



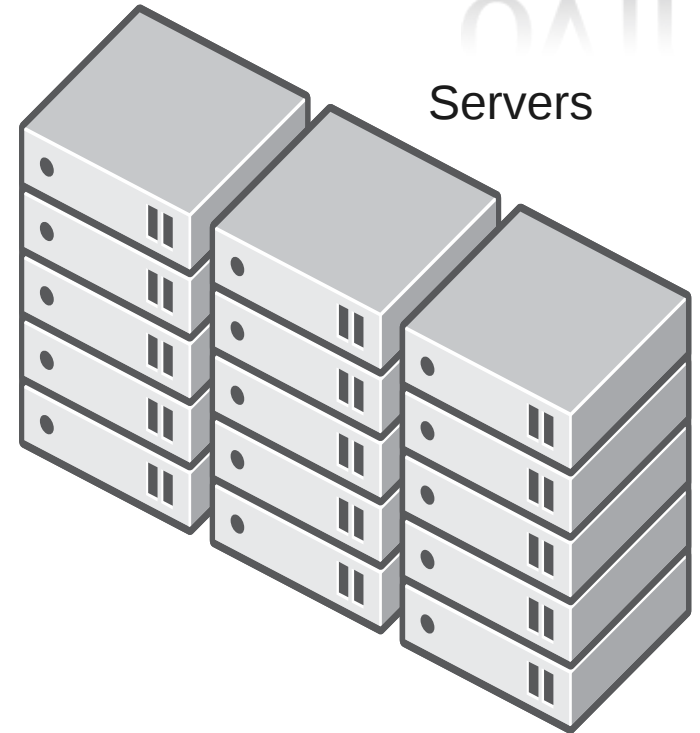
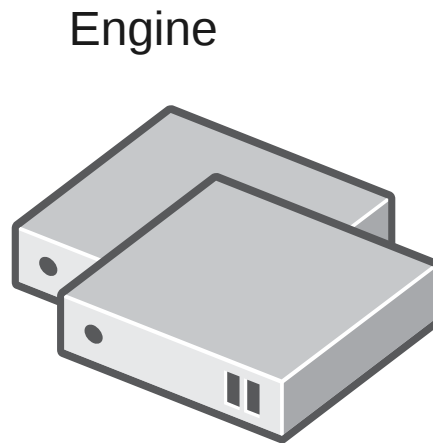
oVirt Architecture

Itamar Heim
iheim@redhat.com

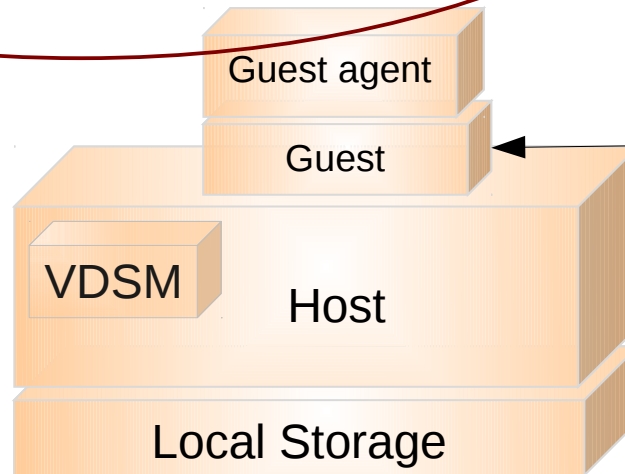
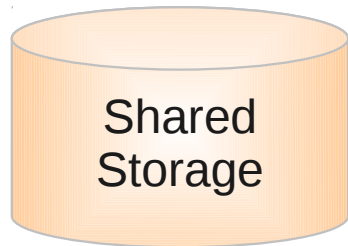
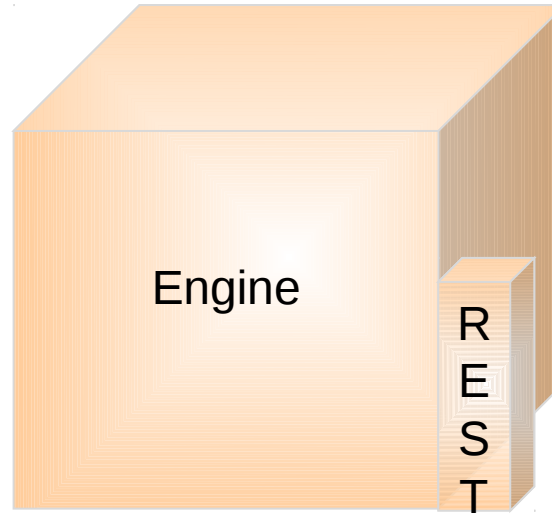
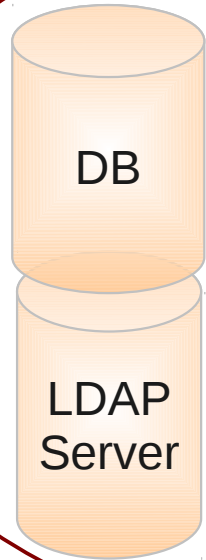
Agenda

