

Expanding oVirt's horizons

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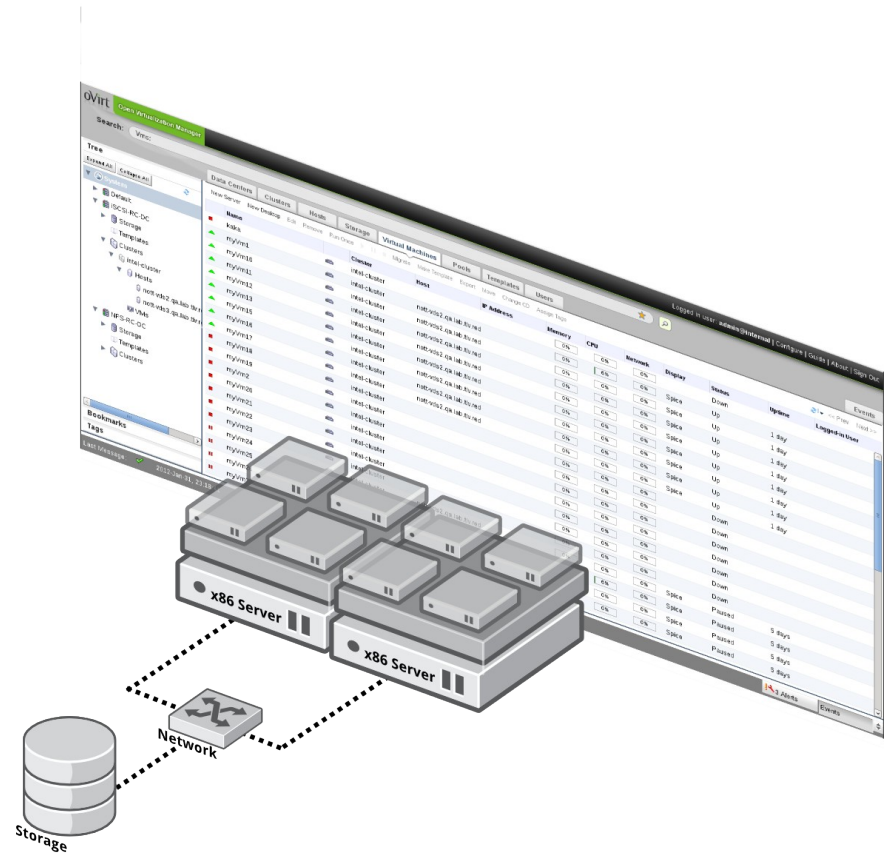
Agenda

- Small oVirt Introduction
- Part 1 – Consuming oVirt
 - Introduction
 - oVirt API
 - oVirt SDK
- Part 2 – Extending oVirt
 - VDSM hooks
 - Scheduling API
 - UI Plugin API

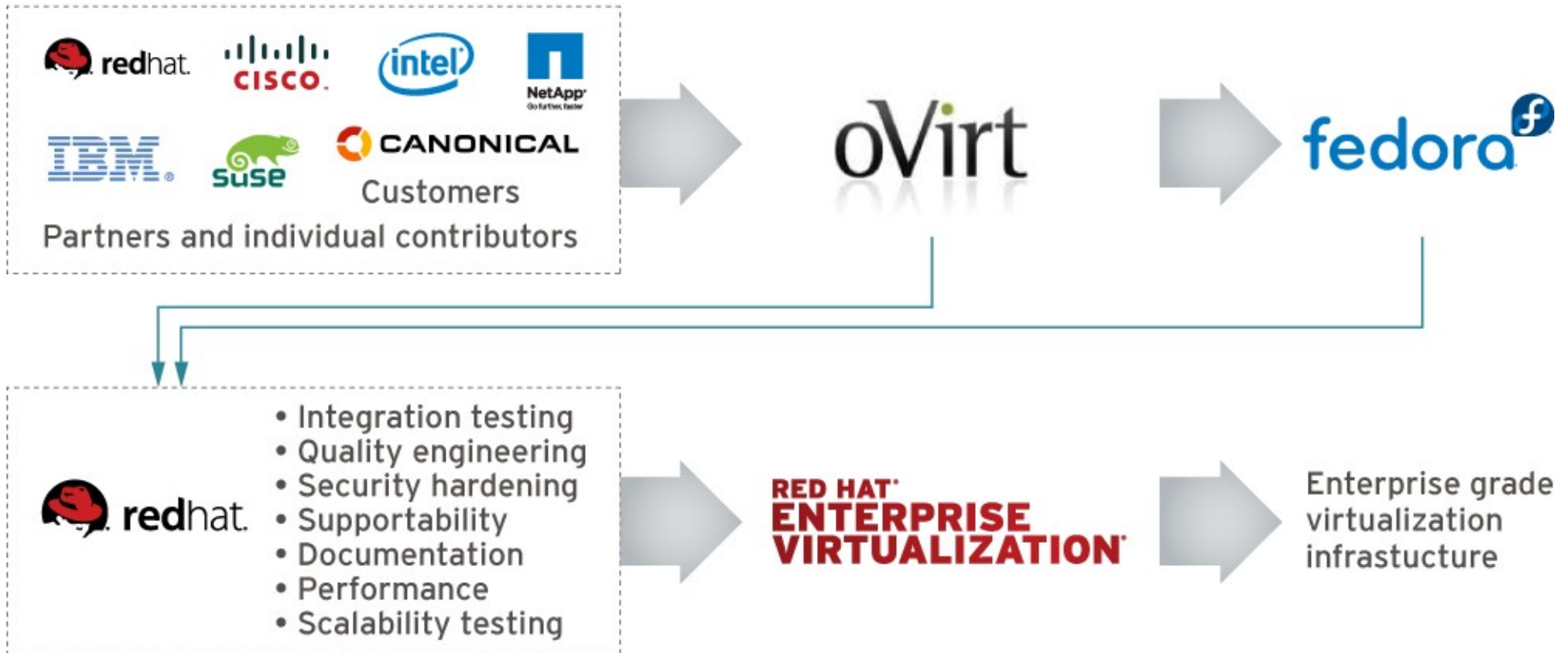
What is oVirt?



- Large scale, centralized management for server and desktop virtualization
- Based on leading performance, scalability and security infrastructure technologies
- Focus on KVM for best integration/performance
- Provides an open source alternative to vCenter/vSphere



Who is behind it



oVirt – Web admin



oVirt Open Virtualization Manager

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

Search: Vms:

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

New Server New Desktop Edit Remove Run Once Migrate Cancel Migration Make Template Export Change CD Assign Tags Guide Me 1-27

System	Name	Host	IP Address	Cluster	Data Center	Memory	CPU	Network	Display	Status
				tlv-lab-cl	tlv-lab	0%	0%	0%		Down
				tlv-lab-cl	tlv-lab	0%	0%	0%		Down
				tlv-lab-cl	tlv-lab	0%	0%	0%		Down
	mike-bondTest			tlv-lab-cl	tlv-lab	0%	0%	0%		Down
	mike-ovirt			tlv-lab-cl	tlv-lab	0%	0%	0%		Down
	mike-testday	saturn-vdsa		tlv-lab-cl	tlv-lab	8%	1%	0%	SPICE	Up
	mike-testday2	saturn-vdsc		tlv-lab-cl	tlv-lab	10%	0%	0%	SPICE	Up
	mike-vdsm			tlv-lab-cl	tlv-lab	0%	0%	0%		Down
	ml2-manager			tlv-lab-cl	tlv-lab	0%	0%	0%		Down
	ml2-network			tlv-lab-cl	tlv-lab	0%	0%	0%		Down
	rhea-vdsa	saturn-vdsa		tlv-lab-cl	tlv-lab	16%	1%	0%	SPICE	Up
	titan-cmpa			tlv-lab-cl	tlv-lab	0%	0%	0%		Down
	titan-cmpb			tlv-lab-cl	tlv-lab	0%	0%	0%		Down
	titan-rdo-multi			tlv-lab-cl	tlv-lab	0%	0%	0%		Down
	titan-rhos-4	saturn-vdsb	192.168.::	tlv-lab-cl	tlv-lab	66%	8%	0%	SPICE	Up

Bookmarks

Tags

Last Message: 2014-Jan-26, 14:36 User admin@internal logged in. Alerts (4) Events Tasks (0)

Part 1

Consuming oVirt

What can I do via API?

