



# Red Hat Enterprise Virtualization 3.6

## REST API Guide

Using the Red Hat Enterprise Virtualization REST Application Programming Interface



# Red Hat Enterprise Virtualization 3.6 REST API Guide

---

Using the Red Hat Enterprise Virtualization REST Application Programming Interface

Red Hat Enterprise Virtualization Documentation Team  
Red Hat Customer Content Services  
[rhev-docs@redhat.com](mailto:rhev-docs@redhat.com)

## Legal Notice

Copyright © 2016 Red Hat.

This document is licensed by Red Hat under the [Creative Commons Attribution-ShareAlike 3.0 Unported License](https://creativecommons.org/licenses/by-sa/3.0/). If you distribute this document, or a modified version of it, you must provide attribution to Red Hat, Inc. and provide a link to the original. If the document is modified, all Red Hat trademarks must be removed.

Red Hat, as the licensor of this document, waives the right to enforce, and agrees not to assert, Section 4d of CC-BY-SA to the fullest extent permitted by applicable law.

Red Hat, Red Hat Enterprise Linux, the Shadowman logo, JBoss, OpenShift, Fedora, the Infinity logo, and RHCE are trademarks of Red Hat, Inc., registered in the United States and other countries.

Linux ® is the registered trademark of Linus Torvalds in the United States and other countries.

Java ® is a registered trademark of Oracle and/or its affiliates.

XFS ® is a trademark of Silicon Graphics International Corp. or its subsidiaries in the United States and/or other countries.

MySQL ® is a registered trademark of MySQL AB in the United States, the European Union and other countries.

Node.js ® is an official trademark of Joyent. Red Hat Software Collections is not formally related to or endorsed by the official Joyent Node.js open source or commercial project.

The OpenStack ® Word Mark and OpenStack logo are either registered trademarks/service marks or trademarks/service marks of the OpenStack Foundation, in the United States and other countries and are used with the OpenStack Foundation's permission. We are not affiliated with, endorsed or sponsored by the OpenStack Foundation, or the OpenStack community.

All other trademarks are the property of their respective owners.

## Abstract

This guide describes Red Hat Enterprise Virtualization's Representational State Transfer API.

## Table of Contents

<b>CHAPTER 1. INTRODUCTION</b> .....	<b>6</b>
1.1. REPRESENTATIONAL STATE TRANSFER	6
1.2. RED HAT ENTERPRISE VIRTUALIZATION REST API PREREQUISITES	6
<b>CHAPTER 2. AUTHENTICATION AND SECURITY</b> .....	<b>8</b>
2.1. TLS/SSL CERTIFICATION	8
2.2. HTTP AUTHENTICATION	9
2.3. AUTHENTICATION SESSIONS	10
<b>CHAPTER 3. REST API QUICK START EXAMPLE</b> .....	<b>12</b>
3.1. EXAMPLE: ACCESS API ENTRY POINT	12
3.2. EXAMPLE: LIST DATA CENTER COLLECTION	14
3.3. EXAMPLE: LIST HOST CLUSTER COLLECTION	15
3.4. EXAMPLE: LIST LOGICAL NETWORKS COLLECTION	16
3.5. EXAMPLE: LIST HOST COLLECTION	17
3.6. EXAMPLE: LIST CPU PROFILES	19
3.7. EXAMPLE: APPROVE HOST	20
3.8. EXAMPLE: CREATE NFS DATA STORAGE	21
3.9. EXAMPLE: CREATE NFS ISO STORAGE	22
3.10. EXAMPLE: ATTACH STORAGE DOMAINS TO DATA CENTER	24
3.11. EXAMPLE: ACTIVATE STORAGE DOMAINS	25
3.12. EXAMPLE: CREATE VIRTUAL MACHINE	26
3.13. EXAMPLE: CREATE VIRTUAL MACHINE NIC	29
3.14. EXAMPLE: CREATE VIRTUAL MACHINE STORAGE DISK	30
3.15. EXAMPLE: ATTACH ISO IMAGE TO VIRTUAL MACHINE	31
3.16. EXAMPLE: START VIRTUAL MACHINE	32
3.17. EXAMPLE: CHECK SYSTEM EVENTS	32
<b>CHAPTER 4. ENTRY POINT</b> .....	<b>35</b>
4.1. PRODUCT INFORMATION	36
4.2. LINK ELEMENTS	36
4.3. SPECIAL OBJECT ELEMENTS	38
4.4. SUMMARY ELEMENT	38
4.5. RESTFUL SERVICE DESCRIPTION LANGUAGE (RSDL)	39
4.6. RED HAT ENTERPRISE VIRTUALIZATION WINDOWS GUEST VSS SUPPORT	41
4.7. QEMU GUEST AGENT OVERVIEW	41
4.8. VSS TRANSACTION FLOW	42
<b>CHAPTER 5. COMPATIBILITY LEVEL VERSIONS</b> .....	<b>43</b>
5.1. UPGRADING COMPATIBILITY LEVELS	43
<b>CHAPTER 6. CAPABILITIES</b> .....	<b>45</b>
6.1. VERSION-DEPENDENT CAPABILITIES	45
6.2. CURRENT VERSION	45
6.3. FEATURES	46
<b>CHAPTER 7. COMMON FEATURES</b> .....	<b>50</b>
7.1. ELEMENT PROPERTY ICONS	50
7.2. REPRESENTATIONS	50
7.3. COLLECTIONS	51
7.4. RESOURCES	57
<b>CHAPTER 8. THE BACKUP AND RESTORE API</b> .....	<b>64</b>

---

8.1. BACKING UP A VIRTUAL MACHINE	64
8.2. RESTORING A VIRTUAL MACHINE	65
<b>CHAPTER 9. DATA CENTERS</b> .....	<b>67</b>
9.1. DATA CENTER ELEMENTS	67
9.2. XML REPRESENTATION OF A DATA CENTER	68
9.3. JSON REPRESENTATION OF A DATA CENTER	69
9.4. METHODS	70
9.5. SUB-COLLECTIONS	71
9.6. ACTIONS	76
<b>CHAPTER 10. CLUSTERS</b> .....	<b>78</b>
10.1. CLUSTER ELEMENTS	78
10.2. MEMORY POLICY ELEMENTS	80
10.3. SCHEDULING POLICY ELEMENTS	80
10.4. XML REPRESENTATION OF A CLUSTER	81
10.5. JSON REPRESENTATION OF A CLUSTER	82
10.6. METHODS	83
10.7. SUB-COLLECTIONS	84
<b>CHAPTER 11. NETWORKS</b> .....	<b>94</b>
11.1. NETWORK ELEMENTS	94
11.2. XML REPRESENTATION OF A NETWORK RESOURCE	94
11.3. JSON REPRESENTATION OF A NETWORK RESOURCE	95
11.4. METHODS	96
11.5. SUB-COLLECTIONS	96
<b>CHAPTER 12. STORAGE DOMAINS</b> .....	<b>99</b>
12.1. STORAGE DOMAIN ELEMENTS	99
12.2. XML REPRESENTATION OF A STORAGE DOMAIN	100
12.3. JSON REPRESENTATION OF A STORAGE DOMAIN	101
12.4. METHODS	102
12.5. STORAGE TYPES	103
12.6. EXPORT STORAGE DOMAINS	106
12.7. GLANCE IMAGE STORAGE DOMAINS	108
12.8. IMPORTING A BLOCK STORAGE DOMAIN	110
12.9. SUB-COLLECTIONS	113
12.10. ACTIONS	114
<b>CHAPTER 13. STORAGE CONNECTIONS</b> .....	<b>117</b>
13.1. STORAGE CONNECTION ELEMENTS	117
13.2. XML REPRESENTATION OF A STORAGE CONNECTION RESOURCE	118
13.3. METHODS	118
<b>CHAPTER 14. HOSTS</b> .....	<b>122</b>
14.1. HOST ELEMENTS	122
14.2. XML REPRESENTATION OF A HOST	125
14.3. JSON REPRESENTATION OF A HOST	128
14.4. POWER MANAGEMENT ELEMENTS	131
14.5. MEMORY MANAGEMENT ELEMENTS	133
14.6. METHODS	134
14.7. SUB-COLLECTIONS	135
14.8. ACTIONS	154
<b>CHAPTER 15. VIRTUAL MACHINES</b> .....	<b>160</b>

15.1. VIRTUAL MACHINE ELEMENTS	160
15.2. XML REPRESENTATION OF A VIRTUAL MACHINE	166
15.3. XML REPRESENTATION OF ADDITIONAL OVF DATA FOR A VIRTUAL MACHINE	169
15.4. JSON REPRESENTATION OF A VIRTUAL MACHINE	171
15.5. METHODS	174
15.6. SUB-COLLECTIONS	177
15.7. ACTIONS	204
<b>CHAPTER 16. FLOATING DISKS</b>	<b>212</b>
16.1. FLOATING DISK ELEMENTS	212
16.2. XML REPRESENTATION OF A FLOATING DISK	213
16.3. METHODS	214
16.4. SUB-COLLECTIONS	214
16.5. ACTIONS	216
<b>CHAPTER 17. TEMPLATES</b>	<b>217</b>
17.1. VIRTUAL MACHINE TEMPLATE ELEMENTS	217
17.2. XML REPRESENTATION OF A VIRTUAL MACHINE TEMPLATE	219
17.3. METHODS	221
17.4. ACTIONS	222
<b>CHAPTER 18. VIRTUAL MACHINE POOLS</b>	<b>224</b>
18.1. VIRTUAL MACHINE POOL ELEMENTS	224
18.2. XML REPRESENTATION OF A VIRTUAL MACHINE POOL	224
18.3. METHODS	225
18.4. ACTIONS	226
<b>CHAPTER 19. DOMAINS</b>	<b>227</b>
19.1. DOMAIN ELEMENTS	227
19.2. XML REPRESENTATION OF A DOMAIN RESOURCE	227
19.3. SUB-COLLECTIONS	227
<b>CHAPTER 20. GROUPS</b>	<b>230</b>
20.1. IMPORTED GROUP ELEMENTS	230
20.2. XML REPRESENTATION OF A GROUP RESOURCE	230
20.3. ADDING A GROUP FROM A DIRECTORY SERVICE	230
<b>CHAPTER 21. ROLES</b>	<b>232</b>
21.1. ROLE ELEMENTS	232
21.2. XML REPRESENTATION OF THE ROLES COLLECTION	232
21.3. METHODS	233
21.4. ROLES PERMITS SUB-COLLECTION	234
<b>CHAPTER 22. USERS</b>	<b>236</b>
22.1. USER ELEMENTS	236
22.2. XML REPRESENTATION OF A USER RESOURCE	236
22.3. METHODS	237
<b>CHAPTER 23. MAC ADDRESS POOLS</b>	<b>239</b>
23.1. MAC ADDRESS POOL ELEMENTS	239
23.2. XML REPRESENTATION OF THE MAC ADDRESS POOLS COLLECTION	239
23.3. METHODS	240
<b>CHAPTER 24. TAGS</b>	<b>242</b>
24.1. TAG ELEMENTS	242
24.2. XML REPRESENTATION OF A TAG RESOURCE	242

24.3. ASSOCIATING TAGS	242
24.4. PARENT TAGS	244
<b>CHAPTER 25. EVENTS</b> .....	<b>247</b>
25.1. EVENT ELEMENTS	247
25.2. XML REPRESENTATION OF THE EVENTS COLLECTION	247
25.3. XML REPRESENTATION OF A VIRTUAL MACHINE CREATION EVENT	248
25.4. METHODS	248
<b>APPENDIX A. API USAGE WITH CURL</b> .....	<b>252</b>
A.1. API USAGE WITH CURL	252
A.2. INSTALLING CURL	252
A.3. USING CURL	252
A.4. EXAMPLES	253
<b>APPENDIX B. ENUMERATED VALUE TRANSLATION</b> .....	<b>256</b>
B.1. ENUMERATED VALUE TRANSLATION	256
<b>APPENDIX C. EVENT CODES</b> .....	<b>258</b>
C.1. EVENT CODES	258
<b>APPENDIX D. TIMEZONES</b> .....	<b>365</b>
D.1. TIMEZONES	365
<b>APPENDIX E. REVISION HISTORY</b> .....	<b>370</b>





# CHAPTER 1. INTRODUCTION

Red Hat Enterprise Virtualization Manager provides a **Representational State Transfer (REST)** API. The API provides software developers and system administrators with control over their Red Hat Enterprise Virtualization environment outside of the standard web interface. The REST API is useful for developers and administrators who aim to integrate the functionality of a Red Hat Enterprise Virtualization environment with custom scripts or external applications that access the API via the standard Hypertext Transfer Protocol (HTTP).

The benefits of the REST API are:

- Broad client support - Any programming language, framework, or system with support for HTTP protocol can use the API;
- Self descriptive - Client applications require minimal knowledge of the virtualization infrastructure as many details are discovered at runtime;
- Resource-based model - The resource-based REST model provides a natural way to manage a virtualization platform.

This provides developers and administrators with the ability to:

- Integrate with enterprise IT systems.
- Integrate with third-party virtualization software.
- Perform automated maintenance or error checking tasks.
- Automate repetitive tasks in a Red Hat Enterprise Virtualization environment with scripts.

This documentation acts as a reference to the Red Hat Enterprise Virtualization Manager REST API. It aims to provide developers and administrators with instructions and examples to help harness the functionality of their Red Hat Enterprise Virtualization environment through the REST API either directly or using the provided Python libraries.

## 1.1. REPRESENTATIONAL STATE TRANSFER

**Representational State Transfer (REST)** is a design architecture that focuses on resources for a specific service and their representations. A resource representation is a key abstraction of information that corresponds to one specific managed element on a server. A client sends a request to a server element located at a Uniform Resource Identifier (URI) and performs operations with standard HTTP methods, such as **GET**, **POST**, **PUT**, and **DELETE**. This provides a stateless communication between the client and server where each request acts independent of any other request and contains all necessary information to complete the request.

## 1.2. RED HAT ENTERPRISE VIRTUALIZATION REST API PREREQUISITES

### Red Hat Enterprise Virtualization REST API Prerequisites

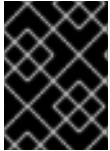
- A networked installation of Red Hat Enterprise Virtualization Manager, which includes the REST API.
- A client or programming library that initiates and receives HTTP requests from the REST API. For example:

- Python software development kit (SDK)
- Java software development kit (SDK)
- **cURL** command line tool
- **RESTClient**, a debugger for RESTful web services
- Knowledge of Hypertext Transfer Protocol (HTTP), which is the protocol used for REST API interactions. The Internet Engineering Task Force provides a Request for Comments (RFC) explaining the Hypertext Transfer Protocol at <http://www.ietf.org/rfc/rfc2616.txt>.
- Knowledge of Extensible Markup Language (XML) or JavaScript Object Notation (JSON), which the API uses to construct resource representations. The W3C provides a full specification on XML at <http://www.w3.org/TR/xml/>. ECMA International provide a free publication on JSON at <http://www.ecma-international.org>.

## CHAPTER 2. AUTHENTICATION AND SECURITY

### 2.1. TLS/SSL CERTIFICATION

The Red Hat Enterprise Virtualization Manager API requires Hypertext Transfer Protocol Secure (HTTPS) [1] for secure interaction with client software, such as the Manager's SDK and CLI components. This involves a process of obtaining a certificate from the Red Hat Enterprise Virtualization Manager and importing it into the certificate store of your client.



#### IMPORTANT

Obtain your certificate from the Red Hat Enterprise Virtualization Manager using a secure network connection.

#### Procedure 2.1. Obtaining a Certificate

You can obtain a certificate from the Red Hat Enterprise Virtualization Manager and transfer it to the client machine using one of three methods:

1. **Method 1** - Use a command line tool to download the certificate from the Manager. Examples of command line tools include **cURL** and **Wget**, both of which are available on multiple platforms.

- a. If using **cURL**:

```
$ curl -o rhevm.cer http://[rhevm-server]/ca.crt
```

- b. If using **Wget**:

```
$ wget -O rhevm.cer http://[rhevm-server]/ca.crt
```

2. **Method 2** - Use a web browser to navigate to the certificate located at:

```
http://[rhevm-server]/ca.crt
```

Depending on the chosen browser, the certificate either downloads or imports into the browser's keystore.

- a. **If the browser downloads the certificate:** save the file as **rhevm.cer**.

**If the browser imports the certificate:** export it from the browser's certification options and save it as **rhevm.cer**.

3. **Method 3** - Log in to the Manager, export the certificate from the truststore and copy it to your client machine.

- a. Log in to the Manager as the **root** user.

- b. Export the certificate from the truststore using the Java **keytool** management utility:

```
$ keytool -exportcert -keystore /etc/pki/ovirt-engine/.truststore  
-alias cacert -storepass mypass -file rhevm.cer
```

This creates a certificate file called **rhevm.cer**.

c. Copy the certificate to the client machine using the **scp** command:

```
$ scp rhevm.cer [username]@[client-machine]:[directory]
```

Each of these methods results in a certificate file named **rhevm.cer** on your client machine. An API user imports this file into the certificate store of the client.

### Procedure 2.2. Importing a Certificate to a Client

- Importing a certificate to a client relies on how the client itself stores and interprets certificates. This guide contains some examples on importing certificates. For clients not using Network Security Services (NSS) or Java KeyStore (JKS), see your client documentation for more information on importing a certificate.

## 2.2. HTTP AUTHENTICATION

Any user with a Red Hat Enterprise Virtualization account has access to the REST API. An API user submits a mandatory Red Hat Enterprise Virtualization Manager user name and password with all requests to the API. Each request uses HTTP Basic Authentication <sup>[2]</sup> to encode these credentials. If a request does not include an appropriate **Authorization** header, the API sends a **401**

**Authorization Required** as a result:

### Example 2.1. Access to the REST API without appropriate credentials

```
HEAD [base] HTTP/1.1
Host: [host]

HTTP/1.1 401 Authorization Required
```

Request are issued with an **Authorization** header for the specified realm. An API user encodes an appropriate Red Hat Enterprise Virtualization Manager domain and user in the supplied credentials with the **username@domain:password** convention.

The following table shows the process for encoding credentials in base64.

**Table 2.1. Encoding credentials for API access**

Item	Value
username	rhevadmin
domain	domain.example.com
password	123456
unencoded credentials	rhevadmin@domain.example.com:123456
base64 encoded credentials	cmhldm1hZG1pbkBibGFjay5xdW1yYW5ldC5jb206MTIzNDU2

An API user provides the base64 encoded credentials as shown:

### Example 2.2. Access to the REST API with appropriate credentials

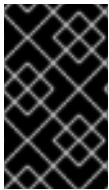
```
HEAD [base] HTTP/1.1
Host: [host]
Authorization: Basic cmhldm1hZG1pbkBiBGFjay5xdW1yYW5ldC5jb206MTIzNDU2

HTTP/1.1 200 OK
...
```



#### IMPORTANT

Basic authentication involves potentially sensitive information, such as passwords, sent as plain text. REST API requires Hypertext Transfer Protocol Secure (HTTPS) for transport-level encryption of plain-text requests.



#### IMPORTANT

Some base64 libraries break the result into multiple lines and terminate each line with a newline character. This breaks the header and causes a faulty request. The Authorization header requires the encoded credentials on a single line within the header.

## 2.3. AUTHENTICATION SESSIONS

The API also provides the ability for authentication session support. An API user sends an initial request with authentication details, then sends all subsequent requests using a session cookie to authenticate. The following procedure demonstrates how to use an authenticated session.

### Procedure 2.3. Requesting an authenticated session

1. Send a request with the **Authorization** and **Prefer: persistent-auth**

```
HEAD [base] HTTP/1.1
Host: [host]
Authorization: Basic
cmhldm1hZG1pbkBiBGFjay5xdW1yYW5ldC5jb206MTIzNDU2
Prefer: persistent-auth

HTTP/1.1 200 OK
...
```

This returns a response with the following header:

```
Set-Cookie: JSESSIONID=5dQja5ubr4yvI2MM2z+LZxrK; Path=/api; Secure
```

Note the **JSESSIONID=** value. In this example the value is **JSESSIONID=5dQja5ubr4yvI2MM2z+LZxrK**.

2. Send all subsequent requests with the **Prefer: persistent-auth** and **cookie** header with the **JSESSIONID=** value. The **Authorization** is no longer needed when using an authenticated session.

```
HEAD [base] HTTP/1.1
Host: [host]
Prefer: persistent-auth
cookie: JSESSIONID=5dQja5ubr4yvI2MM2z+LZxrK

HTTP/1.1 200 OK
...
```

3. When the session is no longer required, perform a request to the sever without the **Prefer: persistent-auth** header.

```
HEAD [base] HTTP/1.1
Host: [host]
Authorization: Basic
cmhl1dm1hZG1pbkBibGFjay5xdW1yYW5ldC5jb206MTIzNDU2

HTTP/1.1 200 OK
...
```

---

[1] HTTPS is described in [RFC 2818 HTTP Over TLS](#).

[2] Basic Authentication is described in [RFC 2617 HTTP Authentication: Basic and Digest Access Authentication](#).

## CHAPTER 3. REST API QUICK START EXAMPLE

This chapter provides an example to demonstrate the REST API's ability to setup a basic Red Hat Enterprise Virtualization environment and create a virtual machine.

In addition to the standard prerequisites, this example requires the following:

- A networked and configured host containing Red Hat Enterprise Virtualization Hypervisor;
- An ISO file containing a desired virtual machine operating system to install. This chapter uses Red Hat Enterprise Linux Server 6 for our installation ISO example; and
- Red Hat Enterprise Virtualization's **engine-iso-uploader** tool to upload your chosen operating system ISO file.

This example uses **cURL** to demonstrate REST requests with a client application. Note that any application capable of HTTP requests can substitute for **cURL**.



### IMPORTANT

For simplicity, the HTTP request headers in this example omit the **Host :** and **Authorization :** fields. However, these fields are mandatory and require data specific to your installation of Red Hat Enterprise Virtualization Manager.



### IMPORTANT

All **cURL** examples include placeholders for authentication details (**USER:PASS**) and certificate location (**CERT**). Ensure all requests performed with **cURL** fulfill certification and authentication requirements.



### NOTE

Red Hat Enterprise Virtualization Manager generates a globally unique identifier (GUID) for the **id** attribute for each resource. Identifier codes in this example might appear different to the identifier codes in your Red Hat Enterprise Virtualization environment.

### 3.1. EXAMPLE: ACCESS API ENTRY POINT

The following request retrieves a representation of the main entry point of the API.

#### Example 3.1. Access the API entry point

##### Request:

```
GET /api HTTP/1.1
Accept: application/xml
```

##### cURL command:

```
# curl -X GET -H "Accept: application/xml" -u [USER:PASS] \
  --cacert [CERT] https://[RHEVM Host]:443/api
```



**Result:**

```

HTTP/1.1 200 OK
Content-Type: application/xml

<api>
  <link rel="capabilities" href="/api/capabilities"/>
  <link rel="clusters" href="/api/clusters"/>
  <link rel="clusters/search" href="/api/clusters?search={query}"/>
  <link rel="datacenters" href="/api/datacenters"/>
  <link rel="datacenters/search" href="/api/datacenters?search=
{query}"/>
  <link rel="events" href="/api/events"/>
  <link rel="events/search" href="/api/events?search={query}"/>
  <link rel="hosts" href="/api/hosts"/>
  <link rel="hosts/search" href="/api/hosts?search={query}"/>
  <link rel="networks" href="/api/networks"/>
  <link rel="roles" href="/api/roles"/>
  <link rel="storagedomains" href="/api/storagedomains"/>
  <link rel="storagedomains/search" href="/api/storagedomains?search=
{query}"/>
  <link rel="tags" href="/api/tags"/>
  <link rel="templates" href="/api/templates"/>
  <link rel="templates/search" href="/api/templates?search={query}"/>
  <link rel="users" href="/api/users"/>
  <link rel="groups" href="/api/groups"/>
  <link rel="domains" href="/api/domains"/>
  <link rel="vmpools" href="/api/vmpools"/>
  <link rel="vmpools/search" href="/api/vmpools?search={query}"/>
  <link rel="vms" href="/api/vms"/>
  <link rel="vms/search" href="/api/vms?search={query}"/>
  <special_objects>
    <link rel="templates/blank"
      href="/api/templates/00000000-0000-0000-0000-000000000000"/>
    <link rel="tags/root"
      href="/api/tags/00000000-0000-0000-0000-000000000000"/>
  </special_objects>
  <product_info>
    <name>Red Hat Enterprise Virtualization</name>
    <vendor>Red Hat</vendor>
    <version revision="0" build="0" minor="0" major="3"/>
  </product_info>
  <summary>
    <vms>
      <total>5</total>
      <active>0</active>
    </vms>
    <hosts>
      <total>1</total>
      <active>1</active>
    </hosts>
    <users>
      <total>1</total>
      <active>1</active>
    </users>
    <storage_domains>

```

```

                <total>2</total>
                <active>2</active>
            </storage_domains>
        </summary>
    </api>

```

The entry point provides a user with links to the collections in a virtualization environment. The **rel** attribute of each collection link provides a reference point for each link. The next step in this example examines the **datacenter** collection, which is available through the **rel="datacenter"** link.

The entry point also contains other data such as **product\_info**, **special\_objects** and **summary**. This data is covered in chapters outside this example.

## 3.2. EXAMPLE: LIST DATA CENTER COLLECTION

Red Hat Enterprise Virtualization Manager creates a **Default** data center on installation. This example uses the **Default** data center as the basis for our virtual environment.

The following request retrieves a representation of the data center collection:

### Example 3.2. List data center collection

#### Request:

```

GET /api/datacenters HTTP/1.1
Accept: application/xml

```

#### cURL command:

```

# curl -X GET -H "Accept: application/xml" -u [USER:PASS] \
  --cacert [CERT] \
  https://[RHEVM Host]:443/api/datacenters

```

#### Result:

```

HTTP/1.1 200 OK
Content-Type: application/xml

<data_centers>
  <data_center href="/api/datacenters/00000002-0002-0002-0002-0000000003ab" id="00000002-0002-0002-0002-0000000003ab">
    <name>Default</name>
    <description>The default Data Center</description>
    <link rel="storagedomains"/>
      href="/api/datacenters/00000002-0002-0002-0002-0000000003ab/storagedomains"
    <link rel="clusters"/>
      href="/api/datacenters/00000002-0002-0002-0002-0000000003ab/clusters"
    <link rel="networks"/>
      href="/api/datacenters/00000002-0002-0002-0002-0000000003ab/networks"
  </data_center>
</data_centers>

```

```

    <link rel="permissions"/>
      href="/api/datacenters/00000002-0002-0002-0002-
000000003ab/permissions"
    <link rel="quotas"/>
      href="/api/datacenters/00000002-0002-0002-0002-
000000003ab/quotas"
    <link rel="iscsibonds"/>
      href="/api/datacenters/00000002-0002-0002-0002-
000000003ab/iscsibonds"
    <link rel="qoss"/>
      href="/api/datacenters/00000002-0002-0002-0002-
000000003ab/qoss"
    <local>>false</local>
    <storage_format>v3</storage_format>
    <version major="3" minor="5"/>
    <supported_versions>
      <version major="3" minor="5"/>
    </supported_versions>
    <status>
      <state>up</state>
    </status>
  </data_center>
</data_centers>

```

Note the **id** code of your **Default** data center. This code identifies this data center in relation to other resources of your virtual environment.

The data center also contains a link to the **storagedomains** sub-collection. The data center uses this sub-collection to attach storage domains from the **storagedomains** main collection, which this example covers later.

### 3.3. EXAMPLE: LIST HOST CLUSTER COLLECTION

Red Hat Enterprise Virtualization Manager creates a **Default** host cluster on installation. This example uses the **Default** cluster to group resources in your Red Hat Enterprise Virtualization environment.

The following request retrieves a representation of the cluster collection:

#### Example 3.3. List host clusters collection

##### Request:

```

GET /api/clusters HTTP/1.1
Accept: application/xml

```

##### cURL command:

```

# curl -X GET -H "Accept: application/xml" -u [USER:PASS] \
  --cacert [CERT] \
  https://[RHEVM Host]:443/api/clusters

```

##### Result:

```

-
```

```

HTTP/1.1 200 OK
Content-Type: application/xml

<clusters>
  <cluster id="99408929-82cf-4dc7-a532-9d998063fa95"
    href="/api/clusters/99408929-82cf-4dc7-a532-9d998063fa95">
    <name>Default</name>
    <description>The default server cluster</description>
    <link rel="networks"
      href="/api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/networks"/>
    <link rel="permissions"
      href="/api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/permissions"/>
    <cpu id="Intel Penryn Family"/>
    <data_center id="01a45ff0-915a-11e0-8b87-5254004ac988"
      href="/api/datacenters/01a45ff0-915a-11e0-8b87-
5254004ac988"/>
    <memory_policy>
      <overcommit percent="100"/>
      <transparent_hugepages>
        <enabled>>false</enabled>
      </transparent_hugepages>
    </memory_policy>
    <scheduling_policy/>
    <version minor="0" major="3"/>
    <error_handling>
      <on_error>migrate</on_error>
    </error_handling>
  </cluster>
</clusters>

```

Note the **id** code of your **Default** host cluster. This code identifies this host cluster in relation to other resources of your virtual environment.

The **Default** cluster is associated with the **Default** data center through a relationship using the **id** and **href** attributes of the **data\_center** element.

The **networks** sub-collection contains a list of associated network resources for this cluster. The next section examines the **networks** collection in more detail.

### 3.4. EXAMPLE: LIST LOGICAL NETWORKS COLLECTION

Red Hat Enterprise Virtualization Manager creates a default **ovirtmgmt** network on installation. This network acts as the management network for Red Hat Enterprise Virtualization Manager to access hypervisor hosts.

This network is associated with our **Default** cluster and is a member of the **Default** data center. This example uses the **ovirtmgmt** network to connect our virtual machines.

The following request retrieves a representation of the logical networks collection:

#### Example 3.4. List logical networks collection

**Request:**

```
GET /api/networks HTTP/1.1
Accept: application/xml
```

**cURL command:**

```
# curl -X GET -H "Accept: application/xml" -u [USER:PASS] \
  --cacert [CERT] \
  https://[RHEVM Host]:443/api/networks
```

**Result:**

```
HTTP/1.1 200 OK
Content-Type: application/xml

<networks>
  <network id="00000000-0000-0000-0000-000000000009"
    href="/api/networks/00000000-0000-0000-0000-000000000009">
    <name>ovirtmgmt</name>
    <description>Management Network</description>
    <data_center id="01a45ff0-915a-11e0-8b87-5254004ac988"
      href="/api/datacenters/01a45ff0-915a-11e0-8b87-
5254004ac988"/>
    <stp>>false</stp>
    <status>
      <state>operational</state>
    </status>
    <display>>false</display>
  </network>
</networks>
```

The **ovirtmgmt** network is attached to the **Default** data center through a relationship using the data center's **id** code.

The **ovirtmgmt** network is also attached to the **Default** cluster through a relationship in the cluster's **network** sub-collection.

### 3.5. EXAMPLE: LIST HOST COLLECTION

This example uses a Red Hat Enterprise Virtualization Hypervisor host. Red Hat Enterprise Virtualization Manager automatically registers any configured Red Hat Enterprise Virtualization Hypervisor. This example retrieves a representation of the hosts collection and shows a Red Hat Enterprise Virtualization Hypervisor host named **hypervisor** registered with the virtualization environment.

**Example 3.5. List hosts collection****Request:**

```
GET /api/hosts HTTP/1.1
Accept: application/xml
```

**cURL command:**

```
# curl -X GET -H "Accept: application/xml" -u [USER:PASS] \  
  --cacert [CERT] \  
  https://[RHEVM Host]:443/api/hosts
```

**Result:**

```
HTTP/1.1 200 OK  
Accept: application/xml  
  
<hosts>  
  <host id="0656f432-923a-11e0-ad20-5254004ac988"  
    href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988">  
    <name>hypervisor</name>  
    <actions>  
      <link rel="install"  
        href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/install"/>  
      <link rel="activate"  
        href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/activate"/>  
      <link rel="fence"  
        href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/fence"/>  
      <link rel="deactivate"  
        href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/deactivate"/>  
      <link rel="approve"  
        href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/approve"/>  
      <link rel="iscsilogin"  
        href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/iscsilogin"/>  
      <link rel="iscsidiscover"  
        href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/iscsidiscover"/>  
      <link rel="commitnetconfig"  
        href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/commitnetconfig"/>  
    </actions>  
    <link rel="storage"  
      href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/storage"/>  
    <link rel="nics"  
      href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/nics"/>  
    <link rel="tags"  
      href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/tags"/>  
    <link rel="permissions"  
      href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/permissions"/>  
    <link rel="statistics"  
      href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988/statistics"/>  
    <address>10.64.14.110</address>
```

```

<status>
  <state>non_operational</state>
</status>
<cluster id="99408929-82cf-4dc7-a532-9d998063fa95"
  href="/api/clusters/99408929-82cf-4dc7-a532-9d998063fa95"/>
<port>54321</port>
<storage_manager>true</storage_manager>
<power_management>
  <enabled>>false</enabled>
  <options/>
</power_management>
<ksm>
  <enabled>>false</enabled>
</ksm>
<transparent_hugepages>
  <enabled>>true</enabled>
</transparent_hugepages>
<iscsi>
  <initiator>iqn.1994-05.com.example:644949fe81ce</initiator>
</iscsi>
<cpu>
  <topology cores="2"/>
  <name>Intel(R) Core(TM)2 Duo CPU E8400 @ 3.00GHz</name>
  <speed>2993</speed>
</cpu>
<summary>
  <active>0</active>
  <migrating>0</migrating>
  <total>0</total>
</summary>
</host>
</hosts>

```

Note the **id** code of your **Default** host. This code identifies this host in relation to other resources of your virtual environment.

This host is a member of the **Default** cluster and accessing the **nics** sub-collection shows this host has a connection to the **ovirtmgmt** network.

### 3.6. EXAMPLE: LIST CPU PROFILES

The following request retrieves a representation of the CPU profiles:

#### Example 3.6. List CPU profiles

##### Request:

```

GET /api/cpuprofiles HTTP/1.1
Accept: application/xml

```

##### cURL command:

```
# curl -X GET -H "Accept: application/xml" -u [USER:PASS] --cacert
[CERT] https://[RHEVM Host]:443/api/cpuprofiles
```

**Result:**

```
HTTP/1.1 200 OK
Content-Type: application/xml

<cpu_profiles>
  <cpu_profile href="0000001a-001a-001a-001a-00000000035e"
id="0000001a-001a-001a-001a-00000000035e">
    <name>Default</name>
    <link href="/api/cpuprofiles/0000001a-001a-001a-001a-
00000000035e/permissions" rel="permissions"/>
    <cluster href= "/api/clusters/00000001-0001-0001-0001-
00000000021b" id="00000001-0001-0001-0001-00000000021b"/>
  </cpu_profile>
  <cpu_profile href="fc4b9188-f87f-44f9-b9c5-c7665e10e0a2"
id="fc4b9188-f87f-44f9-b9c5-c7665e10e0a2">
    <name>Premium</name>
    <description>Full service available</description>
    <link href="/api/cpuprofiles/fc4b9188-f87f-44f9-b9c5-
c7665e10e0a2/permissions" rel="permissions"/>
    <qos href= "/api/datacenters/00000002-0002-0002-0002-
0000000000f7/qoss/5afe49e3-aac4-4b7b-bb83-11b9aef285e1" id="5afe49e3-
aac4-4b7b-bb83-11b9aef285e1"/>
    <cluster href= "/api/clusters/00000001-0001-0001-0001-
00000000021b" id="00000001-0001-0001-0001-00000000021b"/>
  </cpu_profile>
  <cpu_profile href="48c600f4-6768-49ca-9c16-a877d0e586e5"
id="48c600f4-6768-49ca-9c16-a877d0e586e5">
    <name>Budget</name>
    <description>Limited CPU</description>
    <link href="/api/cpuprofiles/48c600f4-6768-49ca-9c16-
a877d0e586e5/permissions" rel="permissions"/>
    <cluster href= "/api/clusters/00000001-0001-0001-0001-
00000000021b" id="00000001-0001-0001-0001-00000000021b"/>
  </cpu_profile>
  <cpu_profile href="48c600f4-6768-49ca-9c16-a877d0e586e5"
id="48c600f4-6768-49ca-9c16-a877d0e586e5">
    <name>Backup</name>
    <link href="/api/cpuprofiles/d510b042-42f0-4cb2-9d2e-
25fcc28d6c5f/permissions" rel="permissions"/>
    <cluster href= "/api/clusters/668cab0c-9185-4eaa-9942-
658284eeecdd" id="668cab0c-9185-4eaa-9942-658284eeecdd"/>
  </cpu_profile>
</cpu_profiles>
```

### 3.7. EXAMPLE: APPROVE HOST

The **hypervisor** host resource contains an **approve** action. A user accesses this action's URI with a **POST** request.