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

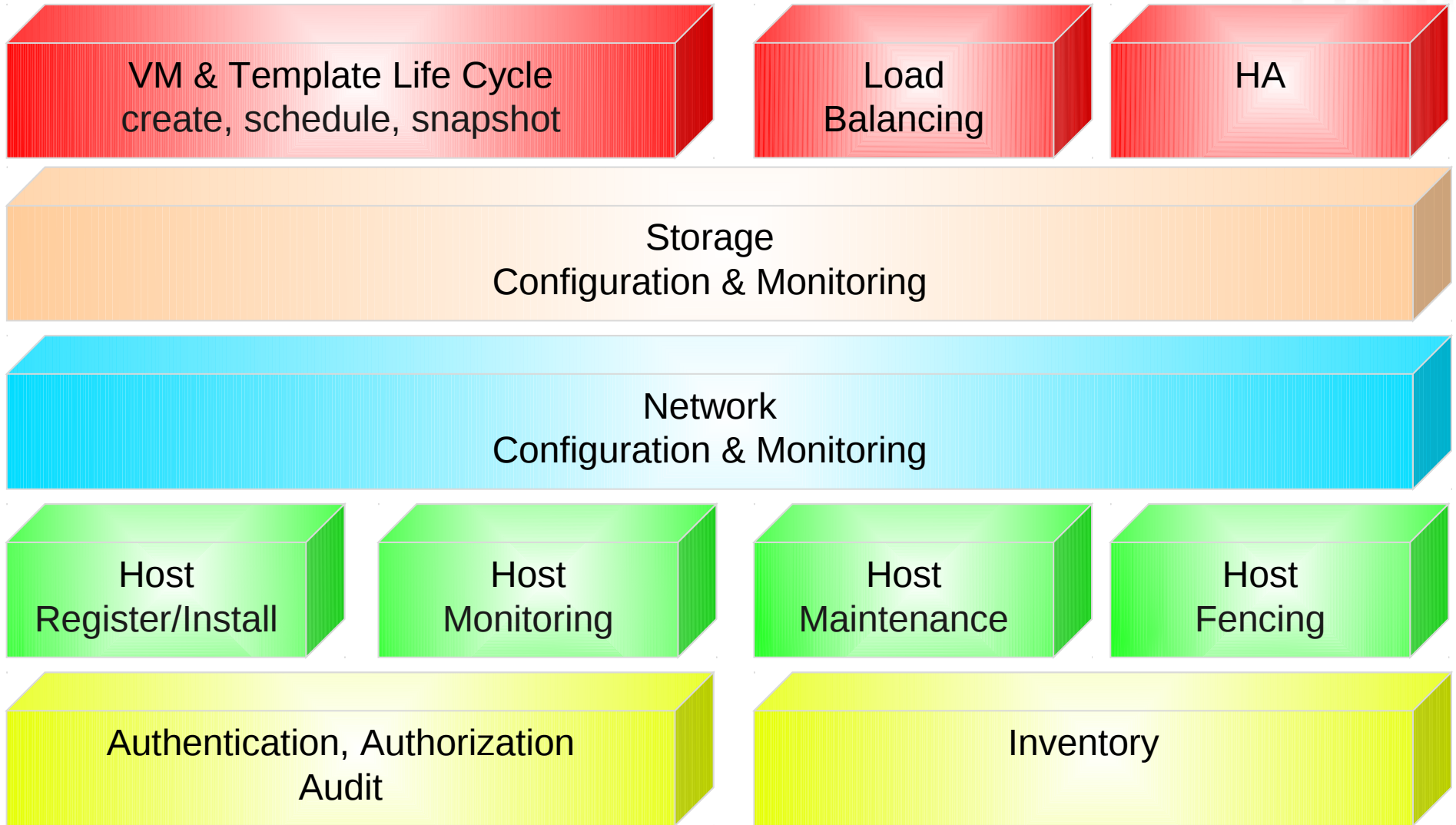
Architecture From 30,000 Feet



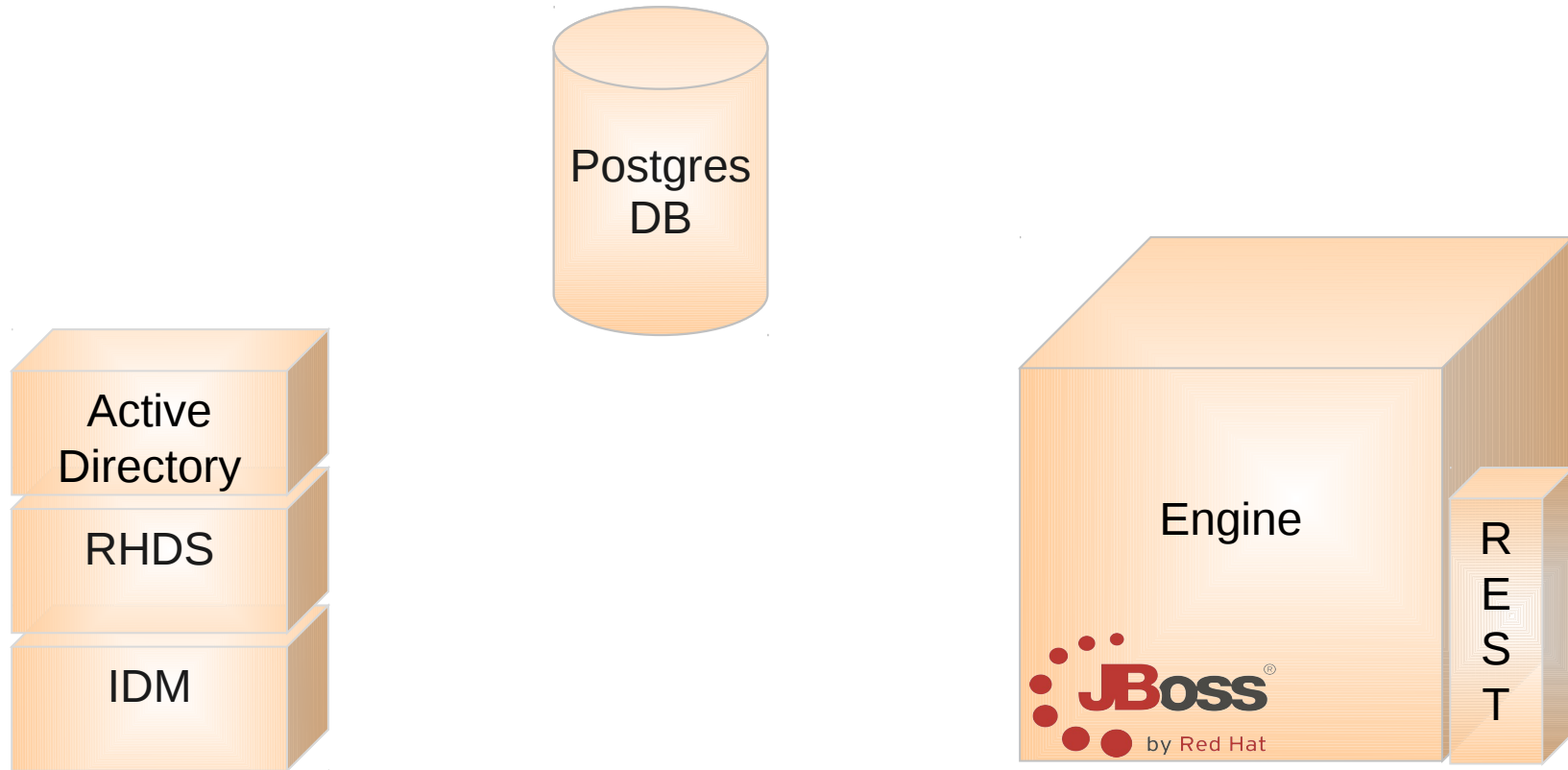
The Real World



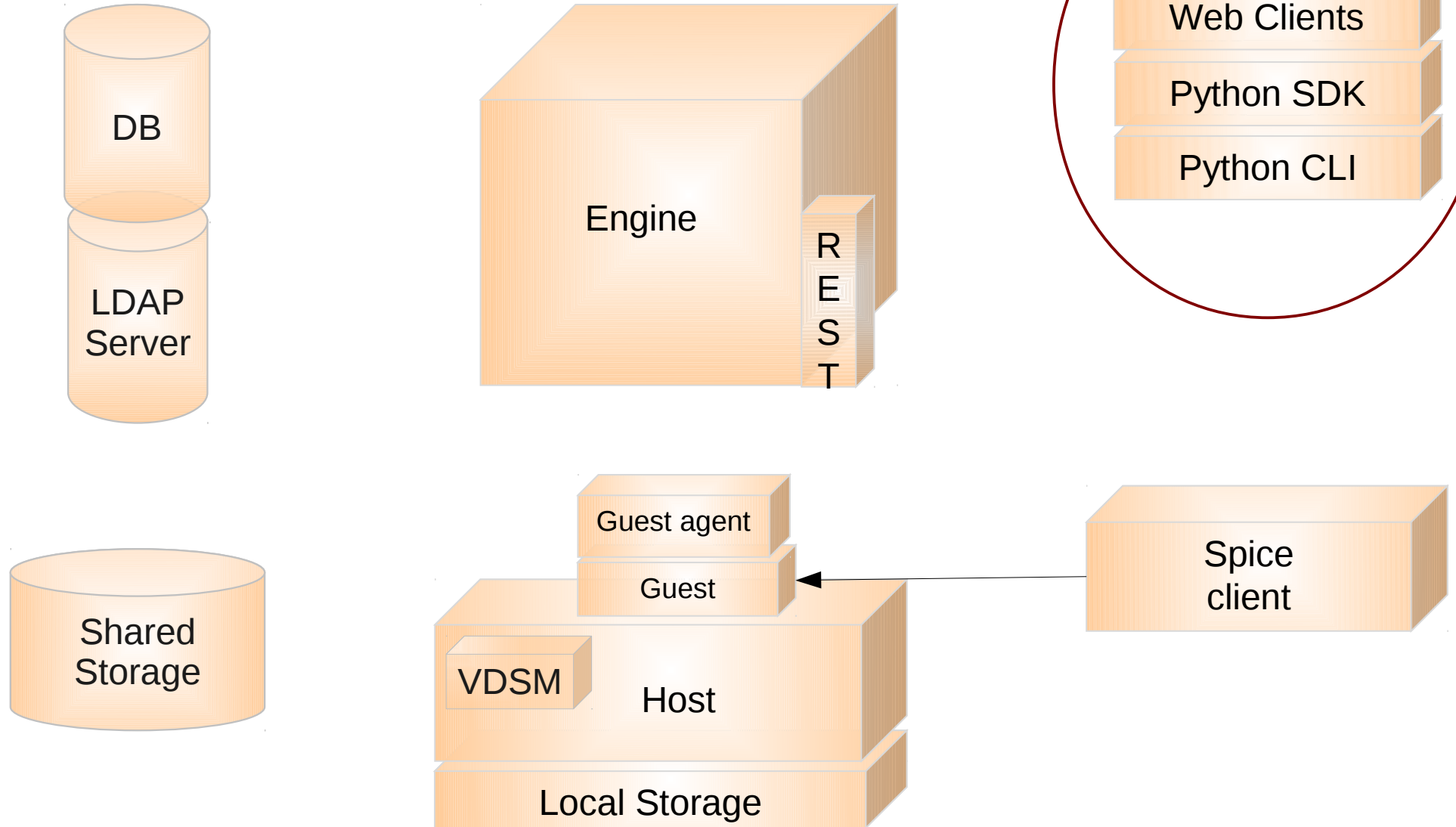
RHEV-M Engine



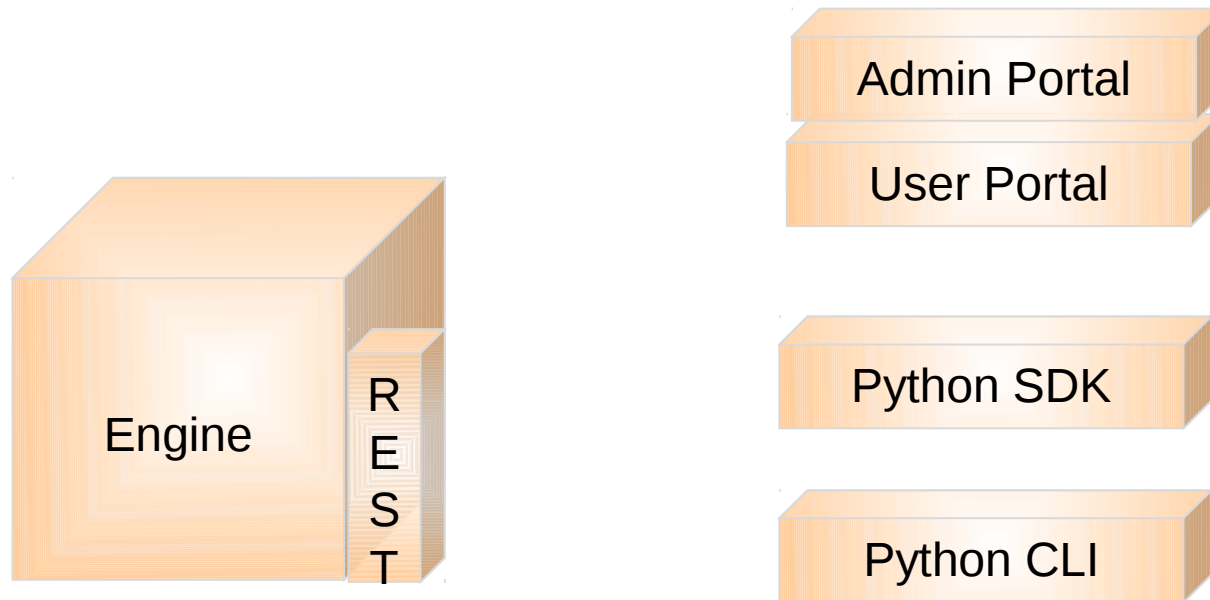
RHEV-M Engine



The Real World



The Clients



Admin Portal



oVirt Open Virtualization Manager Logged in user: vdcadmin | Configure | Guide | About | Sign Out

Search: Vms: x ★ 🔍

[Data Centers](#) [Clusters](#) [Hosts](#) [Storage](#) [Disks](#) **[Virtual Machines](#)** [Pools](#) [Templates](#) [Volumes](#) [Users](#) [Events](#)

[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	0%	0%	0%		Down
■	demo-vm-2			Default	Default	0%	0%	0%		Down
■	linux-vm			cluster-32	demo-dc-32	0%	0%	0%		Down
■	nw-filter-vm-1			cluster-31	dc-31	0%	0%	0%		Down
▲	nwfilter-vm-32-1	zeus02		cluster-32	demo-dc-32	0%	0%	0%	Spice	Up
■	vm-1-dc-30-cluster-3			cluster-30-on-dc-30	dc-30-with-various-cl	0%	0%	0%		Down

[General](#) [Network Interfaces](#) [Disks](#) [Snapshots](#) [Applications](#) [Permissions](#) [Events](#)

