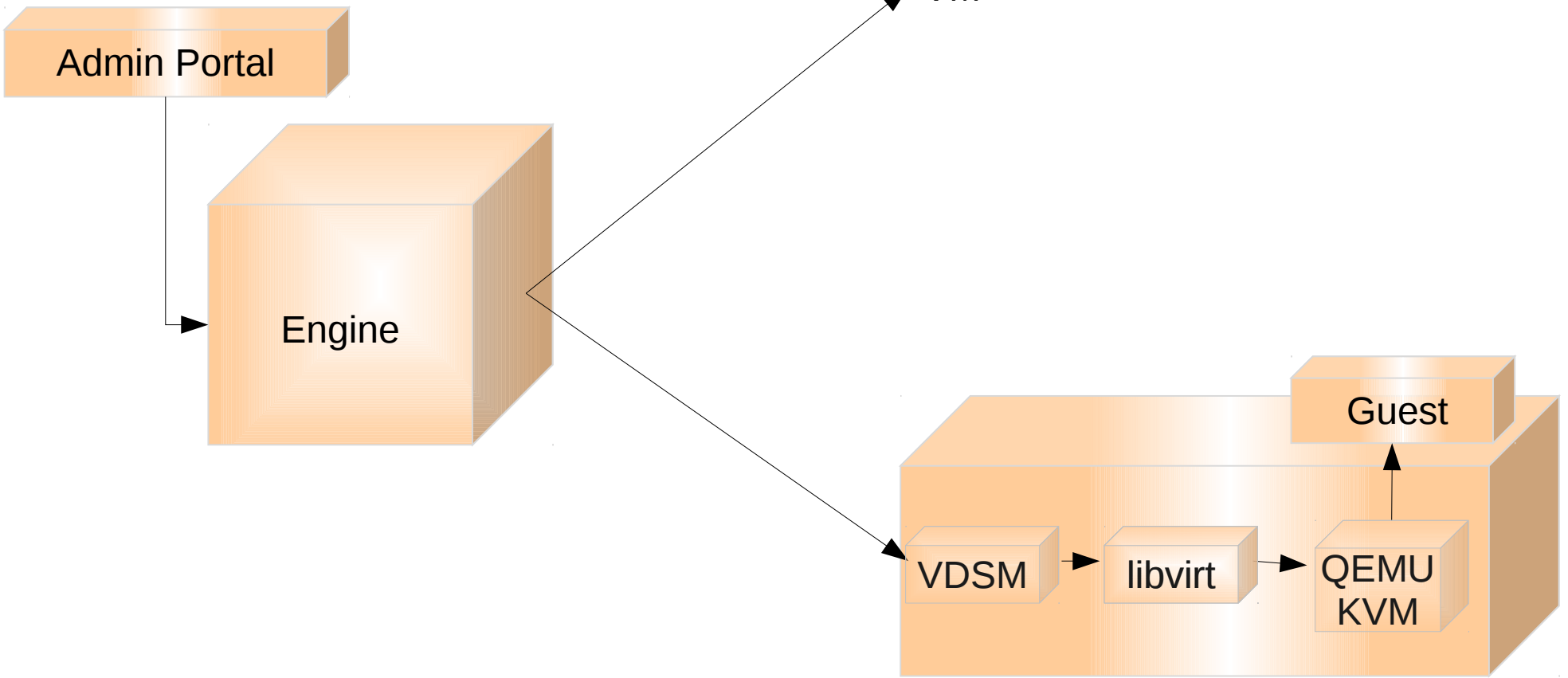
Create VM From Template



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)