**Example 3.7. Approve a pre-configured Red Hat Enterprise Virtualization Hypervisor host****Request:**

```
POST /api/hosts/0656f432-923a-11e0-ad20-5254004ac988/approve HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

**cURL command:**

```
# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" \
  -u [USER:PASS] --cacert [CERT] \
  -d "<action/>" \
  https://[RHEVM Host]:443/api/hosts/0656f432-923a-11e0-ad20-
5254004ac988/approve
```

The POST request requires a body for the message entities to initiate an action. Since the action does not require additional parameters, the body contains an empty **action** element.

Use the **approve** action only for Red Hat Enterprise Virtualization Hypervisor hosts. Red Hat Enterprise Linux hosts require a different process to connect to the virtualization environment.

This approves and activates the host for use in your virtual environment. The **status** for **hypervisor** changes from **non\_operational** to **up**.

**3.8. EXAMPLE: CREATE NFS DATA STORAGE**

An NFS data storage domain is an exported NFS share attached to a data center and provides storage for virtualized guest images. Creation of a new storage domain requires a **POST** request, with the storage domain representation included, sent to the URL of the storage domain collection.

In Red Hat Enterprise Virtualization 3.6 and later you can enable the wipe after delete option by default on the storage domain. To configure this specify **<wipe\_after\_delete>** in the **POST** request. This option can be edited after the domain is created, but doing so will not change the wipe after delete property of disks that already exist.

**Example 3.8. Create an NFS data storage domain****Request:**

```
POST /api/storagedomains HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storage_domain>
  <name>data1</name>
  <type>data</type>
  <storage>
    <type>nfs</type>
```

```

    <address>192.168.0.10</address>
    <path>/data1</path>
  </storage>
</host>
  <name>hypervisor</name>
</host>
</storage_domain>

```

**cURL command:**

```

# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" \
  -u [USER:PASS] --cacert [CERT] \
  -d "<storage_domain><name>data1</name><type>data</type> \
  <storage><type>nfs</type><address>192.168.0.10</address> \
  <path>/data1</path></storage> \
  <host><name>hypervisor</name></host></storage_domain>" \
  https://[RHEVM Host]:443/api/storagedomains

```

The API creates a NFS data storage domain called **data1** with an export path of **192.168.0.10:/data1** and sets access to the storage domain through the **hypervisor** host. The API also returns the following representation of the newly created storage domain resource.

**Result:**

```

HTTP/1.1 200 OK
Accept: application/xml

<storage_domain id="9ca7cb40-9a2a-4513-acef-dc254af57aac"
  href="/api/storagedomains/9ca7cb40-9a2a-4513-acef-dc254af57aac">
  <name>data1</name>
  <link rel="permissions"
    href="/api/storagedomains/9ca7cb40-9a2a-4513-acef-dc254af57aac/
    permissions"/>
  <link rel="files"
    href="/api/storagedomains/9ca7cb40-9a2a-4513-acef-
dc254af57aac/files"/>
  <type>data</type>
  <master>false</master>
  <storage>
    <type>nfs</type>
    <address>192.168.0.10</address>
    <path>/data1</path>
  </storage>
  <available>175019917312</available>
  <used>27917287424</used>
  <committed>10737418240</committed>
  <storage_format>v1</storage_format>
  <host id="0656f432-923a-11e0-ad20-5254004ac988"
    href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988">
  </storage_domain>

```

**3.9. EXAMPLE: CREATE NFS ISO STORAGE**

An NFS ISO storage domain is a mounted NFS share attached to a data center and provides storage for DVD/CD-ROM ISO and virtual floppy disk (VFD) image files. Creation of a new storage domain requires a **POST** request, with the storage domain representation included, sent to the URL of the storage domain collection.

In Red Hat Enterprise Virtualization 3.6 and later you can enable the wipe after delete option by default on the storage domain. To configure this specify `<wipe_after_delete>` in the **POST** request. This option can be edited after the domain is created, but doing so will not change the wipe after delete property of disks that already exist.

### Example 3.9. Create an NFS ISO storage domain

#### Request:

```
POST /api/storagedomains HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storage_domain>
  <name>iso1</name>
  <type>iso</type>
  <storage>
    <type>nfs</type>
    <address>192.168.0.10</address>
    <path>/iso1</path>
  </storage>
  <host>
    <name>hypervisor</name>
  </host>
</storage_domain>
```

#### cURL command:

```
# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" \
  -u [USER:PASS] --cacert [CERT] \
  -d "<storage_domain><name>iso1</name><type>iso</type> \
  <storage><type>nfs</type><address>192.168.0.10</address> \
  <path>/iso1</path></storage> \
  <host><name>hypervisor</name></host></storage_domain>" \
  https://[RHEVM Host]:443/api/storagedomains
```

The API creates a NFS iso storage domain called **iso1** with an export path of **192.168.0.10:/iso1** and gets access to the storage domain through the **hypervisor** host. The API also returns the following representation of the newly created storage domain resource.

#### Result:

```
HTTP/1.1 200 OK
Accept: application/xml

<storage_domain id="00f0d9ce-da15-4b9e-9e3e-3c898fa8b6da"
  href="/api/storagedomains/00f0d9ce-da15-4b9e-9e3e-3c898fa8b6da">
  <name>iso1</name>
  <link rel="permissions">
```

```

    href="/api/storagedomains/00f0d9ce-da15-4b9e-9e3e-3c898fa8b6da/
    permissions"/>
  <link rel="files"
    href="/api/storagedomains/00f0d9ce-da15-4b9e-9e3e-
3c898fa8b6da/files"/>
  <type>iso</type>
  <host id="" href="">
  <master>>false</master>
  <storage>
    <type>nfs</type>
    <address>192.168.0.10</address>
    <path>/iso1</path>
  </storage>
  <available>82678120448</available>
  <used>18253611008</used>
  <committed>0</committed>
  <storage_format>v1</storage_format>
  <host id="0656f432-923a-11e0-ad20-5254004ac988"
    href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988">
  </storage_domain>

```

### 3.10. EXAMPLE: ATTACH STORAGE DOMAINS TO DATA CENTER

The following example attaches the **data1** and **iso1** storage domains to the **Default** data center.

#### Example 3.10. Attach data1 storage domain to the Default data center

##### Request:

```

POST /api/datacenters/01a45ff0-915a-11e0-8b87-
5254004ac988/storagedomains HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storage_domain>
  <name>data1</name>
</storage_domain>

```

##### cURL command:

```

# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" \
  -u [USER:PASS] --cacert [CERT] \
  -d "<storage_domain><name>data1</name></storage_domain>" \
  https://[RHEVM Host]:443/api/datacenters/01a45ff0-915a-11e0-8b87-
5254004ac988/storagedomains

```

#### Example 3.11. Attach iso1 storage domain to the Default data center

##### Request:

```
POST /api/datacenters/01a45ff0-915a-11e0-8b87-
5254004ac988/storagedomains HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storage_domain>
  <name>iso1</name>
</storage_domain>
```

**cURL command:**

```
# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" \
  -u [USER:PASS] --cacert [CERT] \
  -d "<storage_domain><name>iso1</name></storage_domain>" \
  https://[RHEVM Host]:443/api/datacenters/01a45ff0-915a-11e0-8b87-
5254004ac988/storagedomains
```

These **POST** requests place our two new **storage\_domain** resources in the **storagedomains** sub-collection of the **Default** data center. This means the **storagedomains** sub-collection contains attached storage domains of the data center.

### 3.11. EXAMPLE: ACTIVATE STORAGE DOMAINS

This example activates the **data1** and **iso1** storage domains for the Red Hat Enterprise Virtualization Manager's use.

**Example 3.12. Activate data1 storage domain****Request:**

```
POST /api/datacenters/d70d5e2d-b8ad-494a-a4d2-
c7a5631073c4/storagedomains/
9ca7cb40-9a2a-4513-acef-dc254af57aac/activate HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

**cURL command:**

```
# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" \
  -u [USER:PASS] --cacert [CERT] \
  -d "<action/>" \
  https://[RHEVM Host]:443/api/datacenters/d70d5e2d-b8ad-494a-a4d2-
c7a5631073c4/storagedomains/9ca7cb40-9a2a-4513-acef-
dc254af57aac/activate
```

**Example 3.13. Activate iso1 storage domain**

**Request:**

```
POST /api/datacenters/d70d5e2d-b8ad-494a-a4d2-
c7a5631073c4/storagedomains/
00f0d9ce-da15-4b9e-9e3e-3c898fa8b6da/activate HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

**cURL command:**

```
# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" \
  -u [USER:PASS] --cacert [CERT] \
  -d "<action/>"
  https://[RHEVM Host]:443/api/datacenters/d70d5e2d-b8ad-494a-a4d2-
c7a5631073c4/storagedomains/00f0d9ce-da15-4b9e-9e3e-
3c898fa8b6da/activate
```

This activates both storage domains for use with the data center.

## 3.12. EXAMPLE: CREATE VIRTUAL MACHINE

The following example creates a virtual machine called **vm1** on the **Default** cluster using the virtualization environment's **Blank** template as a basis. The request also defines the virtual machine's **memory** as 512 MB and sets the **boot** device to a virtual hard disk.

**Example 3.14. Create a virtual machine****Request:**

```
POST /api/vms HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vm>
  <name>vm1</name>
  <cluster>
    <name>default</name>
  </cluster>
  <template>
    <name>Blank</name>
  </template>
  <memory>536870912</memory>
  <os>
    <boot dev="hd"/>
  </os>
  <cpu_profile id="0000001a-001a-001a-001a-00000000035e"/>
</vm>
```

**cURL command:**

```
# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" -u [USER:PASS] --cacert [CERT] -d "<vm>
<name>vm1</name><cluster><name>default</name></cluster><template>
<name>Blank</name></template><memory>536870912</memory><os><boot
dev='hd'/></os><cpu_profile id='0000001a-001a-001a-001a-00000000035e' />
</vm>" https://[RHEVM Host]:443/api/vms
```

**Result:**

```
HTTP/1.1 200 OK
```

```
Accept: application/xml
```

```
<vm id="6efc0cfa-8495-4a96-93e5-ee490328cf48"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48">
  <name>vm1</name>
  <actions>
    <link rel="shutdown"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/shutdown"/>
    <link rel="start"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/start"/>
    <link rel="stop"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/stop"/>
    <link rel="reboot"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/reboot"/>
    <link rel="suspend"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/suspend"/>
    <link rel="detach"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/detach"/>
    <link rel="export"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/export"/>
    <link rel="move"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/move"/>
    <link rel="ticket"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/ticket"/>
    <link rel="migrate"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/migrate"/>
    <link rel="undo_snapshot"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/undo_snapshot"/>
    <link rel="commit_snapshot"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/commit_snapshot"/>
    <link rel="preview_snapshot"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/preview_snapshot"/>
    <link rel="logon"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/logon"/>
    <link rel="cancelmigration"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/cancelmigration"/>
    <link rel="maintenance"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-
```

```
ee490328cf48/maintenance"/>
  <link rel="clone"
    href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/clone"/>
</actions>
<link rel="applications"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/applications"/>
<link rel="disks"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/disks"/>
<link rel="nics"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/nics"/>
<link rel="cdroms"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/cdroms"/>
<link rel="snapshots"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/snapshots"/>
<link rel="tags"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/tags"/>
<link rel="permissions"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/permissions"/>
<link rel="statistics"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/statistics"/>
<link rel="reporteddevices"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/reporteddevices"/>
<link rel="watchdogs"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/watchdogs"/>
<link rel="sessions"
  href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/sessions"/>
<type>desktop</type>
<status>
  <state>down</state>
</status>
<memory>536870912</memory>
<cpu>
  <topology cores="1" sockets="1"/>
</cpu>
<os type="Unassigned">
  <boot dev="cdrom"/>
</os>
<high_availability>
  <enabled>>false</enabled>
  <priority>0</priority>
</high_availability>
<display>
  <type>spice</type>
  <monitors>1</monitors>
  <single_qxl_pci>>false</single_qxl_pci>
  <allow_override>>false</allow_override>
  <smartcard_enabled>>false</smartcard_enabled>
  <file_transfer_enabled>>true</file_transfer_enabled>
  <copy_paste_enabled>>true</copy_paste_enabled>
</display>
<cluster id="99408929-82cf-4dc7-a532-9d998063fa95"
  href="/api/clusters/99408929-82cf-4dc7-a532-9d998063fa95"/>
<template id="00000000-0000-0000-0000-000000000000"
  href="/api/templates/00000000-0000-0000-0000-000000000000"/>
```



```

<stop_time>2011-06-15T04:48:02.167Z</stop_time>
<creation_time>2011-06-15T14:48:02.078+10:00</creation_time>
<origin>rhev</origin>
<stateless>>false</stateless>
<delete_protected>>false</delete_protected>
<sso>
  <methods>
    <method id="GUEST_AGENT"/>
  </methods>
</sso>
<console enabled="false"/>
<timezone>Etc/GMT</timezone>
<initialization>
  <configuration>
    <type>ovf</type>
    <data>...</data>
  </configuration>
</initialization>
<placement_policy>
  <affinity>migratable</affinity>
</placement_policy>
<memory_policy>
  <guaranteed>536870912</guaranteed>
  <ballooning>>true</ballooning>
</memory_policy>
<usb>
  <enabled>>false</enabled>
</usb>
<soundcard_enabled>>true</soundcard_enabled>
<migration_downtime>-1</migration_downtime>
<virtio_scsi enabled="true"/>
<cpu_profile id="0000001a-001a-001a-001a-000000000035e"/>
<next_run_configuration_exists>>false</next_run_configuration_exists>
<numa_tune_mode>interleave</numa_tune_mode>
</vm>

```

### 3.13. EXAMPLE: CREATE VIRTUAL MACHINE NIC

The following example creates a virtual network interface to connect the example virtual machine to the `ovirtmgmt` network.

#### Example 3.15. Create a virtual machine NIC

##### Request:

```

POST /api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/nics HTTP/1.1
Accept: application/xml
Content-type: application/xml

```

```

<nic>
  <interface>virtio</interface>
  <name>nic1</name>
  <network>

```

```

    <name>ovirtmgmt</name>
  </network>
</nic>

```

**cURL command:**

```

# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" \
  -u [USER:PASS] --cacert [CERT] \
  -d "<nic><name>nic1</name><network><name>ovirtmgmt</name></network>
</nic>" \
  https://[RHEVM Host]:443/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/nics

```

### 3.14. EXAMPLE: CREATE VIRTUAL MACHINE STORAGE DISK

The following example creates an 8 GB Copy-On-Write storage disk for the example virtual machine.

**Example 3.16. Create a virtual machine storage disk****Request:**

```

POST /api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/disks HTTP/1.1
Accept: application/xml
Content-type: application/xml

<disk>
  <storage_domains>
    <storage_domain id="9ca7cb40-9a2a-4513-acef-dc254af57aac"/>
  </storage_domains>
  <size>8589934592</size>
  <type>system</type>
  <interface>virtio</interface>
  <format>cow</format>
  <bootable>true</bootable>
</disk>

```

**cURL command:**

```

# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" \
  -u [USER:PASS] --cacert [CERT] \
  -d "<disk><storage_domains> \
  <storage_domain id='9ca7cb40-9a2a-4513-acef-dc254af57aac' /> \
  </storage_domains><size>8589934592</size><type>system</type> \
  <interface>virtio</interface><format>cow</format> \
  <bootable>true</bootable></disk>" \
  https://[RHEVM Host]:443/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/disks

```

The `storage_domain` element tells the API to store the disk on the `data1` storage domain.

### 3.15. EXAMPLE: ATTACH ISO IMAGE TO VIRTUAL MACHINE

The boot media for our example virtual machine requires an CD-ROM or DVD ISO image for an operating system installation. This example uses a Red Hat Enterprise Server 6 ISO image for installation.

ISO images must be available in the `iso1` ISO domain for the virtual machines to use. Red Hat Enterprise Virtualization Platform provides an uploader tool that ensures that the ISO images are uploaded into the correct directory path with the correct user permissions.

Once the ISO is uploaded, an API user requests the ISO storage domain's `files` sub-collection to view the file resource:

#### Example 3.17. View the files sub-collection in an ISO storage domain

##### Request:

```
GET /api/storagedomains/00f0d9ce-da15-4b9e-9e3e-3c898fa8b6da/files
HTTP/1.1
Accept: application/xml
```

##### cURL command:

```
# curl -X GET -H "Accept: application/xml" -u [USER:PASS] --cacert
[CERT] \
  https://[RHEVM Host]:443/api/storagedomains/00f0d9ce-da15-4b9e-9e3e-
3c898fa8b6da/files
```

The API returns the following representation of the files sub-collection:

```
<files>
  <file id="rhel-server-6.0-x86_64-dvd.iso"
    href="/api/storagedomains/00f0d9ce-da15-4b9e-9e3e-3c898fa8b6da/
    files/rhel-server-6.0-x86_64-dvd.iso.iso">
    <name>rhel-server-6.0-x86_64-dvd.iso.iso</name>
    <storage_domain id="00f0d9ce-da15-4b9e-9e3e-3c898fa8b6da"
      href="/api/storagedomains/00f0d9ce-da15-4b9e-9e3e-
3c898fa8b6da"/>
    </file>
</files>
```

An API user attaches the `rhel-server-6.0-x86_64-dvd.iso` to our example virtual machine. Attaching an ISO image is equivalent to using the **Change CD** button in the Administration or User Portal.

#### Example 3.18. Attach an ISO image to the virtual machine

##### Request:

```
POST /api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/cdroms HTTP/1.1
Accept: application/xml
Content-type: application/xml
```

```
<cdrom>
  <file id="rhel-server-6.0-x86_64-dvd.iso"/>
</cdrom>
```

**cURL command:**

```
# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" \
  -u [USER:PASS] --cacert [CERT] \
  -d "<cdrom><file id='rhel-server-6.0-x86_64-dvd.iso' /></cdrom>" \
  https://[RHEVM Host]:443/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/cdroms
```

### 3.16. EXAMPLE: START VIRTUAL MACHINE

The virtual environment is complete and the virtual machine contains all necessary components to function. This example starts the virtual machine using the **start** action.

**Example 3.19. Start the virtual machine****Request:**

```
POST /api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48/start HTTP/1.1
Accept: application/xml
Content-type: application/xml
```

```
<action>
  <vm>
    <os>
      <boot dev="cdrom"/>
    </os>
  </vm>
</action>
```

**cURL command:**

```
# curl -X POST -H "Accept: application/xml" -H "Content-Type:
application/xml" \
  -u [USER:PASS] --cacert [CERT] \
  -d "<action><vm><os><boot dev='cdrom' /></os></vm></action>" \
  https://[RHEVM Host]:443/api/vms/6efc0cfa-8495-4a96-93e5-
ee490328cf48/start
```

The additional message entity sets the virtual machine's boot device to CD-ROM for this boot only. This enables the virtual machine to install Red Hat Enterprise Server 6 from the attached ISO image. The boot device reverts back to **disk** for all future boots.

### 3.17. EXAMPLE: CHECK SYSTEM EVENTS

The **start** action for the **vm1** creates several entries in the **events** collection. This example lists the events collection and identifies events specific to the API starting a virtual machine.

### Example 3.20. List the events collection

#### Request:

```
GET /api/events HTTP/1.1
Accept: application/xml
```

#### cURL command:

```
# curl -X GET -H "Accept: application/xml" -u [USER:PASS] \
  --cacert [CERT] \
  https://[RHEVM Host]:443/api/events
```

#### Result:

```
<events>
  ...
  <event id="103" href="/api/events/103">
    <description>User admin logged out.</description>
    <code>31</code>
    <severity>normal</severity>
    <time>2011-06-29T17:42:41.544+10:00</time>
    <user id="80b71bae-98a1-11e0-8f20-525400866c73"
      href="/api/users/80b71bae-98a1-11e0-8f20-525400866c73"/>
  </event>
  <event id="102" href="/api/events/102">
    <description>vm1 was started by admin (Host: hypervisor).
</description>
    <code>153</code>
    <severity>normal</severity>
    <time>2011-06-29T17:42:41.499+10:00</time>
    <user id="80b71bae-98a1-11e0-8f20-525400866c73"
      href="/api/users/80b71bae-98a1-11e0-8f20-525400866c73"/>
    <vm id="6efc0cfa-8495-4a96-93e5-ee490328cf48"
      href="/api/vms/6efc0cfa-8495-4a96-93e5-ee490328cf48"/>
    <host id="0656f432-923a-11e0-ad20-5254004ac988"
      href="/api/hosts/0656f432-923a-11e0-ad20-5254004ac988"/>
  </event>
  <event id="101" href="/api/events/101">
    <description>User admin logged in.</description>
    <code>30</code>
    <severity>normal</severity>
    <time>2011-06-29T17:42:40.505+10:00</time>
    <user id="80b71bae-98a1-11e0-8f20-525400866c73"
      href="/api/users/80b71bae-98a1-11e0-8f20-525400866c73"/>
  </event>
  ...
</events>
```

The following events occur:

- **id="101"** - The API authenticates with the **admin** user's user name and password.
- **id="102"** - The API, acting as the **admin** user, starts **vm1** on the **hypervisor** host.
- **id="103"** - The API logs out of the **admin** user account.

## CHAPTER 4. ENTRY POINT

A user begins interacting with the API through a **GET** request on the entry point URI consisting of a **host** and **base**.

### Example 4.1. Accessing the API Entry Point

If the **host** is `www.example.com` and the **base** is `/api`, the entry point appears with the following request:

```
GET /api HTTP/1.1
Accept: application/xml
Host: www.example.com
Authorization: [base64 encoded credentials]

HTTP/1.1 200 OK
Content-Type: application/xml

<api>
  <link rel="hosts" href="/api/hosts"/>
  <link rel="vms" href="/api/vms"/>
  ...
  <product_info>
    <name>Red Hat Enterprise Virtualization</name>
    <vendor>Red Hat</vendor>
    <version revision="0" build="0" minor="1" major="3"/>
  </product_info>
  <special_objects>
    <link rel="templates/blank" href="..."/>
    <link rel="tags/root" href="..."/>
  </special_objects>
  <summary>
    <vms>
      <total>10</total>
      <active>3</active>
    </vms>
    <hosts>
      <total>2</total>
      <active>2</active>
    </hosts>
    <users>
      <total>8</total>
      <active>2</active>
    </users>
    <storage_domains>
      <total>2</total>
      <active>2</active>
    </storage_domains>
  </summary>
</api>
```

**NOTE**

For simplicity, all other examples omit the **Host:** and **Authorization:** request headers and assume the **base** is the default **/api** path. This base path differs depending on your implementation.

## 4.1. PRODUCT INFORMATION

The entry point contains a **product\_info** element to help an API user determine the legitimacy of the Red Hat Enterprise Virtualization environment. This includes the **name** of the product, the **vendor** and the **version**.

### Example 4.2. Verify a genuine Red Hat Enterprise Virtualization environment

The follow elements identify a genuine Red Hat Enterprise Virtualization 3.2 environment:

```
<api>
  ...
  <product_info>
    <name>Red Hat Enterprise Virtualization</name>
    <vendor>Red Hat</vendor>
    <version revision="0" build="0" minor="2" major="3"/>
  </product_info>
  ...
</api>
```

## 4.2. LINK ELEMENTS

Access to the Entry Point provides **link** elements and URIs for all of the resource collections the API exposes. Each collection uses a relation type to identify the URI a client needs.

**Table 4.1. Available Relationship Types**

Relationship	Description
<b>capabilities</b>	Supported capabilities of the Red Hat Enterprise Virtualization Manager.
<b>datacenters</b>	Data centers.
<b>clusters</b>	Host clusters.
<b>networks</b>	Virtual networks.
<b>storagedomains</b>	Storage domains.
<b>hosts</b>	Hosts.
<b>vms</b>	Virtual machines.



Relationship	Description
<b>disks</b>	Virtual machine disks.
<b>templates</b>	Templates.
<b>vmpools</b>	Virtual machine pools.
<b>domains</b>	Identity service domains.
<b>groups</b>	Imported identity service groups.
<b>roles</b>	Roles.
<b>users</b>	Users.
<b>tags</b>	Tags.
<b>events</b>	Events.

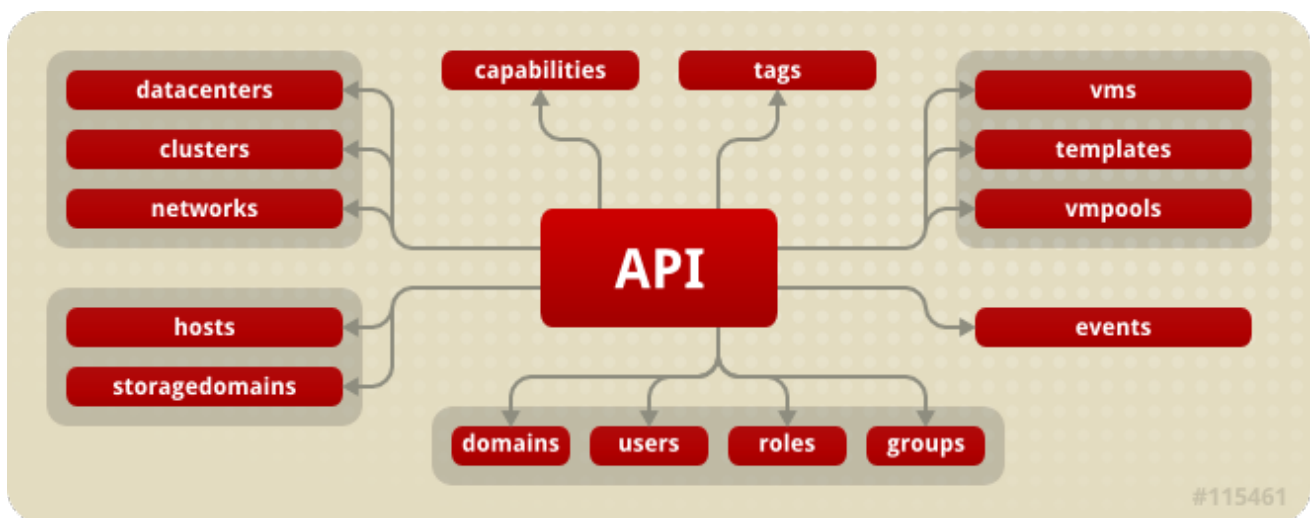


Figure 4.1. The relationship between the API entry point and the resource collections exposed by the API



#### NOTE

All URIs shown in example responses are illustrative. The format of all URIs returned by the server is opaque. Clients navigate to specific resources through the entry point URI and use the relationship types to access the URIs.

The server chooses to include absolute URIs or absolute paths <sup>[3]</sup> in the **link** element's **href** attribute, so clients are required to handle either form.

The **link** elements also contain a set of **search** URIs for certain collections. These URIs use URI templates <sup>[4]</sup> to integrate search queries. The purpose of the URI template is to accept a search

expression using the natural HTTP pattern of a query parameter. The client does not require prior knowledge of the URI structure. Thus clients should treat these templates as being opaque and access them with a URI template library.

Each search query URI template is identified with a relation type using the convention "**collection/search**".

**Table 4.2. Relationships associated with search query URIs**

Relationship	Description
<b>datacenters/search</b>	Query data centers.
<b>clusters/search</b>	Query host clusters.
<b>storagedomains/search</b>	Query storage domains.
<b>hosts/search</b>	Query hosts.
<b>vms/search</b>	Query virtual machines.
<b>disks/search</b>	Query disks.
<b>templates/search</b>	Query templates.
<b>vmpools/search</b>	Query virtual machine pools.
<b>events/search</b>	Query events.
<b>users/search</b>	Query users.

### 4.3. SPECIAL OBJECT ELEMENTS

Special object elements define relationships to special fixed resources within the virtualization environment.

**Table 4.3. Special Objects**

Relationship	Description
<b>templates/blank</b>	The default <b>blank</b> virtual machine template for your virtualization environment. This template exists in every cluster as opposed to a standard template, which only exists in a single cluster.
<b>tags/root</b>	The <b>root</b> tag that acts as a base for tag hierarchy in your virtualization environment.

### 4.4. SUMMARY ELEMENT

The summary element shows a high level summary of the system's statistics.

**Table 4.4. Summary Elements**

Element	Description
<b>vms</b>	Total number of vms and total number of active vms.
<b>hosts</b>	Total number of hosts and total number of active hosts.
<b>users</b>	Total number of users and total number of active users.
<b>storage_domains</b>	Total number of storage domains and total number of active storage domains.

## 4.5. RESTFUL SERVICE DESCRIPTION LANGUAGE (RSDL)

RESTful Service Description Language (RSDL) provides a description of the structure and elements in the REST API in one whole XML specification. Invoke the RSDL using the following request.

```
GET /api?rSDL HTTP/1.1
Accept: application/xml
```

This produces an XML document in the following format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<rSDL href="/api?rSDL" rel="rSDL">
  <description>...</description>
  <version major="3" minor="1" build="0" revision="0"/>
  <schema href="/api?schema" rel="schema">
    <name>...</name>
    <description>...</description>
  </schema>
  <links>
    <link href="/api/capabilities" rel="get">
      ...
    </link>
    ...
  </links>
</rSDL>
```

**Table 4.5. RSDL Structure Elements**

Element	Description
<b>description</b>	A plain text description of the RSDL document.
<b>version</b>	The API version, including <b>major</b> release, <b>minor</b> release, <b>build</b> and <b>revision</b> .
<b>schema</b>	A link to the XML schema (XSD) file.

Element	Description
<b>links</b>	Defines each <b>link</b> in the API.

Each **link** element contains the following a structure:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<rsdl href="/api?rsdl" rel="rsdl">
  ...
  <links>
    <link href="/api/..." rel="...">
      <request>
        <http_method>...</http_method>
        <headers>
          <header>
            <name>...</name>
            <value>...</value>
          </header>
          ...
        </headers>
        <body>
          <type>...</type>
          <parameters_set>
            <parameter required="..." type="...">
              <name>...</name>
            </parameter>
            ...
          </parameters_set>
        </body>
      </request>
      <response>
        <type>...</type>
      </response>
    </link>
    ...
  </links>
</rsdl>
```

Table 4.6. RSDL Link Structure Elements

Element	Description
<b>link</b>	A URI for API requests. Includes a URI attribute ( <b>href</b> ) and a relationship type attribute ( <b>rel</b> ).
<b>request</b>	Defines the request properties required for the link.
<b>http_method</b>	The method type to access this link. Includes the standard HTTP methods for REST API access: <b>GET</b> , <b>POST</b> , <b>PUT</b> and <b>DELETE</b> .

Element	Description
<b>headers</b>	Defines the headers for the HTTP request. Contains a series of <b>header</b> elements, which each contain a header <b>name</b> and <b>value</b> to define the header.
<b>body</b>	Defines the body for the HTTP request. Contains a resource <b>type</b> and a <b>parameter_set</b> , which contains a sets of <b>parameter</b> elements with attributes to define whether they are <b>required</b> for a request and the data <b>type</b> . The <b>parameter</b> element also includes a <b>name</b> element to define the Red Hat Enterprise Virtualization Manager property to modify and also a further <b>parameter_set</b> subset if <b>type</b> is set to <b>collection</b> .
<b>response</b>	Defines the output for the HTTP request. Contains a <b>type</b> element to define the resource structure to output.

Use the RSDL in your applications as a method to map all links and parameter requirements for controlling a Red Hat Enterprise Virtualization environment.

## 4.6. RED HAT ENTERPRISE VIRTUALIZATION WINDOWS GUEST VSS SUPPORT

The Red Hat Enterprise Virtualization Backup and Restore API provides integration with Microsoft Windows Volume Shadow Copy Service (VSS) using **qemu-ga**. The VSS provider registration is made in the guest level as part of the Guest Tools deployment.

**qemu-ga** provides VSS support and live snapshots attempt to quiesce whenever possible.

## 4.7. QEMU GUEST AGENT OVERVIEW

In Red Hat Enterprise Linux 6.4, the QEMU Guest Agent (QEMU GA) provided protection against the corruption of Linux guest virtual machines. Before issuing a snapshot request or creating a backup copy of the disk, the management stack (libvirt) sent a **guest-fsfreeze-freeze QMP** command to the QEMU GA via the virtio-serial port. This command caused the guest agent to freeze all of the guest virtual machine's filesystems, via the **FIFREEZE ioctl()** kernel function. This **ioctl()** function is implemented by the Linux kernel in the guest virtual machine. The function flushes the filesystem cache in the guest virtual machine's kernel, brings the filesystem into a consistent state, and denies all userspace threads write access to the filesystem.

Only after the **QEMU GA** reported success, **libvirt** would proceed with the snapshot. At its completion, **libvirt** sends the **guest-fsfreeze-thaw QMP** command to the **QEMU GA** over the virtio-serial port. This command tells the **QEMU GA** to issue a **FITHAW ioctl()**, which unblocks the userspace threads that were previously denied write access, and resumes normal processing. This process did not ensure that application-level data was in a consistent state when the virtual disk snapshot was taken. This was evident in cases where the **fsck** utility found no problems on filesystems restored from snapshots, and yet applications were not able to resume processing from the point where the snapshot was taken and userspace processes may not have written their internal buffers to files on the disk.

Red Hat Enterprise Linux 6.5 ensures that both file and application-level synchronization (flushing) are done. Guest system administrators can write and install application-specific freezing and thawing hook scripts. Before freezing the filesystems, the **QEMU GA** invokes the main hook script (included in the

**QEMU GA** package). The main hook script in turn calls individual application-specific scripts, prepared by the guest system administrators, that temporarily deactivate all guest virtual machine applications. All of these actions occur when the mode is changed to "freeze".

Just before filesystems are frozen, the guest system administrator's scripts cause the databases and other file system applications to flush their working buffers to the virtual disk and to stop accepting further client connections. The applications then bring their data files into a consistent state where resumption of processing, with the reactivated (or a freshly started) instance of the application (after restoring the virtual disk from backup) is possible. When all scripts are done making their respective applications inactive, and the main hook script returns, **QEMU GA** proceeds to freeze filesystems, and the management stack takes the snapshot. Once all this is done, and it is confirmed that the snapshot is taken, the file system will resume to serve write requests. This process is called thawing.

Thawing is freezing in reverse order. Instructed by **libvirt**, **QEMU GA** thaws the guest virtual machine's filesystems. It then invokes individual hook scripts (via the main hook script) to resume or restart applications that had been inactivated during the freeze process.

## 4.8. VSS TRANSACTION FLOW

In processing a backup, the requester and the writers coordinate to do several things: to provide a stable system image from which to back up data (the shadow copied volume), to group files together on the basis of their usage, and to store information on the saved data. This must all be done with minimal interruption of the writer's normal work flow.

A requester (in our case the Backup Vendor) queries writers for their metadata, processes this data, notifies the writers prior to the beginning of the shadow copy and of the backup operations, and then notifies the writers again after the shadow copy and backup operations end.

Here is how the QEMU VSS provider is registered in Windows OS after the Guest Tools installation:

```
C:\Users\Administrator>vssadmin list providers
vssadmin 1.1 - Volume Shadow Copy Service administrative command-line tool
(C) Copyright 2001-2005 Microsoft Corp.