Name: demo-vm **Defined Memory:** 512 MB **Origin:** oVirt
Description: **Physical Memory Guaranteed:** 512 MB **Run On:** Any Host in Cl
Template: Blank **Number of CPU Cores:** 1 (1 Socket(s)) **Custom Properties:** Not-Configurec
Operating System: Other Linux **Number of Monitors:** 1 **Cluster Compatibility Version:** 3.2
Default Display Type: Spice **USB Policy:** Disabled

Bookmarks
Tags

Last Message: ✔ 2012-Oct-30, 10:54:53 VM nwfilter-vm-32-1 started on Host zeus02
! Alerts (1) 📧 Events 📄 Tasks (0)

User Portal



oVirt Engine
Logged in user: **masayag** | [Sign Out](#) | [Guide](#) | [About](#)

[Basic](#) [Extended](#)

demo-vm linux-vm

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



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

REST API

```

- <api>
  <link rel="capabilities" href="/rhev-api/capabilities"/>
  <link rel="clusters" href="/rhev-api/clusters"/>
  <link rel="clusters/search" href="/rhev-api/clusters?search={query}"/>
  <link rel="datacenters" href="/rhev-api/datacenters"/>
  <link rel="datacenters/search" href="/rhev-api/datacenters?search={query}"/>
  <link rel="events" href="/rhev-api/events"/>
  <link rel="events/search" href="/rhev-api/events?search={query}"/>
  <link rel="hosts" href="/rhev-api/hosts"/>
  <link rel="hosts/search" href="/rhev-api/hosts?search={query}"/>
  <link rel="networks" href="/rhev-api/networks"/>
  <link rel="roles" href="/rhev-api/roles"/>
  <link rel="storagedomains" href="/rhev-api/storagedomains"/>
  <link rel="storagedomains/search" href="/rhev-api/storagedomains?search={query}"/>
  <link rel="tags" href="/rhev-api/tags"/>
  <link rel="templates" href="/rhev-api/templates"/>
  <link rel="templates/search" href="/rhev-api/templates?search={query}"/>
  <link rel="users" href="/rhev-api/users"/>
  <link rel="groups" href="/rhev-api/groups"/>
  <link rel="domains" href="/rhev-api/domains"/>
  <link rel="vmpools" href="/rhev-api/vmpools"/>
  <link rel="vmpools/search" href="/rhev-api/vmpools?search={query}"/>
  <link rel="vms" href="/rhev-api/vms"/>
  <link rel="vms/search" href="/rhev-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>
    <total>2</total>
  </users>