- Access it via REST/SDK/Shell
- Infrastructure configuration
 - Host configuration and management
 - Network and storage configuration
- Virtual machine (VM) configuration and management
 - Networking for the Guest, Virtual disks, VM properties
- User management
- Advanced operations not available in the GUI
- And much more ...

API methods



REST

`https://host:port/api/vms`

Returns:

- XML/JSON/...

```
<vm id="aee0dbce-1591-44d4-9052-
c2209b3e45b8" href="/api/vms/aee0dbce-
1591-44d4-9052-c2209b3e45b8">
  <name>Austin</name><actions>
    <link rel="shutdown"
href="/api/vms/aee0dbce-1591-44d4-
9052-c2209b3e45b8/shutdown"/>
    <link rel="start"
href="/api/vms/aee0dbce-1591-44d4-
9052-c2209b3e45b8/start"/>
  .....
```

SDK (Python/Java)

`api.vms.list()`

Returns:

- list of VM objects

Shell

`list vms`

Returns:

- Formatted text

```
id                :
18df94a7-048f-4306-9cfd-
a74e8ea3b907
name              : Boston
description      : Main
service for Boston
cluster-id       :
99408929-82cf-4dc7-a532-
9d998063fa95
cpu-topology-cores : 2
cpu-topology-sockets : 1
```


- All APIs integrate through the oVirt engine
- All types of APIs are based on the web services interface
 - REST as the core
 - SDK on top of REST
 - Shell implemented on top the Python SDK
- Backward compatibility
- Secure access
 - Session-based access

oVirt REST API

HTTP methods in REST

- GET

Requests a representation of the specified resource. Requests using GET (and a few other HTTP methods) "SHOULD NOT have the significance of taking an action other than retrieval."

- POST

Submits data to be processed to the identified resource. The data is included in the body of the request.

- PUT

Uploads a representation of the specified resource

- DELETE

Deletes the specified resource

Media types

- XML

```
<vms>
  <vm id="xxx">
    <name>yyy</name>
  </vm>
</vms>
```

- JavaScript Object Notation (JSON)

```
{
  "vms" : [
    "vm" : {
      "id" : "xxx",
      "name" : "yyy" } ]
}
```

oVirt-API Example – Collection



- To list all VM resources, use GET

```
GET http(s)://server:port/api/vms
```

- To create a VM resource, use POST

```
POST http(s)://server:port/api/vms
```

```
<vm>...</vm>
```

oVirt-API Example – Resource



- To retrieve a specific VM resource, use GET
`GET http(s)://server:port/api/vms/{ID}`
- To update the VM resource, use PUT
`PUT http(s)://server:port/api/vms/{ID}`
`<vm><name>new_name</name></vm>`
- To remove the VM resource, use DELETE
`DELETE http(s)://server:port/api/vms/{ID}`

RSDL - RESTful Services Description Language



- `http://server:port/api?rSDL`
- Describes parameter constraints
- Easy way to understand
 - How to create the resource
 - What actions are available on a collection
 - What parameters to pass
 - Mandatory/optional/read-only
 - Type
 - Overloads

oVirt SDK

- Mainly used for integration or advanced automation
- Object oriented
- Current bindings
 - Java - <http://www.ovirt.org/Java-sdk>
 - Python - <http://www.ovirt.org/Python-sdk>
 - libgovirt (GObject wrapper for the oVirt REST API) - <https://github.com/GNOME/libgovirt>
 - rbovirt – ruby binding for the oVirt REST API - <https://github.com/abenari/rbovirt>

- Complete protocol abstraction
- Full compliance with the oVirt API architecture
- Self descriptive, intuitive and easy to use
- Auto-generated
- Auto-completion*

* On supported environments

oVirt SDK – Example: Basics



```
from ovirtsdk.api import API
```

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

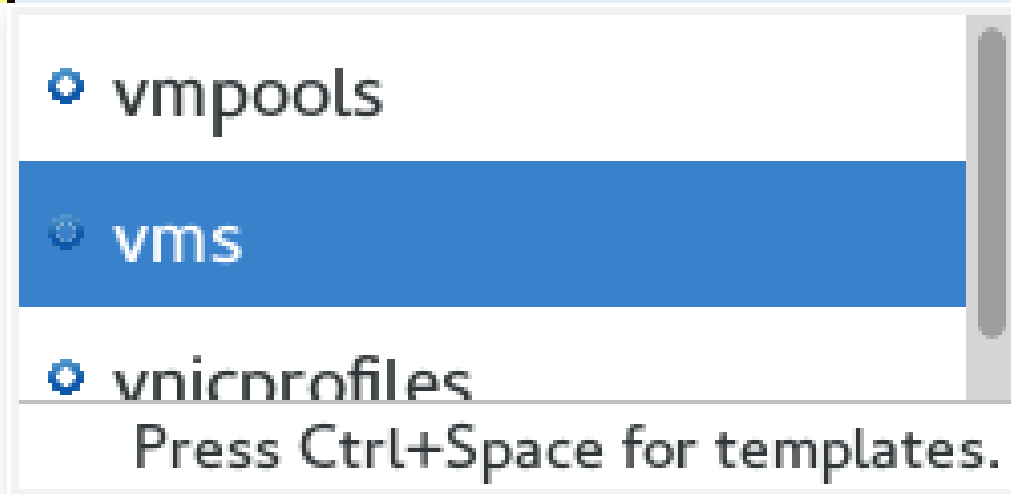
oVirt SDK – Example: Basics



```
from ovirtsdk.api import API
```

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

```
api.v
```



oVirt SDK – Example: Basics



```
from ovirtsdk.api import API
```

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

```
api.vms.
```

A screenshot of a code completion menu for the `api.vms.` attribute. The menu is a blue-bordered box with a white background and a vertical scrollbar on the right. It contains four items, each with a blue circular icon containing a white letter 'M' to its left:

- `add(vm, correlation_id, expect_...)`
- `context()`
- `get(name, id)`
- `list(query, case_sensitive, ma...`

At the bottom of the menu, there is a grey horizontal bar and the text "Press Ctrl+Space for templates."

oVirt SDK – Example: Adding a VM **oVirt**

```
from ovirtsdk.api import API
from ovirtsdk.xml import params

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

cluster = api.clusters.get(name='Default')
template = api.templates.get(name='RHEL7_0')
param = params.VM(name='RHEL_VM1',
                  cluster=cluster,
                  template=template,
                  memory=4*1024**3)
vm1 = api.vms.add(param)
```