Provider name: 'QEMU Guest Agent VSS Provider'
  Provider type: Software
  Provider Id: {3629d4ed-ee09-4e0e-9a5c-6d8ba2872aef}
  Version: 0.12.1
```

---

[3] The RFC describing Uniform Resource Locator Generic Syntax provides a [Collected ABNF for URI](#) that explains the difference between these forms.

[4] The Internet-Draft describing the format of a URI Template is available at <http://tools.ietf.org/html/draft-gregorio-uritemplate-03>.

## CHAPTER 5. COMPATIBILITY LEVEL VERSIONS

Each host connected to Red Hat Enterprise Virtualization Manager contains a version of VDSM. VDSM is the agent within the virtualization infrastructure that runs on a hypervisor or host and provides local management for virtual machines, networks and storage. Red Hat Enterprise Virtualization Manager controls hypervisors and hosts using current or older versions of VDSM.

The Manager migrates virtual machines from host to host within a cluster. This means the Manager excludes certain features from a current version of VDSM until all hosts within a cluster have the same VDSM version, or more recent, installed.

The API represents this concept as a **compatibility level** for each host, corresponding to the version of VDSM installed. A **version** element contains **major** and **minor** attributes, which describe the compatibility level.

When an administrator upgrades all hosts within a cluster to a certain level, the **version** level appears under a **supported\_versions** element. This indicates the cluster's **version** is now updatable to that level. Once the administrator updates all clusters within a data center to a given level, the data center is updatable to that level.

### 5.1. UPGRADING COMPATIBILITY LEVELS

#### Example 5.1. Upgrading compatibility levels

The API reports the following compatibility levels for Red Hat Enterprise Virtualization Manager 3.4 instance:

```
<host ...>
  ...
  <version major="4" minor="14" build="11" revision="0"
full_version="vdsm-4.14.11-5.el6ev"/>
  ...
</host>

<cluster ...>
  ...
  <version major="3" minor="4"/>
  ...
</cluster>

<data_center ...>
  ...
  <version major="3" minor="4"/>
  </supported_versions>
  ...
</data_center>
```

All hosts within a cluster are updated to VDSM 3.5 and the API reports:

```
<host ...>
  ...
  <version major="4" minor="16" build="7" revision="4"
full_version="vdsm-4.16.7.4-1.el6ev"/>
```

```
    ...
  </host>

  <cluster ...>
    ...
    <version major="3" minor="4"/>
    <supported_versions>
      <version major="3" minor="5"/>
    </supported_versions>
    ...
  </cluster>

  <data_center ...>
    ...
    <version major="3" minor="4"/>
    <supported_versions/>
    ...
  </data_center>
```

The cluster is now updatable to **3.5**. When the cluster is updated, the API reports:

```
<cluster ...>
  ...
  <version major="3" minor="5"/>
  <supported_versions/>
  ...
</cluster>

<data_center ...>
  ...
  <version major="3" minor="4"/>
  <supported_versions>
    <version major="3" minor="5"/>
  </supported_versions>
  ...
</data_center>
```

The API user updates the data center to **3.5**. Once upgraded, the API exposes features available in Red Hat Enterprise Virtualization 3.5 for this data center.



## CHAPTER 6. CAPABILITIES

The **capabilities** collection provides information about the capabilities that versions of Red Hat Enterprise Virtualization support. These capabilities include active features and available enumerated values for specific properties.

To retrieve a full list of the capabilities for all versions of Red Hat Enterprise Virtualization from 3.2 to the latest version, submit the following request:

```
GET /api/capabilities/ HTTP/1.1
Content-Type: application/xml
Accept: application/xml
```

### 6.1. VERSION-DEPENDENT CAPABILITIES

The **capabilities** element contains any number of **version** elements that describe capabilities dependent on a compatibility level.

The **version** element includes attributes for **major** and **minor** version numbers. This indicates the current version level.

The following representation shows capabilities specific to Red Hat Enterprise Virtualization Manager **3.0**, **3.1**, **3.2**, **3.3**, **3.4**, **3.5**, and **3.6** respectively:

```
<capabilities>
  <version major="3" minor="0">
    ...
  </version>
  <version major="3" minor="1">
    ...
  </version>
  <version major="3" minor="2">
    ...
  </version>
  <version major="3" minor="3">
    ...
  </version>
  <version major="3" minor="4">
    ...
  </version>
  <version major="3" minor="5">
    ...
  </version>
  <version major="3" minor="6">
    ...
  </version>
  ...
</capabilities>
```

Each **version** contains a series of capabilities dependent on the version specified.

### 6.2. CURRENT VERSION

The **current** element signifies if the **version** specified is the most recent supported compatibility level. The value is a Boolean **true** or **false**.

```
<capabilities>
  <version major="3" minor="5">
    ...
    <current>true</current>
    ...
  </version>
</capabilities>
```

## 6.3. FEATURES

Each version contains a list of compatible features. The following table lists the features compatible with Red Hat Enterprise Virtualization 3.6.

**Table 6.1. Feature Types**

Feature	Description
Transparent huge pages memory policy	Allows you to define the availability of transparent huge pages for hosts. Acceptable values are <b>true</b> or <b>false</b> .
Gluster support	This features provides support for using Gluster Volumes and Bricks as storage.
POSIX-FS storage type	This feature provides support for the POSIX-FS storage type.
Port mirroring	Allows you to define the availability of port mirroring for virtual network interface cards. Acceptable values are <b>true</b> or <b>false</b> .
Display server time	Displays the current date and time in the API.
Display host memory	Displays the total memory for a specific host.
Display host sockets	Allows you to define the topology of a host CPU. Takes three attributes - <b>sockets</b> , <b>threads</b> and <b>cores</b> - which define the number of host sockets displayed, the number of threads and the number of cores per socket.
Search case sensitivity	Allows you to specify whether a search query is case sensitive by providing the <b>case-sensitive=true false</b> URL parameter.
Maximum results for <b>GET</b> requests	Allows you to specify the maximum number of results returned from a <b>GET</b> request.
JSON content type	Allows you to define a header that makes it possible to set a correlation ID for <b>POST</b> and <b>PUT</b> requests.

Feature	Description
Activate and deactivate disks	Allows you to activate or deactivate a disk by specifying <b>activate</b> or <b>deactivate</b> as an action on a specific virtual disk.
Activate and deactivate network interface cards	Allows you to activate or deactivate a network interface card by specifying <b>activate</b> or <b>deactivate</b> as an action on a specific network interface card.
Snapshot refactoring	Allows you to refactor snapshots for virtual machines.
Remove template disks from specified storage domain	Allows you to remove virtual machine template disks from a specific storage domain using a <b>DELETE</b> request.
Floating disks	Floating disks are disks that are not attached to any virtual machine. With this feature, such disks also appear in the root collection rather than under specific virtual machines.
Asynchronous deletion	Allows you to specify that <b>DELETE</b> requests are to be performed asynchronously by specifying the <b>async</b> URL parameter.
Session-based authentication	Allows you to maintain a client-server session by providing an appropriate header, eliminating the need to log in with each request.
Virtual machine applications	Allows you to view a list of applications installed on a specific virtual machine. This list is located in the <b>applications</b> element of a specific virtual machine.
VirtIO-SCSI support	This feature provides support for para-virtualized SCSI controller devices.
Custom resource comments	Allows you to add custom comments to data centers and other resources.
Refresh host capabilities	Allows you to synchronize data on hosts and refresh the list of network interfaces available to a specific host.
Memory snapshot	Allows you to include the memory state as part of a virtual machine snapshot.
Watchdog device	Allows you to create watchdog devices for virtual machines.
SSH authentication method	Allows you to authenticate with hosts over SSH using an administrative user password or SSH public key.
Force select SPM	Allows you to force the selection of a host as SPM.

Feature	Description
Console device	Allows you to control the attachment of console devices in virtual machines.
Storage server connections for storage domains	Allows you to view storage server connections to or from a specific storage domain.
Attach and detach storage server connections	Allows you to attach or detach storage server connections to or from a specific storage domain.
Single PCI for Qxl	Allows you to view multiple video devices via a single PCI guest device.
Add virtual machine from OVF configuration	Allows you to add a virtual machine from a provided OVF configuration.
Virtual network interface card profiles	Allows you to configure a profile that defines quality of service, custom properties and port mirroring for a specific virtual network interface card.
Image storage domains (tech preview)	Allows you to import images from and export images to an image storage domain such as an OpenStack image service (Glance).
Virtual machine fully qualified domain names	Allows you to retrieve the fully qualified domain name of a specific virtual machine.
Attaching disk snapshots to virtual machines	This feature provides support for attaching disk snapshots to virtual machines.
Cloud-Init	Allows you to initialize a virtual machine using Cloud Init.
Gluster brick management	Allows you to delete gluster bricks with data migration using the actions <b>migrate</b> and <b>DELETE</b> . The <b>migrate</b> action and <b>stopmigrate</b> action allow you to migrate data and reuse the brick.
Copy and move back-end disks	Allows you to copy and move disks in additional contexts.
Network labels	Allows you to provision networks on hosts using labels.
Reboot virtual machines	Allows you to reboot virtual machines via a single action.

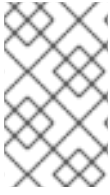
A full list of feature elements and their attributes is located at the top of the section for the relevant version:

```
<capabilities>
  <version major="3" minor="4">
```

```
    ...
    <features>
      <feature>
        <name>Transparent-Huge-Pages Memory Policy</name>
        <transparent_huepages/>
      </feature>
    </features>
    ...
  </version>
</capabilities>
```

## CHAPTER 7. COMMON FEATURES

### 7.1. ELEMENT PROPERTY ICONS



#### NOTE

Throughout this guide, the elements of each resource are detailed in tables. These tables include a properties column, displaying icons depicting element properties. The meaning of these icons is shown in [Table 7.1, “Element property icons”](#).

**Table 7.1. Element property icons**

Property	Description	Icon
Required for creation	These elements must be included in the client-provided representation of a resource on creation, but are not mandatory for an update of a resource.	
Non-updatable	These elements cannot have their value changed when updating a resource. Include these elements in a client-provided representation on update only if their values are not altered by the API user. If altered, the API reports an error.	
Read-only	These elements are read-only. Values for read-only elements are not created or modified.	

## 7.2. REPRESENTATIONS

### 7.2.1. Representations

The API structures resource representations in the following XML document structure:

```
<resource id="resource_id" href="/api/collection/resource_id">
  <name>Resource-Name</name>
  <description>A description of the resource</description>
  ...
</resource>
```

In the context of a virtual machine, the representation appears as follows:

```
<vm id="5b9bbce5-0d72-4f56-b931-5d449181ee06"
  href="/api/vms/5b9bbce5-0d72-4f56-b931-5d449181ee06">
  <name>RHEL6-Machine</name>
  <description>Red Hat Enterprise Linux 6 Virtual Machine</description>
  ...
</vm>
```

### 7.2.2. Common Attributes to Resource Representations

All resource representations contain a set of common attributes

**Table 7.2. Common attributes to resource representations**

Attribute	Type	Description	Properties
<b>id</b>	GUID	Each resource in the virtualization infrastructure contains an <b>id</b> , which acts as a globally unique identifier (GUID). The GUID is the primary method of resource identification.	
<b>href</b>	string	The canonical location of the resource as an absolute path.	

### 7.2.3. Common Elements to Resource Representations

All resource representations contain a set of common elements.

**Table 7.3. Common elements to resource representations**

Element	Type	Description	Properties
<b>name</b>	string	A user-supplied human readable name for the resource. The <b>name</b> is unique across all resources of its type.	
<b>description</b>	string	A free-form user-supplied human readable description of the resource.	

## 7.3. COLLECTIONS

### 7.3.1. Collections

A collection is a set of resources of the same type. The API provides both top-level collections and sub-collections. An example of a top-level collection is the **hosts** collection which contains all virtualization hosts in the environment. An example of a sub-collection is the **host.nics** collection which contains resources for all network interface cards attached to a host resource.

### 7.3.2. Listing All Resources in a Collection

Obtain a listing of resources in a collection with a **GET** request on the collection URI obtained from the entry point.

Include an **Accept** HTTP header to define the MIME type for the response format.

```
GET /api/[collection] HTTP/1.1
Accept: [MIME type]
```

### 7.3.3. Listing Extended Resource Sub-Collections

The API extends collection representations to include sub-collections when the **Accept** header includes the **detail** parameter.

```
GET /api/collection HTTP/1.1
Accept: application/xml; detail=subcollection
```

This includes multiple sub-collection requests using either separated **detail** parameters:

```
GET /api/collection HTTP/1.1
Accept: application/xml; detail=subcollection1; detail=subcollection2
```

Or one **detail** parameter that separates the sub-collection with the **+** operator:

```
GET /api/collection HTTP/1.1
Accept: application/xml;
detail=subcollection1+subcollection2+subcollection3
```

The API supports extended sub-collections for the following main collections.

**Table 7.4. Collections that use extended sub-collections**

Collection	Extended Sub-Collection Support
<b>hosts</b>	<b>statistics</b>
<b>vms</b>	<b>statistics, nics, disks</b>

**Example 7.1. A request for extended statistics, NICs and disks sub-collections in the vms collection**

```
GET /api/vms HTTP/1.1
Accept: application/xml; detail=statistics+nics+disks
```

### 7.3.4. Searching Collections with Queries

A **GET** request on a "**collection/search**" link results in a search query of that collection. The API only returns resources within the collection that satisfy the search query constraints.

```
GET /api/collection?search={query} HTTP/1.1
Accept: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<collection>
  <resource id="resource_id" href="/api/collection/resource_id">
    ...
  </resource>
  ...
</collection>
```



### 7.3.5. Maximum Results Parameter

Use the **max** URL parameter to limit the list of results. Previous to Red Hat Enterprise Virtualization 3.4, the default size of the result was limited by the `SearchResultsLimit` parameter. From Red Hat Enterprise Virtualization 3.4, this parameter does not affect the REST API and an API search query without specifying the **max** parameter will return all values. Specifying the **max** parameter is recommended to prevent API search queries from slowing UI performance.

```
GET /api/collection;max=1 HTTP/1.1
Accept: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<collection>
  <resource id="resource_id" href="/api/collection/resource_id">
    <name>Resource-Name</name>
    <description>A description of the resource</description>
    ...
  </resource>
</collection>
```

### 7.3.6. Case Sensitivity

All search queries are case sensitive by default. The URL syntax provides a Boolean option to toggle case sensitivity.

#### Example 7.2. Case insensitive search query

```
GET /api/collection;case-sensitive=false?search={query} HTTP/1.1
Accept: application/xml
```

### 7.3.7. Query Syntax

The API uses the URI templates to perform a search **query** with a **GET** request:

```
GET /api/collection?search={query} HTTP/1.1
Accept: application/xml
```

The **query** template value refers to the search query the API directs to the **collection**. This **query** uses the same format as Red Hat Enterprise Virtualization Query Language:

```
(criteria) [sortby (element) asc|desc]
```

The **sortby** clause is optional and only needed when ordering results.

**Table 7.5. Example search queries**

Collection	Criteria	Result
------------	----------	--------

Collection	Criteria	Result
<b>hosts</b>	<b>vms.status=up</b>	Displays a list of all hosts running virtual machines that are <b>up</b> .
<b>vms</b>	<b>domain=qa.company.com</b>	Displays a list of all virtual machines running on the specified domain.
<b>vms</b>	<b>users.name=mary</b>	Displays a list of all virtual machines belonging to users with the user name <b>mary</b> .
<b>events</b>	<b>severity&gt;normal sortby time</b>	Displays the list of all <b>events</b> with severity higher than <b>normal</b> and sorted by the <b>time</b> element values.
<b>events</b>	<b>severity&gt;normal sortby time desc</b>	Displays the list of all <b>events</b> with severity higher than <b>normal</b> and sorted by the <b>time</b> element values in descending order.

The API requires the **query** template to be URL-encoded to translate reserved characters, such as operators and spaces.

#### Example 7.3. URL-encoded search query

```
GET /api/vms?search=name%3Dvm1 HTTP/1.1
Accept: application/xml
```

### 7.3.8. Wildcards

Search queries substitute part of a value with an asterisk as a wildcard.

#### Example 7.4. Wildcard search query for name=vm\*

```
GET /api/vms?search=name%3Dvm* HTTP/1.1
Accept: application/xml
```

This query would result in all virtual machines with names beginning with **vm**, such as **vm1**, **vm2**, **vma** or **vm-webserver**.

#### Example 7.5. Wildcard search query for name=v\*1

```
GET /api/vms?search=name%3Dv*1 HTTP/1.1
Accept: application/xml
```

This query would result in all virtual machines with names beginning with **v** and ending with **1**, such as **vm1**, **vr1** or **virtualmachine1**.

### 7.3.9. Pagination

Some Red Hat Enterprise Virtualization environments contain large collections of resources. However, the API only displays a default number of resources for one search query to a collection. To display more than the default, the API separates collections into pages via a search query containing the **page** command.

#### Example 7.6. Paginating resources

This example paginates resources in a collection. The URL-encoded request is:

```
GET /api/collection?search=page%201 HTTP/1.1
Accept: application/xml
```

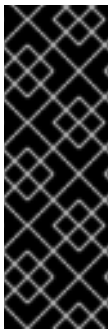
Increase the **page** value to view the next page of results:

```
GET /api/collection?search=page%202 HTTP/1.1
Accept: application/xml
```

Use the **page** command in conjunction with other commands in a search query. For example:

```
GET /api/collection?search=sortBy%20element%20asc%20page%202 HTTP/1.1
Accept: application/xml
```

This query displays the second page in a collection listing ordered by a chosen element.



#### IMPORTANT

The REST APIs are stateless; it is not possible to retain a state between different requests since all requests are independent from each other. As a result, if a status change occurs between your requests, then the page results may be inconsistent.

For example, if you request a specific page from a list of VMs, and a status change occurs before you can request the next page, then your results may be missing entries or contain duplicated entries.

### 7.3.10. Creating a Resource in a Collection

Create a new resource with a **POST** request to the collection URI containing a representation of the new resource.

A **POST** request requires a **Content-Type** header. This informs the API of the representation MIME type in the body content as part of the request.

Include an **Accept** HTTP header to define the MIME type for the response format.

Each resource type has its own specific required properties. The client supplies these properties when creating a new resource. Refer to the individual resource type documentation for more details.

If a required property is absent, the creation fails with a representation indicating the missing elements.

```
POST /api/[collection] HTTP/1.1
Accept: [MIME type]
Content-Type: [MIME type]

[body]
```

### 7.3.11. Asynchronous Requests

The API performs asynchronous **POST** requests unless the user overrides them with an **Expect: 201-created** header.

For example, certain resources, such as Virtual Machines, Disks, Snapshots and Templates, are created asynchronously. A request to create an asynchronous resource results in a **202 Accepted** status. The initial document structure for a **202 Accepted** resource also contains a **creation\_status** element and link for creation status updates. For example:

```
POST /api/collection HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<resource>
  <name>Resource-Name</name>
</resource>

HTTP/1.1 202 Accepted
Content-Type: application/xml

<resource id="resource_id" href="/api/collection/resource_id">
  <name>Resource-Name</name>
  <creation_status>
    <state>pending</state>
  </creation_status>
  <link rel="creation_status"
href="/api/collection/resource_id/creation_status/creation_status_id"/>
  ...
</resource>
```

A **GET** request to the **creation\_status** link provides a creation status update:

```
GET /api/collection/resource_id/creation_status/creation_status_id
HTTP/1.1
Accept: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<creation id="creation_status_id"
href="/api/collection/resource_id/creation_status/creation_status_id">
  <status>
```

```

        <state>complete</state>
    </status>
</creation>

```

Overriding the asynchronous resource creation requires an **Expect: 201-created** header:

```

POST /api/collection HTTP/1.1
Accept: application/xml
Content-Type: application/xml
Expect: 201-created

<resource>
    <name>Resource-Name</name>
</resource>

```

## 7.4. RESOURCES

### 7.4.1. Resources

Resources are data sources in a RESTful web service. Each resource type contains a set of common parameters that the REST API abstracts to form a **resource representation**, usually in XML or JSON. Users can view a resource representation, then edit the parameters and send the representation back to the resource's URL within the API, which modifies the resource. Users can also delete individual resources through REST.

A RESTful web service also groups resources into **collections**. Users can view a representation of all resources in a collection. Users also send resource representations to a specific collection to create a new resource within that particular collection.

### 7.4.2. Retrieving a Resource

Obtain the state of a resource with a **GET** request on a URI obtained from a collection listing.

Include an **Accept** HTTP header to define the MIME type for the response format.

```

GET /api/[collection]/[resource_id] HTTP/1.1
Accept: [MIME type]

```

You can obtain additional information from some resources using the **All-Content: true** header. The RESTful Service Description Language describes which links support this header.

```

GET /api/[collection]/[resource_id] HTTP/1.1
Accept: [MIME type]
All-Content: true

```

### 7.4.3. Updating a Resource

Modify resource properties with a **PUT** request containing an updated description from a previous **GET** request for the resource URI. Details on modifiable properties are found in the individual resource type documentation.

A **PUT** request requires a **Content-Type** header. This informs the API of the representation MIME type in the body content as part of the request.

Include an **Accept** HTTP header to define the MIME type for the response format.

```
PUT /api/collection/resource_id HTTP/1.1
Accept: [MIME type]
Content-Type: [MIME type]

[body]
```

This does not include immutable resource properties that an API user has attempted to modify. If an attempt is made to modify a *strictly* immutable resource property, the API reports a conflict with an error message representation in the response body.

Properties omitted from the representation are ignored and not changed.

#### 7.4.4. Deleting a Resource

Delete a resource with a **DELETE** request sent to its URI.

Include an **Accept** HTTP header to define the MIME type for the response format.

```
DELETE /api/[collection]/[resource_id] HTTP/1.1
Accept: [MIME type]
```

Some cases require optional body content in the **DELETE** request to specify additional properties. A **DELETE** request with optional body content requires a **Content-Type** header to inform the API of the representation MIME type in the body content. If a **DELETE** request contains no body content, omit the **Content-Type** header.

#### 7.4.5. Sub-Collection Relationships

A sub-collection relationship defines a hierarchical link between a resource and a sub-collection. The sub-collection exists or has some meaning in the context of a parent resource. For example, a virtual machine contains network interfaces, which means the API maps the relationship between the virtual machine resource and the network interfaces sub-collection.

Sub-collections are used to model the following relationships types:

- Where one parent resource can contain several child resources and vice versa. For example, a virtual machine can contain several disks and some disks are shared among multiple virtual machines.
- Where mapped resources are dependent on a parent resource. Without the parent resource, the dependent resource cannot exist. For example, the link between a virtual machine and snapshots.
- Where mapped resources exist independently from parent resources but data is still associated with the relationship. For example, the link between a cluster and a network.

The API defines a relationship between a resource and a sub-collection using the **link rel=** attribute:

```
GET /api/collection/resource_id HTTP/1.1
```

```

Accept: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<resource id="resource_id" href="/api/collection/resource_id">
  ...
  <link rel="subcollection"
    href="/api/collection/resource_id/subcollection"/>
  ...
</resource>

```

The API user now queries the sub-collection.

```

GET /api/collection/resource_id/subcollection HTTP/1.1
Accept: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<subcollection>
  <subresource id="subresource_id"
    href="/api/collection/resource_id/subcollection/subresource_id">
    ...
  </subresource>
  ...
</subcollection>

```

### 7.4.6. XML Element Relationships

XML element links act as an alternative to sub-collections to express relationships between resources. XML element links are simply elements with a "href" attribute that points to the linked element.

XML element links are used to model simple 1:N mappings between resources without a dependency and without data associated with the relationship. For example, the relationship between a host and a cluster.

Examples of such relationships include:

- Backlinks from a resource in a sub-collection to a parent resource; or
- Links between resources with an arbitrary relationship.

#### Example 7.7. Backlinking from a sub-collection resource to a resource using an XML element

```

GET /api/collection/resource_id/subcollection/subresource_id HTTP/1.1

HTTP/1.1 200 OK
Content-Type: application/xml

<subcollection>
  <subresource id="subresource_id"
    href="/api/collection/resource_id/subcollection/subresource_id">
    <resource id="resource_id" href="/api/collection/resource_id"/>
  </subresource>
</subcollection>

```

```

    ...
  </subresource>
</subcollection>

```

### 7.4.7. Actions

Most resources include a list of action links to provide functions not achieved through the standard HTTP methods.

```

<resource>
  ...
  <actions>
    <link rel="start" href="/api/collection/resource_id/start"/>
    <link rel="stop" href="/api/collection/resource_id/stop"/>
    ...
  </actions>
  ...
</resource>

```

The API invokes an action with a **POST** request to the supplied URI. The body of the **POST** requires an **action** representation encapsulating common and task-specific parameters.

**Table 7.6. Common action parameters**

Element	Description
<b>async</b>	<b>true</b> if the server responds immediately with <b>202 Accepted</b> and an action representation contains a <b>href</b> link to be polled for completion.
<b>grace_period</b>	a grace period in milliseconds, which must expire before the action is initiated.

Individual actions and their parameters are documented in the individual resource type's documentation. Some parameters are mandatory for specific actions and their absence is indicated with a **fault** response.

An action also requires a **Content-Type: application/xml** header since the **POST** request requires an XML representation in the body content.

When the action is initiated asynchronously, the immediate **202 Accepted** response provides a link to monitor the status of the task:

```

POST /api/collection/resource_id/action HTTP/1.1
Content-Type: application/xml
Accept: application/xml

<action>
  <async>true</async>
</action>

HTTP/1.1 202 Accepted
Content-Type: application/xml

```



```

<action id="action_id"
  href="/api/collection/resource_id/action/action_id">
  <async>true</async>
  ...
</action>

```

A subsequent **GET** on the action URI provides an indication of the status of the asynchronous task.

**Table 7.7. Action statuses**

Status	Description
<b>pending</b>	Task has not yet started.
<b>in_progress</b>	Task is in operation.
<b>complete</b>	Task completed successfully.
<b>failed</b>	Task failed. The returned <b>action</b> representation would contain a <b>fault</b> describing the failure.

Once the task has completed, the action is retained for an indeterminate period. Once this has expired, subsequent **GETs** are **301 Moved Permanently** redirected back to the target resource.

```

GET /api/collection/resource_id/action/action_id HTTP/1.1
Accept: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<action id="action_id"
  href="/api/collection/resource_id/action/action_id">
  <status>
    <state>pending</state>
  </status>
  <link rel="parent" /api/collection/resource_id"/>
  <link rel="replay" href="/api/collection/resource_id/action"/>
</action>

```

An action representation also includes some links that are identified by the **rel** attribute:

**Table 7.8. Action relationships**

Type	Description
<b>parent</b>	A link back to the resource of this action.
<b>replay</b>	A link back to the original action URI. <b>POSTing</b> to this URI causes the action to be re-initiated.

### 7.4.8. Permissions

Each resource contains a **permissions** sub-collection. Each **permission** contains a **user**, an assigned **role** and the specified resource. For example:

```
GET /api/collection/resource_id/permissions HTTP/1.1
Accept: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<permissions>
  <permission id="permission-id"
    href="/api/collection/resource_id/permissions/permission_id">
    <role id="role_id" href="/api/roles/role_id"/>
    <user id="user_id" href="/api/users/user_id"/>
    <resource id="resource_id" href="/api/collection/resource_id"/>
  </permission>
  ...
</permissions>
```

A resource acquires a new permission when an API user sends a **POST** request with a **permission** representation and a **Content-Type: application/xml** header to the resource's **permissions** sub-collection. Each new permission requires a **role** and a **user**:

```
POST /api/collection/resource_id/permissions HTTP/1.1
Content-Type: application/xml
Accept: application/xml

<permission>
  <role id="role_id"/>
  <user id="user_id"/>
</permission>

HTTP/1.1 201 Created
Content-Type: application/xml

<permission id="permission_id"
  href="/api/resources/resource_id/permissions/permission_id">
  <role id="role_id" href="/api/roles/role_id"/>
  <user id="user_id" href="/api/users/user_id"/>
  <resource id="resource_id" href="/api/collection/resource_id"/>
</permission>
```

### 7.4.9. Handling Errors

Some errors require further explanation beyond a standard HTTP status code. For example, the API reports an unsuccessful resource state update or action with a **fault** representation in the response entity body. The fault contains a **reason** and **detail** strings. Clients must accommodate failed requests via extracting the **fault** or the expected resource representation depending on the response status code. Such cases are clearly indicated in the individual resource documentation.

```
PUT /api/collection/resource_id HTTP/1.1
Accept: application/xml
```

---

Content-Type: application/xml

```
<resource>  
  <id>id-update-test</id>  
</resource>
```

HTTP/1.1 409 Conflict  
Content-Type: application/xml

```
<fault>  
  <reason>Broken immutability constraint</reason>  
  <detail>Attempt to set immutable field: id</detail>  
</fault>
```

## CHAPTER 8. THE BACKUP AND RESTORE API

The backup and restore API is a collection of functions that allows you to perform full or file-level backup and restoration of virtual machines. The API combines several components of Red Hat Enterprise Virtualization, such as live snapshots and the REST API, to create and work with temporary volumes that can be attached to a virtual machine containing backup software provided by an independent software provider.

For supported third-party backup vendors, consult the Red Hat Enterprise Virtualization Ecosystem at [Red Hat Marketplace](#).

### 8.1. BACKING UP A VIRTUAL MACHINE

Use the backup and restore API to back up a virtual machine. This procedure assumes you have two virtual machines: the virtual machine to back up, and a virtual machine on which the software for managing the backup is installed.

#### Procedure 8.1. Backing Up a Virtual Machine

1. Using the REST API, create a snapshot of the virtual machine to back up:

```
POST /api/vms/11111111-1111-1111-1111-111111111111/snapshots/
HTTP/1.1
Accept: application/xml
Content-type: application/xml

<snapshot>
  <description>BACKUP</description>
</snapshot>
```



#### NOTE

When you take a snapshot of a virtual machine, a copy of the configuration data of the virtual machine as at the time the snapshot was taken is stored in the **data** attribute of the **configuration** attribute in **initialization** under the snapshot.



#### IMPORTANT

You cannot take snapshots of disks that are marked as shareable or that are based on direct LUN disks.

2. Retrieve the configuration data of the virtual machine from the **data** attribute under the snapshot:

```
GET /api/vms/11111111-1111-1111-1111-
111111111111/snapshots/11111111-1111-1111-1111-111111111111 HTTP/1.1
Accept: application/xml
Content-type: application/xml
```

3. Identify the disk ID and snapshot ID of the snapshot:

```
GET /api/vms/11111111-1111-1111-1111-
111111111111/snapshots/11111111-1111-1111-1111-111111111111/disks
HTTP/1.1
Accept: application/xml
Content-type: application/xml
```

4. Attach the snapshot to the backup virtual machine and activate the disk:

```
POST /api/vms/22222222-2222-2222-2222-222222222222/disks/ HTTP/1.1
Accept: application/xml
Content-type: application/xml

<disk id="11111111-1111-1111-1111-111111111111">
  <snapshot id="11111111-1111-1111-1111-111111111111"/>
  <active>true</active>
</disk>
```

5. Use the backup software on the backup virtual machine to back up the data on the snapshot disk.
6. Detach the snapshot disk from the backup virtual machine:

```
DELETE /api/vms/22222222-2222-2222-2222-222222222222/disks/11111111-
1111-1111-1111-111111111111 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <detach>true</detach>
</action>
```

7. Optionally, delete the snapshot:

```
DELETE /api/vms/11111111-1111-1111-1111-
111111111111/snapshots/11111111-1111-1111-1111-111111111111 HTTP/1.1
Accept: application/xml
Content-type: application/xml
```

You have backed up the state of a virtual machine at a fixed point in time using backup software installed on a separate virtual machine.

## 8.2. RESTORING A VIRTUAL MACHINE

Restore a virtual machine that has been backed up using the backup and restore API. This procedure assumes you have a backup virtual machine on which the software used to manage the previous backup is installed.

### Procedure 8.2. Restoring a Virtual Machine

1. Attach the disk to the backup virtual machine:

```
POST /api/vms/22222222-2222-2222-2222-222222222222/disks/ HTTP/1.1
Accept: application/xml
```

```
Content-type: application/xml
```

```
<disk id="11111111-1111-1111-1111-111111111111">  
</disk>
```

2. Use the backup software to restore the backup to the disk.
3. Detach the disk from the backup virtual machine:

```
DELETE /api/vms/22222222-2222-2222-2222-222222222222/disks/11111111-  
1111-1111-1111-111111111111 HTTP/1.1  
Accept: application/xml  
Content-type: application/xml  
  
<action>  
  <detach>true</detach>  
</action>
```

4. Create a new virtual machine using the configuration data of the virtual machine being restored:

```
POST /api/vms/ HTTP/1.1  
Accept: application/xml  
Content-type: application/xml  
  
<vm>  
  <cluster>  
    <name>cluster_name</name>  
  </cluster>  
  <name>NAME</name>  
  ...  
</vm>
```

5. Attach the disk to the new virtual machine:

```
POST /api/vms/33333333-3333-3333-3333-333333333333/disks/ HTTP/1.1  
Accept: application/xml  
Content-type: application/xml  
  
<disk id="11111111-1111-1111-1111-111111111111">  
</disk>
```

You have restored a virtual machine using a backup that was created using the backup and restore API.



## CHAPTER 9. DATA CENTERS



### 9.1. DATA CENTER ELEMENTS

The **datacenters** collection provides information about the data centers in a Red Hat Enterprise Virtualization environment. An API user accesses this information through the **rel="datacenters"** link obtained from the entry point URI.

The following table shows specific elements contained in a data center resource representation.

**Table 9.1. Data center elements**

Element	Type	Description	Properties
<b>name</b>	string	A plain text, human-readable name for the data center. The <b>name</b> is unique across all data center resources.	
<b>description</b>	string	A plain text, human-readable description of the data center	
<b>link rel="storagedomains"</b>	relationship	A link to the sub-collection for storage domains attached to this data center.	
<b>link rel="clusters"</b>	relationship	A link to the sub-collection for clusters attached to this data center.	
<b>link rel="networks"</b>	relationship	A link to the sub-collection for networks available to this data center.	
<b>link rel="permissions"</b>	relationship	A link to the sub-collection for data center permissions.	
<b>link rel="quotas"</b>	relationship	A link to the sub-collection for quotas associated with this data center.	
<b>local</b>	Boolean: true or false	Specifies whether the data center is a local data center, such as created in all-in-one instances.	
<b>storage_format</b>	enumerated	Describes the storage format version for the data center. A list of enumerated values are available in <b>capabilities</b> .	

Element	Type	Description	Properties
<b>version major= minor=</b>	complex	The compatibility level of the data center.	
<b>supported_versions</b>	complex	A list of possible version levels for the data center, including <b>version major= minor=</b> .	
<b>mac_pool</b>	string	The MAC address pool associated with the data center. If no MAC address pool is specified the default MAC address pool is used.	
<b>status</b>	see below	The data center status.	

The **status** contains one of the following enumerated values: **uninitialized**, **up**, **maintenance**, **not\_operational**, **problematic** and **contend**. These states are listed in **data\_center\_states** under **capabilities**.

## 9.2. XML REPRESENTATION OF A DATA CENTER

### Example 9.1. An XML representation of a data center