```

Done

```
#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

```
#update stateless ce
```

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 read from their respective configuration variables (see 'show'). In the second form, the connection details are provided as arguments.

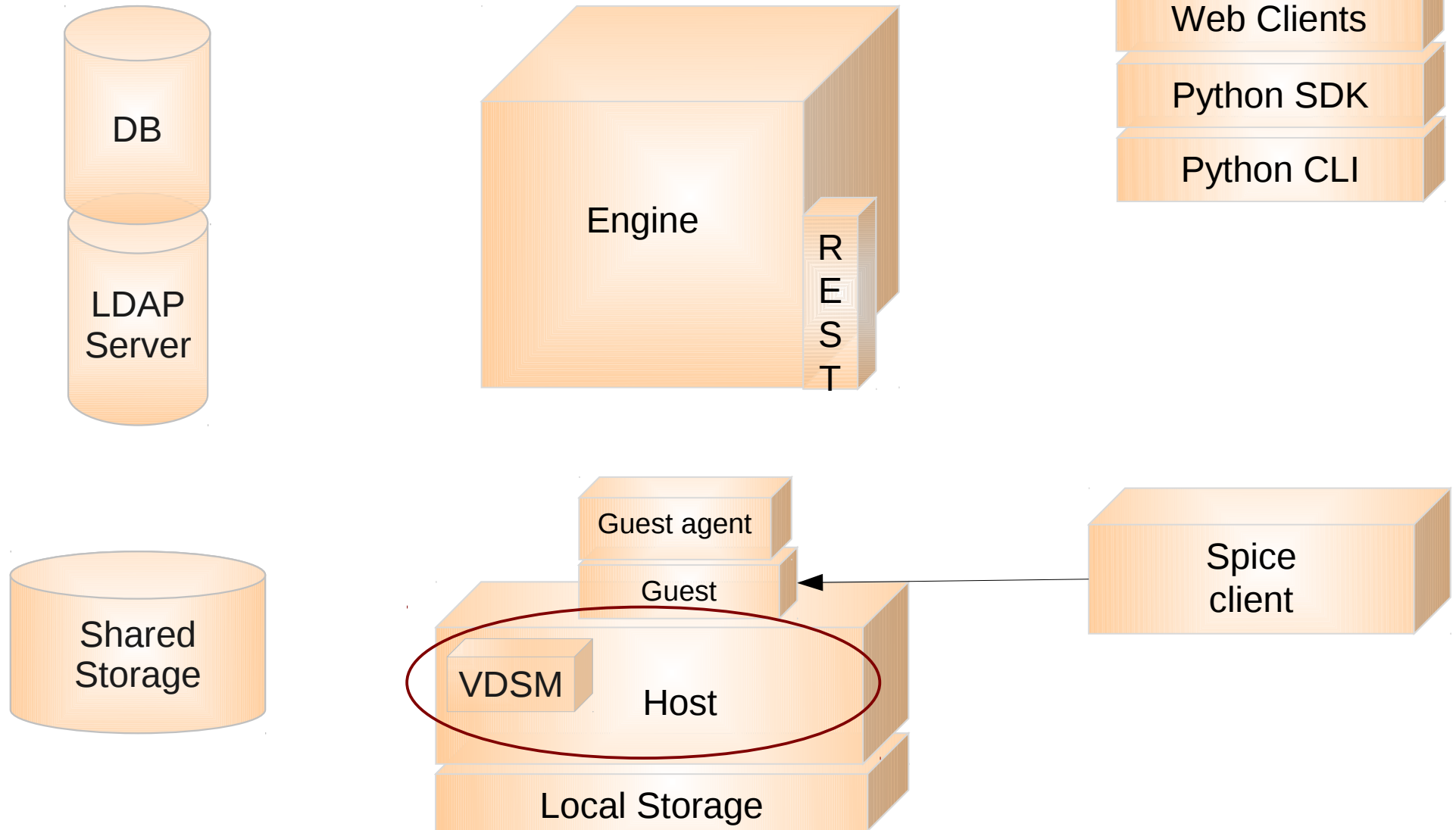
The arguments are:

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

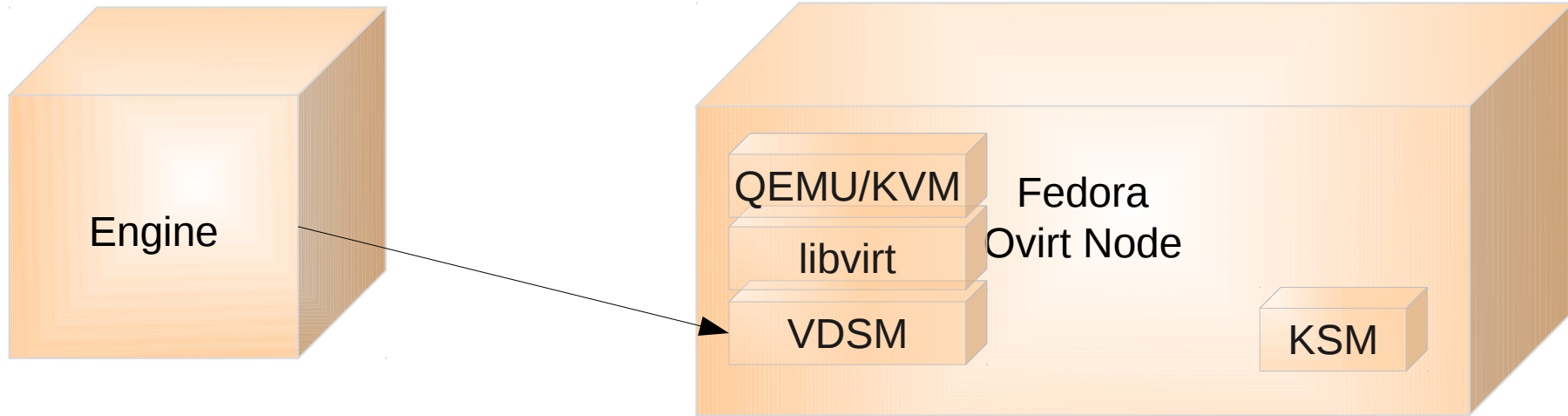


The Real World

oVirt



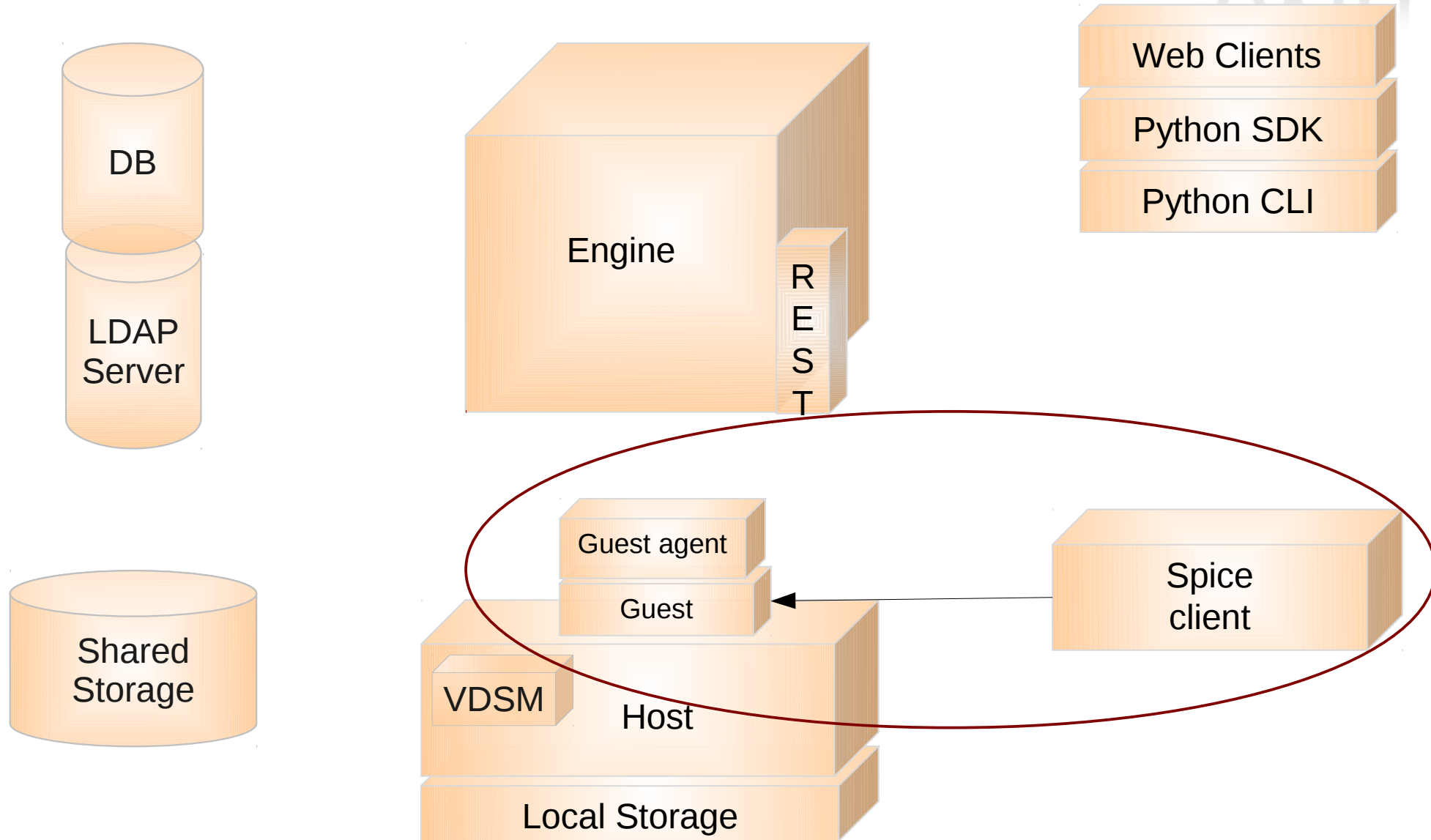
The Host



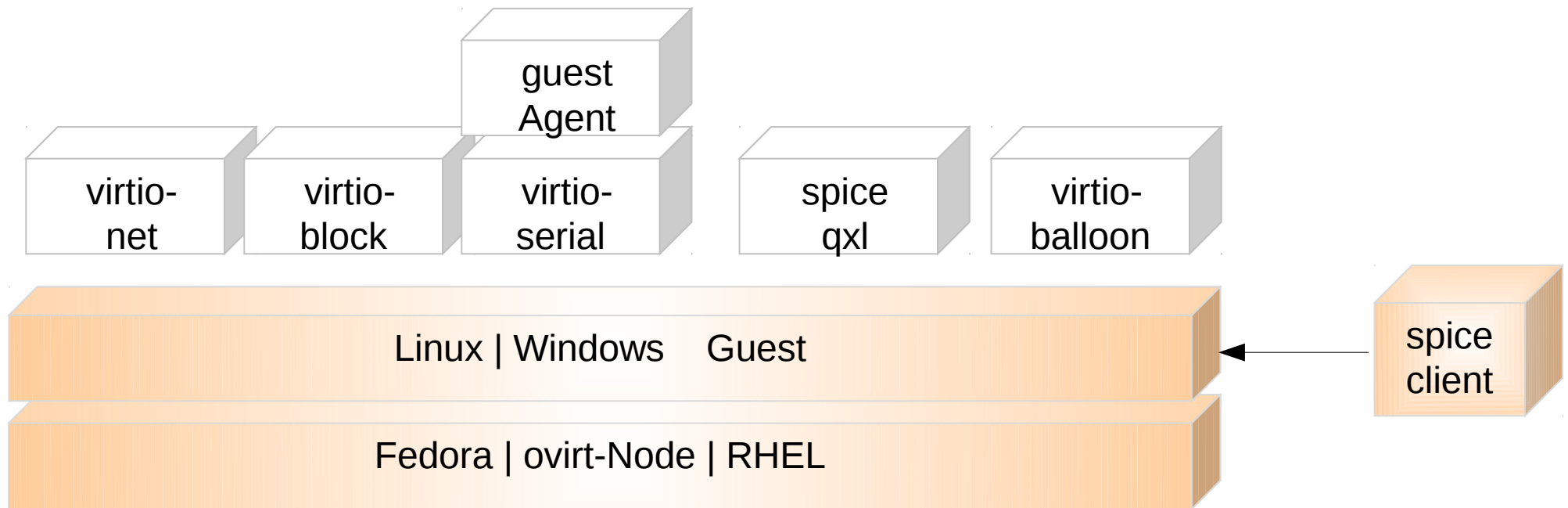
Configuration Monitoring :
Network, Storage, Host, VMs

The Real World

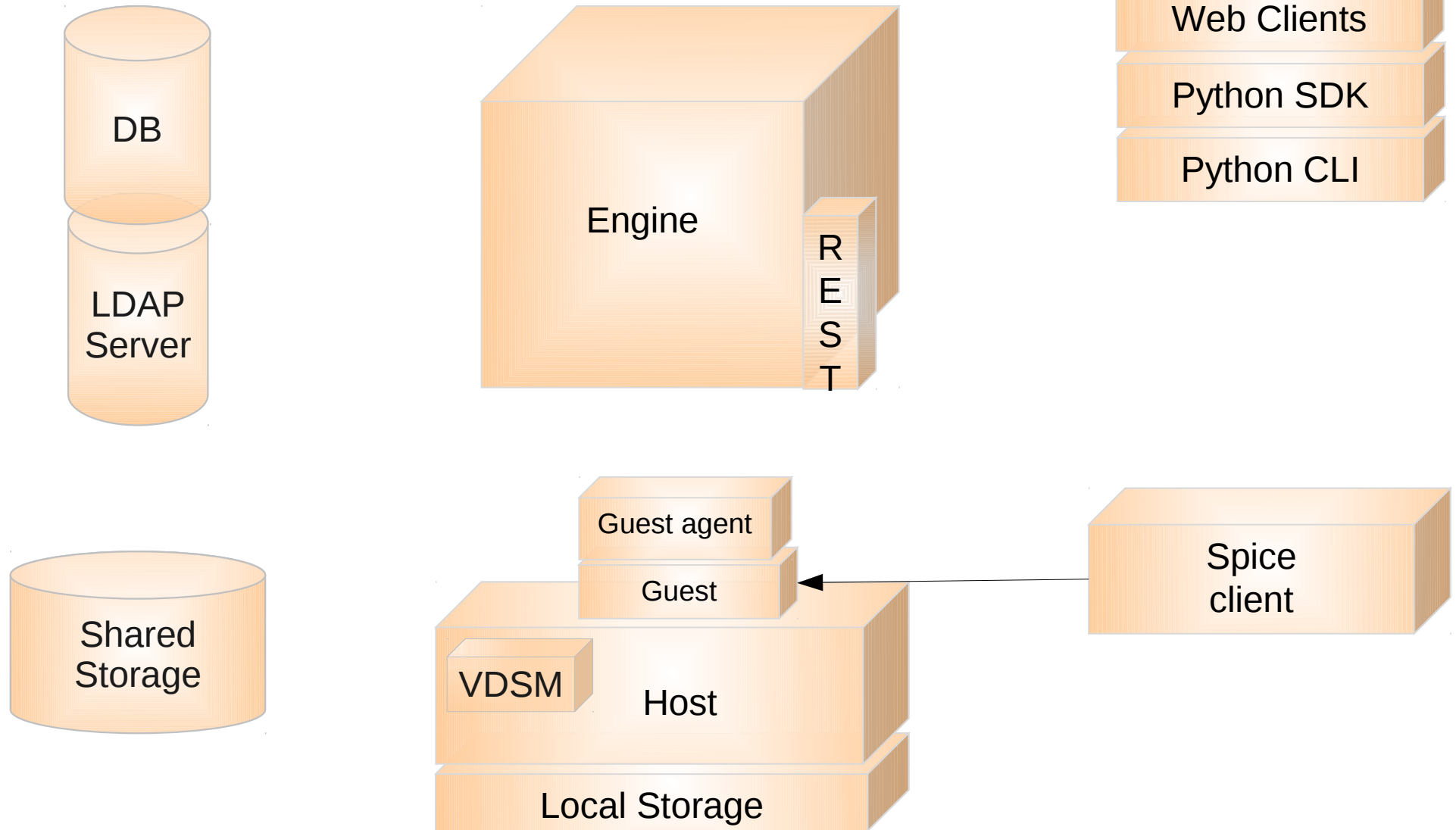
oVirt



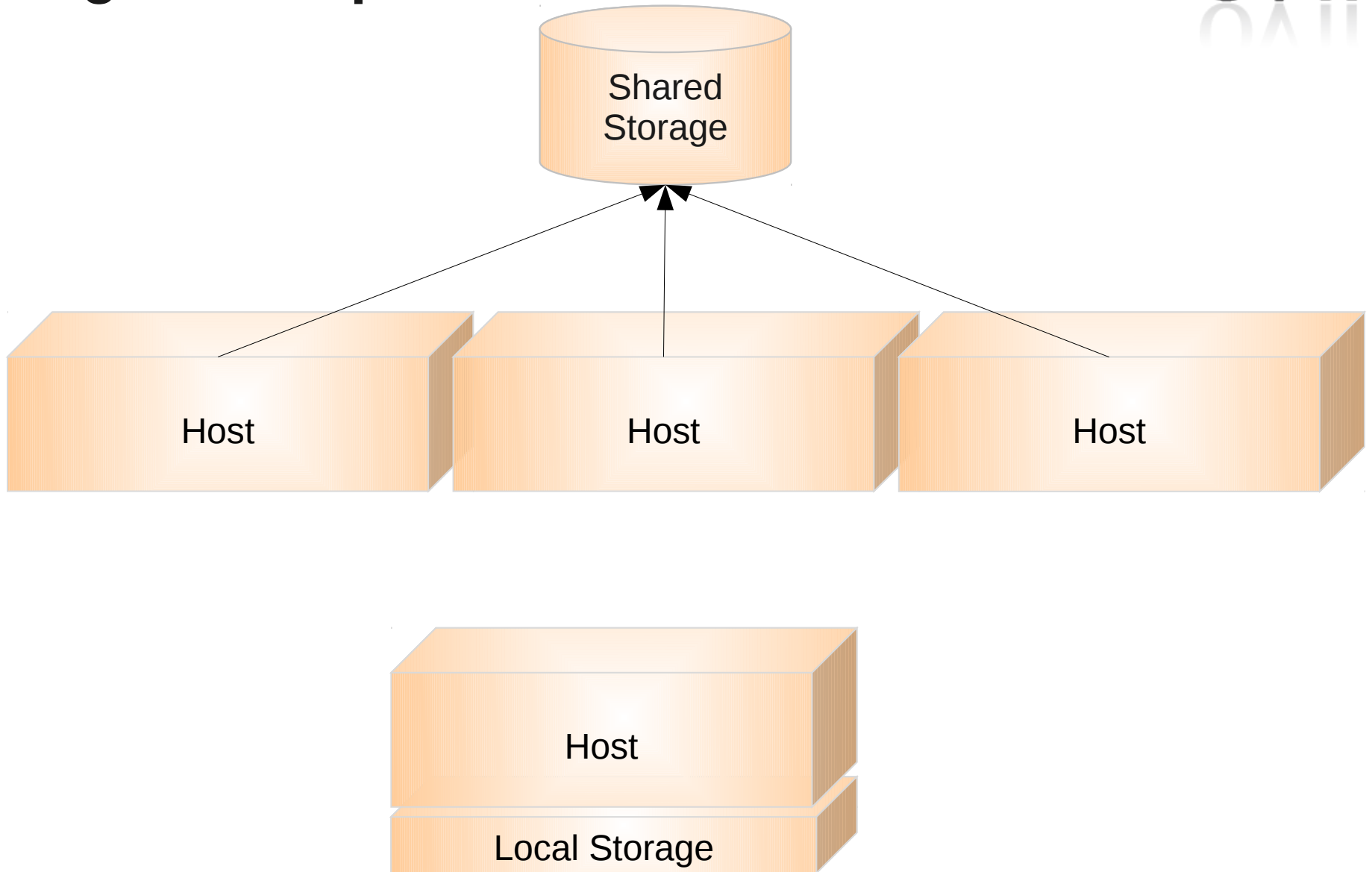
The Guest



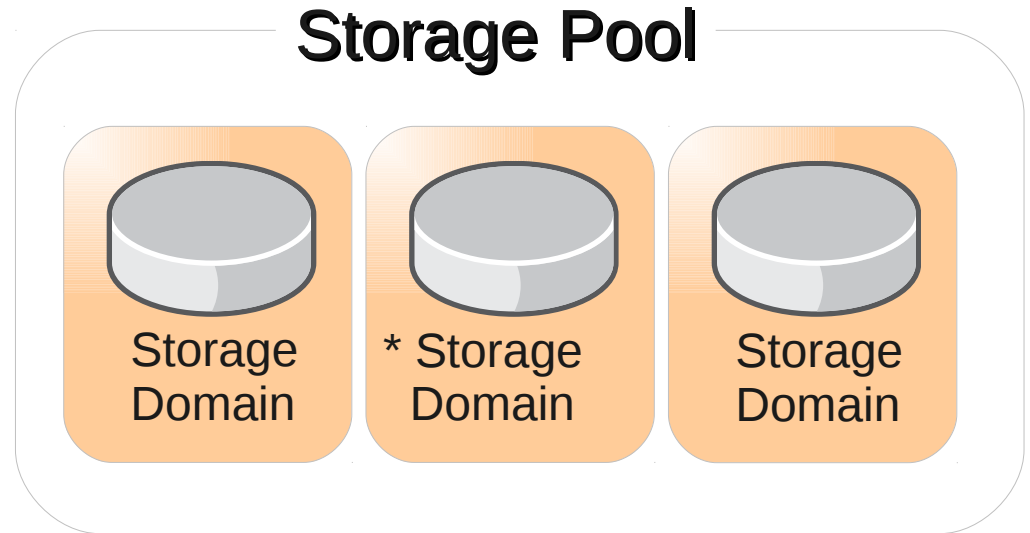
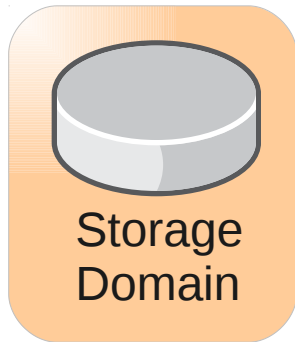
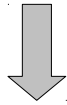
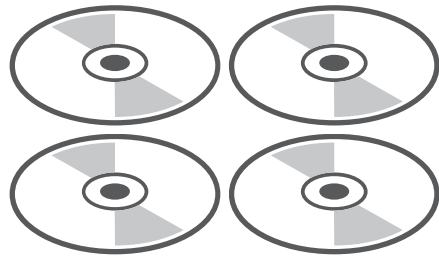
Putting the Pieces Together



Storage Concepts



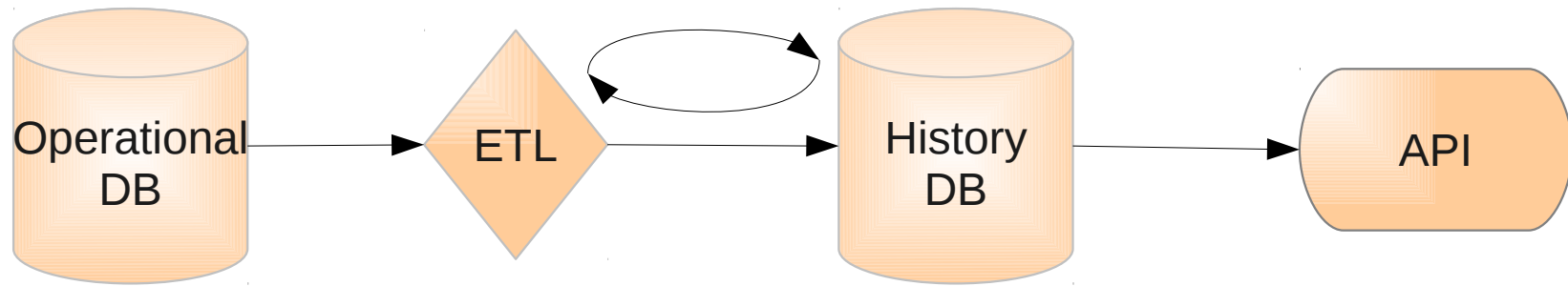
Storage Concepts



* Master Storage Domain



Data Warehouse



Talend Open Studio



50%

Learn Ask Upgrade! Debug Data Inte...

Repository Job HistoryETL 3.0

Business Models

Job Designs

- AggregationToDaily 3.0
- AggregationToHourly 3.0
- ConfigurationSync 3.0
- DailyTimeKeepingJob 3.0