Run a VM

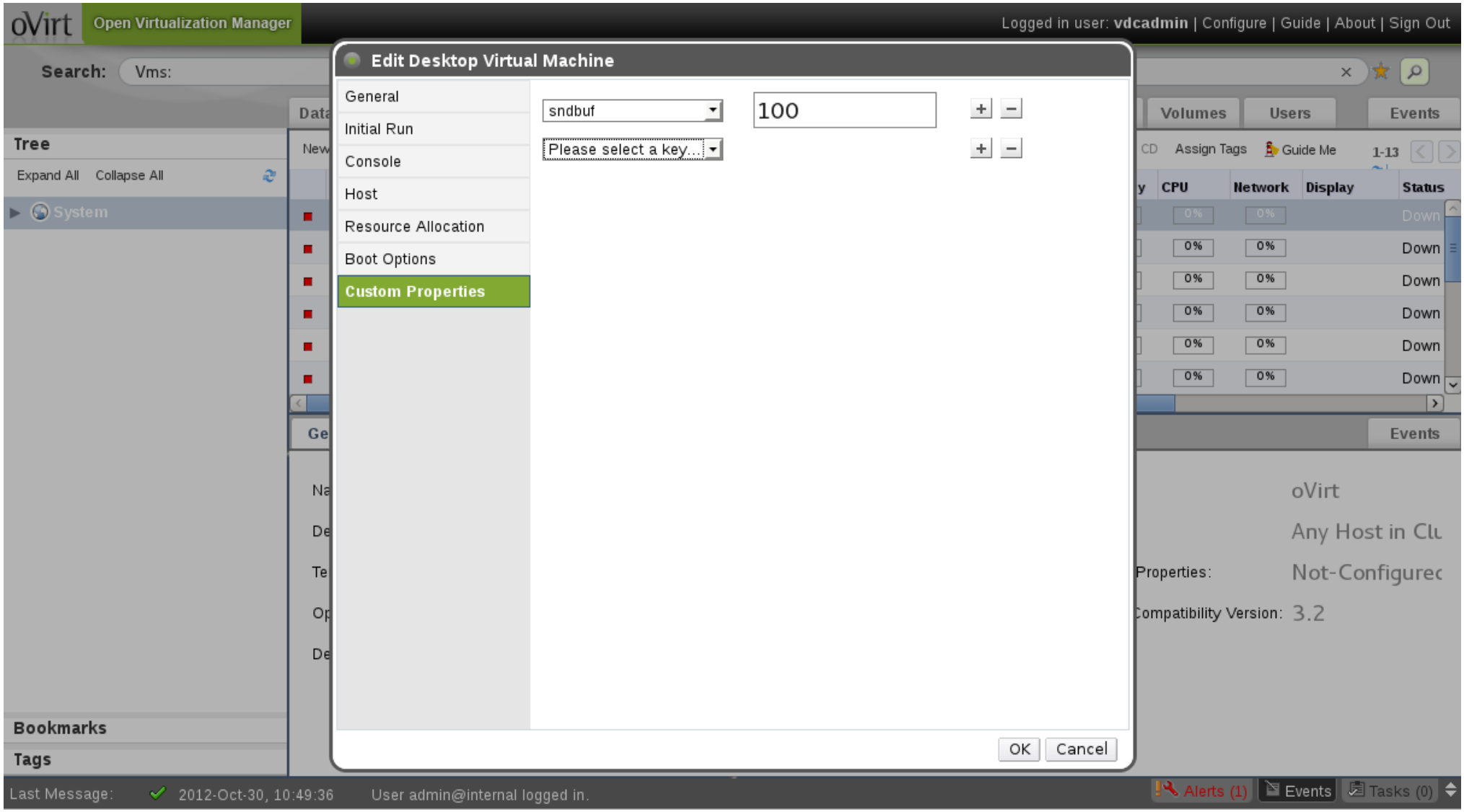

Choose a host on which to start the VM
Admin Portal
Engine
Guest
VDSM
libvirt
QEMU
KVM

What are Hooks?