```
<data_center href="/api/datacenters/00000000-0000-0000-0000-0000-000000000000"
  id="00000000-0000-0000-0000-0000-000000000000">
  <name>Default</name>
  <description>The default Data Center</description>
  <link href="/api/datacenters/00000000-0000-0000-0000-0000-000000000000/storagedomains" rel="storagedomains"/>
  <link href="/api/datacenters/00000000-0000-0000-0000-0000-000000000000/clusters" rel="clusters"/>
  <link href="/api/datacenters/00000000-0000-0000-0000-0000-000000000000/networks" rel="networks"/>
  <link href="/api/datacenters/00000000-0000-0000-0000-0000-000000000000/permissions" rel="permissions"/>
  <link href="/api/datacenters/00000000-0000-0000-0000-0000-000000000000/quotas" rel="quotas"/>
  <local>false</local>
  <storage_format>v3</storage_format>
  <version major="3" minor="4"/>
  <supported_versions>
    <version major="3" minor="4"/>
  </supported_versions>
  <status>
    <state>up</state>
  </status>
```



```

    <mac_pool href="/api/macpools/00000000-0000-0000-0000-000000000000"
id="00000000-0000-0000-0000-000000000000"/>
</data_center>

```

### 9.3. JSON REPRESENTATION OF A DATA CENTER

#### Example 9.2. A JSON representation of a data center

```

{
  "data_center" : [ {
    "local" : "false",
    "storage_format" : "v3",
    "version" : {
      "major" : "3",
      "minor" : "5"
    },
    "supported_versions" : {
      "version" : [ {
        "major" : "3",
        "minor" : "5"
      } ]
    },
    "status" : {
      "state" : "up"
    },
    "mac_pool":
      {
        "href": "/api/macpools/00000000-0000-0000-0000-
000000000000",
        "id": "00000000-0000-0000-0000-000000000000"
      },
    "name" : "Default",
    "description" : "The default Data Center",
    "href" : "/api/datacenters/00000002-0002-0002-0002-000000000255",
    "id" : "00000002-0002-0002-0002-000000000255",
    "link" : [ {
      "href" : "/api/datacenters/00000002-0002-0002-0002-
000000000255/storagedomains",
      "rel" : "storagedomains"
    }, {
      "href" : "/api/datacenters/00000002-0002-0002-0002-
000000000255/clusters",
      "rel" : "clusters"
    }, {
      "href" : "/api/datacenters/00000002-0002-0002-0002-
000000000255/networks",
      "rel" : "networks"
    }, {
      "href" : "/api/datacenters/00000002-0002-0002-0002-
000000000255/permissions",
      "rel" : "permissions"
    }, {
      "href" : "/api/datacenters/00000002-0002-0002-0002-
000000000255/quotas",

```

```

        "rel" : "quotas"
      }, {
        "href" : "/api/datacenters/00000002-0002-0002-0002-
000000000255/iscsibonds",
        "rel" : "iscsibonds"
      }, {
        "href" : "/api/datacenters/00000002-0002-0002-0002-
000000000255/qoss",
        "rel" : "qoss"
      } ]
    } ]
  }
}

```

## 9.4. METHODS

### 9.4.1. Creating a New Data Center

Creation of a new data center requires the **name** and **local** elements.

#### Example 9.3. Creating a data center

```

POST /api/datacenters HTTP/1.1
Accept: application/xml
Content-type: application/xml

<data_center>
  <name>NewDatacenter</name>
  <local>>false</local>
</data_center>

```

### 9.4.2. Updating a Data Center

The **name**, **description**, **storage\_type**, **version**, **storage\_format** and **mac\_pool** elements are updatable post-creation.

#### Example 9.4. Updating a data center

```

PUT /api/datacenters/00000000-0000-0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<data_center>
  <name>UpdatedName</name>
  <description>An updated description for the data
center</description>
</data_center>

```

### 9.4.3. Removing a Data Center

Removal of a data center requires a **DELETE** request.

### Example 9.5. Removing a data center

```
DELETE /api/datacenters/00000000-0000-0000-0000-000000000000 HTTP/1.1
HTTP/1.1 204 No Content
```

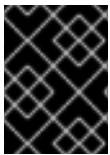
## 9.5. SUB-COLLECTIONS

### 9.5.1. Storage Domains Sub-Collection

#### 9.5.1.1. Storage Domains Sub-Collection

Each data center contains a sub-collection for attached storages domain. An API user interacts with this sub-collection using the standard REST methods.

An attached storage domain has a similar representation to a top-level storage domain, with the exception that it has a data center specific **status** and set of actions. States for the **status** element are listed in **storage\_domain\_states** under **capabilities**.



#### IMPORTANT

The API as documented in this section is experimental and subject to change. It is not covered by the backwards compatibility statement.

#### 9.5.1.2. Attaching and Detaching a Storage Domain

A data center is only ready for use when at least one storage domain is attached, which an API user **POSTs** to the data center's storage domains sub-collection.

When attaching a storage domain, its **id** or **name** must be supplied. An example of attaching a storage domain to a data center:

### Example 9.6. Attach a storage domain to a data center

```
POST /api/datacenters/d70d5e2d-b8ad-494a-a4d2-
c7a5631073c4/storagedomains HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storage_domain id="fabe0451-701f-4235-8f7e-e20e458819ed"/>

HTTP/1.1 201 Created
Location: /datacenters/d70d5e2d-b8ad-494a-a4d2-
c7a5631073c4/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed
Content-Type: application/xml

<storage_domain id="fabe0451-701f-4235-8f7e-e20e458819ed"
  href="/api/datacenters/d70d5e2d-b8ad-494a-a4d2-
c7a5631073c4/storagedomains/
```

```
fabe0451-701f-4235-8f7e-e20e458819ed">
  <name>images0</name>
  <type>data</type>
  <status>
    <state>inactive</state>
  </status>
  <master>true</master>
  <storage>
    <type>nfs</type>
    <address>172.31.0.6</address>
    <path>/exports/RHEVX/images/0</path>
  </storage>
  <data_center id="d70d5e2d-b8ad-494a-a4d2-c7a5631073c4"
    href="/api/datacenters/d70d5e2d-b8ad-494a-a4d2-c7a5631073c4"/>
  <actions>
    <link rel="activate"
      href="/api/datacenters/d70d5e2d-b8ad-494a-a4d2-c7a5631073c4/
        storagedomains/fabe0451-701f-4235-8f7e-
e20e458819ed/activate"/>
    <link rel="deactivate"
      href="/api/datacenters/d70d5e2d-b8ad-494a-a4d2-c7a5631073c4/
        storagedomains/fabe0451-701f-4235-8f7e-
e20e458819ed/deactivate"/>
  </actions>
</storage_domain>
```

Detach a storage domain from a data center with a **DELETE** request. Include an optional **async** element for this request to be asynchronous.

### Example 9.7. Detach a storage domain from a data center

```
DELETE /api/datacenters/d70d5e2d-b8ad-494a-a4d2-
c7a5631073c4/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed
HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <async>true</async>
</action>
```

## 9.5.1.3. Actions

### 9.5.1.3.1. Activate Storage Domain Action

An attached storage domain requires activation on a data center before use. The activate action does not take any action specific parameters.

### Example 9.8. Action to active a storage domain on a datacenter

```
POST /api/datacenters/d70d5e2d-b8ad-494a-a4d2-
c7a5631073c4/storagedomains/fabe0451-701f-4235-8f7e-
```

```
e20e458819ed/activate HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

### 9.5.1.3.2. Deactivate Storage Domain Action

An attached storage domain is deactivated on a data center before removal. The deactivate action does not take any action specific parameters.

#### Example 9.9. Action to deactivate a storage domain on a datacenter

```
POST /api/datacenters/d70d5e2d-b8ad-494a-a4d2-
c7a5631073c4/storagedomains/fabe0451-701f-4235-8f7e-
e20e458819ed/deactivate HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

## 9.5.2. Network Sub-Collection

### 9.5.2.1. Networks Sub-Collection

Networks associated with a data center are represented with the **networks** sub-collection. The representation of a data center's **network** sub-collection contains the following elements:

**Table 9.2. Network elements**

Element	Type	Description
<b>name</b>	string	A plain text, human readable name for the network.
<b>description</b>	string	A plain text, human readable description of the network.
<b>rel="permissions"</b>	relationship	A link to the <b>permissions</b> sub-collection for the network.
<b>rel="vnicprofiles"</b>	relationship	A link to the <b>vnicprofiles</b> sub-collection for the network.
<b>rel="labels"</b>	relationship	A link to the <b>labels</b> sub-collection for the network.

Element	Type	Description
<b>data_center id=</b>	relationship	A reference to the data center of which the network is a member.
<b>stp</b>	Boolean: true or false	Specifies whether spanning tree protocol is enabled for the network.
<b>mtu</b>	integer	Specifies the maximum transmission unit for the network.
<b>usages</b>	complex	Defines a set of <b>usage</b> elements for the network. Users can define networks as <b>vm</b> and <b>display</b> networks at this level.

In the REST API, you can manipulate the **networks** sub-collection with the standard REST methods. For example, the **POST** method can be used to update a network **id** or **name**

#### Example 9.10. Associating a network resource with a data center

```

POST /api/datacenters/00000000-0000-0000-0000-000000000000/networks
HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<network id="da05ac09-00be-45a1-b0b5-4a6a2438665f">
  <name>ovirtmgmt</name>
</network>

HTTP/1.1 201 Created
Location: http://{host}/clusters/00000000-0000-0000-0000-000000000000/networks/00000000-0000-0000-0000-000000000000
Content-Type: application/xml

<network href="/api/networks/00000000-0000-0000-0000-000000000000"
  id="00000000-0000-0000-0000-000000000000">
  <name>Network_001</name>
  <link href="/api/networks/00000000-0000-0000-0000-000000000000/permissions"
    rel="permissions"/>
  <link href="/api/networks/00000000-0000-0000-0000-000000000000/vnicprofiles"
    rel="vnicprofiles"/>
  <link href="/api/networks/00000000-0000-0000-0000-000000000000/labels"
    rel="labels"/>
  <data_center href="/api/datacenters/00000000-0000-0000-0000-000000000000"
    id="00000000-0000-0000-0000-000000000000"/>
  <stp>>false</stp>
  <mtu>0</mtu>
  <usages>

```

```

    <usage>vm</usage>
  </usages>
</network>

```

Update the resource with a **PUT** request. The maximum transmission unit of a network is set using a **PUT** request to specify the integer value of the **mtu** element.

#### Example 9.11. Setting the network maximum transmission unit

```

PUT /api/datacenters/00000000-0000-0000-0000-
000000000000/networks/00000000-0000-0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<network>
  <mtu>1500</mtu>
</network>

```

An association is removed with a **DELETE** request to the appropriate element in the collection.

#### Example 9.12. Removing a network association from a data center

```

DELETE /api/datacenters/00000000-0000-0000-0000-
000000000000/networks/00000000-0000-0000-0000-000000000000 HTTP/1.1

HTTP/1.1 204 No Content

```

### 9.5.3. Quotas Sub-Collection

#### 9.5.3.1. Quotas Sub-Collection

The quotas sub-collection lists restrictions that Red Hat Enterprise Virtualization Manager implements on resources. An API user views this sub-collection and its resources using the **GET** method.

#### Example 9.13. An XML representation of a quota

```

<quota href="/api/datacenters/56087282-d7a6-11e1-af44-001a4a400e0c
/quotas/e13ff85a-b2ba-4f7b-8010-e0d057c03dfe"
id="e13ff85a-b2ba-4f7b-8010-e0d057c03dfe">
  <name>MyQuota</name>
  <description>A quota for my Red Hat Enterprise
  Virtualization environment</description>
  <data_center href= "/api/datacenters/56087282-d7a6-11e1-af44-
001a4a400e0c"
  id="56087282-d7a6-11e1-af44-001a4a400e0c"/>
</quota>

```

Creation of a new quota requires the **name** and **description** elements.

#### Example 9.14. Creating a quota

```
POST /api/datacenters/56087282-d7a6-11e1-af44-001a4a400e0c/quotas
HTTP/1.1
Accept: application/xml
Content-type: application/xml

<quota>
  <name>VMQuota</name>
  <description>My new quota for virtual machines</description>
</quota>
```

Removal of a quota requires a **DELETE** request.

#### Example 9.15. Removing a quota

```
DELETE /api/datacenters/01a45ff0-915a-11e0-8b87-
5254004ac988/quotas/e13ff85a-b2ba-4f7b-8010-e0d057c03dfe HTTP/1.1

HTTP/1.1 204 No Content
```

## 9.6. ACTIONS

### 9.6.1. Force Remove Data Center Action

An API user forces the removal of a data center when encountering unresolvable problems with storage domains, such as the loss of connection to a master storage domain or a lack of available hosts when deleting storage domains. The API includes a **force** action to help with these situations.

This action removes database entries associated with a chosen data center before the API removes the data center from the Red Hat Enterprise Virtualization environment. This means the API removes the data center regardless of associated storage domains.

This action requires a **DELETE** method. The request body contains an **action** representation with the **force** parameter set to **true**. The request also requires an additional **Content-type: application/xml** header to process the XML representation in the body.

#### Example 9.16. Force remove action on a data center

```
DELETE /api/datacenters/00000000-0000-0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <force>true</force>
</action>
```



This action:

- Deletes all database information for **data** storage domains associated the data center;
- Deletes all database information for resources, such as virtual machines and templates, on **data** storage domains associated the data center;
- Detaches **iso** and **export** storage domains from the data center; and
- Deletes the database information for the data center.

This action overrides the requirement for a data center to be empty before deletion.



### IMPORTANT

This action only removes the database entries for resources associated with the data center. The **data** storage domains associated with the data center require manual format before reuse. Metadata for **iso** and **export** domains require manual cleaning prior to use on another data center.

## CHAPTER 10. CLUSTERS





### 10.1. CLUSTER ELEMENTS

The `clusters` collection provides information about clusters in a Red Hat Enterprise Virtualization environment. An API user accesses this information through the `rel="clusters"` link obtained from the entry point URI.

The following table shows specific elements contained in a cluster resource representation.

**Table 10.1. Cluster elements**

Element	Type	Description	Properties
<code>name</code>	string	A user-supplied, human-readable name for the cluster. The <code>name</code> is unique across all cluster resources.	
<code>description</code>	string	A free-form, user-supplied, human-readable description of the cluster.	
<code>link rel="networks"</code>	relationship	A link to the sub-collection for networks associated with this cluster.	
<code>link rel="permissions"</code>	relationship	A link to the sub-collection for cluster permissions.	
<code>link rel="glustervolumes"</code>	relationship	A link to the sub-collection for Red Hat Gluster Storage volumes associated with this cluster.	
<code>link rel="glusterhooks"</code>	relationship	A link to the sub-collection for Red Hat Gluster Storage volume hooks associated with this cluster.	
<code>link rel="affinitygroups"</code>	relationship	A link to the sub-collection for virtual machine affinity groups associated with this cluster.	
<code>cpu id=</code>	complex	A server CPU reference that defines the CPU type all hosts must support in the cluster.	
<code>data_center id=</code>	GUID	A reference to the data center membership of this cluster.	 

Element	Type	Description	Properties
<b>memory_policy</b>	complex	Defines the cluster's policy on host memory utilization.	
<b>scheduling_policy</b>	complex	Defines the load-balancing or power-saving modes for hosts in the cluster.	
<b>version major=minor=</b>	complex	The compatibility level of the cluster.	
<b>supported_versions</b>	complex	A list of possible <b>version</b> levels for the cluster.	
<b>error_handling</b>	complex/enumerated	Defines virtual machine handling when a host within a cluster becomes non-operational. Requires a single <b>on_error</b> element containing an enumerated type property listed in <b>capabilities</b> .	
<b>virt_service</b>	Boolean	Defines whether to expose virtualization services for this cluster.	
<b>gluster_service</b>	Boolean	Defines whether to expose Red Hat Gluster Storage services for this cluster.	
<b>threads_as_cores</b>	Boolean	Defines whether hosts can run virtual machines with a total number of processor cores greater than the number of cores in the host.	
<b>tunnel_migration</b>	Boolean	Defines whether virtual machines use a libvirt-to-libvirt tunnel during migration.	
<b>trusted_service</b>	Boolean	Defines whether an OpenAttestation server is used to verify hosts.	
<b>ballooning_enabled</b>	Boolean	Defines whether ballooning is enabled for the cluster.	
<b>kvm</b>	Boolean	Defines whether kvm is enabled for the cluster.	



**NOTE**

When a host's free memory drops below 20%, ballooning commands like `mom.Controllers.Balloon - INFO Ballooning guest:half1 from 1096400 to 1991580` are logged to `/etc/vdsm/mom.conf`. `/etc/vdsm/mom.conf` is the Memory Overcommit Manager log file. An event will also be added to the event log if a virtual machine does not respect a balloon.

## 10.2. MEMORY POLICY ELEMENTS

The `memory_policy` element contains the following elements:


**Table 10.2. Memory policy elements**


Element	Type	Description	Properties
<code>overcommit percent=</code>	complex	The percentage of host memory allowed in use before no more virtual machines can start on a host. Virtual machines can use more than the available host memory due to memory sharing under KSM. Recommended values include <b>100</b> (None), <b>150</b> (Server Load) and <b>200</b> (Desktop Load).	
<code>transparent_hugepages</code>	complex	Define the <b>enabled</b> status of Transparent Hugepages. The status is either true or false. Check <b>capabilities</b> feature set to ensure your version supports <b>transparent hugepages</b> .	

## 10.3. SCHEDULING POLICY ELEMENTS

The `scheduling_policy` element contains the following elements:

**Table 10.3. Scheduling policy elements**

Element	Type	Description	Properties
<code>policy</code>	enumerated	The VM scheduling mode for hosts in the cluster. A list of enumerated types are listed in <b>capabilities</b> .	

Element	Type	Description	Properties
<b>thresholds low= high= duration=</b>	complex	Defines CPU limits for the host. The <b>high</b> attribute controls the highest CPU usage percentage the host can have before being considered overloaded. The <b>low</b> attribute controls the lowest CPU usage percentage the host can have before being considered underutilized. The <b>duration</b> attribute refers to the number of seconds the host needs to be overloaded before the scheduler starts and moves the load to another host.	

## 10.4. XML REPRESENTATION OF A CLUSTER

### Example 10.1. An XML representation of a cluster

```
<cluster id="00000000-0000-0000-0000-000000000000"
  href="/api/clusters/00000000-0000-0000-0000-000000000000">
  <name>Default</name>
  <description>The default server cluster</description>
  <link rel="networks"
    href="/api/clusters/00000000-0000-0000-0000-
000000000000/networks"/>
  <link rel="permissions"
    href="/api/clusters/00000000-0000-0000-0000-
000000000000/permissions"/>
  <link rel="glustervolumes"
    href="/api/clusters/00000000-0000-0000-0000-
000000000000/glustervolumes"/>
  <link rel="glusterhooks"
    href="/api/clusters/00000000-0000-0000-0000-
000000000000/glusterhooks"/>
  <link rel="affinitygroups"
    href="/api/clusters/00000000-0000-0000-0000-
000000000000/affinitygroups"/>
  <cpu id="Intel Penryn Family"/>
  <architecture>X86_64</architecture>
  <data_center id="00000000-0000-0000-0000-000000000000"
    href="/api/datacenters/00000000-0000-0000-0000-000000000000"/>
  <memory_policy>
    <overcommit percent="100"/>
    <transparent_hugepages>
      <enabled>>false</enabled>
    </transparent_hugepages>
  </memory_policy>
  <scheduling_policies>
    <policy>evenly_distributed</policy>
    <thresholds low="10" high="75" duration="120"/>
  </scheduling_policies>
  <version minor="0" major="3"/>
</cluster>
```

```

<supported_versions>
  <version minor="0"<usage> major="3"/>
</supported_versions>
<error_handling>
  <on_error>migrate</on_error>
</error_handling>
<virt_service>>true</virt_service>
<gluster_service>>false</gluster_service>
<threads_as_cores>>false</threads_as_cores>
<tunnel_migration>>false</tunnel_migration>
<trusted_service>>false</trusted_service>
<ha_reservation>>false</ha_reservation>
<ballooning_enabled>>false</ballooning_enabled>
<ksm>
  <enabled>>true</enabled>
</ksm>
</cluster>

```

## 10.5. JSON REPRESENTATION OF A CLUSTER

### Example 10.2. A JSON representation of a cluster

```

{
  "cluster" : [ {
    "cpu" : {
      "architecture" : "X86_64",
      "id" : "Intel Penryn Family"
    },
    "data_center" : {
      "href" : "/api/datacenters/00000002-0002-0002-0002-000000000255",
      "id" : "00000002-0002-0002-0002-000000000255"
    },
    "memory_policy" : {
      "overcommit" : {
        "percent" : "100"
      },
      "transparent_hugepages" : {
        "enabled" : "true"
      }
    },
    "scheduling_policy" : {
      "policy" : "none",
      "name" : "none",
      "href" : "/api/schedulingpolicies/b4ed2332-a7ac-4d5f-9596-99a439cb2812",
      "id" : "b4ed2332-a7ac-4d5f-9596-99a439cb2812"
    },
    "version" : {
      "major" : "3",
      "minor" : "5"
    },
    "error_handling" : {
      "on_error" : "migrate"
    }
  },

```

```

"virt_service" : "true",
"gluster_service" : "false",
"threads_as_cores" : "false",
"tunnel_migration" : "false",
"trusted_service" : "false",
"ha_reservation" : "false",
"optional_reason" : "false",
"ballooning_enabled" : "false",
"ksm" : {
  "enabled" : "true"
},
"required_rng_sources" : { },
"name" : "Default",
"description" : "The default server cluster",
"href" : "/api/clusters/00000001-0001-0001-0001-0000000002fb",
"id" : "00000001-0001-0001-0001-0000000002fb",
"link" : [ {
  "href" : "/api/clusters/00000001-0001-0001-0001-0000000002fb/networks",
  "rel" : "networks"
}, {
  "href" : "/api/clusters/00000001-0001-0001-0001-0000000002fb/permissions",
  "rel" : "permissions"
}, {
  "href" : "/api/clusters/00000001-0001-0001-0001-0000000002fb/glustervolumes",
  "rel" : "glustervolumes"
}, {
  "href" : "/api/clusters/00000001-0001-0001-0001-0000000002fb/glusterhooks",
  "rel" : "glusterhooks"
}, {
  "href" : "/api/clusters/00000001-0001-0001-0001-0000000002fb/affinitygroups",
  "rel" : "affinitygroups"
}, {
  "href" : "/api/clusters/00000001-0001-0001-0001-0000000002fb/cpuprofiles",
  "rel" : "cpuprofiles"
} ]
} ]
}

```

## 10.6. METHODS

### 10.6.1. Creating a Cluster

Creation of a new cluster requires the **name**, **cpu id=** and **datacenter** elements. Identify the **datacenter** with either the **id** attribute or **name** element.

#### Example 10.3. Creating a cluster

```
POST /api/clusters HTTP/1.1
Accept: application/xml
Content-type: application/xml

<cluster>
  <name>cluster1</name>
  <cpu id="Intel Penryn Family"/>
  <data_center id="00000000-0000-0000-0000-000000000000"/>
</cluster>
```

### 10.6.2. Updating a Cluster

The **name**, **description**, **cpu id=** and **error\_handling** elements are updatable post-creation.

#### Example 10.4. Updating a cluster

```
PUT /api/clusters/00000000-0000-0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<cluster>
  <description>Cluster 1</description>
</cluster>
```

### 10.6.3. Removing a Cluster

Removal of a cluster requires a **DELETE** request.

#### Example 10.5. Removing a cluster

```
DELETE /api/clusters/00000000-0000-0000-0000-000000000000 HTTP/1.1

HTTP/1.1 204 No Content
```

## 10.7. SUB-COLLECTIONS

### 10.7.1. Networks Sub-Collection


#### 10.7.1.1. Networks Sub-Collection

Networks associated with a cluster are represented with the **networks** sub-collection. Every host within a cluster connects to these associated networks.

The representation of a cluster's **network** sub-collection is the same as a standard **network** resource except for the following additional elements:

**Table 10.4. Additional network elements**



Element	Type	Description	Properties
<b>cluster id=</b>	relationship	A reference to the cluster of which this network is a member.	
<b>required</b>	Boolean	Defines required or optional network status.	
<b>display</b>	Boolean	Defines the display network status. Used for backward compatibility.	
<b>usages</b>	complex	Defines a set of <b>usage</b> elements for the network. Users can define networks as <b>VM</b> and <b>DISPLAY</b> networks at this level.	

An API user manipulates the **networks** sub-collection with the standard REST methods. **POST**ing a network **id** or **name** reference to the **networks** sub-collection associates the network with the cluster.

#### Example 10.6. Associating a network resource with a cluster

```

POST /api/clusters/99408929-82cf-4dc7-a532-9d998063fa95/networks
HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<network id="da05ac09-00be-45a1-b0b5-4a6a2438665f">
  <name>ovirtmgmt</name>
</network>

HTTP/1.1 201 Created
Location: http://{host}/clusters/99408929-82cf-4dc7-a532-9d998063fa95/networks/da05ac09-00be-45a1-b0b5-4a6a2438665f
Content-Type: application/xml

<network id="da05ac09-00be-45a1-b0b5-4a6a2438665f"
  href="/api/clusters/99408929-82cf-4dc7-a532-9d998063fa95/networks/
da05ac09-00be-45a1-b0b5-4a6a2438665f">
  <name>ovirtmgmt</name>
  <status>
    <state>operational</state>
  </status>
  <description>Display Network</description>
  <cluster id="99408929-82cf-4dc7-a532-9d998063fa95"
    href="/api/clusters/99408929-82cf-4dc7-a532-9d998063fa95"/>
  <data_center id="d70d5e2d-b8ad-494a-a4d2-c7a5631073c4"
    href="/api/datacenters/d70d5e2d-b8ad-494a-a4d2-c7a5631073c4"/>
  <required>true</required>
  <usages>
    <usage>VM</usage>
  </usages>
</network>

```

Update the resource with a **PUT** request.

### Example 10.7. Setting the display network status

```
PUT /api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/networks/da05ac09-00be-45a1-b0b5-4a6a2438665f HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<network>
  <required>false</required>
  <usages>
    <usage>VM</usage>
    <usage>DISPLAY</usage>
  </usages>
</network>
```

The required or optional network status is set using a **PUT** request to specify the Boolean value (true or false) of the **required** element.

### Example 10.8. Setting optional network status

```
PUT /api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/networks/da05ac09-00be-45a1-b0b5-4a6a2438665f HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<network>
  <required>false</required>
</network>
```

An association is removed with a **DELETE** request to the appropriate element in the collection.

### Example 10.9. Removing a network association from a cluster

```
DELETE /api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/networks/da05ac09-00be-45a1-b0b5-4a6a2438665f HTTP/1.1

HTTP/1.1 204 No Content
```









## 10.7.2. Storage Volumes Sub-Collection

### 10.7.2.1. Red Hat Gluster Storage Volumes Sub-Collection

Red Hat Enterprise Virtualization provides a means for creating and managing Red Hat Gluster Storage volumes. Red Hat Gluster Storage volumes are associated with clusters and are represented with the **glustervolumes** sub-collection.

The representation of a Red Hat Gluster Storage volume resource in the **glustervolumes** sub-collection is defined using the following elements:

**Table 10.5. Gluster volume elements**

Element	Type	Description	Properties
<b>volume_type</b>	enumerated	Defines the volume type. See the <b>capabilities</b> collection for a list of volume types.	 
<b>bricks</b>	relationship	The sub-collection for the Red Hat Gluster Storage bricks. When creating a new volume, the request requires a set of <b>brick</b> elements to create and manage in this cluster. Requires the <b>server_id</b> of the Red Hat Gluster Storage server and a <b>brick_dir</b> element for the brick directory	 
<b>transport_types</b>	complex	Defines a set of volume <b>transport_type</b> elements. See the <b>capabilities</b> collection for a list of available transport types.	
<b>replica_count</b>	integer	Defines the file replication count for a replicated volume.	
<b>stripe_count</b>	integer	Defines the stripe count for a striped volume	
<b>options</b>	complex	A set of additional Red Hat Gluster Storage <b>option</b> elements. Each <b>option</b> includes an option <b>name</b> and a <b>value</b> .	

#### Example 10.10. An XML representation of a Red Hat Gluster Storage volume

```
<gluster_volume id="99408929-82cf-4dc7-a532-9d998063fa95"
href="/api/clusters/99408929-82cf-4dc7-a532-9d998063fa95
/glustervolume/e199f877-900a-4e30-8114-8e3177f47651">
  <name>GlusterVolume1</name>
  <link rel="bricks"
    href="/api/clusters/99408929-82cf-4dc7-a532-9d998063fa95
    /glustervolume/e199f877-900a-4e30-8114-8e3177f47651/bricks"/>
  <volume_type>DISTRIBUTED_REPLICATE</volume_type>
  <transport_types>
    <transport_type>TCP</transport_type>
  </transport_types>
  <replica_count>2</replica_count>
```

```

    <stripe_count>1</stripe_count>
    <options>
      <option>
        <name>cluster.min-free-disk</name>
        <value>536870912</value>
      </option>
    </options>
  </gluster_volume>

```

Create a Red Hat Gluster Storage volume via a **POST** request with the required **name**, **volume\_type** and **bricks** to the sub-collection.

### Example 10.11. Creating a Red Hat Gluster Storage volume

```

POST /api/clusters/99408929-82cf-4dc7-a532-9d998063fa95/glustervolumes
HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<gluster_volume>
  <name>GlusterVolume1</name>
  <volume_type>DISTRIBUTED_REPLICATE</volume_type>
  <bricks>
    <brick>
      <server_id>server1</server_id>
      <brick_dir>/exp1</brick_dir>
    </brick>
  </bricks>
</gluster_volume>

```

Remove a Red Hat Gluster Storage volume with a **DELETE** request.

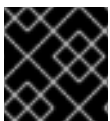
### Example 10.12. Removing a Red Hat Gluster Storage volume

```

DELETE /api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/glustervolumes/e199f877-900a-4e30-8114-8e3177f47651
HTTP/1.1

HTTP/1.1 204 No Content

```



#### IMPORTANT







Resources in the **glustervolumes** sub-collection cannot be updated.

#### 10.7.2.2. Bricks Sub-Collection

The **glustervolumes** sub-collection contains its own **bricks** sub-collection to define individual bricks in a Red Hat Gluster Storage volume. Additional information can be retrieved for **GET** requests using the **All-Content: true** header.

The representation of a volume's **bricks** sub-collection is defined using the following elements:

**Table 10.6. Brick elements**

Element	Type	Description	Properties
<b>server_id</b>	string	A reference to the Red Hat Gluster Storage server.	 
<b>brick_dir</b>	string	Defines a brick directory on the Red Hat Gluster Storage server.	 
<b>replica_count</b>	integer	Defines the file replication count for the brick in the volume.	
<b>stripe_count</b>	integer	Defines the stripe count for the brick in the volume	

Create new bricks via a **POST** request with the required **server\_id** and **brick\_dir** to the sub-collection.

#### Example 10.13. Adding a brick

```
POST /api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/glustervolumes/e199f877-900a-4e30-8114-8e3177f47651/bricks
HTTP/1.1
Accept: application/xml
Content-Type: application/xml

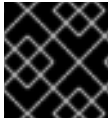
<brick>
  <server_id>server1</server_id>
  <brick_dir>/exp1</brick_dir>
</brick>
```

Remove a brick with a **DELETE** request.

#### Example 10.14. Removing a brick

```
DELETE /api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/glustervolumes/e199f877-900a-4e30-8114-
8e3177f47651/bricks/0a473ebe-01d2-444d-8f58-f565a436b8eb HTTP/1.1

HTTP/1.1 204 No Content
```



## IMPORTANT

Resources in the **bricks** sub-collection cannot be updated.

### 10.7.2.3. Actions

#### 10.7.2.3.1. Start Action

The **start** action makes a Gluster volume available for use.

##### Example 10.15. Starting a Volume

```
POST /api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/glustervolumes/e199f877-900a-4e30-8114-8e3177f47651/start
HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<action/>
```

Use an optional **force** Boolean element to force the action for a running volume. This is useful for starting disabled brick processes in a running volume.

#### 10.7.2.3.2. Stop Action

The **stop** action deactivates a Gluster volume.

##### Example 10.16. Stopping a Volume

```
POST /api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/glustervolumes/e199f877-900a-4e30-8114-8e3177f47651/stop
HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<action/>
```

Use an optional **force** Boolean element to brute force the stop action.

#### 10.7.2.3.3. Set Option Action

The **setoption** action sets a volume option.

##### Example 10.17. Set an option

```
POST /api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/glustervolumes/e199f877-900a-4e30-8114-
8e3177f47651/setoption HTTP/1.1
Accept: application/xml
Content-Type: application/xml
```

```

<action>
  <option>
    <name>cluster.min-free-disk</name>
    <value>536870912</value>
  </option>
</action>

```

#### 10.7.2.3.4. Reset Option Action

The **resetoption** action resets a volume option.

##### Example 10.18. Reset an option

```

POST /api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/glustervolumes/e199f877-900a-4e30-8114-
8e3177f47651/resetoption HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<action>
  <option>
    <name>cluster.min-free-disk</name>
  </option>
</action>

```

#### 10.7.2.3.5. Reset All Options Action

The **resetalloptions** action resets all volume options.

##### Example 10.19. Reset all options

```

POST /api/clusters/99408929-82cf-4dc7-a532-
9d998063fa95/glustervolumes/e199f877-900a-4e30-8114-
8e3177f47651/resetalloptions HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<action/>


```

### 10.7.3. Affinity Groups Sub-Collection

#### 10.7.3.1. Affinity Group Sub-Collection

The representation of a virtual machine affinity group resource in the **affinitygroups** sub-collection is defined using the following elements:

**Table 10.7. Affinity group elements**

Element	Type	Description	Properties
<b>name</b>	string	A plain text, human readable name for the affinity group.	
<b>cluster</b>	relationship	A reference to the cluster to which the affinity group applies.	
<b>positive</b>	Boolean: true or false	Specifies whether the affinity group applies positive affinity or negative affinity to virtual machines that are members of that affinity group.	
<b>enforcing</b>	Boolean: true or false	Specifies whether the affinity group uses hard or soft enforcement of the affinity applied to virtual machines that are members of that affinity group.	

### Example 10.20. An XML representation of a virtual machine affinity group