- DeleteTimeKeepingJob 3.0
- HistoryDelete 3.0
- HistoryETL 3.0
- HostConfigCheck 3.0
- HourlyTimeKeepingJob 3.0
- MinimalVersionCheck 3.0
- ParallelRun 3.0
- SampleRunJobs 3.0
- SampleTimeKeepingJob 3.0

Outline Code Viewer

Designer Code

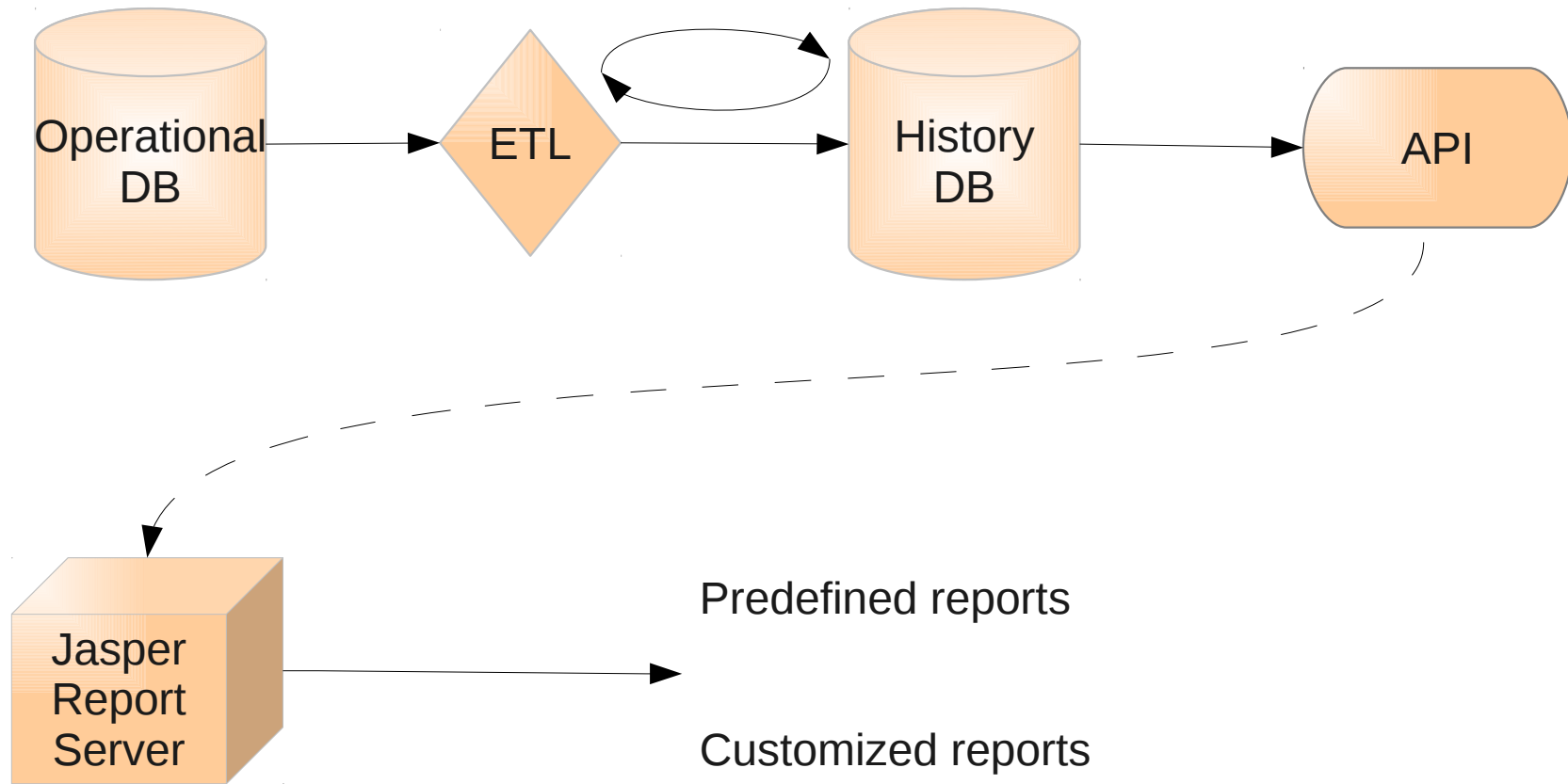
Job(HistoryETL 3.0) Contexts(Job Histor) Component Run (Job HistoryETL) Talend Exchange Problems Job Hierarchy Progress

0 errors, 0 warnings, 0 infos

Description	Resource
Errors (0 items)	
Warnings (0 items)	
Infos (0 items)	

tContextLoad_1
 tFileDelete_1
 tFileInputProperties_1
 tJDBCCConnection_1 (sample_ovirt_histor)
 tJDBCCConnection_2 (engine)
 tJDBCCConnection_3 (hourly_ovirt_histor)
 tJDBCCConnection_4 (daily_ovirt_histor)
 tJDBCCConnection_5 (delete_ovirt_histor)

DWH & 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

Active Virtual Machines by OS (BR18)

* Show Deleted Entities? Yes

* Data Center

* Cluster

* VM Type

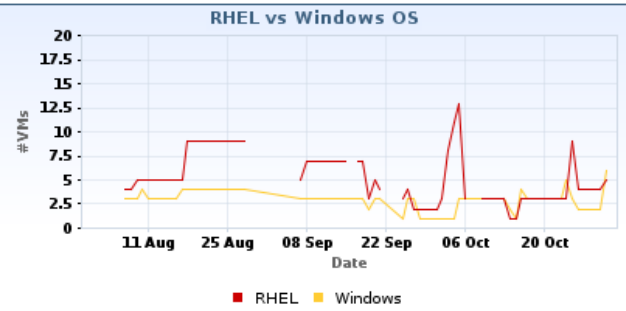
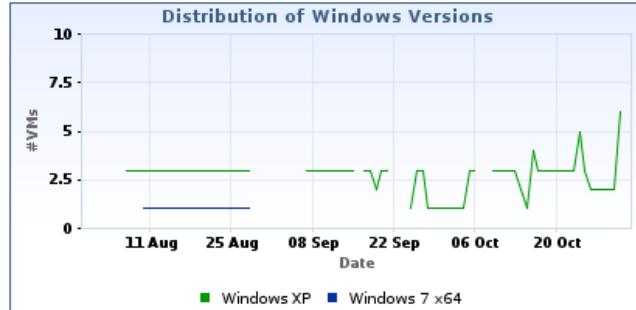
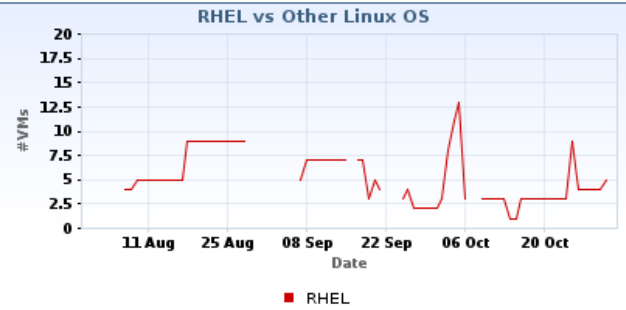
* Period Range

* Select Month

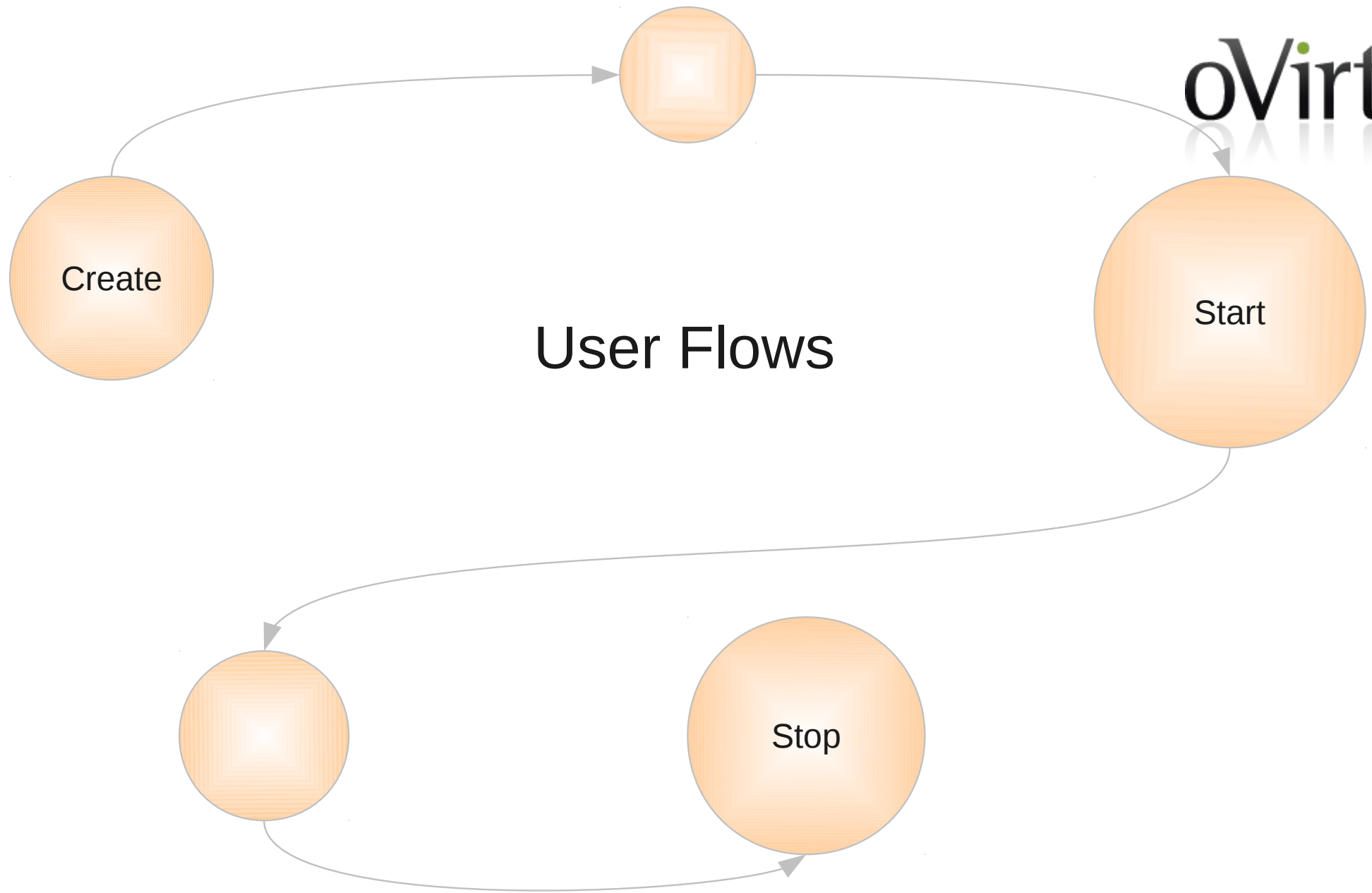
* Start Date

* End Date

Reset



Page 1 of 1



Create VM From Template



New Server Virtual Machine

General

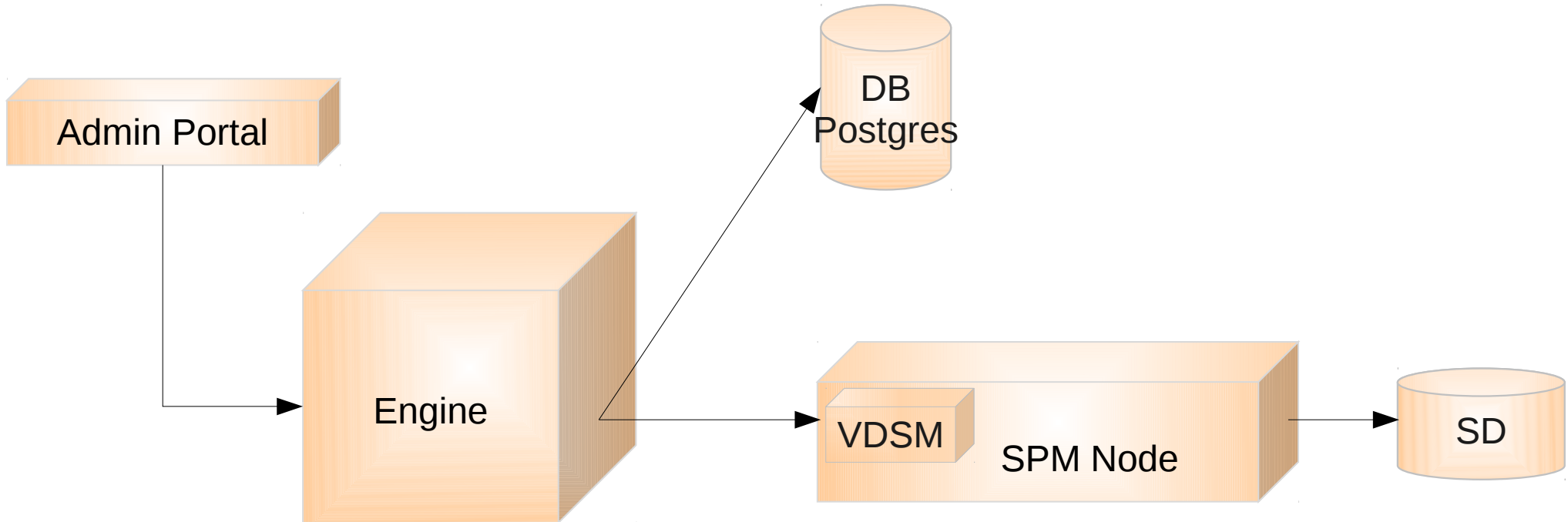
- Data Center: demo-dc-32