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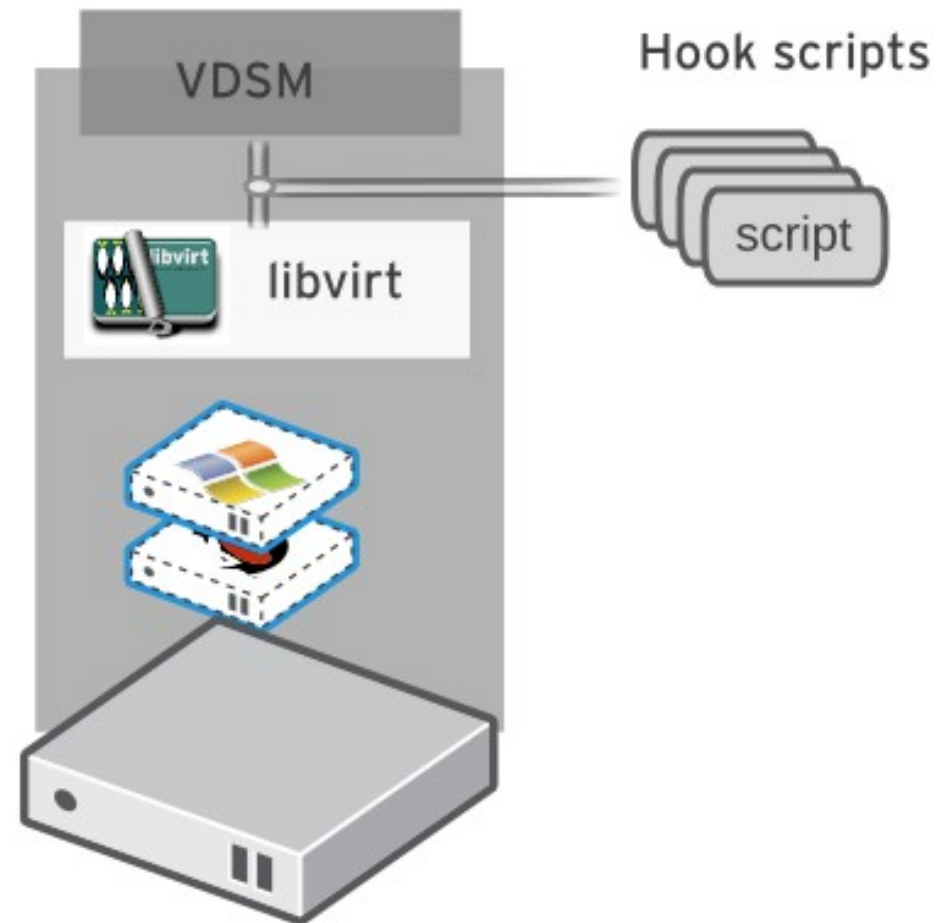
Part 2

Extending oVirt

VDSM Hooks

Hooks

- VDSM manages a hypervisor
- “Hook” mechanism for customization
 - Allows administrator to define scripts to modify VM/VDSM operation
 - Extend or modify VM configuration
 - Run different system scripts



- Hook scripts are called at specific events
- Hooks can modify a virtual machines XML definition
- Hooks can run system commands – eg. Apply firewall rule to VM
- More info:
 - http://www.ovirt.org/Vdsm_Hooks
 - http://www.ovirt.org/VDSM-Hooks_Catalogue

- Lifecycle events where you can apply hooks
 - VDSM (management agent) start
 - VDSM stop
 - VM start
 - VM stop
 - VM migration in/out
 - VM Pause
 - VM Continue
 - VM Hibernate
 - VM resume from hibernate
 - VM set ticket
 - NIC hotplug / hotunplug
 - On host networking configuration change

Hook Example – VM level

```
import os
import hooking

def removeMacSpoofingFilter(interface):
    for filterElement in interface.getElementsByTagName('filterref'):
        if isMacSpoofingFilter(filterElement):
            interface.removeChild(filterElement)

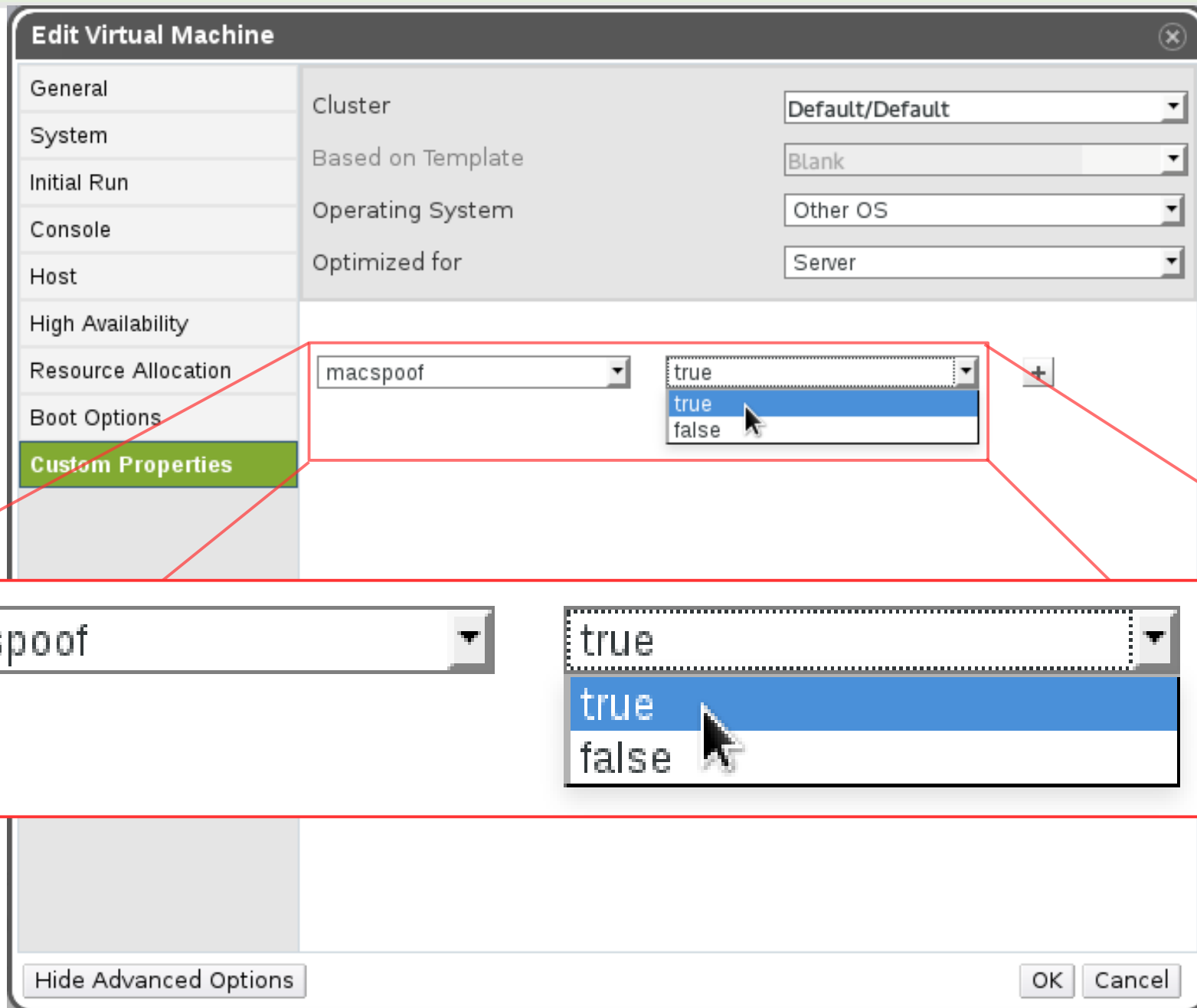
def isMacSpoofingFilter(filterElement):
    """
    Accept a filter DOM element
    and checks if it's a mac spoofing filter
    """
    filterValue = filterElement.getAttribute('filter')
    return filterValue == 'vdsm-no-mac-spoofing'

if __name__ == '__main__':
    if hooking.tobool(os.environ.get('macspooft')):
        domxml = hooking.read_domxml()

        for interface in domxml.getElementsByTagName('interface'):
            removeMacSpoofingFilter(interface)

        hooking.write_domxml(domxml)
```