```
<affinity_group href="/api/clusters/00000000-0000-0000-0000-000000000000/affinitygroups/00000000-0000-0000-0000-000000000000" id="00000000-0000-0000-0000-000000000000">
  <name>AF_GROUP_001</name>
  <cluster href="/api/clusters/00000000-0000-0000-0000-000000000000" id="00000000-0000-0000-0000-000000000000"/>
  <positive>true</positive>
  <enforcing>true</enforcing>
</affinity_group>
```

Create a virtual machine affinity group via a **POST** request with the required **name** attribute.

### Example 10.21. Creating a virtual machine affinity group

```
POST https://XX.XX.XX.XX/api/clusters/00000000-0000-0000-0000-000000000000/affinitygroups HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<affinity_group>
  <name>AF_GROUP_001</name>
  <positive>true</positive>
  <enforcing>true</enforcing>
</affinity_group>
```

Remove a virtual machine affinity group with a **DELETE** request.

### Example 10.22. Removing a virtual machine affinity group



```
DELETE https://XX.XX.XX.XX/api/clusters/00000000-0000-0000-0000-000000000000/affinitygroups/00000000-0000-0000-0000-000000000000
HTTP/1.1
```

```
HTTP/1.1 204 No Content
```




## CHAPTER 11. NETWORKS

### 11.1. NETWORK ELEMENTS

The **networks** collection provides information about the logical networks in a Red Hat Enterprise Virtualization environment. An API user accesses this information through the **rel="networks"** link obtained from the entry point URI.

The following table shows specific elements contained in a network resource representation.

**Table 11.1. Network elements**

Element	Type	Description	Properties
<b>link</b> <b>rel="vnicprofiles"</b>	relationship	A link to the sub-collection for VNIC profiles attached to this logical network.	
<b>link</b> <b>rel="labels"</b>	relationship	A link to the sub-collection for labels attached to this logical network.	
<b>data_center id=</b>	GUID	A reference to the data center of which this cluster is a member.	 
<b>vlan id=</b>	integer	A VLAN tag.	
<b>stp</b>	Boolean: true or false	<b>true</b> if Spanning Tree Protocol is enabled on this network.	
<b>mtu</b>	integer	Sets the maximum transmission unit for the logical network. If omitted, the logical network uses the default value.	
<b>status</b>	One of <b>operational</b> or <b>non_operational</b>	The status of the network. These states are listed in <b>network_states</b> under <b>capabilities</b> .	
<b>usages</b>	complex	Defines a set of <b>usage</b> elements for the network. Users can define networks as <b>VM</b> networks at this level.	



#### IMPORTANT

The API as documented in this section is experimental and subject to change. It is not covered by the backwards compatibility statement.

### 11.2. XML REPRESENTATION OF A NETWORK RESOURCE

**Example 11.1. An XML representation of a network resource**

```

<network href="/api/networks/00000000-0000-0000-0000-000000000000"
  id="00000000-0000-0000-0000-000000000000">
  <name>ovirtmgmt</name>
  <description>Management Network</description>
  <link href="/api/networks/00000000-0000-0000-0000-
000000000000/permissions" rel="permissions"/>
  <link href="/api/networks/00000000-0000-0000-0000-
000000000000/vnicprofiles" rel="vnicprofiles"/>
  <link href="/api/networks/00000000-0000-0000-0000-000000000000/labels"
rel="labels"/>
  <data_center href="/api/datacenters/00000000-0000-0000-0000-
000000000000"
    id="00000000-0000-0000-0000-000000000000"/>
  <stp>>false</stp>
  <mtu>0</mtu>
  <usages>
    <usage>vm</usage>
  </usages>
</network>

```

**11.3. JSON REPRESENTATION OF A NETWORK RESOURCE****Example 11.2. A JSON representation of a network resource**

```

{
  "network" : [ {
    "data_center" : {
      "href" : "/api/datacenters/00000002-0002-0002-0002-000000000255",
      "id" : "00000002-0002-0002-0002-000000000255"
    },
    "stp" : "false",
    "mtu" : "0",
    "usages" : {
      "usage" : [ "vm" ]
    },
    "name" : "ovirtmgmt",
    "description" : "Management Network",
    "href" : "/api/networks/00000000-0000-0000-0000-000000000009",
    "id" : "00000000-0000-0000-0000-000000000009",
    "link" : [ {
      "href" : "/api/networks/00000000-0000-0000-0000-
000000000009/permissions",
      "rel" : "permissions"
    }, {
      "href" : "/api/networks/00000000-0000-0000-0000-
000000000009/vnicprofiles",
      "rel" : "vnicprofiles"
    }, {
      "href" : "/api/networks/00000000-0000-0000-0000-
000000000009/labels",
      "rel" : "labels"
    }
  ]
  }
]

```

```
} ]  
} ]  
}
```

## 11.4. METHODS

### 11.4.1. Creating a Network Resource

Creation of a new network requires the **name** and **datacenter** elements.

#### Example 11.3. Creating a network resource

```
POST /api/networks HTTP/1.1  
Accept: application/xml  
Content-type: application/xml  
  
<network>  
  <name>network 1</name>  
  <data_center id="00000000-0000-0000-0000-000000000000"/>  
</network>
```

### 11.4.2. Updating a Network Resource

The **name**, **description**, **ip**, **vlan**, **stp** and **display** elements are updatable post-creation.

#### Example 11.4. Updating a network resource

```
PUT /api/networks/00000000-0000-0000-0000-000000000000 HTTP/1.1  
Accept: application/xml  
Content-type: application/xml  
  
<network>  
  <description>Network 1</description>  
</network>
```

### 11.4.3. Removing a Network Resource

Removal of a network requires a **DELETE** request.

#### Example 11.5. Removing a network

```
DELETE /api/networks/00000000-0000-0000-0000-000000000000 HTTP/1.1  
  
HTTP/1.1 204 No Content
```

## 11.5. SUB-COLLECTIONS

### 11.5.1. Network vNIC Profile Sub-Collection

vNIC (Virtual Network Interface Controller) profiles, also referred to as virtual machine interface profiles, are customized profiles applied to users and groups to limit network bandwidth. Each **vnicprofile** contains the following elements:

**Table 11.2. Elements for vnic profiles**

Element	Type	Description
<b>name</b>	string	The unique identifier for the profile.
<b>description</b>	string	A plain text description of the profile.
<b>network</b>	string	The unique identifier of the logical network to which the profile applies.
<b>port_mirroring</b>	Boolean: <b>true</b> or <b>false</b>	The default is <b>false</b> .

#### Example 11.6. An XML representation of the network's vnicprofile sub-collection

```
<vnic_profile href= "/api/vnicprofiles/f9c2f9f1-3ae2-4100-a9a5-285ebb755c0d" id="f9c2f9f1-3ae2-4100-a9a5-285ebb755c0d">
  <name>Peanuts</name>
  <description>shelled</description>
  <network href= "/api/networks/00000000-0000-0000-0000-000000000009" id="00000000-0000-0000-0000-000000000009"/>
  <port_mirroring>false</port_mirroring>
</vnic_profile>
</vnic_profiles>
```

### 11.5.2. Network Labels Sub-Collection

Network labels are plain text, human-readable labels that allow you to automate the association of logical networks with physical host network interfaces. Each **label** contains the following elements:

**Table 11.3. Elements for labels**

Element	Type	Description
<b>network</b>	string	The <b>href</b> and <b>id</b> of the networks to which the label is attached.

#### Example 11.7. An XML representation of the network's labels sub-collection

```
<labels>
  <label href="/api/networks/00000000-0000-0000-0000-000000000000/labels/eth0" id="eth0">
```

```
<network href="/api/networks/00000000-0000-0000-0000-000000000000"
  id="00000000-0000-0000-0000-000000000000"/>
</label>
</labels>
```

### 11.5.3. Methods

#### 11.5.3.1. Attach Label to Logical Network Action

You can attach labels to a logical network to automate the association of that logical network with physical host network interfaces to which the same label has been attached.

##### Example 11.8. Action to attach a label to a logical network

```
POST /api/networks/00000000-0000-0000-0000-000000000000/labels/ HTTP/1.1
Accept: application/xml
Content-type: application/xml

<label id="Label_001" />
```

#### 11.5.3.2. Removing a Label From a Logical Network

Removal of a label from a logical network requires a **DELETE** request.

##### Example 11.9. Removing a label from a logical network

```
DELETE /api/networks/00000000-0000-0000-0000-000000000000/labels/[label_id] HTTP/1.1

HTTP/1.1 204 No Content
```




## CHAPTER 12. STORAGE DOMAINS

### 12.1. STORAGE DOMAIN ELEMENTS

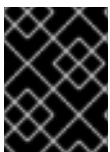
The `storagedomains` collection provides information about the storage domains in a Red Hat Enterprise Virtualization environment. An API user accesses this information through the `rel="storagedomains"` link obtained from the entry point URI.

The following table shows specific elements contained in a storage domain resource representation.

**Table 12.1. Storage domain elements**

Element	Type	Description	Properties
<code>link rel="permissions"</code>	relationship	A link to the sub-collection for storage domain permissions.	
<code>link rel="files"</code>	relationship	A link to the <code>files</code> sub-collection for this storage domains.	
<code>link rel="vms"</code>	relationship	A link to the <code>vms</code> sub-collection for a storage domain with <code>type</code> set to <code>export</code> .	
<code>link rel="templates"</code>	relationship	A link to the <code>templates</code> sub-collection for a storage domain with <code>type</code> set to <code>export</code> .	
<code>type</code>	enumerated	The storage domain type. A list of enumerated values are available in <code>capabilities</code> .	
<code>external_status</code>	complex/enumerated	The storage domain health status as reported by external systems and plugins. The <code>state</code> element contains an enumerated value of <code>ok</code> , <code>info</code> , <code>warning</code> , <code>error</code> , or <code>failure</code> .	
<code>master</code>	Boolean: true or false	<code>true</code> if this is the master storage domain of a data center.	
<code>host</code>	complex	A reference to the host on which this storage domain should be initialized. The only restriction on this host is that it should have access to the physical storage specified.	

Element	Type	Description	Properties
<b>storage</b>	complex	Describes the underlying storage of the storage domain.	 
<b>available</b>	integer	Space available in bytes.	
<b>used</b>	integer	Space used in bytes.	
<b>committed</b>	integer	Space committed in bytes.	
<b>storage_format</b>	enumerated	Describes the storage format version for the storage domain. A list of enumerated values are available in <b>capabilities</b> .	 
<b>wipe_after_delete</b>	Boolean: true or false	Sets the wipe after delete option by default on the storage domain. This option can be edited after the domain is created, but doing so will not change the wipe after delete property of disks that already exist.	
<b>warning_low_space_indicator</b>	integer	A percentage value that sets the warning low space indicator option. If the free space available on the storage domain is below this percentage, warning messages are displayed to the user and logged.	
<b>critical_space_action_blocker</b>	integer	A value in GB that sets the critical space action blocker option. If the free space available on the storage domain is below this value, error messages are displayed to the user and logged, and any new action that consumes space, even temporarily, will be blocked.	



### IMPORTANT

The API as documented in this chapter is experimental and subject to change. It is not covered by the backwards compatibility statement.

## 12.2. XML REPRESENTATION OF A STORAGE DOMAIN



**Example 12.1. An XML representation of a storage domain**

```

<storage_domain id="fabe0451-701f-4235-8f7e-e20e458819ed"
  href="/api/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed">
  <name>data0</name>
  <link rel="permissions"
    href="/api/storagedomains/be24cd98-8e23-49c7-b425-
1a12bd12abb0/permissions"/>
  <link rel="files"
    href="/api/storagedomains/be24cd98-8e23-49c7-b425-
1a12bd12abb0/files"/>
  <type>data</type>
  <master>true</master>
  <storage>
    <type>nfs</type>
    <address>172.31.0.6</address>
    <path>/exports/RHEVX/images/0</path>
  </storage>
  <available>156766306304</available>
  <used>433791696896</used>
  <committed>617401548800</committed>
  <storage_format>v1</storage_format>
  <wipe_after_delete>true</wipe_after_delete>
  <warning_low_space_indicator>10</warning_low_space_indicator>
  <critical_space_action_blocker>5</critical_space_action_blocker>
</storage_domain>

```

**12.3. JSON REPRESENTATION OF A STORAGE DOMAIN****Example 12.2. A JSON representation of a storage domain**

```

{
  "storage_domain" : [ {
    "type" : "data",
    "master" : "false",
    "storage" : {
      "address" : "192.0.2.0",
      "type" : "nfs",
      "path" : "/storage/user/nfs"
    },
    "available" : 193273528320,
    "used" : 17179869184,
    "committed" : 0,
    "storage_format" : "v3",
    "name" : "NFS_01",
    "href" : "/api/storagedomains/8827b158-6d2e-442d-a7ee-c6fd4718aaba",
    "id" : "8827b158-6d2e-442d-a7ee-c6fd4718aaba",
    "link" : [ {
      "href" : "/api/storagedomains/8827b158-6d2e-442d-a7ee-
c6fd4718aaba/permissions",
      "rel" : "permissions"
    }, {
      "href" : "/api/storagedomains/8827b158-6d2e-442d-a7ee-

```

```

c6fd4718aaba/disks",
  "rel" : "disks"
}, {
  "href" : "/api/storagedomains/8827b158-6d2e-442d-a7ee-
c6fd4718aaba/storageconnections",
  "rel" : "storageconnections"
}, {
  "href" : "/api/storagedomains/8827b158-6d2e-442d-a7ee-
c6fd4718aaba/disksnapshots",
  "rel" : "disksnapshots"
}, {
  "href" : "/api/storagedomains/8827b158-6d2e-442d-a7ee-
c6fd4718aaba/diskprofiles",
  "rel" : "diskprofiles"
} ]
} ]
}

```

## 12.4. METHODS

### 12.4.1. Creating a Storage Domain

Creation of a new storage domain requires the **name**, **type**, **host** and **storage** elements. Identify the **host** element with the **id** attribute or **name** element.

In Red Hat Enterprise Virtualization 3.6 and later you can enable the wipe after delete option by default on the storage domain. To configure this specify `<wipe_after_delete>` in the **POST** request. This option can be edited after the domain is created, but doing so will not change the wipe after delete property of disks that already exist.

#### Example 12.3. Creating a storage domain

```

POST /api/storagedomains HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storage_domain>
  <name>data1</name>
  <type>data</type>
  <host id="2ab5e1da-b726-4274-bbf7-0a42b16a0fc3"/>
  <storage>
    <type>nfs</type>
    <address>172.31.0.6</address>
    <path>/exports/RHEVX/images/0</path>
  </storage>
</storage_domain>

```

The API user attaches the storage domain to a data center after creation.

### 12.4.2. Updating a Storage Domain

Only the **name** and **wipe after delete** elements are updatable post-creation. Changing the **wipe after delete** element will not change the wipe after delete property of disks that already exist.

#### Example 12.4. Updating a storage domain

```
PUT /api/storagedomains HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storage_domain>
  <name>data2</name>
  ...
  <wipe_after_delete>true</wipe_after_delete>
  ...
</storage_domain>
```

### 12.4.3. Removing a Storage Domain

Removal of a storage domain requires a **DELETE** request.

#### Example 12.5. Removing a storage domain

```
DELETE /api/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed HTTP/1.1

HTTP/1.1 204 No Content
```

## 12.5. STORAGE TYPES

### 12.5.1. Storage Types


The **storage** element contains a **type** element, which is an enumerated value found under the **capabilities** collection.


The storage element also contains additional elements specific to each storage **type**. The next few sections examine these additional storage **type** elements.

### 12.5.2. NFS Storage

The following table contains **nfs** specific elements in a **storage** description.

Table 12.2. NFS specific elements





Element	Type	Description	Properties
<b>address</b>	string	The host name or IP address of the NFS server.	

Element	Type	Description	Properties
<b>path</b>	string	The path of NFS mountable directory on the server.	

### 12.5.3. PosixFS Storage

The following table contains **posixfs** specific elements in a **storage** description.



**Table 12.3. PosixFS specific elements**

Element	Type	Description	Properties
<b>address</b>	string	The host name or IP address of the PosixFS server.	
<b>path</b>	string	The path of PosixFS mountable directory on the server.	
<b>vfs_type</b>	string	The Linux-supported file system type of the PosixFS share.	
<b>mount_options</b>	string	The options for mounting the PosixFS share.	

### 12.5.4. iSCSI and FCP Storage










The following table contains **iscsi** and **fcp** specific elements in a **storage** description.

**Table 12.4. iSCSI and FCP specific elements**

Element	Type	Description	Properties
<b>logical_unit id=</b>	complex	The <b>id</b> of the logical unit. A storage domain also accepts multiple iSCSI or FCP logical units.	
<b>override_luns</b>	Boolean	Defines whether to replace all logical unit settings with new settings. Set to <b>true</b> to override.	

The **logical\_unit** contains a set of sub-elements.

**Table 12.5. Logical unit elements**

Element	Type	Description	Properties
<b>address</b>	string	The address of the server containing the storage device.	
<b>port</b>	integer	The port number of the server.	
<b>target</b>	string	The target IQN for the storage device.	
<b>username</b>	string	A CHAP user name for logging into a target.	
<b>password</b>	string	A CHAP password for logging into a target.	
<b>serial</b>	string	The serial ID for the target.	
<b>vendor_id</b>	string	The vendor name for the target.	
<b>product_id</b>	string	The product code for the target.	
<b>lun_mapping</b>	integer	The Logical Unit Number device mapping for the target.	

In the case of iSCSI, if a **logical\_unit** description also contains details of the iSCSI target with the LUN in question, the target performs an automatic login when the storage domain is created.

### 12.5.5. LocalFS Storage

The **localfs** specific elements in a **storage** description are:

**Table 12.6. Localfs specific elements**

Element	Type	Description	Properties
<b>path</b>	string	The path of local storage domain on the host.	

A **localfs** storage domain requires a data center with **storage\_type** set to **localfs**. This data center only contains a single host cluster, and the host cluster only contains a single host.

## 12.6. EXPORT STORAGE DOMAINS

### 12.6.1. Export Storage Domains

Storage domains with **type** set to **export** contain **vms** and **templates** sub-collections, which list the import candidate VMs and templates stored on that particular storage domain.

#### Example 12.6. Listing the virtual machines sub-collection of an export storage domain

```
GET /api/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed/vms
Accept: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<vms>
  <vm id="082c794b-771f-452f-83c9-b2b5a19c0399"
    href="/api/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed/
    vms/082c794b-771f-452f-83c9-b2b5a19c0399">
    <name>vm1</name>
    ...
    <storage_domain id="fabe0451-701f-4235-8f7e-e20e458819ed"
      href="/api/storagedomains/fabe0451-701f-4235-8f7e-
e20e458819ed"/>
    <actions>
      <link rel="import" href="/api/storagedomains/
      fabe0451-701f-4235-8f7e-e20e458819ed/vms/
      082c794b-771f-452f-83c9-b2b5a19c0399/import"/>
    </actions>
  </vm>
</vms>
```

VMs and templates in these collections have a similar representation to their counterparts in the top-level VMs and templates collection, except they also contain a **storage\_domain** reference and an **import** action.

The **import** action imports a virtual machine or a template from an **export** storage domain. The destination cluster and storage domain is specified with **cluster** and **storage\_domain** references.

Include an optional **name** element to give the virtual machine or template a specific name.

#### Example 12.7. Action to import a virtual machine from an export storage domain

```
POST /api/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed/vms/
082c794b-771f-452f-83c9-b2b5a19c0399/import HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
```

```

    <storage_domain>
      <name>images0</name>
    </storage_domain>
  <cluster>
    <name>Default</name>
  </cluster>
</action>

```

### Example 12.8. Action to import a template from an export storage domain

```

POST /api/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed/templates/
082c794b-771f-452f-83c9-b2b5a19c0399/import HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <storage_domain>
    <name>images0</name>
  </storage_domain>
  <cluster>
    <name>Default</name>
  </cluster>
</action>

```

Include an optional **clone** Boolean element to import the virtual machine as a new entity.

### Example 12.9. Action to import a virtual machine as a new entity

```

POST /api/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed/vms/
082c794b-771f-452f-83c9-b2b5a19c0399/import HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <storage_domain>
    <name>images0</name>
  </storage_domain>
  <cluster>
    <name>Default</name>
  </cluster>
  <clone>true</clone>
  <vm>
    <name>MyVM</name>
  </vm>
  ...
</action>

```

Include an optional **disks** element to choose which disks to import using individual **disk id** elements.

### Example 12.10. Selecting disks for an import action

```

POST /api/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed/vms/
082c794b-771f-452f-83c9-b2b5a19c0399/import HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <cluster>
    <name>Default</name>
  </cluster>
  <vm>
    <name>MyVM</name>
  </vm>
  ...
  <disks>
    <disk id="4825ffda-a997-4e96-ae27-5503f1851d1b"/>
  </disks>
</action>

```

Delete a virtual machine or template from an **export** storage domain with a **DELETE** request.

#### Example 12.11. Delete virtual machine from an export storage domain

```

DELETE /api/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed/vms/
082c794b-771f-452f-83c9-b2b5a19c0399 HTTP/1.1
Accept: application/xml

HTTP/1.1 204 No Content

```

## 12.7. GLANCE IMAGE STORAGE DOMAINS

### 12.7.1. Glance Image Storage Domains

Storage domains with type set to **Image** represent instances of an OpenStack image service that has been added to the Red Hat Enterprise Virtualization environment as an external provider. These Glance image storage domains contain an **images** sub-collection with virtual machine images that have been exported to or can be imported from that Glance image storage domain.

#### Example 12.12. Listing the images sub-collection of a Glance image storage domain

```

GET /api/storagedomains/00000000-0000-0000-0000-000000000000/images
Accept: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<images>
  <image href="/api/storagedomains/00000000-0000-0000-0000-
000000000000/images/
    00000000-0000-0000-0000-000000000000" id="00000000-0000-0000-0000-
000000000000">

```



```

    <actions>
      <link href="/api/storagedomains/00000000-0000-0000-0000-
000000000000/images/
        00000000-0000-0000-0000-000000000000/import" rel="import"/>
    </actions>
    <name>RHEL_65_Disk_001</name>
    <storage_domain href="/api/storagedomains/00000000-0000-0000-0000-
000000000000"
      id="00000000-0000-0000-0000-000000000000"/>
  </image>
  <image href="/api/storagedomains/00000000-0000-0000-0000-
000000000000/images/
    00000000-0000-0000-0000-000000000000" id="00000000-0000-0000-0000-
000000000000">
    <actions>
      <link href="/api/storagedomains/00000000-0000-0000-0000-
000000000000/images/
        00000000-0000-0000-0000-000000000000/import" rel="import"/>
    </actions>
    <name>RHEL_65_Disk_002</name>
    <storage_domain href="/api/storagedomains/00000000-0000-0000-0000-
000000000000"
      id="00000000-0000-0000-0000-000000000000"/>
  </image>
</images>

```

The **import** action imports a virtual machine image from a Glance image storage domain. The destination storage domain is specified with a **storage\_domain** reference, and the destination cluster with a **cluster** reference.

Include an optional **name** element to give the virtual machine or template a specific name.

### Example 12.13. Action to import a virtual machine from a Glance image storage domain

```

POST /api/storagedomains/00000000-0000-0000-000000000000/images/
00000000-0000-0000-000000000000/import HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <storage_domain>
    <name>images0</name>
  </storage_domain>
  <cluster>
    <name>images0</name>
  </cluster>
</action>

```

You can also import images as templates by specifying the **import\_as\_template** reference:

### Example 12.14. Action to import a virtual machine from a Glance image storage domain as a template

```

POST /api/storagedomains/00000000-0000-0000-000000000000/images/
00000000-0000-0000-000000000000/import HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <storage_domain>
    <name>images0</name>
  </storage_domain>
  <cluster>
    <name>images0</name>
  </cluster>
  </import_as_template>true</import_as_template>
</action>

```

## 12.8. IMPORTING A BLOCK STORAGE DOMAIN

### 12.8.1. Importing a Block Storage Domain

An existing block storage domain with **type** set to **iscsi** or **fc** can be imported to the engine using the REST API. The ability to import storage domains allows you to recover data in the event of a failure in the engine database, and to migrate data from one data center or environment to another.

This procedure assumes the storage domain is not attached to a data center or host in any environment. Moreover, to import and attach an existing block storage domain to a data center, the target data center must be initialized, and must have a compatibility level of 3.5 or higher.

#### Procedure 12.1. Importing a block storage domain

1. Discover the targets on your iSCSI storage server:

```

POST /api/hosts/052a880a-53e0-4fe3-9ed5-01f939d1df66/iscsidiscover
Accept: application/xml
Content-Type: application/xml

<action>
  <iscsi>
    <address>192.0.2.0</address>
    <port>3260</port>
  </iscsi>
</action>

```

2. Get a list of storage domains that are candidates to be imported, using the iSCSI targets discovered in the previous step:

```

POST /api/hosts/052a880a-53e0-4fe3-9ed5-
01f939d1df66/unregisteredstoragedomainsdiscover HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <iscsi>

```

```

        <address>192.0.2.0</address>
    </iscsi>
    <iscsi_target>iqn.name1.120.01</iscsi_target>
    <iscsi_target>iqn.name2.120.02</iscsi_target>
    <iscsi_target>iqn.name3.120.03</iscsi_target>
</action>

```

The response shows a list of storage domains not associated with a host, similar to the following:

```

<action>
  <iscsi>
    <address>192.0.2.0</address>
  </iscsi>
  <storage_domains>
    <storage_domain id="6ab65b16-0f03-4b93-85a7-5bc3b8d52be0">
      <name>scsi4</name>
      <type>data</type>
      <external_status>
        <state>ok</state>
      </external_status>
      <master>false</master>
      <storage>
        <type>iscsi</type>
        <volume_group id="OLkKwa-VmEM-abW7-hPiv-BGrw-sQ2E-
vTdAy1"/>
      </storage>
      <available>0</available>
      <used>0</used>
      <committed>0</committed>
      <storage_format>v3</storage_format>
    </storage_domain>
  <status>
    <state>complete</state>
  </status>
  <iscsi_target>iqn.name1.120.01</iscsi_target>
  <iscsi_target>iqn.name2.120.02</iscsi_target>
  <iscsi_target>iqn.name3.120.03</iscsi_target>
</action>

```

### 3. Import the iSCSI storage domains to the host:

```

POST /api/storagedomains/ HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storage_domain id="6ab65b16-0f03-4b93-85a7-5bc3b8d52be0">
  <import>true</import>
  <host id="052a880a-53e0-4fe3-9ed5-01f939d1df66" />
  <type>data</type>
  <storage>
    <type>iscsi</type>
  </storage>
</storage_domain>

```

You have now imported the block storage domain to your host.

You may now wish to attach the storage domain to the host, and find any unregistered disks. Attach the storage domain and associated disks with the following steps:

### Procedure 12.2. Attaching a block storage domain

1. Attach the storage domain to your data center:

```
POST /api/datacenters/01a45ff0-915a-45e0-8d56-
5253234ac988/storagedomains
Accept: application/xml
Content-Type: application/xml

<storage_domain>
  <name>scsi4</name>
</storage_domain>
```

2. Find the unregistered disks on the storage domain:

```
GET /api/storagedomains/6ab65b16-0f03-4b93-85a7-
5bc3b8d52be0/disks;unregistered
Accept: application/xml
Content-Type: application/xml
```

This will return information about any unregistered disks on the storage domain, with a response similar to:

```
<disk href= "/api/storagedomains/6ab65b16-0f03-4b93-85a7-
5bc3b8d52be0/disks/b662f6da-3e97-4bb6-8a50-bda9980a6e83"
id="b662f6da-3e97-4bb6-8a50-bda9980a6e83">
  <actions>
    <link href= "/api/storagedomains/6ab65b16-0f03-4b93-85a7-
5bc3b8d52be0/disks/b662f6da-3e97-4bb6-8a50-bda9980a6e83/export"
rel="export"/>
  </actions>
  <name>disk1</name>
  <description/>
  <link href= "/api/storagedomains/6ab65b16-0f03-4b93-85a7-
5bc3b8d52be0/disks/b662f6da-3e97-4bb6-8a50-bda9980a6e83/permissions"
rel="permissions"/>
  <link href= "/api/storagedomains/6ab65b16-0f03-4b93-85a7-
5bc3b8d52be0/disks/b662f6da-3e97-4bb6-8a50-bda9980a6e83/statistics"
rel="statistics"/>
  <alias>disk1</alias>
  <image_id>930d653e-2a11-45ce-8042-9935584a3f87</image_id>
  <storage_domain href= "/api/storagedomains/6ab65b16-0f03-4b93-
85a7-5bc3b8d52be0" id="8ac10ec5-7cc9-4b1c-9c97-f121a9e4679a"/>
  <storage_domains>
    <storage_domain id="6ab65b16-0f03-4b93-85a7-5bc3b8d52be0"/>
  </storage_domains>
  <size>10737418240</size>
  <provisioned_size>10737418240</provisioned_size>
  <actual_size>10737418240</actual_size>
  <status>
```

```

        <state>ok</state>
    </status>
</interface>ide</interface>
<format>raw</format>
<sparse>>false</sparse>
<bootable>>false</bootable>
<shareable>>false</shareable>
<wipe_after_delete>>false</wipe_after_delete>
<propagate_errors>>false</propagate_errors>
<storage_type>image</storage_type>
</disk>

```

3. Attach the disk to the storage domain:

```

POST /api/storagedomains/6ab65b16-0f03-4b93-85a7-
5bc3b8d52be0/disks;unregistered
Accept: application/xml
Content-Type: application/xml

<disk id='b662f6da-3e97-4bb6-8a50-bda9980a6e83'></disk>

```

The disk is now attached to the imported block storage domain.

## 12.9. SUB-COLLECTIONS

### 12.9.1. Files Sub-Collection

The **files** sub-collection under each storage domain provides a way for clients to list available files. This sub-collection is specifically targeted to ISO storage domains, which contain ISO images and virtual floppy disks (VFDs) that an administrator uploads through Red Hat Enterprise Virtualization Manager.

The addition of a CD-ROM device to a VM requires an ISO image from the **files** sub-collection of an ISO storage domain.

#### Example 12.15. Listing the files sub-collection of an ISO storage domain

```

GET /api/storagedomains/00f0d9ce-da15-4b9e-9e3e-3c898fa8b6da/files
HTTP/1.1
Accept: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<files>
  <file id="en_winxp_pro_with_sp2.iso"
    href="/api/storagedomains/00f0d9ce-da15-4b9e-9e3e-
3c898fa8b6da/files/
    en_winxp_pro_with_sp2.iso">
    <name>en_winxp_pro_with_sp2.iso</name>
    <type>iso</type>
    <storage_domain id="00f0d9ce-da15-4b9e-9e3e-3c898fa8b6da"
      href="/api/storagedomains/00f0d9ce-da15-4b9e-9e3e-
3c898fa8b6da"/>
  </file>

```

```

    <file id="boot.vfd"
      href="/api/storagedomains/00f0d9ce-da15-4b9e-9e3e-
3c898fa8b6da/files/
      boot.vfd">
      <name>boot.vfd</name>
      <type>vfd</type>
      <storage_doman id="00f0d9ce-da15-4b9e-9e3e-3c898fa8b6da"
        href="/api/storagedomains/00f0d9ce-da15-4b9e-9e3e-
3c898fa8b6da"/>
    </file>
</files>

```

Like other resources, files have opaque **id** and **href** attributes. The **name** element contains the filename.

## 12.10. ACTIONS

### 12.10.1. Importing an Existing Storage Domain

The API provides a user with the ability to remove an ISO or Export storage domain from one Red Hat Enterprise Virtualization Manager instance without re-formatting the underlying storage and import it into another instance. Importing is achieved similarly to adding a new storage domain, except the **name** is not specified.

#### Example 12.16. Importing an existing export storage domain

```

POST /api/storagedomains HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<storage_domain>
  <type>export</type>
  <storage>
    <type>nfs</type>
    <address>172.31.0.6</address>
    <path>/exports/RHEVX/export-domain</path>
  </storage>
  <host id="2ab5e1da-b726-4274-bbf7-0a42b16a0fc3"/>
</storage_domain>

HTTP/1.1 201 Created
Content-Type: application/xml

<storage_domain id="fabe0451-701f-4235-8f7e-e20e458819ed"
  href="/api/storagedomains/fabe0451-701f-4235-8f7e-e20e458819ed">
  <name>export1</name>
  ...
</storage_domain>

```

### 12.10.2. Deleting a Storage Domain

A **storage\_domain** reference is passed in the body of a **DELETE** request for a storage domain. The **storage\_domain** reference is in the following form:

```
<storage_domain>
  <host id="..."/>
</storage_domain>
```

OR

```
<storage_domain>
  <host>
    <name>...</name>
  </host>
</storage_domain>
```

### Format Storage Domain

An API user provides an optional **format** element to specify whether or not to format the storage domain after deletion.

#### Example 12.17. Formatting a storage domain after deletion

```
<storage_domain>
  <host id="..."/>
  <format>>true</format>
</storage_domain>
```

If no **format** element is passed, the storage domain remains unformatted.

### Logical Removal of Storage Domain

The API also provides a function for the logical removal of the storage domain. This retains the storage domain's data for import. Use the **destroy** element to logically remove the storage domain and retain the data.

#### Example 12.18. Logical removal of a storage domain

```
<storage_domain>
  <host id="..."/>
  <destroy>>true</destroy>
</storage_domain>
```

### 12.10.3. Refreshing the LUN Size

Users can refresh the LUN size after increasing the size of the underlying LUN on the storage server. The **refreshluns** action forces a rescan of the provided LUNs and updates the database with the new size if required.

#### Example 12.19. Refreshing the LUN Size

```
POST /api/storagedomains/262b056b-aede-40f1-9666-
```

```
b883eff59d40/refreshluns HTTP/1.1
```

```
Accept: application/xml
```

```
Content-type: application/xml
```

```
<action>
```

```
  <logical_units>
```

```
    <logical_unit id="1IET_00010001"/>
```

```
    <logical_unit id="1IET_00010002"/>
```

```
  </logical_units>
```

```
</action>
```



## CHAPTER 13. STORAGE CONNECTIONS

### 13.1. STORAGE CONNECTION ELEMENTS

Table 13.1. Storage Connection Base Elements








Element	Type	Description	Properties
<b>type</b>	One of <b>nfs</b> , <b>posixfs</b> , <b>local</b> , or <b>iscsi</b>	The type of storage domain.	
<b>address</b>	string	The hostname or IP address of the storage domain.	 (Only required for NFS and iSCSI)
<b>host</b>	string	The <b>id</b> or <b>name</b> of the hypervisor. The <b>host</b> is optional. Providing it will attempt a connection to the storage via the host; not providing it will lead to persisting storage details in the database.	

Table 13.2. Storage Connection File-based Storage Elements

Element	Type	Description	Properties
<b>path</b>	string	The mounted file path of the storage domain. The <b>path</b> cannot be updated to one already used by a storage connection.	
<b>mount_options</b>	string	The options for mounting the PosixFS share.	
<b>vfs_type</b>	string	The Linux-supported file system type of the PosixFS share.	 
<b>nfs_version</b>	string	The version of NFS used.	
<b>nfs_timeo</b>	integer	The amount of time, in deciseconds, the NFS client will wait for a request to complete.	

Element	Type	Description	Properties
<b>nfs_retrans</b>	integer	The number of retransmissions the NFS client will attempt to complete a request.	

Table 13.3. Storage Connection iSCSI elements

Element	Type	Description	Properties
<b>port</b>	integer	The TCP port used for the iSCSI storage domain.	
<b>target</b>	string	The target IQN for the storage device.	
<b>username</b>	string	A CHAP user name for logging into a target.	
<b>password</b>	string	A CHAP password for logging into a target.	

## 13.2. XML REPRESENTATION OF A STORAGE CONNECTION RESOURCE

### Example 13.1. An XML representation of a storage connection resource