- Host Cluster: cluster-32
- Name: rhel63_demo_vm
- Description: Demo VM
- Based on Template: rhel63_demo
- Memory Size: 512 MB
- Total Virtual CPUs: 2
- Advanced Parameters
 - Cores per Virtual Socket: 1
 - Virtual Sockets: 2
- Operating System: Red Hat Enterprise Linux 6.x x64

OK Cancel

Last Message: ✓ 2012-Oct-30, 10:45:18 Creation of Template rhel63_demo from VM demo-vm has been completed.

VM	CPU	Network	Display	Status
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down
...	0%	0%		Down

Create VM From Template



Run a VM



oVirt Open Virtualization Manager

Logged in user: **vdadmin** | [Configure](#) | [Guide](#) | [About](#) | [Sign Out](#)

Search: Vms: [x] [star] [magnifying glass]

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

New Server New Desktop Edit Remove Run Once [play] [stop] [refresh] Migrate Cancel Migration Make Template Export Change CD Assign Tags Guide Me 1-13 [left] [right]

Name	Host	IP Address	Cluster	Data Center	Memory	CPU	Network	Display	Status
demo-vm			cluster-32	demo-dc-32	0%	0%	0%		Down
demo-vm-2			Default	Default	0%	0%	0%		Down
linux-vm			cluster-32	demo-dc-32	0%	0%	0%		Down
nw-filter-vm-1			cluster-31	dc-31	0%	0%	0%		Down
nwfilter-vm-32-1	zeus02		cluster-32	demo-dc-32	0%	0%	0%	Spice	Up