Hook Example – VM level



Hook Example – Device level

```
import os
import hooking

def removeMacSpoofingFilter(interface):
    for filterElement in interface.getElementsByTagName('filterref'):
        if isMacSpoofingFilter(filterElement):
            interface.removeChild(filterElement)

def isMacSpoofingFilter(filterElement):
    """
    Accept a filter DOM element
    and checks if it's a mac spoofing filter
    """
    filterValue = filterElement.getAttribute('filter')
    return filterValue == 'vdsm-no-mac-spoofing'

if __name__ == '__main__':
    if hooking.tobool(os.environ.get('ifacemacspoof')):
        domxml = hooking.read_domxml()
        interface, = domxml.getElementsByTagName('interface')
        removeMacSpoofingFilter(interface)
        hooking.write_domxml(domxml)
```

Hook Example – Device level

VM Interface Profile [Close]

Network:

Name:

Description:

QoS:

Port Mirroring:

- To write a hook you need:
 - Hook script(s)
 - README
 - What the hook does
 - How to configure the system for the hook
 - How to use the hook
 - Sudoers file*
 - Makefile to install hook
 - Hooks usually installed in `/usr/libexec/vdsm/hooks`

* In case your hook needs sudo

Scheduling API

- The need - **construct user-defined scheduling policy**

Re: [Users] How to define max number of running VMs on a host?

....

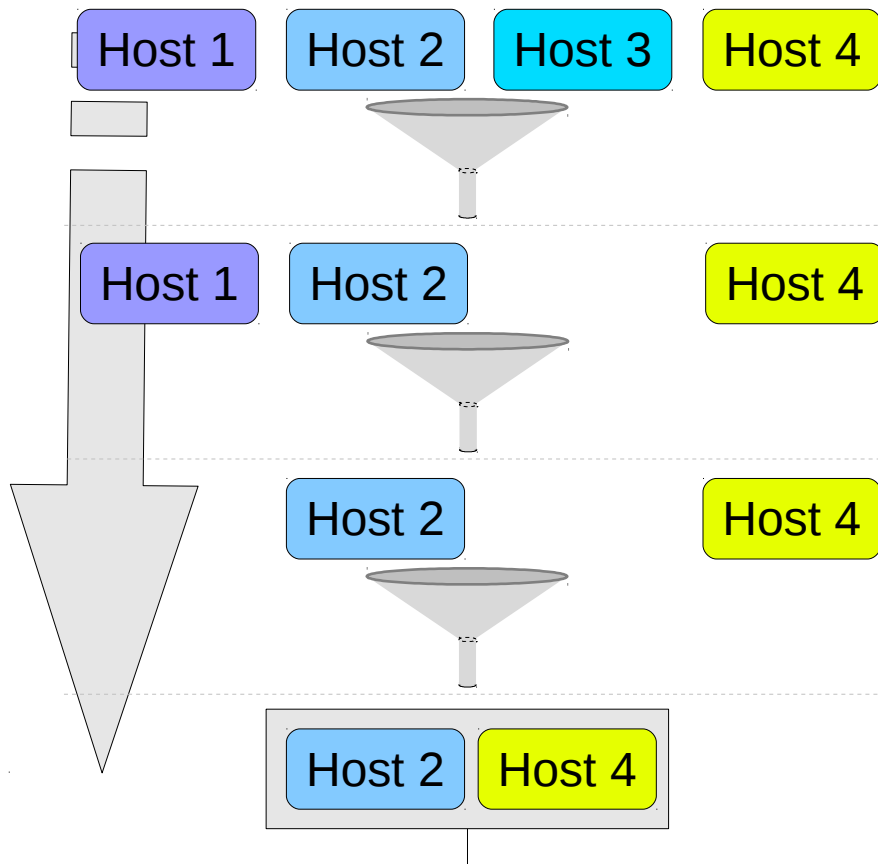
I have 4 graphic workstations with 3 graphic cards on each. I wanna passthrough graphic cards to the VMs one by one, since one workstation has only 3 cards, I must limit the number of running VM on a host to 3.

Old Scheduling Mechanism

- Executes the selected distribution algorithm on the Cluster (by CPU only)
 - Evenly Distributed
 - Power Saving
- Scheduling
 - Selects a host to run/migrate VM
- Load balancing
 - Selects a VM to migrate and Host to migrate to
- No way to extend by users

- Scheduling policy consists of
 - Filter modules
 - Weight modules
 - Load balancing module
- External modules developed in Python
- Existing (legacy) logic translated to modules
- Set the desired policy for a cluster
- More info:
 - <http://goo.gl/senjQA> - Existing policy units catalog
 - http://www.ovirt.org/External_Scheduler_Samples