```
<storage_connections>
  <storage_connection href= "/api/storageconnections/608c5b96-9939-4331-96b5-197f28aa2e35" id="608c5b96-9939-4331-96b5-197f28aa2e35">
    <address>domain.example.com</address>
    <type>nfs</type>
    <path>/var/lib/exports/iso</path>
  </storage_connection>
  <storage_connection href= "/api/storageconnections/2ebb3f78-8c22-4666-8df4-e4bb7fec6b3a" id="2ebb3f78-8c22-4666-8df4-e4bb7fec6b3a">
    <address>domain.example.com</address>
    <type>posixfs</type>
    <path>/export/storagedata/username/data</path>
    <vfs_type>nfs</vfs_type>
  </storage_connection>
</storage_connections>
```

## 13.3. METHODS

### 13.3.1. Creating a New Storage Connection

Creating a new storage connection requires a **POST** request.

It is possible to create a new storage connection without adding a storage domain. The host **id** or **name** is optional; providing it will attempt a connection to the storage via the host.

### Example 13.2. Creating a New Storage Connection

```
POST /api/storageconnections HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storage_connection>
  <type>nfs</type>
  <address>domain.example.com</address>
  <path>/export/storagedata/username/data</path>
  <host>
    <name>Host_Name</name>
  </host>
</storage_connection>
```

### 13.3.2. Deleting a Storage Connection

Deleting a storage connection requires a **DELETE** request. A storage connection can only be deleted if neither storage domain nor LUN disks reference it.

The host **name** or **id** is optional; providing it unmounts the connection from that host.

### Example 13.3. Deleting Storage Connection

```
DELETE /api/storageconnections/Storage_Connection_ID HTTP/1.1
Accept: application/xml
Content-type: application/xml

<host>
  <name>Host_Name</name>
</host>
```

### 13.3.3. Updating a Storage Connection

Updating an existing storage connection requires a **PUT** request. The storage domain must be in either maintenance mode or unattached to successfully update the connection.

Providing the host **name** or **id** is optional; if provided, the host attempts a connection to the updated storage details.

### Example 13.4. Updating a Storage Connection

```
PUT /api/storageconnections/Storage_Connection_ID HTTP/1.1
Accept: application/xml
Content-type: application/xml
```

```

<storage_connection>
  <address>updated.example.domain.com</address>
  <host>
    <name>Host_name</name>
  </host>
</storage_connection>

```

### 13.3.4. Updating an iSCSI Storage Connection

Updating an existing iSCSI storage connection requires a **PUT** request. An iSCSI storage domain must be in maintenance mode or unattached to successfully update the connection.

#### Example 13.5. Updating a Storage Connection

```

PUT /api/storageconnections/Storage_Connection_ID HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storage_connection>
  <port>3456</port>
</storage_connection>

```

### 13.3.5. Adding New Storage Domain with Existing Storage Connection

Adding a new storage domain with existing storage connection requires a **POST** request. This is only applicable with file-based storage domains: **NFS**, **POSIX**, and **local**.

#### Example 13.6. Adding a New Storage Domain with Existing Storage Connection

```

POST /api/storagedomains HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storage_domain>
  <name>New_Domain</name>
  <type>data</type>
  <storage id="Storage_Connection_ID"/>
  <host>
    <name>Host_Name</name>
  </host>
</storage_domain>

```

### 13.3.6. Attaching an Additional Storage Connection to iSCSI Storage

Attaching an additional storage connection to an iSCSI storage domain requires a **POST** request.

#### Example 13.7. Attaching an Additional Storage Connection to iSCSI Storage

```

POST /api/storagedomains/iSCSI_Domain_ID/storageconnections HTTP/1.1

```

```
Accept: application/xml
Content-type: application/xml

<storage_connection id="Storage_Connection_ID">
</storage_connection>
```

### 13.3.7. Detaching a Storage Connection from iSCSI Storage

Detaching a storage connection from an iSCSI storage domain requires a **DELETE** request.

#### Example 13.8. Detaching a Storage Connection from iSCSI Storage

```
DELETE
/api/storagedomains/iSCSI_Domain_ID/storageconnections/Storage_Connectio
n_ID HTTP/1.1
Accept: application/xml
Content-type: application/xml
```

### 13.3.8. Defining Credentials to an iSCSI Target

When an iSCSI storage domain is added using the Administration Portal, only a single user name and password can be specified for that domain. However, some setups require that each host in the cluster use a separate user name and password. Specific credentials can be applied to each iSCSI target per host by using the **storageconnectionextensions** element.

#### Example 13.9. Defining credentials to an iSCSI target

```
POST /api/hosts/2ab5e1da-b726-4274-bbf7-
0a42b16a0fc3/storageconnectionextensions HTTP/1.1
Accept: application/xml
Content-type: application/xml

<storageconnectionextension>
  <target>iqn.2010.05.com.example:iscsi.targetX</target>
  <username>jimmy</username>
  <password>p@55w0Rd!</password>
</storageconnectionextension>
```

## CHAPTER 14. HOSTS



### 14.1. HOST ELEMENTS



The **hosts** collection provides information about the hosts in a Red Hat Enterprise Virtualization environment. An API user accesses this information through the **rel="hosts"** link obtained from the entry point URI.

Additional information can be retrieved for **GET** requests using the **All-Content: true** header.

The following table shows specific elements contained in a host resource representation.







**Table 14.1. Host elements**

Element	Type	Description	Properties
<b>link rel="storage"</b>	relationship	A link to the <b>storage</b> sub-collection for host storage.	
<b>link rel="nics"</b>	relationship	A link to the <b>nics</b> sub-collection for host network interfaces.	
<b>link rel="numanodes"</b>	relationship	A link to the <b>numanodes</b> sub-collection for host NUMA nodes.	
<b>link rel="tags"</b>	relationship	A link to the <b>tags</b> sub-collection for host tags.	
<b>link rel="permissions"</b>	relationship	A link to the <b>permissions</b> sub-collection for host permissions.	
<b>link rel="statistics"</b>	relationship	A link to the <b>statistics</b> sub-collection for host statistics.	
<b>link rel="hooks"</b>	relationship	A link to the <b>hooks</b> sub-collection for host hooks.	
<b>link rel="fenceagents"</b>	relationship	A link to the <b>fenceagents</b> sub-collection for host fence agents.	
<b>link rel="katelloerrata"</b>	relationship	A link to the <b>katelloerrata</b> sub-collection for host errata.	
<b>link rel="devices"</b>	relationship	A link to the <b>devices</b> sub-collection for host devices.	

Element	Type	Description	Properties
<b>link</b> <b>rel="networkattachm ents"</b>	relationship	A link to the <b>networkattachments</b> sub-collection for host network configuration.	
<b>link</b> <b>rel="unmanagedne tworks"</b>	relationship	A link to the <b>unmanagednetworks</b> sub-collection for unmanaged networks on the host.	
<b>link</b> <b>rel="storageconn ectionextensions "</b>	relationship	A link to the <b>storageconnectionextensions</b> sub-collection for host storage connection extensions.	
<b>name</b>	string	The unique identifier for the host.	
<b>root_password</b>	string	The root password of this host, by convention only included in the client-provided host representation on creation.	 
<b>comment</b>	string	Any comments regarding the host.	
<b>address</b>	string	The IP address or hostname of the host.	 
<b>certificate</b>	complex	A reference to the host certificate details, including <b>organization</b> and <b>subject</b> .	
<b>status</b>	See below	The host status.	
<b>external_status</b>	complex/enumerated	The host health status as reported by external systems and plug-ins. The <b>state</b> element contains an enumerated value of <b>ok</b> , <b>info</b> , <b>warning</b> , <b>error</b> , or <b>failure</b> .	
<b>cluster id=</b>	GUID	A reference to the cluster that includes this host.	
<b>port</b>	integer	The listen port of the VDSM daemon running on this host.	

Element	Type	Description	Properties
<b>type</b>	One of <b>rhel</b> or <b>rhev-h</b>	The host type.	
<b>storage_manager_priority=</b>	Boolean: true or false	Specifies whether the host is a storage manager.	
<b>version major=</b> <b>minor=</b> <b>build=</b> <b>revision=</b> <b>full_version=</b>	complex	The compatibility level of the host.	
<b>hardware_informa</b> <b>tion</b>	complex	Information regarding the hardware of the host, including <b>manufacturer</b> , <b>version</b> , <b>serial_number</b> , <b>product_name</b> , <b>uuid</b> , and <b>family</b> .	
<b>power_management</b> <b>type=</b>	complex	Configuration options for host power management, including <b>enabled</b> , <b>options</b> , <b>kdump_detection</b> , <b>automatic_pm_enabled</b> , and <b>agents</b> . See <a href="#">Section 14.4, “Power Management Elements”</a> for more information on the host power management options.	
<b>ksm</b>	Boolean: true or false	<b>true</b> if Kernel SamePage Merging (KSM) is enabled.	
<b>transparent_huge</b> <b>pages</b>	Boolean: true or false	<b>true</b> if Transparent Hugepages is enabled.	
<b>iscsi</b>	complex	The SCSI <b>initiator</b> for the host.	
<b>ssh</b>	complex	Details regarding the SSH connection with the host, including <b>port</b> and <b>fingerprint</b> .	



Element	Type	Description	Properties
<b>cpu</b>	complex	Statistics for the host CPU. Includes sub-elements for the CPU's <b>name</b> , <b>topology cores=</b> , <b>topology sockets=</b> , <b>topology threads=</b> and <b>speed</b> . The <b>topology cores=</b> aggregates the total cores while the <b>topology sockets=</b> aggregates the total physical CPUs. The total cores available to virtual machines equals the number of sockets multiplied by the cores per socket.	
<b>memory</b>	integer	The total amount of host memory in bytes.	
<b>max_scheduling_memory</b>	integer	The maximum amount of memory that can be used in scheduling in bytes.	
<b>summary</b>	complex	Summary statistics of the virtual machines on the host. Includes sub-elements for numbers of <b>active</b> , <b>migrating</b> and <b>total</b> VMs.	
<b>os type=</b>	complex	Details regarding the operating system installed on the host, including <b>version full_version=</b> .	
<b>libvirt_version major= minor= build= revision= full_version=</b>	complex	The libvirt compatibility level of the host.	

The **status** contains one of the following enumerative values: **down**, **error**, **initializing**, **installing**, **install\_failed**, **maintenance**, **non\_operational**, **non\_responsive**, **pending\_approval**, **preparing\_for\_maintenance**, **connecting**, **reboot**, **unassigned** and **up**. These states are listed in **host\_states** under **capabilities**.

## 14.2. XML REPRESENTATION OF A HOST

### Example 14.1. An XML representation of a host

```
<host href="/api/hosts/00000000-0000-0000-0000-000000000000"
id="00000000-0000-0000-0000-000000000000">
  <actions>
    <link href="/api/hosts/00000000-0000-0000-0000-
000000000000/upgrade" rel="upgrade"/>
    <link href="/api/hosts/00000000-0000-0000-0000-
000000000000/setupnetworks" rel="setupnetworks"/>
  </actions>
</host>
```

```

    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/fence" rel="fence"/>
    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/refresh" rel="refresh"/>
    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/install" rel="install"/>
    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/activate" rel="activate"/>
    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/deactivate" rel="deactivate"/>
    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/approve" rel="approve"/>
    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/forceselectspm" rel="forceselectspm"/>
    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/enrollcertificate" rel="enrollcertificate"/>
    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/iscsilogin" rel="iscsilogin"/>
    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/unregisteredstoragedomainsdiscover"
rel="unregisteredstoragedomainsdiscover"/>
    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/iscsidiscover" rel="iscsidiscover"/>
    <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/commitnetconfig" rel="commitnetconfig"/>
  </actions>
  <name>host1</name>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/storage"
rel="storage"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/nics"
rel="nics"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/numanodes" rel="numanodes"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/tags"
rel="tags"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/permissions" rel="permissions"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/statistics" rel="statistics"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/hooks"
rel="hooks"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/fenceagents" rel="fenceagents"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/katelloerrata" rel="katelloerrata"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/devices"
rel="devices"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/networkattachments" rel="networkattachments"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/unmanagednetworks" rel="unmanagednetworks"/>
  <link href="/api/hosts/00000000-0000-0000-0000-0000-000000000000/storageconnectionextensions"
rel="storageconnectionextensions"/>
  <address>host1.example.com</address>
  <certificate>

```

```

    <organization>exampleorg</organization>
    <subject>O=exampleorg,CN=XX.XX.XX.XX</subject>
</certificate>
<status>
  <state>up</state>
</status>
<external_status>
  <state>ok</state>
</external_status>
<cluster href="/api/clusters/00000000-0000-0000-0000-000000000000"
id="00000000-0000-0000-0000-000000000000"/>
<port>54321</port>
<type>rhel</type>
<storage_manager priority="2">false</storage_manager>
<spm>
  <priority>2</priority>
  <status>
    <state>none</state>
  </status>
</spm>
<version major="4" minor="17" build="20" revision="0"
full_version="vdsms-4.17.20-0.el7ev"/>
<power_management>
  <enabled>false</enabled>
  <pm_proxies/>
  <automatic_pm_enabled>true</automatic_pm_enabled>
  <kdump_detection>true</kdump_detection>
</power_management>
<ksm>
  <enabled>true</enabled>
</ksm>
<transparent_hugepages>
  <enabled>true</enabled>
</transparent_hugepages>
<iscsi>
  <initiator>iqn.2001-04.com.example:diskarrays-sn-
a8675309</initiator>
</iscsi>
<ssh>
  <port>22</port>

<fingerprint>00:00:00:00:00:00:00:00:00:00:00:00:00:00:00</fingerprin
t>
</ssh>
<cpu>
  <topology cores="2" sockets="1"/>
  <name>Intel(R) Xeon(R) CPU E5430 @ 2.66GHz</name>
  <speed>2656</speed>
</cpu>
<memory>12430868480</memory>
<max_scheduling_memory>12026118144</max_scheduling_memory>
<summary>
  <active>2</active>
  <migrating>0</migrating>
  <total>3</total>
</summary>

```

```

<protocol>stomp</protocol>
<os type="RHEL">
  <version full_version="7.2-9.el7_2.1"/>
</os>
<libvirt_version major="1" minor="2" build="17" revision="0"
full_version="libvirt-1.2.17-13.el7_2.2"/>
<kdump_status>disabled</kdump_status>
<selinux>
  <mode>enforcing</mode>
</selinux>
<auto_numa_status>disable</auto_numa_status>
<numa_supported>false</numa_supported>
<live_snapshot_support>true</live_snapshot_support>
<update_available>false</update_available>
<device_passthrough>
  <enabled>true</enabled>
</device_passthrough>
</host>

```

### 14.3. JSON REPRESENTATION OF A HOST

#### Example 14.2. A JSON representation of a host

```

{
  "host" : [ {
    "address" : "198.51.100.0",
    "certificate" : {
      "organization" : "example.com",
      "subject" : "O=example.com,CN=192.0.2.0"
    },
    "status" : {
      "state" : "up"
    },
    "cluster" : {
      "href" : "/api/clusters/00000001-0001-0001-0001-0000000002fb",
      "id" : "00000001-0001-0001-0001-0000000002fb"
    },
    "port" : "54321",
    "type" : "rhel",
    "storage_manager" : {
      "value" : "true",
      "priority" : "5"
    },
    "spm" : {
      "priority" : "5"
    },
    "version" : {
      "major" : "4",
      "minor" : "16",
      "build" : "8",
      "revision" : "1",
      "full_version" : "vdsm-4.16.8.1-6.el6ev"
    },
    "hardware_information" : {

```

```

    "manufacturer" : "System Manufacturer To Be Filled By O.E.M.",
    "version" : "System Version To Be Filled By O.E.M.",
    "serial_number" : "Serial Number To Be Filled By O.E.M.",
    "product_name" : "Product Name To Be Filled By O.E.M.",
    "uuid" : "9fa0a1a2-a3a4-a5a6-a7a8-a9aaabacadae",
    "family" : "Family To Be Filled By O.E.M.",
    "supported_rng_sources" : {
      "source" : [ "RANDOM" ]
    }
  },
  "power_management" : {
    "enabled" : "false",
    "options" : {
      "option" : [ {
        "name" : "secure",
        "value" : "false"
      } ]
    }
  },
  "automatic_pm_enabled" : "true",
  "kdump_detection" : "true",
  "type" : "apc"
},
"ksm" : {
  "enabled" : "false"
},
"transparent_hugepages" : {
  "enabled" : "true"
},
"iscsi" : {
  "initiator" : "iqn.1994-05.com.example:795610ff2632"
},
"ssh" : {
  "port" : "22",
  "fingerprint" : "77:27:38:25:8f:60:8d:93:9c:2c:b0:cb:5e:19:f4:53"
},
"cpu" : {
  "topology" : {
    "sockets" : "1",
    "cores" : "4",
    "threads" : "1"
  },
  "name" : "Intel(R) Core(TM)2 Quad CPU    Q9550  @ 2.83GHz",
  "speed" : 2833
},
"memory" : 2989490176,
"max_scheduling_memory" : 2584739840,
"summary" : {
  "active" : "0",
  "migrating" : "0",
  "total" : "0"
},
"protocol" : "stomp",
"os" : {
  "version" : {
    "full_version" : "6Server - 6.6.0.2.el6"
  }
},

```

```
    "type" : "RHEL"
  },
  "libvirt_version" : {
    "major" : "0",
    "minor" : "10",
    "build" : "2",
    "revision" : "0",
    "full_version" : "libvirt-0.10.2-46.el6_6.2"
  },
  "kdump_status" : "disabled",
  "selinux" : {
    "mode" : "enforcing"
  },
  "auto_numa_status" : "unknown",
  "numa_supported" : "false",
  "live_snapshot_support" : "true",
  "actions" : {
    "link" : [ {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/fence",
      "rel" : "fence"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/approve",
      "rel" : "approve"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/forceselectspm",
      "rel" : "forceselectspm"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/iscsilogin",
      "rel" : "iscsilogin"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/iscsidiscover",
      "rel" : "iscsidiscover"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/commitnetconfig",
      "rel" : "commitnetconfig"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/deactivate",
      "rel" : "deactivate"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/install",
      "rel" : "install"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/activate",
      "rel" : "activate"
    } ]
  },
  "name" : "Host-07",
```

```





    "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe",
    "id" : "ea7aa772-d2af-4a5c-9350-d86f005c93fe",
    "link" : [ {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-
d86f005c93fe/storage",
      "rel" : "storage"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/nics",
      "rel" : "nics"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-
d86f005c93fe/numanodes",
      "rel" : "numanodes"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/tags",
      "rel" : "tags"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-
d86f005c93fe/permissions",
      "rel" : "permissions"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-
d86f005c93fe/statistics",
      "rel" : "statistics"
    }, {
      "href" : "/api/hosts/ea7aa772-d2af-4a5c-9350-d86f005c93fe/hooks",
      "rel" : "hooks"
    } ]
  } ]
}

```

## 14.4. POWER MANAGEMENT ELEMENTS

The `power_management` element provides users with the ability to set a power management configuration, which is required for host fencing. Certain sub-elements are required when configuring `power_management`.

Table 14.2. Power management options

Element	Type	Description	Properties
<code>type=</code>	fencing device code	A list of valid fencing device codes are available in the <b>capabilities</b> collection.	 
<code>enabled</code>	Boolean: true or false	Indicates whether power management configuration is enabled or disabled.	
<code>address</code>	string	The host name or IP address of the host.	

Element	Type	Description	Properties
<b>username</b>	string	A valid user name for power management.	
<b>password</b>	string	A valid, robust password for power management.	
<b>options</b>	complex	Fencing options for the selected <b>type=</b> specified with the option <b>name=""</b> and <b>value=""</b> strings.	
<b>agents</b>	complex	Specifies fence agent options when multiple fences are used. Use the <b>order</b> sub-element to prioritize the fence agents. Agents are run sequentially according to their order until the fence action succeeds. When two or more fence agents have the same <b>order</b> , they are run concurrently. Other sub-elements include <b>type</b> , <b>ip</b> , <b>user</b> , <b>password</b> , and <b>options</b> .	
<b>automatic_pm_enabled</b>	Boolean: true or false	Toggles the automated power control of the host in order to save energy. When set to <b>true</b> , the host will be automatically powered down if the cluster's load is low, and powered on again when required. This is set to <b>true</b> when a host is created, unless disabled by the user.	
<b>kdump_detection</b>	Boolean: true or false	Toggles whether to determine if kdump is running on the host before it is shut down. When set to <b>true</b> , the host will not shut down during a kdump process. This is set to <b>true</b> when a host has power management enabled, unless disabled by the user.	

The **options** element requires a list of **option** sub-elements. Each **option** requires a **name** and **type** attributes. Certain options are only available for specific fencing types as defined in the **capabilities** collection.

A new host includes an optional **power\_management** configuration when **POST**ing to the host resource. The **power\_management** configuration is updatable using a **PUT** request.



**Example 14.3. An XML representation of a host's power management configuration**

```

<host id="2ab5e1da-b726-4274-bbf7-0a42b16a0fc3"
  href="/api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3">
  <name>host1</name>
  ...
  <power_management type="ilo">
    <enabled>true</enabled>
    <address>192.168.1.107</address>
    <username>admin</username>
    <password>p@55w0rd!</password>
    <options>
      <option name="secure" value="true"/>
      <option name="port" value="54345"/>
      <option name="slot" value="3"/>
    </options>
  </power_management>
  <agents>
    <agent id="07f0b9ce-923a-4a96-a532-3c898fa8b6da">
      <type>apc</type>
      <order>1</order>
      <ip>192.168.1.111</ip>
      <user>example</user>
      <password>p@55w0rd!</password>
      <port>9</port>
      <options>
        <option name="power_wait" value="5"/>
        <option name="secure" value="false"/>
      </options>
    </agent>
    <agent id="50c71ba2-8495-11e0-b931-e20e458819ed">
      <type>rsa</type>
      <order>2</order>
      <ip>192.168.1.112</ip>
      <user>example</user>
      <password>p@55w0rd!</password>
      <port>9</port>
      <options>
        <option name="power_wait" value="5"/>
        <option name="secure" value="false"/>
      </options>
    </agent>
  </agents>
  <automatic_pm_enabled>true</automatic_pm_enabled>
  <kdump_detection>true</kdump_detection>
</host>

```

**14.5. MEMORY MANAGEMENT ELEMENTS**

The API provides two configuration settings for a host's memory management.

**Kernel SamePage Merging (KSM)** reduces references to memory pages from multiple identical pages to a single page reference. This helps with optimization for memory density. KSM uses the **ksm** element.

### Example 14.4. Setting KSM memory management

```
PUT /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3 HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<host id="2ab5e1da-b726-4274-bbf7-0a42b16a0fc3"
  href="/api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3">
  <ksm>true</ksm>
</host>
```

**Transparent Hugepage support** expands the size of memory pages beyond the standard 4kB limit. This reduces memory consumption and increases host performance. Transparent Hugepage support uses the `transparent_hugepages` element.

### Example 14.5. Setting Transparent Hugepage memory management

```
PUT /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3 HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<host id="2ab5e1da-b726-4274-bbf7-0a42b16a0fc3"
  href="/api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3">
  <transparent_hugepages>true</transparent_hugepages>
</host>
```

Availability of Transparent Hugepage support is found in the `capabilities` collection.

## 14.6. METHODS

### 14.6.1. Creating a Host

Creation of a new host requires the `name`, `address` and `root_password` elements.

#### Example 14.6. Creating a host

```
POST /api/hosts HTTP/1.1
Accept: application/xml
Content-type: application/xml

<host>
  <name>host2</name>
  <address>host2.example.com</address>
  <root_password>p@55w0Rd!</root_password>
</host>
```

New host creation applies only to the addition of Red Hat Enterprise Linux hosts. Red Hat Enterprise Virtualization Manager detects hypervisor hosts automatically and requires approval for their use.

The `root_password` element is only included in the client-provided initial representation and is not exposed in the representations returned from subsequent requests.

## 14.6.2. Updating a Host

The `name`, `description`, `cluster`, `power_management`, `transparent_hugepages` and `ksm` elements are updatable post-creation.

### Example 14.7. Updating a host

```
POST /api/hosts/00000000-0000-0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<host>
  <name>host3</name>
</host>
```

## 14.6.3. Removing a Host

Removal of a host requires a **DELETE** request.

### Example 14.8. Removing a host

```
DELETE /api/hosts/00000000-0000-0000-0000-000000000000 HTTP/1.1




HTTP/1.1 204 No Content
```



## 14.7. SUB-COLLECTIONS

### 14.7.1. Host Network Attachments Sub-Collection

The `network_attachments` sub-collection represents the network configuration of the host. Each `network_attachment` element represents a network attached to the host and contains the following elements:

**Table 14.3. Elements for a host's network attachments**

Element	Type	Description	Properties
<code>network id=</code>	GUID	A reference to the network to which the host is attached.	 
<code>host_nic id=</code>	GUID	A reference to the host network interface to which the network is attached.	

Element	Type	Description	Properties
<b>ip_address_assignments</b>	complex	The IP configuration of the network. Each <b>ip_address_assignment</b> contains <b>assignment_method</b> and <b>ip address= netmask= gateway=</b> sub-elements.	
<b>properties</b>	complex	Defines custom property keys for the network. Each <b>property</b> contains <b>name</b> and <b>value</b> sub-elements. See <a href="#">Section 14.7.2.3.2, "Network Attachment Custom Properties"</a> .	
<b>reported_configurations</b>	complex	A read-only list of configuration properties for the network attachment. The <b>in_sync</b> boolean is <b>false</b> when the network attachment is out of sync with the logical network definition of the data center. Each <b>reported_configuration</b> contains <b>name</b> , <b>expected_value</b> , <b>actual_value</b> , and <b>in_sync</b> sub-elements.	
<b>host id=</b>	GUID	A reference to the host.	

#### Example 14.9. An XML representation of a network attachment on a host

```
<network_attachment href="/api/hosts/00000000-0000-0000-0000-000000000000/networkattachments/00000000-0000-0000-0000-000000000000" id="00000000-0000-0000-0000-000000000000">
  <network href="/api/networks/00000000-0000-0000-0000-000000000000" id="00000000-0000-0000-0000-000000000000"/>
  <host_nic href="/api/hosts/00000000-0000-0000-0000-000000000000/nics/00000000-0000-0000-0000-000000000000" id="00000000-0000-0000-0000-000000000000"/>
  <ip_address_assignments>
    <ip_address_assignment>
      <ip address="XX.XX.XX.XX" netmask="255.255.255.0" gateway="XX.XX.XX.XX"/>
      <assignment_method>dhcp</assignment_method>
    </ip_address_assignment>
  </ip_address_assignments>
  <reported_configurations>
    <in_sync>true</in_sync>
    <reported_configuration>
      <name>mtu</name>
```

```

        <expected_value>1500</expected_value>
        <actual_value>1500</actual_value>
        <in_sync>true</in_sync>
    </reported_configuration>
    <reported_configuration>
        <name>bridged</name>
        <expected_value>true</expected_value>
        <actual_value>true</actual_value>
        <in_sync>true</in_sync>
    </reported_configuration>
    <reported_configuration>
        <name>vlan</name>
        <in_sync>true</in_sync>
    </reported_configuration>
    <reported_configuration>
        <name>boot_protocol</name>
        <expected_value>DHCP</expected_value>
        <actual_value>DHCP</actual_value>
        <in_sync>true</in_sync>
    </reported_configuration>
</reported_configurations>
<host href="/api/hosts/f59a29cd-587d-48a3-b72a-db537eb21957"
id="f59a29cd-587d-48a3-b72a-db537eb21957"/>
</network_attachment>

```

When attaching a network to a host, the **network** and **host\_nic** elements are required, with either an **id** or a **name**. The **host\_nic** ID can refer to either an unused network interface card or a bond.

#### Example 14.10. Attach a network to a host

```

POST /api/hosts/00000000-0000-0000-0000-000000000000/nics/00000000-0000-
0000-0000-000000000000/networkattachments HTTP/1.1
Accept: application/xml
Content-type: application/xml

<network_attachment>
  <network id="00000000-0000-0000-0000-000000000000"/>
  <host_nic id="00000000-0000-0000-0000-000000000000"/>
</network_attachment>

```

The **host\_nic**, **ip\_address\_assignments**, and **properties** elements are updatable post-creation. Changing the **host\_nic** ID moves the network to a different network interface card.

#### Example 14.11. Modifying a host network attachment

```

PUT /api/hosts/00000000-0000-0000-0000-000000000000/nics/00000000-0000-
0000-0000-000000000000/networkattachments/00000000-0000-0000-0000-
000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<network_attachment>

```

```

<host_nic id="00000000-0000-0000-0000-000000000000"/>
<ip_address_assignments>
  <ip_address_assignment>
    <ip address="XX.XX.XX.XX" netmask="255.255.255.0"
gateway="XX.XX.XX.XX"/>
    <assignment_method>static</assignment_method>
  </ip_address_assignment>
</ip_address_assignments>
<properties>
  <property>
    <name>bridge_opts</name>
    <value>
      forward_delay=1500 group_fwd_mask=0x0 multicast_snooping=1
    </value>
  </property>
</properties>
</network_attachment>

```

Detach a network from the host with a **DELETE** request on the network attachment.

#### Example 14.12. Detach a network from a host

```

DELETE /api/hosts/00000000-0000-0000-0000-000000000000/nics/00000000-
0000-0000-0000-000000000000/networkattachments/00000000-0000-0000-0000-
000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

HTTP/1.1 204 No Content

```



#### IMPORTANT

Changes to network attachment configuration must be explicitly committed. See [Section 14.8.9, "Commit Host Network Configuration Action"](#).

## 14.7.2. Host Network Interface Sub-Collection




### 14.7.2.1. Host Network Interface Sub-Collection

The **nics** sub-collection represents a host's physical network interfaces. Additional information can be retrieved for **GET** requests using the **All-Content: true** header. Each **host\_nic** element in the representation acts as a network interface and contains the following elements:

Table 14.4. Elements for a host's network interfaces

Element	Type	Description	Properties
---------	------	-------------	------------

Element	Type	Description	Properties
<b>name</b>	string	The name of the host network interface, e.g. <b>eth0</b> .	 [a] 
<b>link rel="statistics"</b>	relationship	A link to the <b>statistics</b> sub-collection for a host's network interface statistics.	
<b>link rel="labels"</b>	relationship	A link to the <b>labels</b> sub-collection for a host's network interface labels.	
<b>link rel="networkattachments"</b>	relationship	A link to the <b>networkattachments</b> sub-collection for a host's network interface configuration.	
<b>link rel="master"</b>	relationship	A reference to the master bonded interface, if this is a slave interface.	
<b>host id=</b>	GUID	A reference to the host.	
<b>network id=</b>	GUID	A reference to the network, if any, that the interface is attached.	 [b]
<b>mac address=</b>	string	The MAC address of the interface.	
<b>ip address= netmask= gateway= mtu=</b>	complex	The IP level configuration of the interface.	
<b>mtu</b>	complex	The maximum transmission unit for the interface.	
<b>boot_protocol</b>	enumerated	The protocol for IP address assignment when the host is booting. A list of enumerated values is available in <b>capabilities</b> .	
<b>status</b>	enumerated	The link status for the network interface. These states are listed in <b>host_nic_states</b> under <b>capabilities</b> .	

Element	Type	Description	Properties
<b>vlan id</b>	integer	The VLAN which this interface represents.	
<b>bonding</b>	complex	A list of <b>options</b> and <b>slave</b> NICs for bonded interfaces.	 [c] 
<b>bridged</b>	Boolean	Defines the bridged network status. Set to <b>true</b> for a bridged network and <b>false</b> for a bridgeless network.	

[a] Only required when adding bonded interfaces. Other interfaces are read-only and cannot be added.

[b] Only required when adding bonded interfaces. Other interfaces are read-only and cannot be added.

[c] Only required when adding bonded interfaces. Other interfaces are read-only and cannot be added.

### Example 14.13. An XML representation of a network interface on a host

```
<host_nic id="00000000-0000-0000-0000-000000000000"
  href="/api/hosts/00000000-0000-0000-0000-000000000000/nics/
00000000-0000-0000-0000-000000000000">
  <actions>
    <link rel="attach"
      href="/api/hosts/00000000-0000-0000-0000-000000000000/nics/
00000000-0000-0000-0000-000000000000/attach"/>
    <link rel="detach"
      href="/api/hosts/00000000-0000-0000-0000-000000000000/nics/
00000000-0000-0000-0000-000000000000/detach"/>
  </actions>
  <name>bond0</name>
  <link href="/api/hosts/00000000-0000-0000-0000-
000000000000/nics/00000000-0000-0000-0000-000000000000/statistics"
rel="statistics"/>
  <link href="/api/hosts/00000000-0000-0000-0000-
000000000000/nics/00000000-0000-0000-0000-000000000000/labels"
rel="labels"/>
  <link href="/api/hosts/00000000-0000-0000-0000-
000000000000/nics/00000000-0000-0000-0000-
000000000000/networkattachments" rel="networkattachments"/>
  <host href="/api/hosts/00000000-0000-0000-0000-000000000000"
id="00000000-0000-0000-0000-000000000000"/>
  <network href="/api/networks/00000000-0000-0000-0000-000000000000"
id="00000000-0000-0000-0000-000000000000"/>
  <mac address="00:00:00:00:00:00"/>
  <ip address="XX.XX.XX.XX" netmask="255.255.255.0"
gateway="XX.XX.XX.XX"/>
  <boot_protocol>dhcp</boot_protocol>
```



```

<status>
  <state>up</state>
</status>
<bonding>
  <options>
    <option name="mode" value="4" type="Dynamic link
aggregation (802.3ad)"/>
    <option name="miimon" value="100"/>
  </options>
  <slaves>
    <host_nic id="00000000-0000-0000-0000-000000000000"/>
    <host_nic id="00000000-0000-0000-0000-000000000000"/>
  </slaves>
</bonding>
<mtu>1500</mtu>
<bridged>true</bridged>
<custom_configuration>>false</custom_configuration>
</host_nic>

```

In the REST API, you can only create bonded interfaces. See [Section 14.7.2.2, “Bonded Interfaces”](#). All other network interfaces contain updatable **network**, **ip** and **boot\_protocol** elements.

Modify a network interface with a **PUT** request.

```

PUT /api/hosts/00000000-0000-0000-0000-000000000000/nics/
00000000-0000-0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<host_nic>
  <ip address="XX.XX.XX.XX" netmask="255.255.255.0"
gateway="XX.XX.XX.XX"/>
  <boot_protocol>static</boot_protocol>
</host_nic>

```

Remove a network interface with a **DELETE** request.