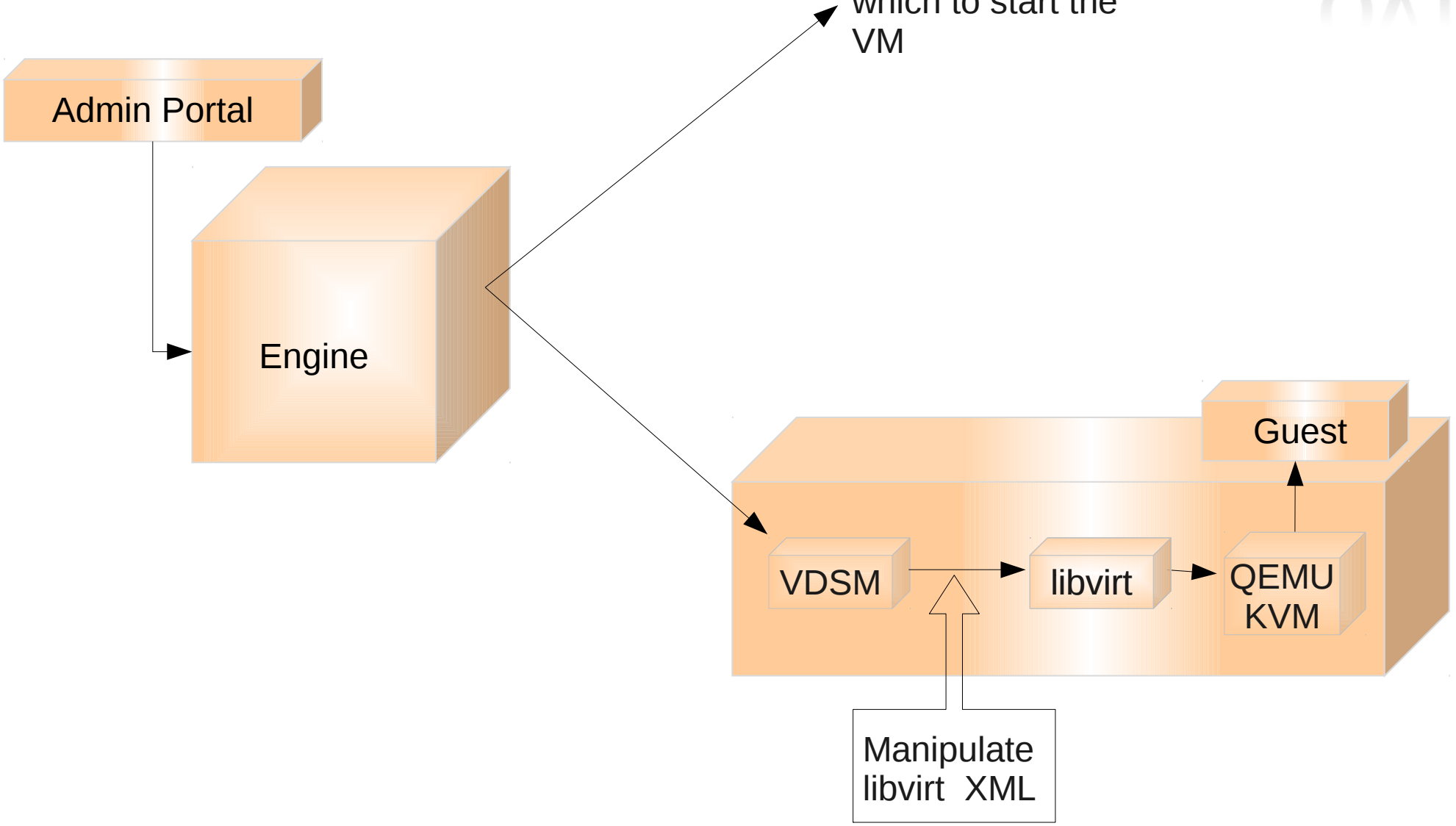
oVirt

- 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.