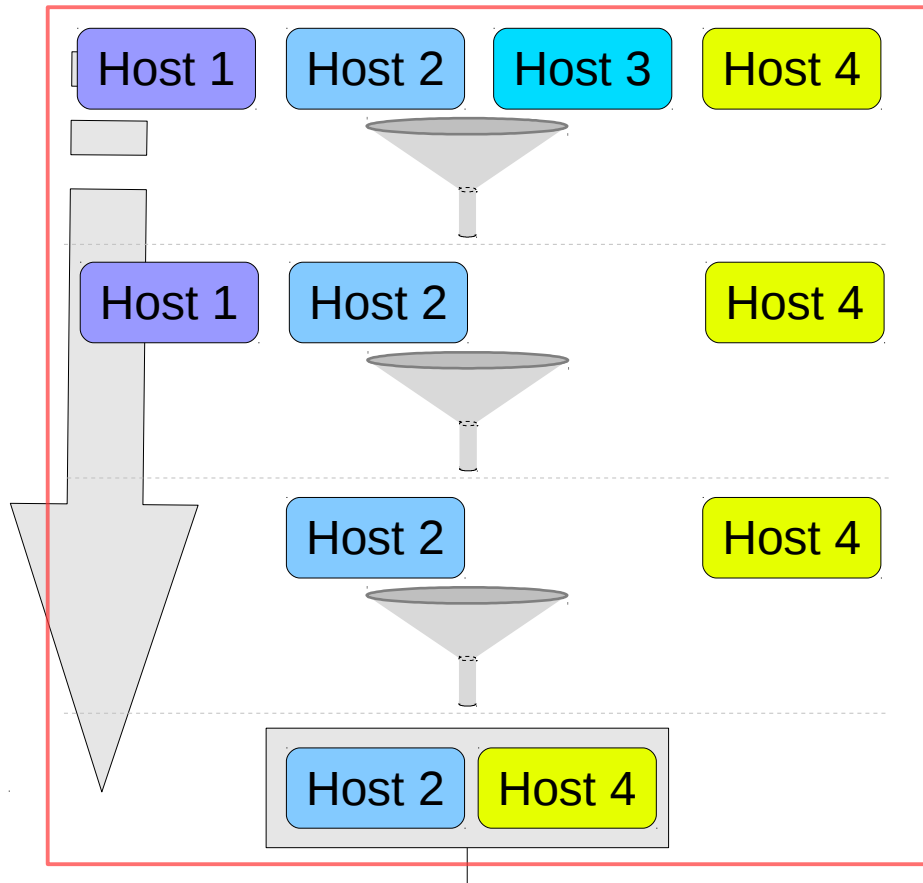
New Scheduling Mechanism



	func 1	func 2	sum
Factor	5	2	
Host 2	10	2	54
Host 4	3	12	39*

*Host 4 sum: $3*5+12*2 = 39$

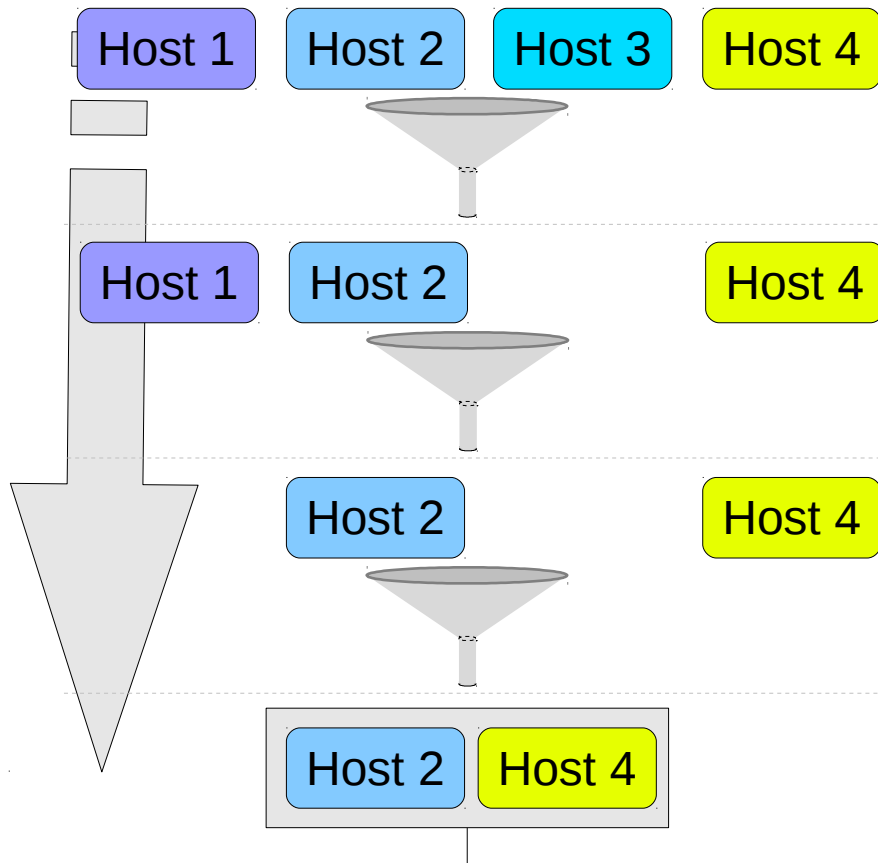
Filter Module



	func 1	func 2	sum
Factor	5	2	
Host 2	10	2	54
Host 4	3	12	39*

*Host 4 sum: $3*5+12*2 = 39$

Weight Module



	func 1	func 2	sum
Factor	5	2	
Host 2	10	2	54
Host 4	3	12	39*

*Host 4 sum: $3*5+12*2 = 39$

- Logical unit which filters out hosts
 - Clear cut logic
 - Easy to write and maintain
 - Chained up-dependently to allow complete filtering
 - Allows custom parameters
- Existing logic (pin-to-host, memory limitations, etc.) is translated into filters
- External filters written in python can be loaded into engine

Let's go back to the example



Re: [Users] How to define max number of running VMs on a host?

....

I have 4 graphic workstations with 3 graphic cards on each. I wanna passthrough graphic cards to the VMs one by one, since one workstation has only 3 cards, I must limit the number of running VM on a host to 3.

Filter: filters out hosts with number running of vms > 3

Filter Example

```
class max_vms():
    '''returns only hosts with less running vms then the maximum'''

    #What are the values this module will accept, used to present
    #the user with options
    properties_validation = 'maximum_vm_count=[0-9]*'

    def do_filter(self, hosts_ids, vm_id, args_map):
        #open a connection to the rest api
        try:
            connection = API(url='http://host:port',
                             username='user@domain', password='')
        except BaseException as ex:
            #letting the external proxy know there was an error
            print >> sys.stderr, ex
            return

        #get our parameters from the map
        maximum_vm_count = int(args_map.get('maximum_vm_count', 100))

        #get all the hosts with the given ids
        engine_hosts = \
            connection.hosts.list(
                query=" or ".join(["id=%s" % u for u in hosts_ids]))

        #iterate over them and decide which to accept
        accepted_host_ids = []
        for engine_host in engine_hosts:
            if(engine_host and
                engine_host.summary.active < maximum_vm_count):
                accepted_host_ids.append(engine_host.id)
        print accepted_host_ids
```