```

DELETE /api/hosts/00000000-0000-0000-0000-000000000000/nics/
00000000-0000-0000-0000-000000000000 HTTP/1.1

HTTP/1.1 204 No Content





```

### 14.7.2.2. Bonded Interfaces

A bonded interface is represented as a **host\_nic** resource containing a **bonding** element.

**Table 14.5. Bonded interface properties**

Element	Type	Description	Properties
---------	------	-------------	------------

Element	Type	Description	Properties
<b>options</b>	complex	A list of <b>option</b> elements for a bonded interface. Each <b>option</b> contains property <b>name</b> and <b>value</b> attributes.	 [a] 
<b>slaves</b>	complex	A list of slave <b>host_nic id=</b> elements for a bonded interface.	 [b] 

[a] Only required when adding bonded interfaces. Other interfaces are read-only and cannot be added.

[b] Only required when adding bonded interfaces. Other interfaces are read-only and cannot be added.

An API user creates a new bond when creating a new **host\_nic** (**POST**) or updating a **host\_nic** (**PUT**). Use either the **id** or **name** elements to identify the slave **host\_nic** elements. When adding a new network interface, the **name** and **network** elements are required. Identify the **network** element with the **id** attribute or **name** element.

#### Example 14.14. Creating a bonded interface

```
POST /api/hosts/00000000-0000-0000-0000-000000000000/nics HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<host_nic>
  <name>bond4</name>
  <network id="00000000-0000-0000-0000-000000000000"/>
  <bonding>
    <slaves>
      <host_nic id="00000000-0000-0000-0000-000000000000"/>
      <host_nic id="00000000-0000-0000-0000-000000000000"/>
    </slaves>
  </bonding>
</host_nic>
```



#### IMPORTANT

**bond0**, **bond1**, **bond2**, **bond3** and **bond4** are the only valid names for a bonded interface.

#### Example 14.15. Removing a bonded interface

Remove a bonded interface with a **DELETE** request.

```
DELETE /api/hosts/00000000-0000-0000-0000-000000000000/nics/00000000-
```

```
0000-0000-0000-000000000000 HTTP/1.1
```

```
HTTP/1.1 204 No Content
```



## IMPORTANT





Changes to bonded interface configuration must be explicitly committed. See [Section 14.8.9, “Commit Host Network Configuration Action”](#).

### 14.7.2.3. Network Interface Network Attachments

#### 14.7.2.3.1. Network Interface Network Attachments

Each network interface on a host exposes a **network\_attachments** sub-collection representing the network interface card's network attachments. Each **network\_attachment** represents a network attached to the network interface and contains the following elements:

**Table 14.6. Elements for a host network interface's network attachments**

Element	Type	Description	Properties
<b>network_id=</b>	GUID	A reference to the network to which the interface is attached.	 
<b>host_nic_id=</b>	GUID	A reference to the host network interface.	
<b>ip_address_assignments</b>	complex	The IP configuration of the network. Each <b>ip_address_assignment</b> contains <b>assignment_method</b> and <b>ip address= netmask= gateway=</b> sub-elements.	
<b>properties</b>	complex	Defines custom property keys for the network. Each <b>property</b> contains <b>name</b> and <b>value</b> sub-elements.	
<b>reported_configurations</b>	complex	A read-only list of configuration properties for the network attachment. The <b>in_sync</b> boolean is <b>false</b> when the network attachment contains uncommitted network configuration. Each <b>reported_configuration</b> contains <b>name</b> , <b>expected_value</b> , <b>actual_value</b> , and <b>in_sync</b> sub-elements.	

**Example 14.16. An XML representation of a network attachment on a network interface card**

```

<network_attachment href="/api/hosts/00000000-0000-0000-0000-
000000000000/nics/00000000-0000-0000-0000-
000000000000/networkattachments/00000000-0000-0000-0000-000000000000"
id="00000000-0000-0000-0000-000000000000">
  <network href="/api/networks/00000000-0000-0000-0000-000000000000"
id="00000000-0000-0000-0000-000000000000"/>
  <host_nic href="/api/hosts/00000000-0000-0000-0000-
000000000000/nics/00000000-0000-0000-0000-000000000000" id="00000000-
0000-0000-0000-000000000000"/>
  <ip_address_assignments>
    <ip_address_assignment>
      <ip address="XX.XX.XX.XX" netmask="255.255.255.0"
gateway="XX.XX.XX.XX"/>
      <assignment_method>static</assignment_method>
    </ip_address_assignment>
  </ip_address_assignments>
  <reported_configurations>
    <in_sync>true</in_sync>
    <reported_configuration>
      <name>mtu</name>
      <expected_value>1500</expected_value>
      <actual_value>1500</actual_value>
      <in_sync>true</in_sync>
    </reported_configuration>
    <reported_configuration>
      <name>bridged</name>
      <expected_value>true</expected_value>
      <actual_value>true</actual_value>
      <in_sync>true</in_sync>
    </reported_configuration>
    <reported_configuration>
      <name>vlan</name>
      <in_sync>true</in_sync>
    </reported_configuration>
    <reported_configuration>
      <name>boot_protocol</name>
      <expected_value>DHCP</expected_value>
      <actual_value>DHCP</actual_value>
      <in_sync>true</in_sync>
    </reported_configuration>
  </reported_configurations>
</network_attachment>

```

When attaching a network to a network interface card, the **network** element is required, with either an **id** or a **name**.

#### Example 14.17. Attach a network to a host network interface card

```

POST /api/hosts/00000000-0000-0000-0000-000000000000/nics/00000000-0000-
0000-0000-000000000000/networkattachments HTTP/1.1
Accept: application/xml
Content-type: application/xml

```

```
<networkattachment>
  <network id="00000000-0000-0000-0000-000000000000"/>
</networkattachment>
```

The `ip_address_assignments` and `properties` elements are updatable post-creation.

#### Example 14.18. Modifying a network attachment

```
PUT /api/hosts/00000000-0000-0000-0000-000000000000/nics/00000000-0000-0000-0000-000000000000/networkattachments/00000000-0000-0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<networkattachment>
  <ip_address_assignments>
    <ip_address_assignment>
      <ip address="XX.XX.XX.XX" netmask="255.255.255.0"
gateway="XX.XX.XX.XX"/>
      <assignment_method>static</assignment_method>
    </ip_address_assignment>
  </ip_address_assignments>
</networkattachment>
```

Detach a network from the network interface card with a **DELETE** request on the network attachment.

#### Example 14.19. Detach a network from a host network interface card

```
DELETE /api/hosts/00000000-0000-0000-0000-000000000000/nics/00000000-0000-0000-0000-000000000000/networkattachments/00000000-0000-0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

HTTP/1.1 204 No Content
```



#### IMPORTANT

Changes to network attachment configuration must be explicitly committed. See [Section 14.8.9, “Commit Host Network Configuration Action”](#).

#### 14.7.2.3.2. Network Attachment Custom Properties

Custom properties can be applied to network attachments. Each property contains **name** and **value** sub-elements. To amend the custom properties, perform a **PUT** request on a network attachment, or a **POST** request with the `setupnetworks` action.

**Table 14.7. Elements for custom bridge options for a host's network interface**

Element	Type	Description
<b>name</b>	string	The unique identifier for the property. Bridge options have the set name of <b>bridge_opts</b> .
<b>value</b>	string	The bridge options, represented by a valid key and value with the following syntax: [key]=[value]. Separate multiple entries with a whitespace character. The following keys are valid, with the values provided as examples: <b>forward_delay=1500</b> <b>gc_timer=3765</b> <b>group_addr=1:80:c2:0:0:0</b> <b>group_fwd_mask=0x0</b> <b>hash_elasticity=4</b> <b>hash_max=512</b> <b>hello_time=200</b> <b>hello_timer=70</b> <b>max_age=2000</b> <b>multicast_last_member_count=2</b> <b>multicast_last_member_interval=100</b> <b>multicast_membership_interval=26000</b> <b>multicast_querier=0</b> <b>multicast_querier_interval=25500</b> <b>multicast_query_interval=13000</b> <b>multicast_query_response_interval=1000</b> <b>multicast_query_use_ifaddr=0</b> <b>multicast_router=1</b> <b>multicast_snooping=1</b> <b>multicast_startup_query_count=2</b> <b>multicast_startup_query_interval=3125</b>

#### Example 14.20. An XML representation of a network attachment's properties sub-collection

```

<network_attachment>
  ...
  <properties>
    <property>
      <name>bridge_opts</name>
      <value>
        forward_delay=1500 group_fwd_mask=0x0 multicast_snooping=1
      </value>
    </property>
  </properties>
  ...
</network_attachment>

```

#### 14.7.2.4. Network Interface Labels

You can attach labels to a host network interface card to automate the association of that network interface card with logical networks to which the same label has been attached.

#### Example 14.21. Attaching a label to a network interface card

```
POST /api/hosts/00000000-0000-0000-0000-000000000000/nics/00000000-0000-0000-0000-000000000000/labels HTTP/1.1
Accept: application/xml
Content-type: application/xml

<label id="Label_001" />
```

Removal of a label from a physical host network interface card requires a **DELETE** request.

#### Example 14.22. Removing a label from a network interface card

```
DELETE /api/hosts/00000000-0000-0000-0000-000000000000/nics/00000000-0000-0000-0000-000000000000/labels/00000000-0000-0000-0000-000000000000 HTTP/1.1

HTTP/1.1 204 No Content
```

### 14.7.2.5. Network Interface Statistics

Each host's network interface exposes a **statistics** sub-collection for a host's network interface statistics. Each **statistic** contains the following elements:

**Table 14.8. Elements for a host's network interface statistics**

Element	Type	Description
<b>name</b>	string	The unique identifier for the statistic entry.
<b>description</b>	string	A plain text description of the statistic.
<b>unit</b>	string	The unit or rate to measure the statistical values.
<b>type</b>	One of <b>GAUGE</b> or <b>COUNTER</b>	The type of statistic measures.
<b>values type=</b>	One of <b>INTEGER</b> or <b>DECIMAL</b>	The data type for the statistical values that follow.
<b>value</b>	complex	A data set that contains <b>datum</b> .
<b>datum</b>	see <b>values type</b>	An individual piece of data from a <b>value</b> .
<b>host_nic id=</b>	relationship	A relationship to the containing <b>host_nic</b> resource.

The following table lists the statistic types for network interfaces on hosts.

**Table 14.9. Host NIC statistic types**

Name	Description
<code>data.current.rx</code>	The rate in bytes per second of data received.
<code>data.current.tx</code>	The rate in bytes per second of data transmitted.
<code>data.total.rx</code>	Total received data.
<code>data.total.tx</code>	Total transmitted data.
<code>errors.total.rx</code>	Total errors from receiving data.
<code>errors.total.tx</code>	Total errors from transmitting data.

**Example 14.23. An XML representation of a host's network interface statistics sub-collection**

```
<statistics>
  <statistic id="00000000-0000-0000-0000-000000000000"
    href="/api/hosts/00000000-0000-0000-0000-000000000000/nics/
00000000-0000-0000-0000-000000000000/statistics/
00000000-0000-0000-0000-000000000000">
    <name>data.current.rx</name>
    <description>Receive data rate</description>
    <values type="DECIMAL">
      <value>
        <datum>0</datum>
      </value>
    </values>
    <type>GAUGE</type>
    <unit>BYTES_PER_SECOND</unit>
    <host_nic id="00000000-0000-0000-0000-000000000000"
      href="/api/hosts/00000000-0000-0000-0000-000000000000/nics/
00000000-0000-0000-0000-000000000000"/>
  </statistic>
  ...
</statistics>
```



**NOTE**

This `statistics` sub-collection is read-only.

### 14.7.3. Storage Sub-Collection



The **storage** sub-collection provides a list of the iSCSI and FCP storage representations available on the host. This storage is used to create storage domains.

Each **storage** representation in the sub-collection represents a SCSI LUN.

#### Example 14.24. An XML representation of the storage sub-collection on a host

```
<host_storage>
  <storage id="82fb123b-321e-40a1-9889-95dcd2654463"
    href="/api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/storage/
    82fb123b-321e-40a1-9889-95dcd2654463">
    <name>LUN0</name>
    <type>iscsi</type>
    <logical_unit id="LUN0">
      <address>mysan.example.com</address>
      <target>iqn.2009-08.com.example:mysan.foobar</target>
    </logical_unit>
  </storage>
</host_storage>
```



#### NOTE

The **host\_storage** collection is read-only.



#### IMPORTANT

The API as documented in this section is experimental and subject to change. It is not covered by the backwards compatibility statement.

## 14.7.4. Host NUMA Nodes Sub-Collection

### 14.7.4.1. NUMA Nodes Sub-Collection

The **numanodes** sub-collection represents the host's NUMA topology. Each **host\_numa\_node** element in the sub-collection represents a NUMA node.

#### Example 14.25. An XML representation of the numanodes sub-collection on a host

```
<host_numa_nodes>
  <host_numa_node href="/api/hosts/f6735fa9-4ee5-47ce-b750-
a87863736cc2/numanodes/91d8537c-699e-460b-9a70-285f651e7d68"
id="91d8537c-699e-460b-9a70-285f651e7d68">
  <link href="/api/hosts/f6735fa9-4ee5-47ce-b750-
a87863736cc2/numanodes/91d8537c-699e-460b-9a70-285f651e7d68/statistics"
rel="statistics"/>
  <host href="/api/hosts/f6735fa9-4ee5-47ce-b750-a87863736cc2"
id="f6735fa9-4ee5-47ce-b750-a87863736cc2"/>
  <index>0</index>
  <memory>8157</memory>
  <cpu>
    <cores>
      <core index="0"/>
    </cores>
  </cpu>
</host_numa_node>
</host_numa_nodes>
```

```

        <core index="2"/>
        <core index="4"/>
        <core index="6"/>
    </cores>
</cpu>
<node_distance>10 16</node_distance>
</host_numa_node>
<host_numa_node href="/api/hosts/f6735fa9-4ee5-47ce-b750-
a87863736cc2/numanodes/4b18926e-6faf-43f5-9fc2-0503f1531562"
id="4b18926e-6faf-43f5-9fc2-0503f1531562">
    <link href="/api/hosts/f6735fa9-4ee5-47ce-b750-
a87863736cc2/numanodes/4b18926e-6faf-43f5-9fc2-0503f1531562/statistics"
rel="statistics"/>
    <host href="/api/hosts/f6735fa9-4ee5-47ce-b750-a87863736cc2"
id="f6735fa9-4ee5-47ce-b750-a87863736cc2"/>
    <index>2</index>
    <memory>8175</memory>
    <cpu>
        <cores>
            <core index="1"/>
            <core index="3"/>
            <core index="5"/>
            <core index="7"/>
        </cores>
    </cpu>
    <node_distance>16 10</node_distance>
</host_numa_node>
</host_numa_nodes>

```



## NOTE

The `host_numa_nodes` sub-collection is read-only.

### 14.7.4.2. NUMA Node Statistics

Each host NUMA node exposes a `statistics` sub-collection for NUMA node statistics. Each `statistic` contains the following elements:

**Table 14.10. Elements for a host's NUMA node statistics**

Element	Type	Description
<code>name</code>	string	The unique identifier for the statistic entry.
<code>description</code>	string	A plain text description of the statistic.
<code>unit</code>	string	The unit or rate to measure the statistical values.
<code>type</code>	One of <b>GAUGE</b> or <b>COUNTER</b>	The type of statistic measures.

Element	Type	Description
<b>values type=</b>	One of <b>INTEGER</b> or <b>DECIMAL</b>	The data type for the statistical values that follow.
<b>value</b>	complex	A data set that contains <b>datum</b> .
<b>datum</b>	see <b>values type</b>	An individual piece of data from a <b>value</b> .
<b>host_numa_node id=</b>	relationship	A relationship to the containing <b>numanode</b> resource.

The following table lists the statistic types for host NUMA nodes.

**Table 14.11. Host NUMA node statistics**

Name	Description
<b>memory.total</b>	Total memory in bytes on the NUMA node.
<b>memory.used</b>	Memory in bytes used on the NUMA node.
<b>memory.free</b>	Memory in bytes free on the NUMA node.
<b>cpu.current.user</b>	Percentage of CPU usage for users.
<b>cpu.current.system</b>	Percentage of CPU usage for the system.
<b>cpu.current.idle</b>	Percentage of idle CPU usage.

**Example 14.26. An XML representation of the host NUMA node's statistics sub-collection**

```
<statistics>
  <statistic href="/api/hosts/f6745fa9-4ee5-47ce-b750-
a87863736cc2/numanodes/91d8537c-689e-460b-9a70-
285f651e7d68/statistics/7816602b-c05c-3dc7-a4da-3769f7ad8896"
id="7816602b-c05c-3dc7-a4da-3769f7ad8896">
    <name>memory.total</name>
    <description>Total memory</description>
    <values type="INTEGER">
      <value>
        <datum>8157</datum>
      </value>
    </values>
    <type>GAUGE</type>
    <unit>BYTES</unit>
    <host_numa_node href="/api/hosts/f6745fa9-4ee5-47ce-b750-
a87863736cc2/numanodes/91d8537c-689e-460b-9a70-285f651e7d68"
id="91d8537c-689e-460b-9a70-285f651e7d68"/>
  </statistic>
```

```
...
</statistics>
```

**NOTE**

A host NUMA node's **statistics** sub-collection is read-only.

**14.7.5. Host Statistics Sub-Collection****14.7.5.1. Host Statistics Sub-Collection**

Each host resource exposes a **statistics** sub-collection for host-specific statistics. Each **statistic** contains the following elements:

**Table 14.12. Elements for host statistics**

Element	Type	Description
<b>name</b>	string	The unique identifier for the statistic entry.
<b>description</b>	string	A plain text description of the statistic.
<b>unit</b>	string	The unit or rate to measure the statistical values.
<b>type</b>	One of <b>GAUGE</b> or <b>COUNTER</b>	The type of statistic measures.
<b>values type=</b>	One of <b>INTEGER</b> or <b>DECIMAL</b>	The data type for the statistical values that follow.
<b>value</b>	complex	A data set that contains <b>datum</b> .
<b>datum</b>	see <b>values type</b>	An individual piece of data from a <b>value</b> .
<b>host id=</b>	relationship	A relationship to the containing <b>host</b> resource.

The following table lists the statistic types for hosts.

**Table 14.13. Host statistic types**

Name	Description
<b>memory.total</b>	Total memory in bytes on the host.
<b>memory.used</b>	Memory in bytes used on the host.

Name	Description
<code>memory.free</code>	Memory in bytes free on the host.
<code>memory.shared</code>	Memory in bytes shared on the host.
<code>memory.buffers</code>	I/O buffers in bytes.
<code>memory.cached</code>	OS caches in bytes.
<code>swap.total</code>	Total swap memory in bytes on the host.
<code>swap.free</code>	Swap memory in bytes free on the host.
<code>swap.used</code>	Swap memory in bytes used on the host.
<code>swap.cached</code>	Swap memory in bytes also cached in host's memory.
<code>ksm.cpu.current</code>	Percentage of CPU usage for Kernel SamePage Merging.
<code>cpu.current.user</code>	Percentage of CPU usage for users.
<code>cpu.current.system</code>	Percentage of CPU usage for system.
<code>cpu.current.idle</code>	Percentage of idle CPU usage.
<code>cpu.load.avg.5m</code>	CPU load average per five minutes.

#### Example 14.27. An XML representation of the host's statistics sub-collection

```

<statistics>
  <statistic id="4ae97794-f56d-3f05-a9e7-8798887cd1ac"
    href="/api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/
    statistics/4ae97794-f56d-3f05-a9e7-8798887cd1ac">
    <name>memory.total</name>
    <description>Total memory</description>
    <unit>BYTES</unit>
    <type>GUAGE</type>
    <values type="INTEGER">
      <value>
        <datum>3983540224<datum>
      </value>
    </values>
    <host id="2ab5e1da-b726-4274-bbf7-0a42b16a0fc3"
      href="/api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3"/>
  </statistic>
  ...
</statistics>

```

**NOTE**

A host's **statistics** sub-collection is read-only.

## 14.8. ACTIONS

### 14.8.1. Install VDSM Action

Install VDSM and related software on the host. The host type defines additional parameters for the action.

- **Red Hat Enterprise Linux host** - This host type requires a **root\_password** element that refers to the password for the host's **root** user.
- **Red Hat Enterprise Virtualization Hypervisor host** - This host type requires an **image** element that refers to an ISO file stored on the Red Hat Enterprise Virtualization Manager server.

#### Example 14.28. Action to install VDSM to a Red Hat Enterprise Linux host

```
POST /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/install HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <root_password>p@55w0Rd!</root_password>
</action>
```

#### Example 14.29. Action to install VDSM to a Red Hat Enterprise Virtualization Hypervisor host

```
POST /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/install HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <image>/usr/share/rhev-hypervisor/rhev-hypervisor.iso</image>
</action>
```

### 14.8.2. Activate Host Action

Activate the host for use, such as running virtual machines.

#### Example 14.30. Action to activate a host

```
POST /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/activate HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

### 14.8.3. Host Network Setup Action

Configure multiple network settings on a host. The **setupnetworks** action can be used for complex network configuration such as moving a network from one network interface to another.

#### Example 14.31. Action to edit host network configuration

```

POST /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/setupnetworks
HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <modified_network_attachments>
    <network_attachment id="41561e1c-c653-4b45-b9c9-126630e8e3b9">
      <host_nic id="857a46d3-5f64-68bd-f456-c70de5b2d569"/>
    </network_attachment>
    <network_attachment id="3c3f442f-948b-4cdc-9a48-89bb0593cfbd">
      <network id="00000000-0000-0000-0000-000000000010"/>
      <ip address="10.35.1.247" netmask="255.255.254.0"
gateway="10.35.1.254"/>
      <properties>
        <property>
          <name>bridge_opts</name>
          <value>
            forward_delay=1500 group_fwd_mask=0x0 multicast_snooping=1
          </value>
        </property>
      </properties>
    </network_attachment>
  </modified_network_attachments>
  <synchronized_network_attachments>
    <network_attachment id="3c3f442f-948b-4cdc-9a48-89bb0593cfbd">
  </synchronized_network_attachments>
  <removed_network_attachments>
    <network_attachment id="7f456dae-c57f-35d5-55a4-20b74dc53af9">
  </removed_network_attachments>
  <modified_bonds>
    <host_nic id="a56b212d-2bc4-4120-9136-53be6cacb39a">
      <bonding>
        <slaves>
          <host_nic id="75ac21f7-4aa3-405a-a022-341e5f525b85">
          <host_nic id="f3dda04c-1233-41af-a111-74327b876487">
        </slaves>
      </bonding>
    </host_nic>
  </modified_bonds>
  <removed_bonds>
    <host_nic id="36ab5c7f-647a-bc64-f5e7-ba5d74f8e4ba">
  </removed_bonds>
  <modified_labels>
    <label id="Label002">
    <host_nic id="857a46d3-5f64-68bd-f456-c70de5b2d569"/>

```

```

        </label>
        <label>
        <host_nic id="a56b212d-2bc4-4120-9136-53be6cacb39a"/>
        <label id="Label003"/>
        </label>
    </modified_labels>
    <removed_labels>
        <label id="Label001">
    </removed_labels>
    <checkConnectivity>true</checkConnectivity>
    <connectivityTimeout>60</connectivityTimeout>
</action>

```

This action updates all specified host network resources with standard NIC elements. The request includes additional elements specified in the following table.

**Table 14.14. Elements for multiple host network interface setup**

Element	Type	Description
<b>modified_bonds</b>	complex	Creates or updates bonds. Each <b>host_nic</b> element contains standard <b>bonding</b> elements. See <a href="#">Section 14.7.2.2, “Bonded Interfaces”</a> .
<b>removed_bonds</b>	complex	An ID list of bonds to remove.
<b>modified_network_attachments</b>	complex	Adds or updates network attachments on the host. Each <b>network_attachment</b> element contains standard host <b>network_attachment</b> elements. See <a href="#">Section 14.7.1, “Host Network Attachments Sub-Collection”</a> . Changing the <b>host_nic</b> ID moves the network to a different network interface card.
<b>synchronized_network_attachments</b>	complex	An ID list of out-of-sync network attachments to synchronize with the logical network definition of the data center.
<b>removed_network_attachments</b>	complex	An ID list of network attachments to remove.
<b>modified_labels</b>	complex	Creates or modifies labels. Each <b>label</b> element contains a <b>label_id</b> (when creating a label) and a <b>host_nic</b> identified by a name or ID. Changing the <b>host_nic</b> ID moves the label to a different network interface card.
<b>removed_labels</b>	complex	An ID list of labels to remove.



Element	Type	Description
<b>checkConnectivity</b>	Boolean	Set to <b>true</b> to verify connectivity between the host and the Red Hat Enterprise Virtualization Manager. If the connectivity is lost, Red Hat Enterprise Virtualization Manager reverts the settings.
<b>connectivityTimeout</b>	integer	Defines the timeout for loss of connectivity.

#### 14.8.4. Fence Host Action

An API user controls a host's power management device with the **fence** action. The **capabilities** lists available **fence\_type** options.

##### Example 14.32. Action to fence a host

```
POST /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/fence
Accept: application/xml
Content-Type: application/xml

<action>
  <fence_type>start</fence_type>
</action>
```

#### 14.8.5. Deactivate Host Action

Deactivate the host to perform maintenance tasks.

##### Example 14.33. Action to deactivate a host

```
POST /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/deactivate HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

#### 14.8.6. Approve Host Action

Approve a pre-installed Red Hat Enterprise Virtualization Hypervisor host for usage in the virtualization environment. This action also accepts an optional **cluster** element to define the target cluster for this host.

##### Example 14.34. Action to approve a host

```
POST /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/approve HTTP/1.1
Accept: application/xml
Content-type: application/xml
```

```
<action>
  <cluster id="99408929-82cf-4dc7-a532-9d998063fa95"/>
</action>
```

### 14.8.7. Host iSCSI Login Action

The **iscsilogin** action enables a host to login to an iSCSI target. Logging into a target makes the contained LUNs available in the **host\_storage** collection.

#### Example 14.35. Action to enable a host to login to iSCSI target

```
POST /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/iscsilogin HTTP/1.1
Accept: application/xml
Content-Type: application/xml
```

```
<action>
  <iscsi>
    <address>mysan.example.com</address>
    <target>iqn.2009-08.com.example:mysan.foobar</target>
    <username>jimmy</username>
    <password>s3kr37</password>
  </iscsi>
</action>
```

### 14.8.8. Host iSCSI Discover Action

The **iscsidiscover** action enables an iSCSI portal to be queried for its list of targets.

#### Example 14.36. Action to query a list of targets for iSCSI portal

```
POST /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/iscsidiscover
HTTP/1.1
Accept: application/xml
Content-Type: application/xml
```

```
<action>
  <iscsi>
    <address>mysan.example.com</address>
    <port>3260</port>
  </iscsi>
</action>
```

### 14.8.9. Commit Host Network Configuration Action

An API user commits the network configuration to persist a host network interface attachment or detachment, or persist the creation and deletion of a bonded interface.

**Example 14.37. Action to commit network configuration**

```
POST /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/commitnetconfig
HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

**IMPORTANT**

Networking configuration is only committed after the Manager has established that host connectivity is not lost as a result of the configuration changes. If host connectivity is lost, the host requires a reboot and automatically reverts to the previous networking configuration.

**14.8.10. Setting SPM**

Manually set a host as the Storage Pool Manager (SPM).

**Example 14.38. Action to Set Host as SPM**

```
POST /api/hosts/2ab5e1da-b726-4274-bbf7-0a42b16a0fc3/forceselectspm
HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

## CHAPTER 15. VIRTUAL MACHINES


### 15.1. VIRTUAL MACHINE ELEMENTS



The **vms** collection provides information about virtual machines in a Red Hat Enterprise Virtualization environment. An API user accesses this information through the **rel="vms"** link obtained from the entry point URI.





Additional information can be retrieved for **GET** requests using the **All-Content: true** header.

The following table shows specific elements contained in a virtual machine resource representation.

**Table 15.1. Virtual machine elements**

Element	Type	Description	Properties
<b>link rel="applications"</b>	relationship	A link to the <b>applications</b> sub-collection for virtual machine resources, which shows the applications installed on the virtual machine.	
<b>link rel="disks"</b>	relationship	A link to the <b>disks</b> sub-collection for virtual machine resources.	
<b>link rel="nics"</b>	relationship	A link to the <b>nics</b> sub-collection for virtual machine resources.	
<b>link rel="numanodes"</b>	relationship	A link to the <b>numanodes</b> sub-collection for virtual machine resources.	
<b>link rel="cdroms"</b>	relationship	A link to the <b>cdroms</b> sub-collection for virtual machine resources.	
<b>link rel="snapshots"</b>	relationship	A link to the <b>snapshots</b> sub-collection for virtual machine resources.	
<b>link rel="tags"</b>	relationship	A link to the <b>tags</b> sub-collection for virtual machine resources.	
<b>link rel="permissions"</b>	relationship	A link to the <b>permissions</b> sub-collection for virtual machine permissions.	
<b>link rel="statistics"</b>	relationship	A link to the <b>statistics</b> sub-collection for virtual machine resources.	

Element	Type	Description	Properties
<b>link</b> <b>rel="reporteddevices"</b>	relationship	A link to the <b>reporteddevices</b> sub-collection for virtual machine resources.	
<b>link</b> <b>rel="watchdogs"</b>	relationship	A link to the <b>watchdogs</b> sub-collection for virtual machine resources.	
<b>link</b> <b>rel="sessions"</b>	relationship	A link to the <b>sessions</b> sub-collection for virtual machine resources.	
<b>type</b>	enumerated	The virtual machine type. A list of enumerated values are available in <b>capabilities</b> .	
<b>status</b>	See below	The virtual machine status.	
<b>memory</b>	integer	The amount of memory allocated to the guest in bytes.	
<b>cpu</b>	complex	<p>Defines CPU details for the virtual machine. The <b>topology</b> sub-element sets number of logical <b>sockets</b> available to the guest and the number of <b>cores</b> per socket. The total cores available to the virtual machine equals the number of sockets multiplied by the cores per socket.</p> <p>The <b>cputune</b> sub-element maps virtual CPUs to physical host CPUs using a series of <b>vcpupin</b> elements. Each <b>vcpupin</b> elements contains a virtual CPU attribute (<b>vcpu</b>) and an attribute to define which physical to use (<b>cpuset</b>). Set the <b>cpuset</b> to either a single CPU (<b>cpuset="0"</b>), multiple CPUs (<b>cpuset="0, 2"</b>), a CPU range (<b>cpuset="0-3"</b>) or a CPU range with exclusion (<b>cpuset="0-3, ^2"</b>).</p> <p>The <b>cpu_mode</b> sub-element defines how closely the virtual CPU relates to the host CPU. It has three values: <b>custom</b> is the default if no mode is given, <b>host_model</b> copies the host CPU as best as libvirt can understand, and <b>host_passthrough</b> passes all aspects of the host to the guest, even those that libvirt does not recognize. However, <b>host_passthrough</b> will prevent migration of that virtual machine.</p>	
<b>os type=</b>	string, e.g. <b>RHEL5</b> or <b>WindowsXP</b>	The guest operating system type.	

Element	Type	Description	Properties
<b>os boot dev=</b>	enumerated	A list of boot devices described by a <b>dev</b> attribute on a <b>boot</b> element. A list of enumerated values are available in <b>capabilities</b> .	
<b>os kernel</b>	string	A path to a kernel image the virtual machine is configured to boot. This option supports booting a Linux kernel directly rather than through the BIOS bootloader.	
<b>os initrd</b>	string	A path to an initrd image to be used with the previously specified kernel. This option supports booting a Linux kernel directly rather than through the BIOS bootloader.	
<b>os cmdline</b>	string	A kernel command line parameter string to be used with the defined kernel. This option supports booting a Linux kernel directly rather than through the BIOS bootloader.	
<b>high_availability</b>	complex	Set <b>enabled</b> to <b>true</b> if the virtual machine should be automatically restarted if the virtual machine or its host crashes. A <b>priority</b> element controls the order in which virtual machines are re-started.	
<b>display</b>	complex	The display <b>type</b> (either <b>vnc</b> or <b>spice</b> ), port, and the number of <b>monitors</b> . The <b>allow_reconnect</b> Boolean value specifies if a client can reconnect to the machine via display.  The <b>smartcard_enabled</b> sub-element is a Boolean ( <b>true</b> or <b>false</b> ) to specify if a Smartcard attached to a client is passed through to a virtual machine. The default is <b>false</b> .	
<b>cluster id=</b>	GUID	A reference to the virtual machine's host cluster.	
<b>template id=</b>	GUID	A reference to the template on which this virtual machine is based.	 
<b>domain id=</b>	GUID	A reference to the virtual machine's domain.	

Element	Type	Description	Properties
<b>start_time</b>	<b>xsd:dateTime</b> format: <b>YYYY-MM-DDThh:mm:ss</b>	The date and time at which this virtual machine was started.	
<b>stop_time</b>	<b>xsd:dateTime</b> format: <b>YYYY-MM-DDThh:mm:ss</b>	The date and time at which this virtual machine was stopped.	
<b>creation_time</b>	<b>xsd:dateTime</b> format: <b>YYYY-MM-DDThh:mm:ss</b>	The date and time at which this virtual machine was created.	
<b>origin</b>	One of <b>rhev</b> , <b>ovirt</b> , <b>vmware</b> or <b>xen</b>	The system from which this virtual machine originated.	
<b>stateless</b>	Boolean: true or false	<b>true</b> if the virtual machine is stateless. A stateless virtual machine contains a snapshot of its disk image taken at boot and deleted at shutdown. This means state changes do not persist after a reboot.	
<b>delete_protected</b>	Boolean: true or false	If set to <b>true</b> , the virtual machine cannot be deleted.	
<b>sso</b>	string	A reference to the method of single sign-on for the virtual machine. Includes a <b>method</b> element with an <b>ip</b> attribute.	
<b>placement_policy</b>	complex	Sets the placement policy for virtual machine migration. Requires a default <b>host=</b> and an <b>affinity</b> (one of <b>migratable</b> , <b>user_migratable</b> or <b>pinned</b> ). Leave the <b>host</b> element empty to set no preferred host. Use multiple <b>host</b> elements to specify a subset of preferred hosts within a cluster.	
<b>memory_policy</b>	complex	Sets the memory policy for virtual machines. Defines the minimum amount of <b>guaranteed</b> memory on a host in order for the virtual machine to run.	
<b>quota_id=</b>	GUID	Sets a quota for the virtual machine.	

Element	Type	Description	Properties
<b>custom_properties</b>	complex	A set of user-defined environment variable passed as parameters to custom scripts. Each <b>custom_property</b> contains <b>name</b> and <b>value</b> attributes. A list of enumerated values are available in <b>capabilities</b> .	
<b>usb</b>	complex	Defines the USB policy for a virtual machine. Requires an <b>enabled</b> element set to a Boolean value and a <b>type</b> element set to either <b>native</b> or <b>legacy</b> .	
<b>migration_downtime</b>	integer	Represents the maximum number of milliseconds the virtual machine can be down during live migration. A value of 0 means that the VDSM default will be used.	
<b>cpu_profile_id=</b>	GUID	A reference to the virtual machine's cpu profile.	
<b>next_run_configuration</b>	Boolean: true or false	<b>true</b> if changes to the virtual machine's configuration will be applied when the virtual machine is next restarted.	
<b>numa_tune_mode</b>	string	Reference to the mode of memory allocation ( <b>interleave</b> , <b>strict</b> , or <b>preferred</b> ) of the host NUMA node.	
<b>guest_info</b>	complex	A reference to the guest client information. Includes an <b>ip</b> element with an <b>address=</b> attribute.	
<b>vm_pool</b>	complex	A reference to the virtual machine pool. This element only appears for virtual machines part of a pool.	
<b>timezone</b>	tz database format: <b>Area/Location</b>	The Sysprep timezone setting for a Windows virtual machine.	
<b>domain</b>	complex	The Sysprep domain setting for a Windows virtual machine. Requires a <b>name</b> from the <b>domains</b> collection.	
<b>initialization</b>	complex	Defines a list of values applied to the virtual machine on boot using Cloud-Init for Linux-based virtual machines, or Sysprep for Windows-based virtual machines.  <b>Cloud-Init</b>	



Element	Type	Description	Properties
		<ul style="list-style-type: none"> <li>• <b>host_name</b>: The host name of the virtual machine.</li> <li>• <b>timezone</b>: The time zone for the virtual machine.</li> <li>• <b>user_name</b>: The user name for the virtual machine.</li> <li>• <b>root_password</b>: The password for the user, or root password if no user is specified.</li> <li>• <b>authorized_ssh_keys</b>: SSH keys to be added to the authorized keys file of the virtual machine. You can enter multiple SSH keys by separating each SSH key with a line break.</li> <li>• <b>regenerate_ssh_keys</b>: Whether to regenerate SSH key for the virtual machine. Possible values are <b>true</b> or <b>false</b>.</li> <li>• <b>dns_servers</b>: A space-separated list of DNS servers.</li> <li>• <b>dns_search</b>: A space-separated list of DNS search domains.</li> <li>• <b>nic_configurations</b>: Defines a network interface controller for the virtual machine. Network interface controllers are defined as <b>nic_configuration</b> objects under this collection that each specify the <b>name</b>, <b>ip</b>, <b>boot_protocol</b>, and <b>on_boot</b>.</li> <li>• <b>custom_script</b>: A custom script to run on the virtual machine when it starts.</li> </ul> <p><b>Sysprep</b></p> <ul style="list-style-type: none"> <li>• <b>host_name</b>: The host name of the virtual machine.</li> <li>• <b>domain</b>: The domain of which the virtual machine is a member.</li> <li>• <b>authorized_ssh_keys</b>: SSH keys to be added to the authorized keys file of the virtual machine. You can enter multiple SSH keys by separating each SSH key with a line break.</li> <li>• <b>regenerate_ssh_keys</b>: Whether to regenerate SSH key for the virtual machine. Possible values are <b>true</b> or <b>false</b>.</li> <li>• <b>timezone</b>: The time zone for the virtual machine.</li> <li>• <b>root_password</b>: The password for the admin user of the virtual machine.</li> </ul>	

Element	Type	Description	Properties
		<ul style="list-style-type: none"> <li>• <b>custom_script</b>: A custom script to run on the virtual machine when it starts.</li> <li>• <b>input_locale</b>: The locale for user input.</li> <li>• <b>ui_language</b>: The language used for user interface elements such as buttons and menus.</li> <li>• <b>system_locale</b>: The locale for the overall system.</li> <li>• <b>user_locale</b>: The locale for users.</li> <li>• <b>active_directory_ou</b>: The organizational unit in the Active Directory domain to which the virtual machine belongs.</li> <li>• <b>org_name</b>: The name of the organization to which the virtual machine belongs.</li> </ul>	
<b>payloads</b>	complex	<p>Defines a set of <b>payload</b> elements to deliver content to a virtual machine upon boot. Each <b>payload</b> requires a <b>type</b> attribute, either <b>cdrom</b> or <b>floppy</b>, and a set of <b>file</b> elements. Within each <b>file</b> element is a <b>name</b> element that specifies the name and location of the file, and a <b>content</b> element that defines the content to deliver to the file.</p> <p>The <b>payloads</b> element is used by the <b>cloud-init</b> feature. When <b>cloud-init</b> is used to configure a virtual machine, a payload is automatically created with the <b>type</b> attribute set to <b>cd-rom</b> and two <b>file</b> sub-elements, <b>openstack/latest/meta_data.json</b> and <b>openstack/latest/user_data</b>, which pass configuration parameters to the virtual machine.</p>	

The **status** contains one of the following enumerative values: **unassigned**, **down**, **up**, **powering\_up**, **powered\_down**, **paused**, **migrating\_from**, **migrating\_to**, **unknown**, **not\_responding**, **wait\_for\_launch**, **reboot\_in\_progress**, **saving\_state**, **restoring\_state**, **suspended**, **image\_illegal**, **image\_locked** or **powering\_down**. These states are listed in **vm\_states** under **capabilities**.

## 15.2. XML REPRESENTATION OF A VIRTUAL MACHINE

### Example 15.1. An XML representation of a virtual machine