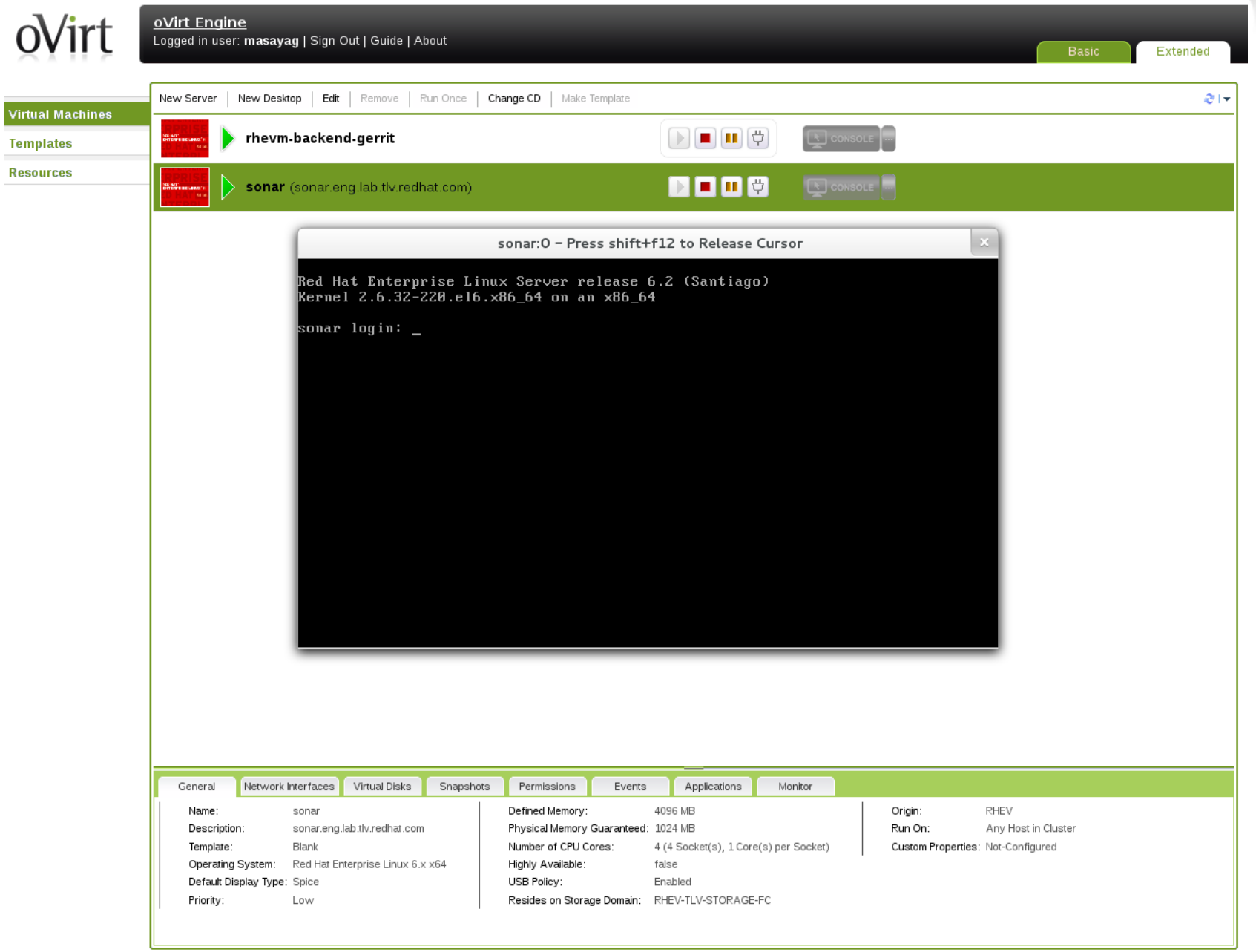
Use Hooks


oVirt
Open Virtualization Manager
Logged in user: vdcadmin | Configure | Guide | About | Sign Out
Search: Vms:
Tree
Expand All
Collapse All
System
Bookmarks
Tags
Volumes
Users
Events
Assign Tags
Guide Me
1-13
CPU
Network
Display
Status
Down
Edit Desktop Virtual Machine
General
Initial Run
Console
Host
Resource Allocation
Boot Options
Custom Properties
sndbuf
100
Please select a key...
OK
Cancel
oVirt
Any Host in Clu
Properties:
Not-Configurec
Compatibility Version:
3.2
Last Message:
2012-Oct-30, 10:49:36
User admin@internal logged in.
Alerts (1)
Events
Tasks (0)