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        print accepted_host_ids
```

- External process is scanning directory `/usr/share/ovirt-scheduler-proxy/plugins` for python source files
- Analyze for filter / weight / balance functions
- Cache results
- Expose source files as external policy units

Cluster Policy Management



Configure

Roles

System Permissions

Cluster Policies

New Edit Copy Remove

Name
Evenly_Distributed
None
Power_Saving
Copy_of_None
max_vms

Attached Clusters

Edit Cluster Policy

Name Description

Filter Modules Drag or use context menu to make changes ?

Enabled Filters	Disabled Filters
<input type="text"/>	<input type="text" value="(EXT)dummy"/>
<input type="text" value="CPU"/>	<input type="text" value="(EXT)example"/>
<input type="text" value="Network"/>	
<input type="text" value="(EXT)max_vms"/>	

Weights Modules Drag or use context menu to make changes ?

Enabled Weights & Factors	Disabled Weights
<input type="text" value="1"/> <input type="text" value="(EXT)even_vm_distribution"/>	<input type="text" value="None"/>
	<input type="text" value="(EXT)dummy"/>
	<input type="text" value="PowerSaving"/>
	<input type="text" value="EvenDistribution"/>

Load Balancer ?

(EXT)

Properties ?

OK Reset Cancel

Cluster Policy Management



Edit Cluster Policy

Name: max_vms Description:

Filter Modules Drag or use context menu to make changes ?

Enabled Filters: CPU, Network, (EXT) max_vms

Disabled Filters: (EXT) dummy, (EXT) example

Filter Modules Drag or use context menu to make changes ?

Enabled Filters: CPU, Network, (EXT) max_vms

Disabled Filters: (EXT) dummy, (EXT) example

Properties ?

maximum_vm_count: 3

OK Reset Cancel

Cluster Policy Management



Configure

Roles

System Permissions

Cluster Policies

New Edit Copy Remove

Name
Evenly_Distributed
None
Power_Saving
Copy_of_None
max_vms

Edit Cluster Policy

Name: max_vms Description:

Filter Modules Drag or use context menu to make changes ?

Enabled Filters	Disabled Filters
CPU	(EXT)dummy
Network	(EXT)example
(EXT)max_vms	

Weights Modules Drag or use context menu to make changes ?

Enabled Weights & Factors	Disabled Weights
1 (EXT)even_vm_distribution	None
	(EXT)dummy
	PowerSaving
	EvenDistribution

maximum_vm_count 3 + -

OK Reset Cancel

Cluster Policy Management



The screenshot displays the 'Edit Cluster Policy' dialog in oVirt. The left sidebar shows the 'Configure' menu with 'Cluster Policies' selected. The main area shows the policy configuration for 'max_vms'. The 'Filter Modules' section is active, showing 'Enabled Filters' (CPU, Network, (EXT)max_vms) and 'Disabled Filters' ((EXT)dummy, (EXT)example). The 'Weights Modules' section is partially visible, showing 'Enabled Weights & Factors' and 'Disabled Weights'. A red box highlights the 'Load Balancer' section, which includes a dropdown menu set to 'vm_balance' and '(EXT)'. Below this, the 'Properties' section shows 'maximum_vm_count' set to 3. At the bottom right, there are 'OK', 'Reset', and 'Cancel' buttons.

Configure

- Roles
- System Permissions
- Cluster Policies**

New Edit Copy Remove

Name

- Evenly_Distributed
- None
- Power_Saving
- Copy_of_None
- max_vms

Edit Cluster Policy

Name: max_vms Description: []

Filter Modules Drag or use context menu to make changes ?

Enabled Filters

- CPU
- Network
- (EXT)max_vms

Disabled Filters

- (EXT)dummy
- (EXT)example

Weights Modules Drag or use context menu to make changes ?

Enabled Weights & Factors

Disabled Weights

Load Balancer ?

vm_balance (EXT)

Load Balancer ?

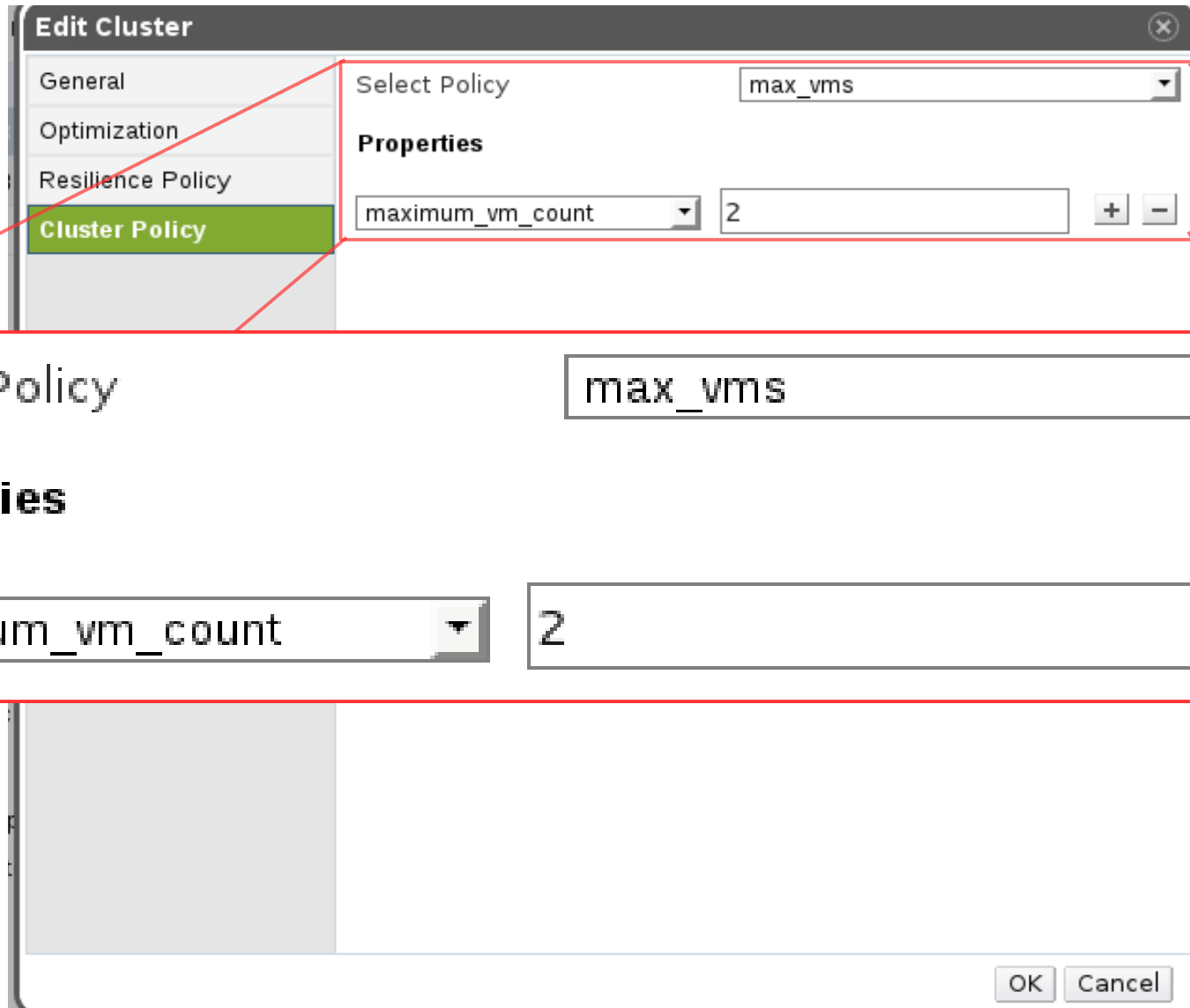
vm_balance (EXT)

Properties ?

maximum_vm_count 3 + -

OK Reset Cancel

Apply Cluster Policy



UI Plugins

- Extend oVirt Web Admin user interface
- Included in oVirt 3.2 release

- <http://www.ovirt.org/Features/UIPlugins>
- [http://www.ovirt.org/Tutorial/UIPlugins/Crash Course](http://www.ovirt.org/Tutorial/UIPlugins/CrashCourse)
- http://www.ovirt.org/Features/UIPlugins#Real-world_UI_plugins

Web Admin user interface



oVirt Open Virtualization Manager

Logged in user: admin@internal | [Configure](#) | [Guide](#) | [About](#) | [Sign Out](#)

Search: Host:

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

New Edit Remove Activate Maintenance Configure Local Storage Power Management Assign Tags

Name	Hostname/IP	Cluster	Data Center	Status	Running VMs	Memory	CPU	Network	SPM
dev01aaa	10.34.63.161	MyCluster	MyDC	Up	0	16%	0%	0%	Normal
test	10.34.60.88	Default	Default	Maintenance	0	0%	0%	0%	Normal

Tree

- System
 - Default
 - MyDC
 - Storage
 - Networks
 - Templates
 - Clusters
 - MyCluster
 - Hosts
 - dev01aaa
 - VMs

Bookmarks

Tags

Last Message: 2013-Jan-09, 17:01 User admin@internal logged in. Alerts (5) Events Tasks (0)

- Plugin host page
 - Hosts actual plugin code (JavaScript)
`/usr/share/ovirt-engine/ui-plugins/<resourcePath>/<hostPage>.html`
- Plugin descriptor
 - Meta-data + default configuration
`/usr/share/ovirt-engine/ui-plugins/<descriptorName>.json`
- Plugin user configuration
 - Override default configuration, tweak runtime behavior
`/etc/ovirt-engine/ui-plugins/<descriptorName>-config.json`

Writing plugins

```
<!DOCTYPE html>
<html>
<head>
  <!-- Fetch additional resources if necessary -->
  <script type="text/javascript" src="jquery-min.js"></script>
```

```
<!-- Actual plugin code -->
<script>
  // Access plugin API from iframe context
  var api = parent.pluginApi('myPlugin');