vm-1-dc-30-cluster-3			cluster-30-on-dc-30	dc-30-with-various-cl	0%	0%	0%		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	

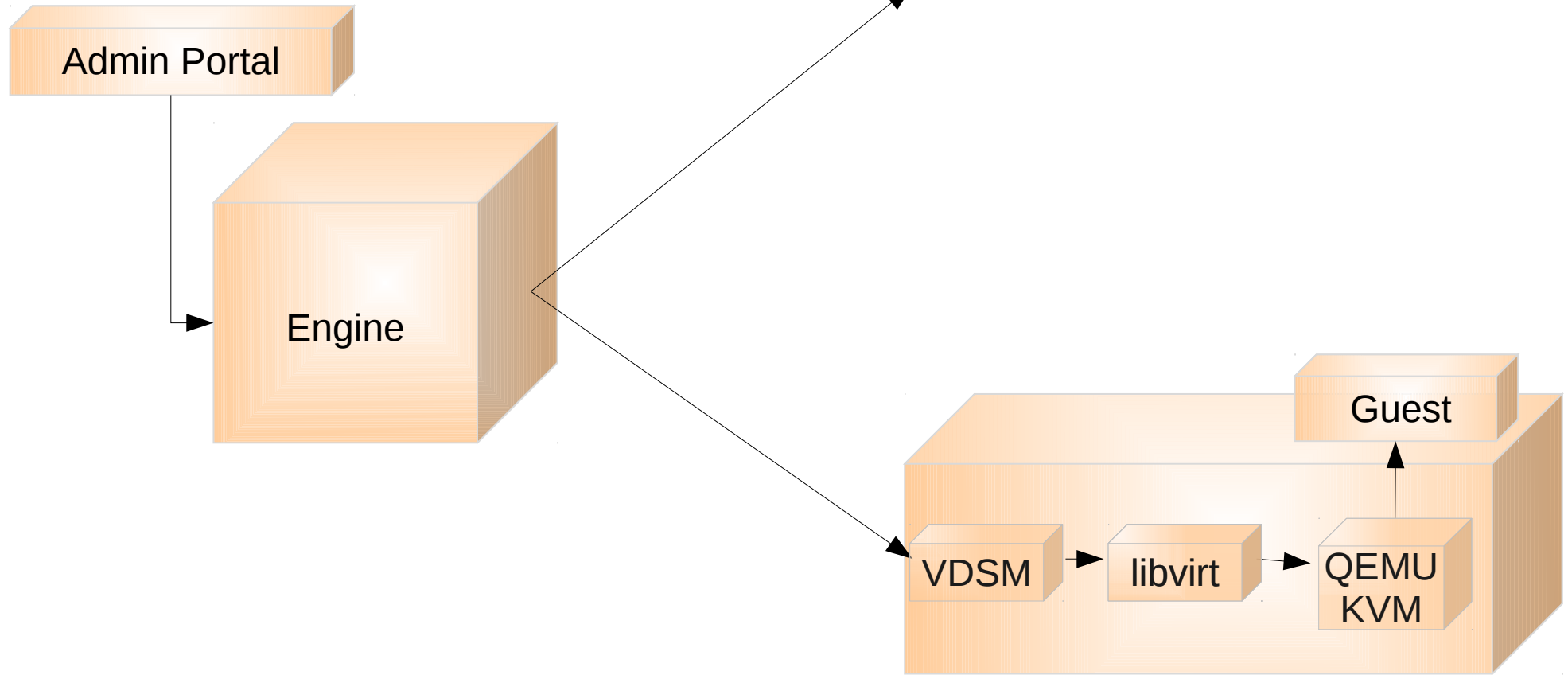
Bookmarks

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



What are 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.

Use Hooks



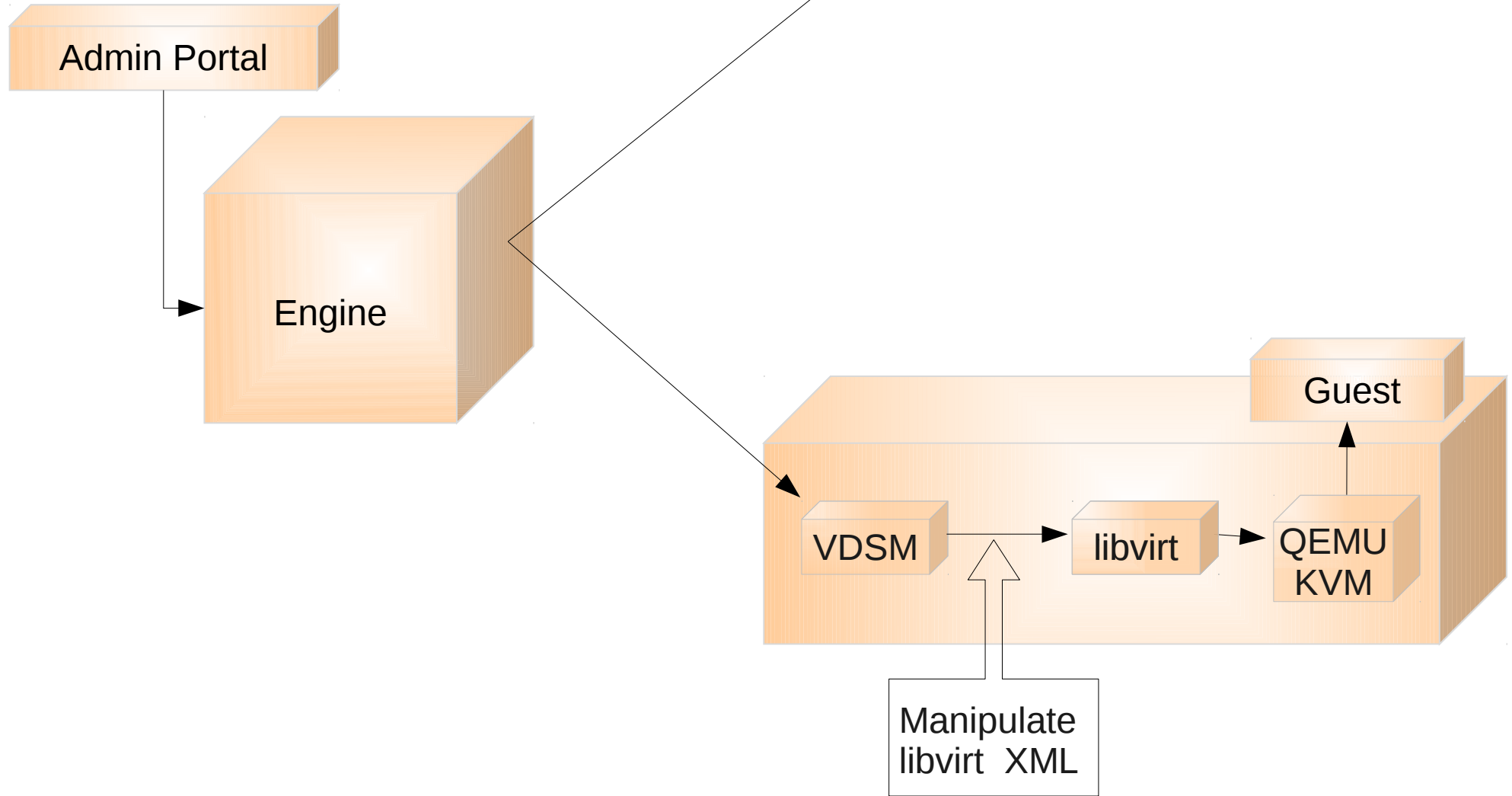
The screenshot shows the oVirt Open Virtualization Manager interface. A dialog box titled "Edit Desktop Virtual Machine" is open, displaying the "Custom Properties" tab. The dialog contains a list of properties:

- General: sndbuf (dropdown), 100 (text input), +, -
- Initial Run: (empty)
- Console: Please select a key... (dropdown), +, -
- Host: (empty)
- Resource Allocation: (empty)
- Boot Options: (empty)
- Custom Properties: (empty)

The background interface shows a search bar, a tree view with "System" selected, and a table of virtual machines with columns for CPU, Network, Display, and Status. The status of all VMs is "Down".

Start VM With Hooks

Choose a host on which to start the VM



Connect to Guest



oVirt Engine

Logged in user: masayag | Sign Out | Guide | About

Basic

Extended

Virtual Machines

Templates

Resources

New Server | New Desktop | Edit | Remove | Run Once | Change CD | Make Template



rhev-backend-gerrit



sonar (sonar.eng.lab.tlv.redhat.com)