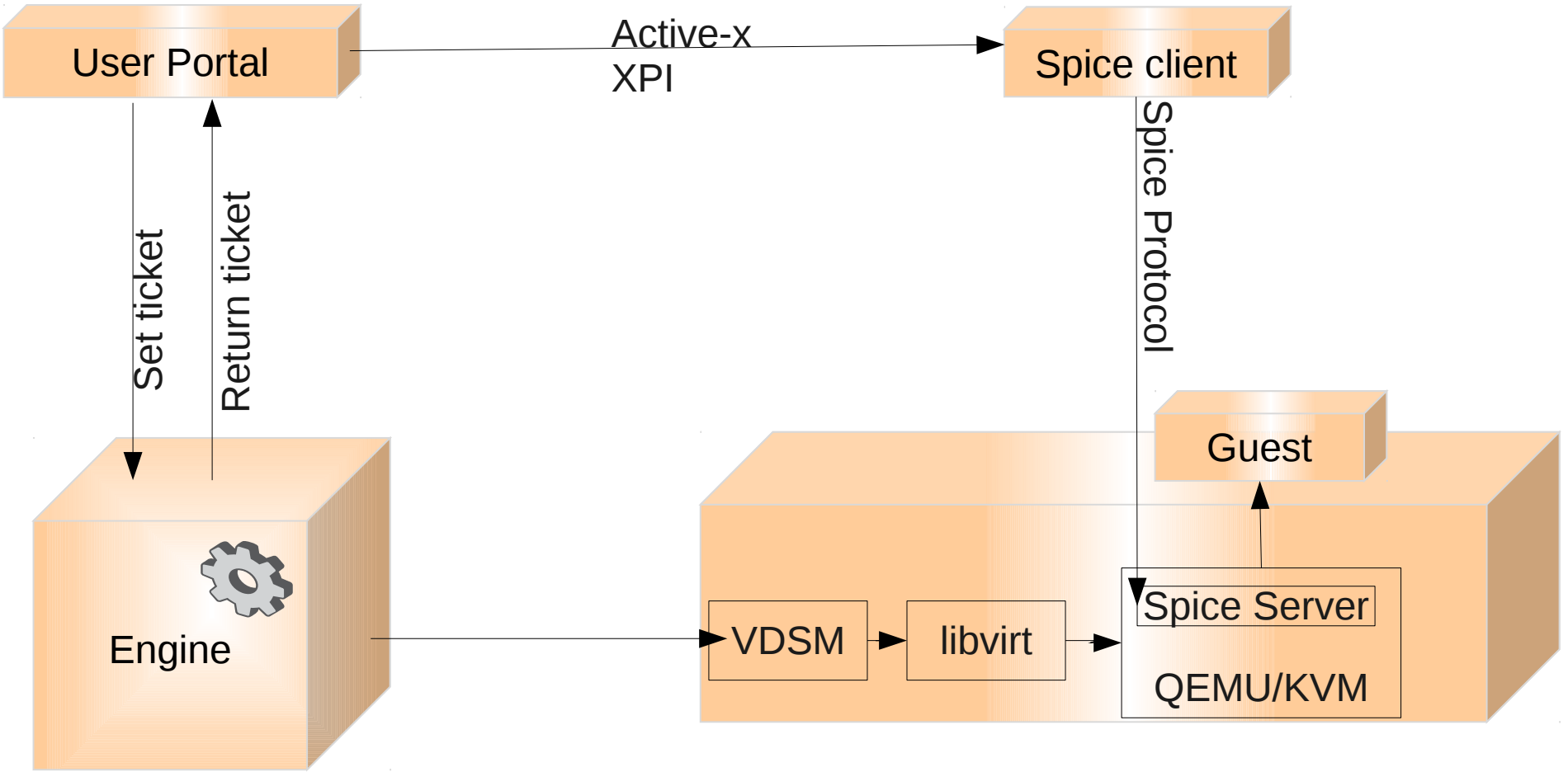
Start VM With Hooks



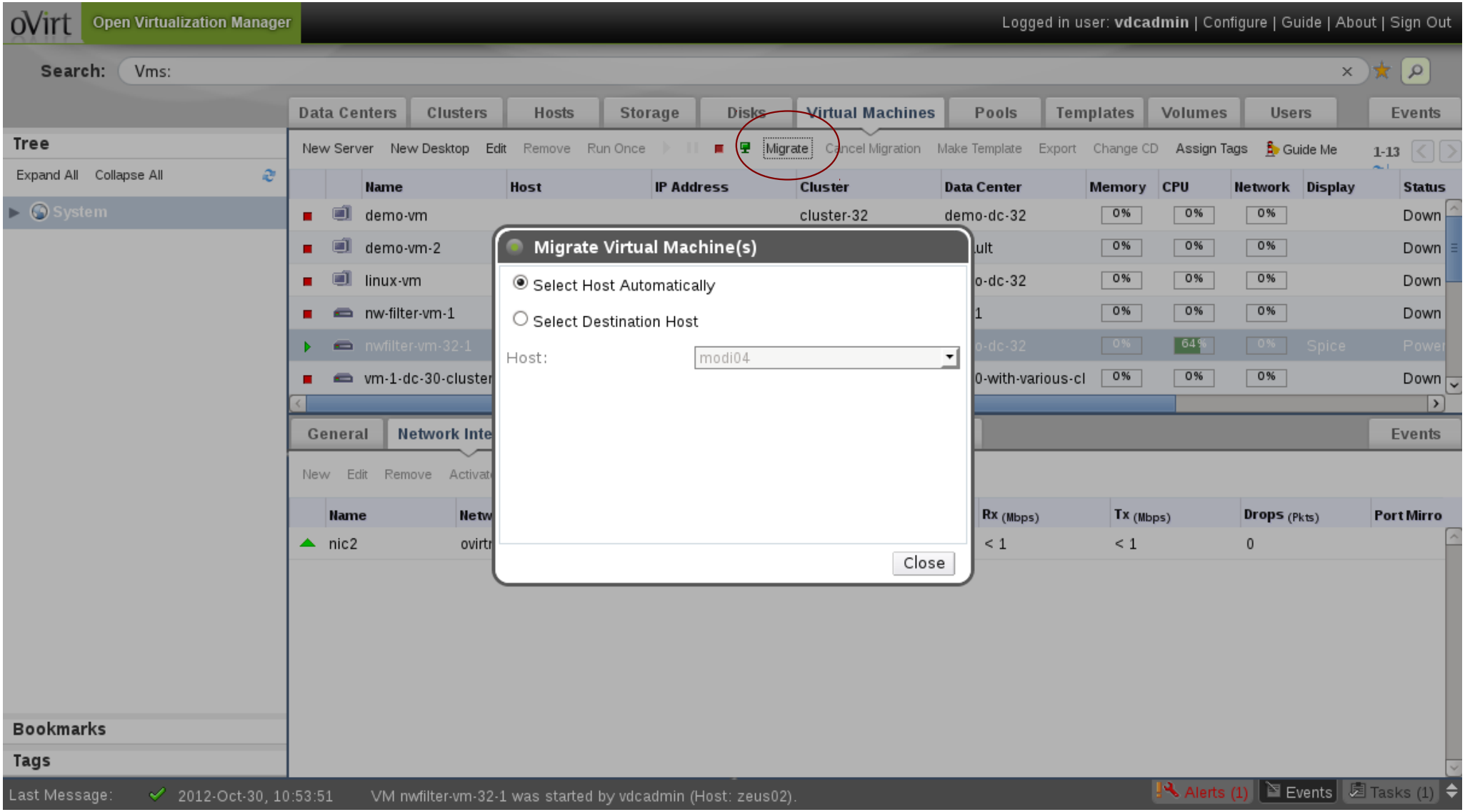
Connect to Guest



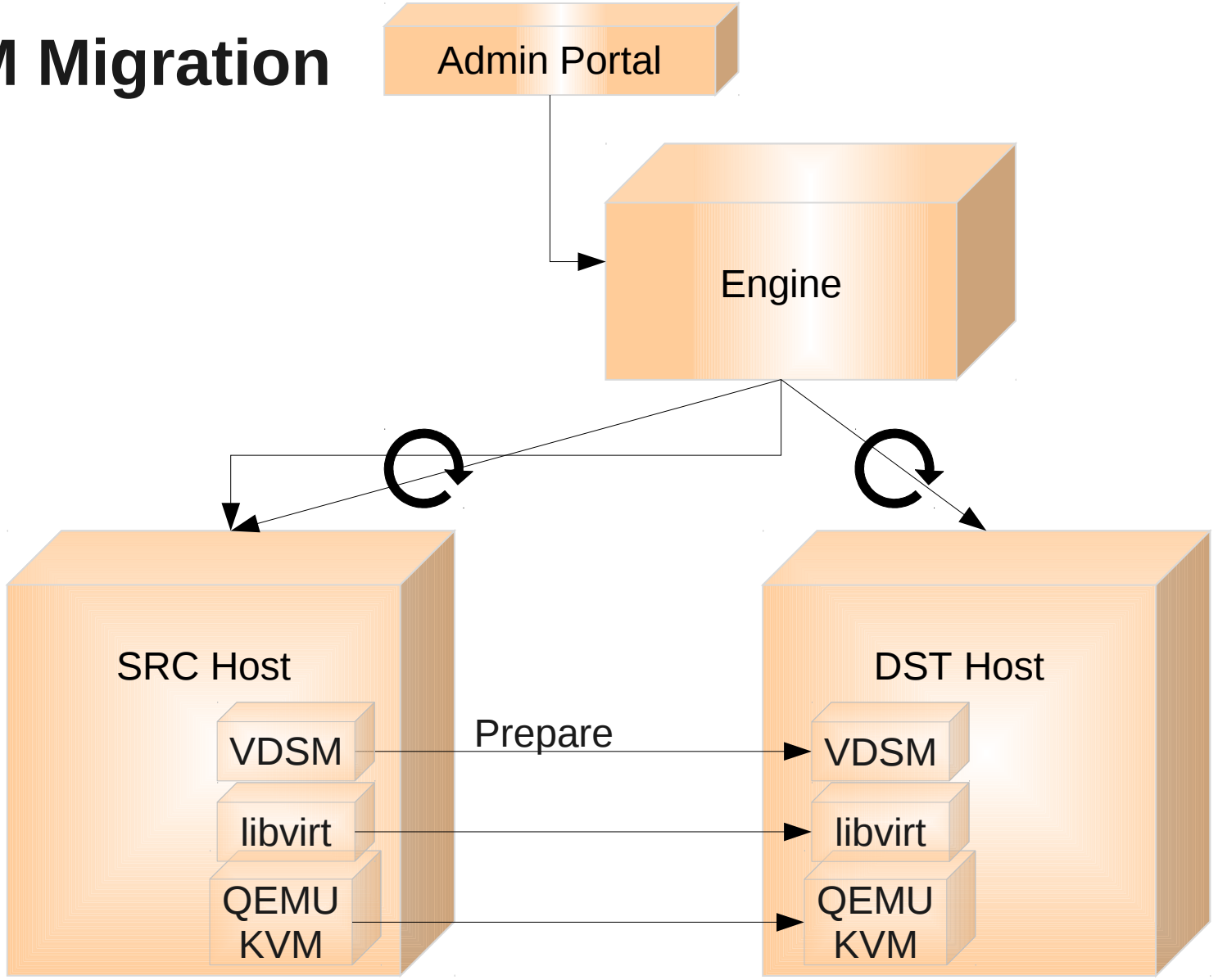
Connect To Guest



VM Migration



VM Migration



Summary

- Review of various oVirt components
- User Action -> Flow in the system
- Everything is open sourced
  - http://www.ovirt.org

Get Involved!

oVirt

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

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THANK YOU !

http://www.ovirt.org