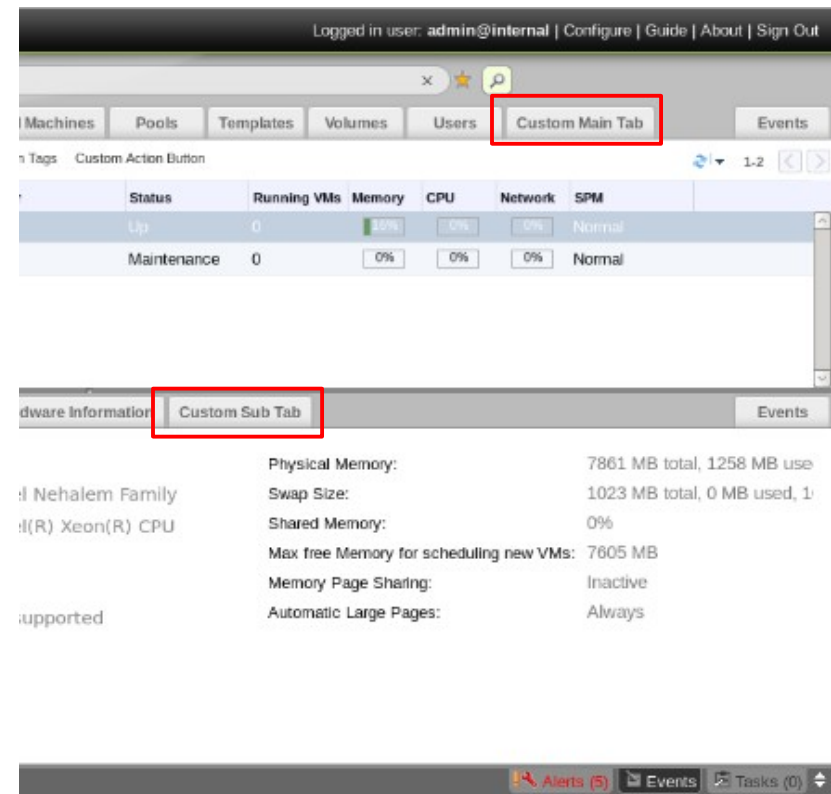
  // Register plugin event handler functions
  api.register({
    UiInit: function() {
      api.addMainTab('Foo Tab', 'foo-tab', 'http://foo.com/');
    }
  });

  // Tell plugin infrastructure that we are ready
  api.ready();
</script>
```

```
</head>
<body> <!-- HTML body is intentionally empty --> </body>
</html>
```

Supported API functions

- `addMainTab(label, historyToken, contentUrl)`
- `addSubTab(entityTypeName, label, historyToken, contentUrl)`
- `setTabContentUrl(historyToken, contentUrl)`
- `setTabAccessible(historyToken, tabAccessible)`



String

Boolean

Number

Object

Supported API functions



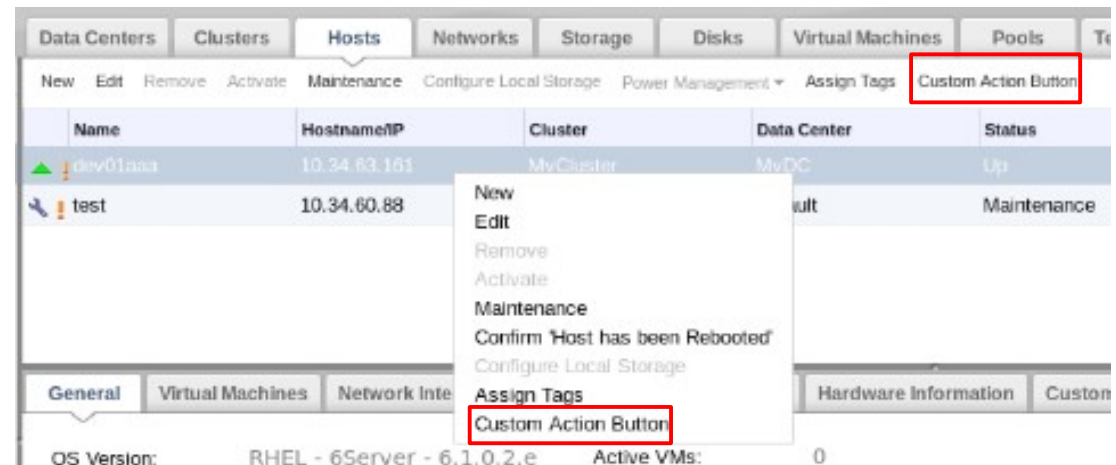
- `addMainTabActionButton(entityTypeName, label, buttonInterface, options)`
 - Can add the button at the toolbar, context menu, or both
- `addSubTabActionButton(mainTabEntityName, subTabEntityName, label, buttonInterface, options)`
- `showDialog(title, dialogToken, contentUrl, width, height)`
- `SetDialogContentUrl(dialogToken, contentUrl)`
- `CloseDialog(dialogToken)`
- `loginUserName()`
- `loginUserId()`

String

Boolean

Number

Object



Supported API events



- UiInit
- {entity}SelectionChange(selectedItems[])
- UserLogin(`userNameWithDomain`, `userId`)
- UserLogout()
- RestApiSessionAcquired(`sessionId`)
- MessageReceived (`data`, `sourceWindow`)
 - allows Plugin HTML to interact with the UI plugin by sending messages via HTML5 `postMessage` API
 - Requires `allowedMessageOrigins` set in Plugin Descriptor file

String

Boolean

Number

Object

- Meta-data + default configuration

`/usr/share/ovirt-engine/ui-plugins/<descriptorName>.json`