```
sonar:0 - Press shift+f12 to Release Cursor

Red Hat Enterprise Linux Server release 6.2 (Santiago)
Kernel 2.6.32-220.el6.x86_64 on an x86_64

sonar login: _
```

General

Network Interfaces

Virtual Disks

Snapshots

Permissions

Events

Applications

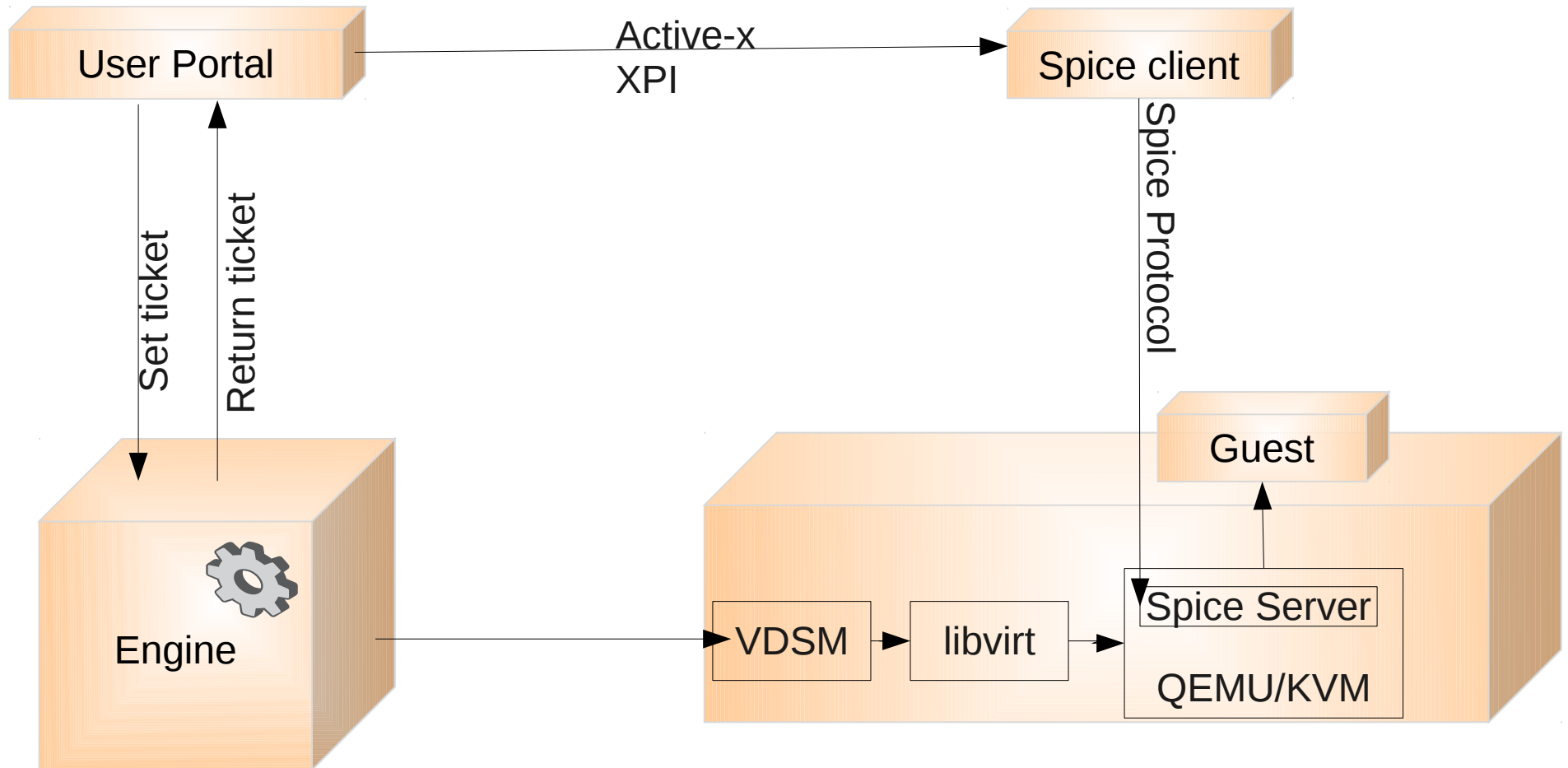
Monitor

Name: sonar
Description: sonar.eng.lab.tlv.redhat.com
Template: Blank
Operating System: Red Hat Enterprise Linux 6.x x64
Default Display Type: Spice
Priority: Low

Defined Memory: 4096 MB
Physical Memory Guaranteed: 1024 MB
Number of CPU Cores: 4 (4 Socket(s), 1 Core(s) per Socket)
Highly Available: false
USB Policy: Enabled
Resides on Storage Domain: RHEV-TLV-STORAGE-FC

Origin: RHEV
Run On: Any Host in Cluster
Custom Properties: Not-Configured

Connect To Guest

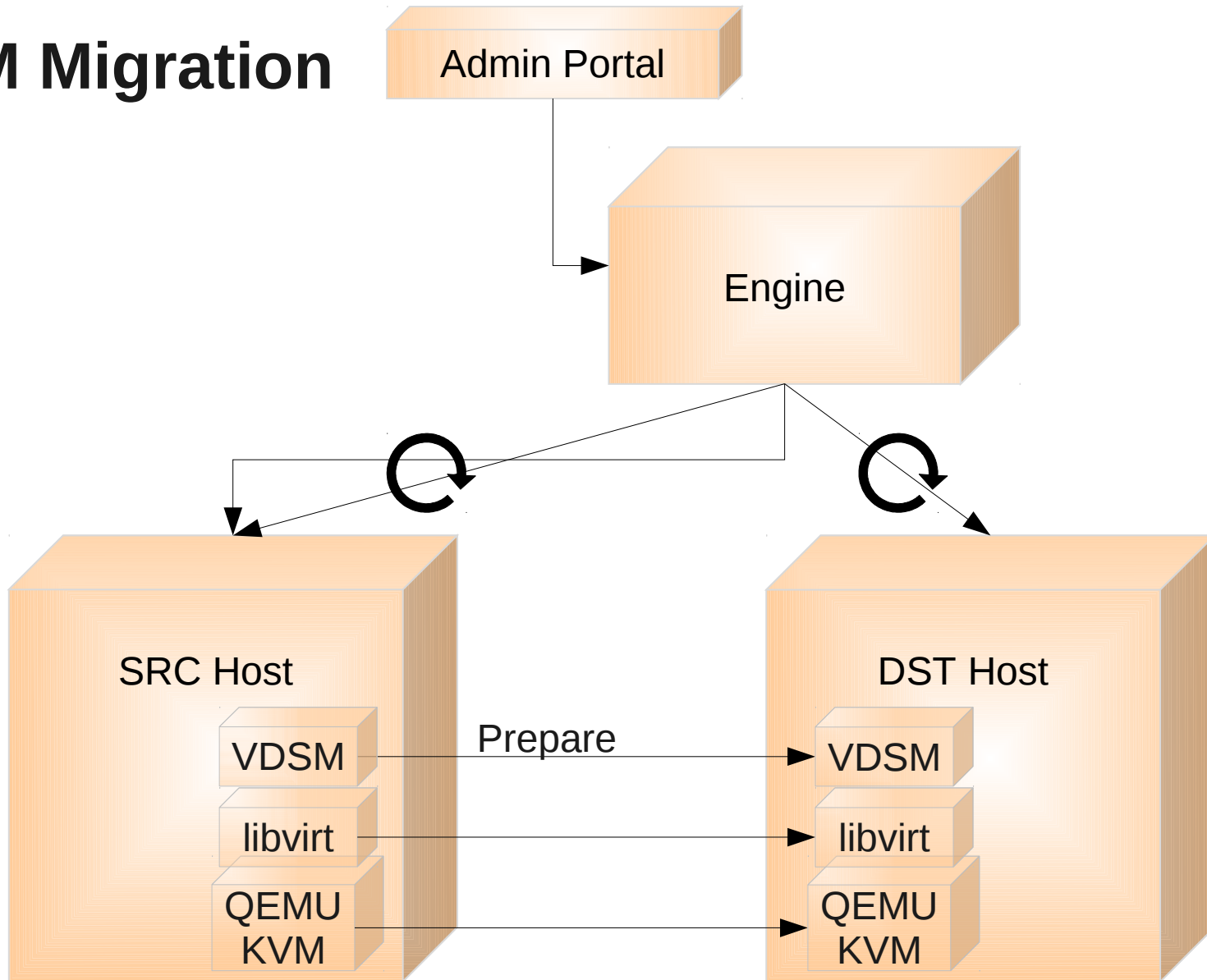


VM Migration



The screenshot displays the oVirt Open Virtualization Manager interface. The top navigation bar includes the oVirt logo, the text "Open Virtualization Manager", and a user login status "Logged in user: vdcadmin | Configure | Guide | About | Sign Out". Below this is a search bar with "Vms:" and a magnifying glass icon. The main interface features a tree view on the left and a central table of Virtual Machines. The "Virtual Machines" tab is active, showing a table with columns: Name, Host, IP Address, Cluster, Data Center, Memory, CPU, Network, Display, and Status. A "Migrate" button is circled in red in the toolbar above the table. A modal dialog box titled "Migrate Virtual Machine(s)" is open in the foreground, containing two radio buttons: "Select Host Automatically" (selected) and "Select Destination Host". Below these is a "Host:" label and a dropdown menu showing "modi04". A "Close" button is at the bottom right of the dialog. The bottom status bar shows a message: "Last Message: 2012-Oct-30, 10:53:51 VM nwfilter-vm-32-1 was started by vdcadmin (Host: zeus02)." and icons for Alerts (1), Events, and Tasks (1).

VM Migration



Summary

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

Get Involved!

- 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
- IRC
 - [#ovirt](https://irc.oftc.net/#ovirt) on irc.oftc.net

oVirt

THANK YOU !

<http://www.ovirt.org>