```
{
```

```
// A name that uniquely identifies the plugin (required)
```

```
"name": "foo",
```

```
// URL of plugin host page that invokes the plugin code (required)
```

```
"url": "/webadmin/webadmin/plugin/foo/start.html",
```

```
// Default configuration object associated with the plugin (optional)
```

```
"config": { "band": "ZZ Top", "classic": true, "score": 10 },
```

```
// Path to plugin static resources (optional)
```

```
// Used when serving plugin files through PluginResourceServlet
```

```
// This path is relative to /usr/share/ovirt-engine/ui-plugins
```

```
"resourcePath": "foo-files"
```

```
}
```

Main steps in plugin development

- (1) Write plugin descriptor
- (2) Write plugin host page
- (3) See plugin in action



Example: Monitoring UI-Plugin

Author: **René Koch** <rkoch@linuxland.at>

Project Page: <https://github.com/monitoring-ui-plugin>

Monitoring UI-Plugin – VM Status



oVirt Open Virtualization Manager

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Search: vms:status = up

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

New VM Edit Remove Run Once Migrate Cancel Migration Make Template Export Create Snapshot Change CD Assign Tags Guide Me

Name	Host	IP Address	Cluster	Data Center	Memory	CPU	Network	Display	Status	Uptime	Comment
sol11-test	centos-hyp01.lab.ovido.at		ovido-local	ovido-local	0%	0%	0%	SPICE	Up		
test-rhel7	centos-hyp01.lab.ovido.at		ovido-local	ovido-local	0%	0%	0%	SPICE	Up		
tpl-debian	centos-hyp01.lab.ovido.at		ovido-local	ovido-local	0%	1%	0%	SPICE	Up	2 min	

General Network Interfaces Disks Snapshots Applications Permissions Sessions **Monitoring Details** Events

Acknowledge Comment Downtime Notifications Schedule

Service	Output
Apachestatus Check	OK 0.479704 seconds response time. Idle 7, busy 1, open slots 248
CPU Check	CPU STATISTICS OK : user=0.00% system=0.99% iowait=0.00% idle=99.01% nice=0.00% st
Cron daemon	PROCS OK: 1 process with command name 'crond'
Date Check	Date OK: time diff=0s
Disk Check	DISK OK - free space: / 4029 MB (74% inode=91%): /boot 164 MB (71% inode=99%): /var 434
HTTP Check	HTTP OK: HTTP/1.1 200 OK - 282 bytes in 0.012 second response time
Load Check	OK - load average: 0.00, 0.00, 0.00
Memory Check	MEMORY OK - 33% Used (320 M) on 806 M

Name	Value
Acknowledged	no
Comments	
Is flapping	no
Last check	1390989756
Last notification	no
Last state change	1386373129
Latency	0.1822078228
Long plugin output	

Bookmarks Tags

Last Message: 2014-Jan-29, 10:59 User admin@internal logged in. Alerts (0) Events Tasks (0)

Monitoring UI-Plugin – VM Graphs

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Name	Host	IP Address	Cluster	Data Center	Memory	CPU	Network	Display	Status	Uptime	Comment
sol11-test	centos-hyp01.lab.ovidio.at		ovidio-local	ovidio-local	0%	0%	0%	SPICE	Up		
test-rhel7	centos-hyp01.lab.ovidio.at		ovidio-local	ovidio-local	0%	0%	0%	SPICE	Up		
tpl-debian	centos-hyp01.lab.ovidio.at		ovidio-local	ovidio-local	0%	1%	0%	SPICE	Up	2 min	

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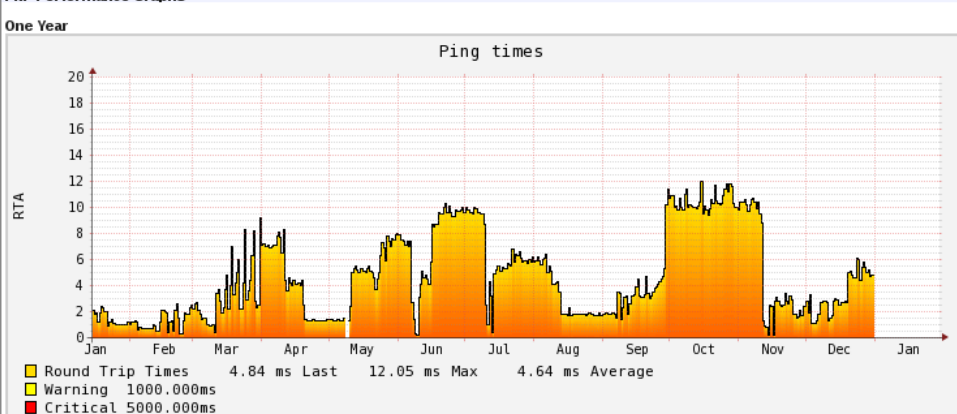
Service	Output
HTTP Check	HTTP OK: HTTP/1.1 200 OK - 282 bytes in 0.011 second response
Load Check	OK - load average: 0.00, 0.00, 0.00
Memory Check	MEMORY OK - 33% Used (330 M von 996 M)
MySQL Threads connected	OK - 1 client connection threads
MySQL connection time	OK - 0.03 seconds to connect as monitoring
MySQL long running procs	OK - 0 long running processes
MySQL open files	OK - 12.30% of the open files limit reached (126 of max. 1024)
MySQL slow queries	OK - 0 slow queries in 300 seconds (0.00/sec)
NRPE Alive	NRPE v2.14
PING	OK - 10.0.200.19: rta 2.524ms, lost 0%
SSH Check	SSH OK - OpenSSH_5.3 (protocol 2.0)
Swap Check	SWAP OK - 99% free (2019 MB out of 2047 MB)

[Details](#)
[Graphs](#)

PNP Performance Graphs

One Year

Ping times



■ Round Trip Times 4.84 ms Last 12.05 ms Max 4.64 ms Average
■ Warning 1000.000ms
■ Critical 5000.000ms

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Monitoring UI-Plugin – Details



- UI Plugin infrastructure
- Perl with various Modules
- Template Toolkit
- jQuery
- jQuery UI
- jQuery.loadTemplate
- GNU Autotools, Spec, SELinux-Policy

Monitoring UI-Plugin – monitoring-ui.json



- Plugin descriptor

```
{
  "name": "monitoring",
  // URL of plugin host page that invokes the plugin code (required)
  "url": "/webadmin/webadmin/plugin/monitoring/start.html",

  // Default configuration object associated with the plugin
  "config": {
    "url": "/monitoring-ui/cgi/monitoring-ui.cgi",
    "monitoringDetailsLabel" : "Monitoring Details",
    "monitoringDashboardLabel" : "Monitoring Dashboard"
  },

  // Path to plugin static resources (optional)
  // This path is relative to /usr/share/ovirt-engine/ui-plugins
  "resourcePath": "monitoring-files"
}
```

Monitoring UI-Plugin – start.html



- Register section - register the following event handlers
 - UiInit – add the main/sub tabs

```
// Register an event handler, for the UI Plugin init
api.register({
  UiInit: function() {
    // // Dashboard Main Tab
    // api.addMainTab(conf.icingaDashboardLabel, 'ovirt-monitoring', 'https://www.icinga.org');

    // Sub Tabs
    api.addSubTab('DataCenter', conf.monitoringDetailsLabel, 'datacenters-monitoring', conf.url + '?results=datacenters');
    api.addSubTab('Cluster', conf.monitoringDetailsLabel, 'clusters-monitoring', conf.url + '?results=clusters');
    api.addSubTab('Host', conf.monitoringDetailsLabel, 'hosts-monitoring', conf.url + '?results=hosts');
    api.addSubTab('Storage', conf.monitoringDetailsLabel, 'storage-monitoring', conf.url + '?results=storage');
    api.addSubTab('VirtualMachine', conf.monitoringDetailsLabel, 'vms-monitoring', conf.url + '?results=vms');
    api.addSubTab('Pools', conf.monitoringDetailsLabel, 'pools-monitoring', conf.url + '?results=pools');
  },
},
```

Monitoring UI-Plugin – start.html



- *SelectionChange – set sub-tabs URL

```
// Get name for changed selections
DataCenterSelectionChange: function() {
  if (arguments.length == 1) {
    var dataCenterName = arguments[0].name;
    api.setTabContentUrl('datacenters-monitoring', conf.url + '?results=datacenters&host=' + encodeURIComponent(dataCenterName));
  }
},

ClusterSelectionChange: function() {
  if (arguments.length == 1) {
    var clusterName = arguments[0].name;
    api.setTabContentUrl('clusters-monitoring', conf.url + '?results=clusters&host=' + encodeURIComponent(clusterName));
  }
},

HostSelectionChange: function() {
  if (arguments.length == 1) {
    var hostName = arguments[0].name;
    api.setTabContentUrl('hosts-monitoring', conf.url + '?results=hosts&host=' + encodeURIComponent(hostName));
  }
},

StorageSelectionChange: function() {
  if (arguments.length == 1) {
    var storageName = arguments[0].name;
    api.setTabContentUrl('storage-monitoring', conf.url + '?results=storage&host=' + encodeURIComponent(storageName));
  }
},
```

Monitoring - check_rhev3



- Icinga/Nagios plugin to check:

- Datacenters
- Clusters
- Hosts
- Storagedomains
- Virtual Machines
- Virtual Machine Pools

```
$ ./check_rhev3.pl -H ovirt-engine \  
-a admin@internal:password -D "*" -I status  
RHEV CRITICAL: Datacenters critical - 1/2  
Datacenters with state UP |up=1;2;2;0;  
contend=0;;;0; problematic=0;;;0;  
not_operational=0;;;0; uninitialized=1;;;0;  
maintenance=0;;;0;
```

Plugin: **check_rhev3**

Author: **René Koch** <rkoch@linuxland.at>

Project Page: https://github.com/ovido/check_rhev3

- oVirt
 - <http://www.ovirt.org>
- Mailing lists
 - users@ovirt.org
 - arch@ovirt.org
 - engine-devel@ovirt.org
 - vdsm-devel@lists.fedorahosted.org
- IRC Channel
 - #ovirt channel on irc.OFTC.net

THANK YOU !

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