```
<vm id="70b4d9a7-4f73-4def-89ca-24fc5f60e01a"
  href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a">
  <actions>
    <link rel="move"
  href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/move"/>
    <link rel="ticket"
  href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/ticket"/>
```

```

    <link rel="reboot"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/reboot"/>
    <link rel="undo_snapshot"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/undo_snapshot"/>
    <link rel="commit_snapshot"
href="/api/vms/70b4d9a7-4f73-4def-89ca-
24fc5f60e01a/commit_snapshot"/>
    <link rel="preview_snapshot"
href="/api/vms/70b4d9a7-4f73-4def-89ca-
24fc5f60e01a/preview_snapshot"/>
    <link rel="logon"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/logon"/>
    <link rel="cancelmigration"
href="/api/vms/70b4d9a7-4f73-4def-89ca-
24fc5f60e01a/cancelmigration"/>
    <link rel="maintenance"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/maintenance"/>
    <link rel="clone"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/clone"/>
    <link rel="migrate"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/migrate"/>
    <link rel="detach"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/detach"/>
    <link rel="export"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/export"/>
    <link rel="shutdown"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/shutdown"/>
    <link rel="start"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/start"/>
    <link rel="stop"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/stop"/>
    <link rel="suspend"
href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/suspend"/>
  </actions>
  <name>VM_01</name>
  <description>Testing Virtual Machine</description>
  <link rel="applications"
    href="/api/vms/70b4d9a7-4f73-4def-89ca-
24fc5f60e01a/applications"/>
  <link rel="disks"
    href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/disks"/>
  <link rel="nics"
    href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/nics"/>
  <link rel="numanodes"
    href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/numanodes"/>
  <link rel="cdroms"
    href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/cdroms"/>
  <link rel="snapshots"
    href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/snapshots"/>
  <link rel="tags"
    href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/tags"/>
  <link rel="permissions"
    href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/permissions"/>
  <link rel="statistics"
    href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/statistics"/>
  <link rel="reporteddevices"

```

```

    href="/api/vms/70b4d9a7-4f73-4def-89ca-
24fc5f60e01a/reporteddevices"/>
    <link rel="watchdogs"
      href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/watchdogs"/>
    <link rel="sessions"
      href="/api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a/sessions"/>
    <type>server</type>
    <status>
      <state>down</state>
    </status>
    <memory>1073741824</memory>
    <cpu>
      <topology sockets="1" cores="1"/>
      <architecture>X86_64</architecture>
    </cpu>
    <cpu_shares>0</cpu_shares>
    <bios>
      <boot_menu>
        <enabled>>false</enabled>
      </boot_menu>
    </bios>
    <os type="other">
      <boot dev="hd"/>
    </os>
    <high_availability>
      <enabled>>false</enabled>
      <priority>1</priority>
    </high_availability>
    <display>
      <type>spice</type>
      <monitors>1</monitors>
      <single_qxl_pci>>false</single_qxl_pci>
      <allow_override>>true</allow_override>
      <smartcard_enabled>>false</smartcard_enabled>
      <file_transfer_enabled>>true</file_transfer_enabled>
      <copy_paste_enabled>>true</copy_paste_enabled>
    </display>
    <cluster href="/api/clusters/00000001-0001-0001-0001-0000000002fb"
id="00000001-0001-0001-0001-0000000002fb"/>
    <template href="/api/templates/00000000-0000-0000-0000-000000000000"
id="00000000-0000-0000-0000-000000000000"/>
    <stop_time>2014-12-03T14:25:45.588+10:00</stop_time>
    <creation_time>2014-12-03T14:25:45.535+10:00</creation_time>
    <origin>ovirt</origin>
    <stateless>>false</stateless>
    <delete_protected>>false</delete_protected>
    <sso>
      <methods>
        <method id="GUEST_AGENT"/>
      </methods>
    </sso>
    <timezone>Etc/GMT</timezone>
    <placement_policy>
      <affinity>migratable</affinity>
    </placement_policy>
    <memory_policy>

```

```

        <guaranteed>1073741824</guaranteed>
    </memory_policy>
    <usb>
        <enabled>>false</enabled>
    </usb>
    <migration_downtime>-1</migration_downtime>
    <cpu_profile href="/api/cpuprofiles/0000001a-001a-001a-001a-
0000000002e3" id="0000001a-001a-001a-001a-0000000002e3"/>
    <next_run_configuration_exists>>false</next_run_configuration_exists>
    <numa_tune_mode>interleave</numa_tune_mode>
</vm>

```

### 15.3. XML REPRESENTATION OF ADDITIONAL OVF DATA FOR A VIRTUAL MACHINE

Use a **GET** request for a virtual machine with the **All-Content: true** header to include additional OVF data with the representation of the virtual machine.

The **Accept** header defaults to **application/xml** if left blank, and the data is represented with HTML entities so as not to interfere with the XML tags. Specifying the **Accept: application/json** header will return the data in standard XML tagging. This example representation has been formatted from its standard block format to improve legibility.

#### Example 15.2. XML representation of additional ovf data for a virtual machine

```

GET /api/vms/70b4d9a7-4f73-4def-89ca-24fc5f60e01a HTTP/1.1
All-Content: true

<?xml version='1.0' encoding='UTF-8'?>
<ovf:Envelope xmlns:ovf="http://schemas.dmtf.org/ovf/envelope/1/"
  xmlns:rasd="http://schemas.dmtf.org/wbem/wscim/1/cim-
schema/2/CIM_ResourceAllocationSettingData"
  xmlns:vssd="http://schemas.dmtf.org/wbem/wscim/1/cim-
schema/2/CIM_VirtualSystemSettingData"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  ovf:version="3.5.0.0">
  <References/>
  <Section xsi:type="ovf:NetworkSection_Type">
    <Info>List of networks</Info>
    <Network ovf:name="Network 1"/>
  </Section>
  <Section xsi:type="ovf:DiskSection_Type">
    <Info>List of Virtual Disks</Info>
  </Section>
  <Content ovf:id="out" xsi:type="ovf:VirtualSystem_Type">
    <CreationDate>2014/12/03 04:25:45</CreationDate>
    <ExportDate>2015/02/09 14:12:24</ExportDate>
    <DeleteProtected>>false</DeleteProtected>
    <SsoMethod>guest_agent</SsoMethod>
    <IsSmartcardEnabled>>false</IsSmartcardEnabled>
    <TimeZone>Etc/GMT</TimeZone>
    <default_boot_sequence>0</default_boot_sequence>
    <Generation>1</Generation>
  </Content>
</ovf:Envelope>

```

```

<VmType>1</VmType>
<MinAllocatedMem>1024</MinAllocatedMem>
<IsStateless>>false</IsStateless>
<IsRunAndPause>>false</IsRunAndPause>
<AutoStartup>>false</AutoStartup>
<Priority>1</Priority>
<CreatedByUserId>fdfc627c-d875-11e0-90f0-
83df133b58cc</CreatedByUserId>
<IsBootMenuEnabled>>false</IsBootMenuEnabled>
<IsSpiceFileTransferEnabled>>true</IsSpiceFileTransferEnabled>
<IsSpiceCopyPasteEnabled>>true</IsSpiceCopyPasteEnabled>
<Name>VM_export</Name>
<TemplateId>00000000-0000-0000-0000-000000000000</TemplateId>
<TemplateName>Blank</TemplateName>
<IsInitalized>>false</IsInitalized>
<Origin>3</Origin>
<DefaultDisplayType>1</DefaultDisplayType>
<TrustedService>>false</TrustedService>
<OriginalTemplateId>00000000-0000-0000-0000-
000000000000</OriginalTemplateId>
<OriginalTemplateName>Blank</OriginalTemplateName>
<UseLatestVersion>>false</UseLatestVersion>
<Section ovf:id="70b4d9a7-4f73-4def-89ca-24fc5f60e01a"
  ovf:required="false"
  xsi:type="ovf:OperatingSystemSection_Type">
  <Info>Guest Operating System</Info>
  <Description>other</Description>
</Section>
<Section xsi:type="ovf:VirtualHardwareSection_Type">
  <Info>1 CPU, 1024 Memeory</Info>
  <System>
    <vssd:VirtualSystemType>ENGINE 3.5.0.0</vssd:VirtualSystemType>
  </System>
  <Item>
    <rasd:Caption>1 virtual cpu</rasd:Caption>
    <rasd:Description>Number of virtual CPU</rasd:Description>
    <rasd:InstanceId>1</rasd:InstanceId>
    <rasd:ResourceType>3</rasd:ResourceType>
    <rasd:num_of_sockets>1</rasd:num_of_sockets>
    <rasd:cpu_per_socket>1</rasd:cpu_per_socket>
  </Item>
  <Item>
    <rasd:Caption>1024 MB of memory</rasd:Caption>
    <rasd:Description>Memory Size</rasd:Description>
    <rasd:InstanceId>2</rasd:InstanceId>
    <rasd:ResourceType>4</rasd:ResourceType>
    <rasd:AllocationUnits>MegaBytes</rasd:AllocationUnits>
    <rasd:VirtualQuantity>1024</rasd:VirtualQuantity>
  </Item>
  <Item>
    <rasd:Caption>USB Controller</rasd:Caption>
    <rasd:InstanceId>3</rasd:InstanceId>
    <rasd:ResourceType>23</rasd:ResourceType>
    <rasd:UsbPolicy>DISABLED</rasd:UsbPolicy>
  </Item>

```

```

    </Section>
  </Content>
</ovf:Envelope>

```

## 15.4. JSON REPRESENTATION OF A VIRTUAL MACHINE

### Example 15.3. A JSON representation of a virtual machine

```

{
  "type" : "server",
  "status" : {
    "state" : "down"
  },
  "stop_reason" : "",
  "memory" : 1073741824,
  "cpu" : {
    "topology" : {
      "sockets" : "1",
      "cores" : "1"
    },
    "architecture" : "X86_64"
  },
  "cpu_shares" : "0",
  "bios" : {
    "boot_menu" : {
      "enabled" : "false"
    }
  },
  "os" : {
    "boot" : [ {
      "dev" : "hd"
    } ],
    "type" : "other"
  },
  "high_availability" : {
    "enabled" : "false",
    "priority" : "1"
  },
  "display" : {
    "type" : "spice",
    "monitors" : "1",
    "single_qxl_pci" : "false",
    "allow_override" : "false",
    "smartcard_enabled" : "false",
    "file_transfer_enabled" : "true",
    "copy_paste_enabled" : "true"
  },
  "cluster" : {
    "href" : "/api/clusters/00000001-0001-0001-0001-0000000002fb",
    "id" : "00000001-0001-0001-0001-0000000002fb"
  },
  "template" : {
    "href" : "/api/templates/00000000-0000-0000-0000-000000000000",
    "id" : "00000000-0000-0000-0000-000000000000"
  }
}

```

```
},
"stop_time" : 1423550982110,
"creation_time" : 1423490033647,
"origin" : "ovirt",
"stateless" : "false",
"delete_protected" : "false",
"sso" : {
  "methods" : {
    "method" : [ {
      "id" : "GUEST_AGENT"
    } ]
  }
},
"timezone" : "Etc/GMT",
"initialization" : {
  "regenerate_ssh_keys" : "false",
  "nic_configurations" : { }
},
"placement_policy" : {
  "affinity" : "migratable"
},
"memory_policy" : {
  "guaranteed" : 1073741824,
  "ballooning" : "true"
},
"usb" : {
  "enabled" : "false"
},
"migration_downtime" : "-1",
"cpu_profile" : {
  "href" : "/api/cpuprofiles/0000001a-001a-001a-001a-0000000002e3",
  "id" : "0000001a-001a-001a-001a-0000000002e3"
},
"next_run_configuration_exists" : "false",
"numa_tune_mode" : "interleave",
"actions" : {
  "link" : [ {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/ticket",
    "rel" : "ticket"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/move",
    "rel" : "move"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/clone",
    "rel" : "clone"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/commit_snapshot",
    "rel" : "commit_snapshot"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/preview_snapshot",
    "rel" : "preview_snapshot"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/logon",
    "rel" : "logon"
  }
]
```



```

    }, {
      "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/cancelmigration",
      "rel" : "cancelmigration"
    }, {
      "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/maintenance",
      "rel" : "maintenance"
    }, {
      "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/reboot",
      "rel" : "reboot"
    }, {
      "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/undo_snapshot",
      "rel" : "undo_snapshot"
    }, {
      "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/migrate",
      "rel" : "migrate"
    }, {
      "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/detach",
      "rel" : "detach"
    }, {
      "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/export",
      "rel" : "export"
    }, {
      "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/shutdown",
      "rel" : "shutdown"
    }, {
      "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/start",
      "rel" : "start"
    }, {
      "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/stop",
      "rel" : "stop"
    }, {
      "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/suspend",
      "rel" : "suspend"
    }
  ]
},
"name" : "VM_01",
"href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e",
"id" : "42ec2621-7ad6-4ca2-bd68-973a44b2562e",
"link" : [ {
  "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/applications",
  "rel" : "applications"
}, {
  "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/disks",
  "rel" : "disks"
}, {
  "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/nics",
  "rel" : "nics"
}, {
  "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/numanodes",
  "rel" : "numanodes"
}, {
  "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/cdroms",

```

```

    "rel" : "cdroms"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/snapshots",
    "rel" : "snapshots"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/tags",
    "rel" : "tags"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/permissions",
    "rel" : "permissions"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/statistics",
    "rel" : "statistics"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/reporteddevices",
    "rel" : "reporteddevices"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/watchdogs",
    "rel" : "watchdogs"
  }, {
    "href" : "/api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/sessions",
    "rel" : "sessions"
  } ]
}

```

## 15.5. METHODS

### 15.5.1. Creating a Virtual Machine

Creating a new virtual machine requires the **name**, **template**, and **cluster** elements. Identify the **template** and **cluster** elements with the **id** attribute or **name** element. Identify the CPU profile ID with the **cpuprofiles** attribute.

#### Example 15.4. Creating a virtual machine with 512 MB that boots from CD-ROM

```

POST /api/vms HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vm>
  <name>vm2</name>
  <description>Virtual Machine 2</description>
  <type>desktop</type>
  <memory>536870912</memory>
  <cluster>
    <name>default</name>
  </cluster>
  <template>
    <name>Blank</name>
  </template>
  <os>

```

```

        <boot dev="cdrom"/>
    </os>
    <cdroms>
        <cdrom>
            <file id="example_windows_7_x64_dvd_u_677543.iso"/>
        </cdrom>
    </cdroms>
    <cpu_profile id="0000001a-001a-001a-001a-00000000035e"/>
</vm>

```

### Example 15.5. Creating a virtual machine with 512 MB that boots from a virtual hard disk

```

POST /api/vms HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vm>
    <name>vm2</name>
    <description>Virtual Machine 2</description>
    <type>desktop</type>
    <memory>536870912</memory>
    <cluster>
        <name>default</name>
    </cluster>
    <template>
        <name>Blank</name>
    </template>
    <os>
        <boot dev="hd"/>
    </os>
    <cpu_profile id="0000001a-001a-001a-001a-00000000035e"/>
</vm>

```



#### NOTE

Memory in the previous example is converted to bytes using the following formula:

$$512\text{MB} * 1024^2 = 536870912 \text{ bytes}$$

### 15.5.2. Updating a Virtual Machine

The **name**, **description**, **cluster**, **type**, **memory**, **cpu**, **os**, **high\_availability**, **display**, **timezone**, **domain**, **stateless**, **placement\_policy**, **memory\_policy**, **usb**, **payloads**, **origin** and **custom\_properties** elements are updatable post-creation.

### Example 15.6. Updating a virtual machine to contain 1 GB of memory

```

PUT /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399 HTTP/1.1
Accept: application/xml
Content-type: application/xml

```

```
<vm>
  <memory>1073741824</memory>
</vm>
```

**NOTE**

Memory in the previous example is converted to bytes using the following formula:

$$1024\text{MB} * 1024^2 = 1073741824 \text{ bytes}$$

**NOTE**

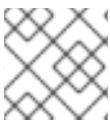
Memory hot plug is supported from Red Hat Enterprise Virtualization 3.6 onwards. You can use the example above to increase memory while the virtual machine is running.

**Example 15.7. Hot plugging vCPUs**

Add virtual CPUs to a running virtual machine without having to reboot it. In this example, the number of sockets is changed to 4.

```
PUT /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vm>
  <cpu>
    <topology>
      <sockets>4</sockets>
      <cores>2</cores>
      <threads>2</threads>
    </topology>
  </cpu>
</vm>
```

**NOTE**

CPU hot unplug is currently not supported in Red Hat Enterprise Virtualization.

**Example 15.8. Pinning a virtual machine to multiple hosts**

A virtual machine that is pinned to multiple hosts cannot be live migrated, but in the event of a host failure, any virtual machine configured to be highly available is automatically restarted on one of the other hosts to which the virtual machine is pinned. Multi-host pinning can be used to restrict a virtual machine to hosts with, for example, the same hardware configuration.

```
PUT /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vm>
```

```

<high_availability>
  <enabled>>true</enabled>
  <priority>1</priority>
</high_availability>
<placement_policy>
  <hosts>
    <host><name>Host1</name></host>
    <host><name>Host2</name></host>
  </hosts>
  <affinity>pinned</affinity>
</placement_policy>
</vm>

```

### 15.5.3. Removing a Virtual Machine

Removal of a virtual machine requires a **DELETE** request.

#### Example 15.9. Removing a virtual machine

```

DELETE /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399 HTTP/1.1

HTTP/1.1 204 No Content

```

### 15.5.4. Removing a Virtual Machine but not the Virtual Disk

Detach the virtual disk prior to removing the virtual machine. This preserves the virtual disk. Removal of a virtual machine requires a **DELETE** request.

#### Example 15.10. Removing a virtual machine

```

DELETE /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <vm>
    <disks>
      <detach_only>true</detach_only>
    </disks>
  </vm>
</action>

```

## 15.6. SUB-COLLECTIONS

### 15.6.1. Disks Sub-Collection

#### 15.6.1.1. Disks Sub-Collection

The **disks** sub-collection represents all virtual hard disk devices on a virtual machine. A **disk** representation contains the following elements:

**Table 15.2. Elements for virtual machine disks**

Element	Type	Description	Properties
<b>link</b> <b>rel="statistics"</b>	relationship	A link to the <b>statistics</b> sub-collection for a virtual machine's disk statistics.	
<b>link</b> <b>rel="permissions"</b>	relationship	A link to the <b>permissions</b> sub-collection.	
<b>alias</b>	string	The unique identifier for the disk. Use <b>alias</b> instead of <b>name</b> .	
<b>image_id</b>	string	A reference to the virtual machine image stored on the defined storage domain.	
<b>storage_domains</b>	complex	The storage domains associated with this disk. Each <b>storage_domain</b> element contains an <b>id</b> attribute with the associated storage domain's GUID. Update this element with <b>POST</b> to perform live migration of a disk from one data storage domain to another.	 [a]
<b>size</b>	integer	Size of the disk in bytes. Deprecated; replaced by <b>provisioned_size</b> .	
<b>provisioned_size</b>	integer	The provisioned size of the disk in bytes.	 
<b>actual_size</b>	integer	Actual size of the disk in bytes.	
<b>status</b>	One of <b>illegal</b> , <b>invalid</b> , <b>locked</b> or <b>ok</b>	The status of the disk device. These states are listed in <b>disk_states</b> under <b>capabilities</b> .	
<b>interface</b>	enumerated	The type of interface driver used to connect to the disk device. A list of enumerated values is available in <b>capabilities</b> .	

Element	Type	Description	Properties
<b>format</b>	enumerated	The underlying storage format. A list of enumerated values is available in <b>capabilities</b> . Copy On Write (COW) allows snapshots, with a small performance overhead. Raw does not allow snapshots, but offers improved performance.	
<b>sparse</b>	Boolean: true or false	<b>true</b> if the physical storage for the disk should not be preallocated.	
<b>bootable</b>	Boolean: true or false	<b>true</b> if this disk is to be marked as bootable.	
<b>shareable</b>	Boolean: true or false	<b>true</b> to share the disk with multiple virtual machines.	
<b>wipe_after_delete</b>	Boolean: true or false	<b>true</b> if the underlying physical storage for the disk should be zeroed when the disk is deleted. This increases security but is a more intensive operation and may prolong delete times.	
<b>propagate_errors</b>	Boolean: true or false	<b>true</b> if disk errors should not cause virtual machine to be paused and, instead, disk errors should be propagated to the guest OS.	
<b>vm_id=</b>	GUID	The ID of the containing virtual machine.	
<b>quota_id=</b>	GUID	Sets a quota for the disk.	
<b>lun_storage</b>	complex	A reference to a direct LUN mapping for storage usage. Requires a <b>logical_unit</b> element that contains iSCSI or FCP device details.	
<b>active</b>	Boolean	Defines if the disk is connected to the virtual machine.	
<b>read_only</b>	Boolean	Defines if the disk is read-only.	
<b>link rel="disk_profile"</b>	relationship	A link to the <b>disk_profile</b> sub-collection.	

Element	Type	Description	Properties
[a]		This element is only required if the disk is being added to a virtual machine and not created from a virtual machine template.	

### Example 15.11. An XML representation of a disk device

```
<disk id="ed7feafe-9aaf-458c-809a-ed789cddb5b4"
  href="/api/vms/082c794b-771f-452f-83c9-b2b5a19c0399/disks/
ed7feafe-9aaf-458c-809a-ed789cddb5b4">
  <link rel="statistics"
    href="/api/vms/082c794b-771f-452f-83c9-b2b5a19c0399/disks/
ed7feafe-9aaf-458c-809a-ed789cddb5b4/statistics"/>
  <link rel="permissions"
    href="/api/vms/082c794b-771f-452f-83c9-b2b5a19c0399/disks/
ed7feafe-9aaf-458c-809a-ed789cddb5b4/permissions"/>
  <vm id="082c794b-771f-452f-83c9-b2b5a19c0399"
    href="/api/vms/082c794b-771f-452f-83c9-b2b5a19c0399"/>
  <alias>Classic_VM</alias>
  <image_id>cac69a29-ccff-49d4-8a26-e4cdacd83e34</image_id>
  <storage_domains>
    <storage_domain id="fabe0451-701f-4235-8f7e-e20e458819ed"/>
  </storage_domains>
  <size>12884901888</size>
  <provisioned_size>12884901888</provisioned_size>
  <actual_size>1073741824</actual_size>
  <type>system</type>
  <status>
    <state>ok</state>
  </status>
  <interface>virtio</interface>
  <format>raw</format>
  <bootable>true</bootable>
  <shareable>true</shareable>
  <wipe_after_disk>true</wipe_after_disk>
  <propagate_errors>false</propagate_errors>
  <active>true</active>
  <read_only>false</read_only>
  <disk_profile id="23fb2e0d-3062-4819-8165-3be88f2f587e"
    href="/api/diskprofiles/23fb2e0d-3062-4819-8165-3be88f2f587e"/>
  <lun_storage>
    <logical_unit id="lun1">
      ...
    </logical_unit>
  </lun_storage>
</disk>
```

Add a new virtual disk. When adding a new internal disk, the **provisioned\_size** element is required. Use the **storage\_domains** element to specify in which storage domain the disk will be created. Multiple disks for the same virtual machine can reside in different storage domains.

-



**Example 15.12. Creating a new disk device on a virtual machine**

```

POST /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399/disks HTTP/1.1
Accept: application/xml
Content-type: application/xml

<disk>
  <storage_domains>
    <storage_domain id="fabe0451-701f-4235-8f7e-e20e458819ed"/>
  </storage_domains>
  <provisioned_size>8589934592</provisioned_size>
  <type>system</type>
  <interface>virtio</interface>
  <format>cow</format>
  <bootable>true</bootable>
</disk>

```

Add a new external (direct LUN) disk to a virtual machine. This method requires the **lun\_storage** element and the **logical\_unit** element, which contains iSCSI or FCP device details.

**Example 15.13. Creating a new direct LUN disk device on a virtual machine**

```

POST /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399/disks HTTP/1.1
Accept: application/xml
Content-type: application/xml

<disk>
  <interface>virtio</interface>
  <lun_storage>
    <type>iscsi</type>
    <logical_unit id="lun1">
      <address>iscsi.example.com</address>
      <port>3260</port>
      <target>iqn.2010.05.com.example:iscsi.targetX</target>
    </logical_unit>
  </lun_storage>
</disk>

```

The **alias**, **description**, **storage\_domains**, **provisioned\_size**, **interface**, **bootable**, **shareable**, **wipe\_after\_delete** and **propagate\_errors** elements are updatable post-creation.

Users can resize virtual disks that are in use by one or more virtual machines, without pausing, hibernating or rebooting the virtual machine(s).

**Example 15.14. Updating a virtual machine disk**

```

PUT /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/disks/ed7feafe-9aaf-
458c-809a-ed789cddb5b4 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<disk>

```

```

    <bootable>false</bootable>
    <shareable>false</shareable>
  </disk>

```

### Example 15.15. Updating a virtual machine disk to 20GB

```

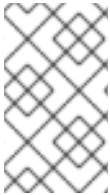
PUT /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/disks/ed7feafe-9aaf-
458c-809a-ed789cddb5b4 HTTP/1.1
Accept: application/xml
Content-type: application/xml

```

```

<disk>
  <provisioned_size>21474836480</provisioned_size>
</disk>

```



#### NOTE

Disk size in the previous example is converted to bytes using the following formula:

$$20480\text{MB} * 1024^2 = 21474836480 \text{ bytes}$$

### Example 15.16. Renaming a virtual machine disk

```

PUT /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/disks/ed7feafe-9aaf-
458c-809a-ed789cddb5b4 HTTP/1.1
Accept: application/xml
Content-type: application/xml

```

```

<disk>
  <alias>Classic_VM2</alias>
</disk>

```

Removal of a virtual machine disk requires a **DELETE** request.

### Example 15.17. Removing a virtual machine disk

```

DELETE /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/disks/ed7feafe-
9aaf-458c-809a-ed789cddb5b4 HTTP/1.1

```

```

HTTP/1.1 204 No Content

```

#### 15.6.1.2. Disk Cloning

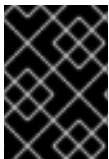
Clone a disk from a template with the **clone** element. Set the **clone** element to **true** within the **disks** sub-collection when creating a virtual machine. This clones a disk from the base template and attaches it to the virtual machine.

**Example 15.18. Cloning a disk from a template**

The following example clones a disk from a template during the creation of a virtual machine.

```
POST /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vm>
  <name>cloned_vm</name>
  <template id="64d4aa08-58c6-4de2-abc4-89f19003b886"/>
  <cluster id="99408929-82cf-4dc7-a532-9d998063fa95"/>
  <disks>
    <clone>true</clone>
    <disk id="4825ffda-a997-4e96-ae27-5503f1851d1b">
      <format>COW</format>
    </disk>
    <disk id="42aef10d-3dd5-4704-aa73-56a023c1464c">
      <format>COW</format>
    </disk>
  </disks>
</vm>
```

**IMPORTANT**

Search queries for virtual machine disks based upon disk name require the **alias** search parameter instead of **name**.

**15.6.1.3. Disk Statistics Sub-Collection**

Each virtual machine's disk exposes a **statistics** sub-collection for disk-specific statistics. Each **statistic** contains the following elements:

**Table 15.3. Elements for virtual machine disk statistics**

Element	Type	Description
<b>name</b>	string	The unique identifier for the statistic entry.
<b>description</b>	string	A plain text description of the statistic.
<b>unit</b>	string	The unit or rate to measure the statistical values.
<b>type</b>	One of <b>GAUGE</b> or <b>COUNTER</b>	The type of statistic measures.
<b>values type=</b>	One of <b>INTEGER</b> or <b>DECIMAL</b>	The data type for the statistical values that follow.
<b>value</b>	complex	A data set that contains <b>datum</b> .

Element	Type	Description
<b>datum</b>	see <b>values type</b>	An individual piece of data from a <b>value</b> .
<b>disk id=</b>	relationship	A relationship to the containing <b>disk</b> resource.

The following table lists the statistic types for virtual machine disks.

**Table 15.4. Virtual machine disk statistic types**

Name	Description
<b>data.current.read</b>	The data transfer rate in bytes per second when reading from the disk.
<b>data.current.write</b>	The data transfer rate in bytes per second when writing to the disk.

#### Example 15.19. An XML representation of a virtual machine's statistics sub-collection

```
<statistics>
  <statistic id="33b9212b-f9cb-3fd0-b364-248fb61e1272"
    href="/api/vms/3a42530e-3bc5-4094-829d-489257894c2a/disks/
    f28ec14c-fc85-43e1-818d-96b49d50e27b/statistics/
    33b9212b-f9cb-3fd0-b364-248fb61e1272">
    <name>data.current.read</name>
    <description>Read data rate</description>
    <values type="DECIMAL">
      <value>
        <datum>0</datum>
      </value>
    </values>
    <type>GAUGE</type>
    <unit>BYTES_PER_SECOND</unit>
    <disk id="f28ec14c-fc85-43e1-818d-96b49d50e27b"
      href="/api/vms/3a42530e-3bc5-4094-829d-489257894c2a/
      disks/f28ec14c-fc85-43e1-818d-96b49d50e27b"/>
  </statistic>
  ...
</statistics>
```



#### NOTE

This **statistics** sub-collection is read-only.

#### 15.6.1.4. Floating Disk Attach and Detach Actions

Attach a disk from the main **rel="disks"** collection using a **POST** request on the virtual machine's **disks** sub-collection. Include the **id** of the disk to attach.

**Example 15.20. Attach a floating disk**

```
POST /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399/disks HTTP/1.1
Accept: application/xml
Content-type: application/xml

<disk id="d135f1c5-b5e1-4238-9381-b3277f5a3742">
</disk>
```

Detach a disk from a virtual machine's **disks** sub-collection using a **DELETE** request on the disk resource but ensure to include a **detach** Boolean element so the disk is not destroyed.

**Example 15.21. Detach a disk from a virtual machine**

```
DELETE /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399/disks/
d135f1c5-b5e1-4238-9381-b3277f5a3742 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <detach>true</detach>
</action>
```

**15.6.1.5. Disk Activate and Deactivate Actions**

Each virtual machine's disk provides a set of **activate** and **deactivate** actions to add and remove disks from a virtual machine.

**Example 15.22. Action to activate a virtual machine disk**

```
POST /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399/disks/a42ada0e-1d69-
410d-a392-a6980d873e5d/activate HTTP/1.1
Accept: application/xml
Content-type: application/xml

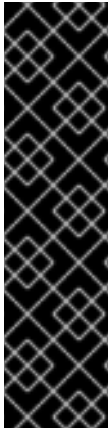
<action/>
```

**Example 15.23. Action to deactivate a virtual machine disk**

```
POST /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399/disks/a42ada0e-1d69-
410d-a392-a6980d873e5d/deactivate HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

Use these actions to hotplug disks to virtual machines and activate newly attached floating disks.



## IMPORTANT

The hotplugging feature only supports **VirtIO** disks and virtual machine operating systems that support hotplugging operations. Example operating systems include:






- Red Hat Enterprise Linux 6;
- Red Hat Enterprise Linux 5;
- Windows Server 2008; and,
- Windows Server 2003.

## 15.6.2. Network Interfaces Sub-Collection

### 15.6.2.1. Network Interfaces Sub-Collection

The **nics** sub-collection represents all network interface devices on a virtual machine. **Anic** representation contains the following elements:

**Table 15.5. Elements for virtual machine network interfaces**

Element	Type	Description	Properties
<b>link</b> <b>rel="statistics"</b>	relationship	A link to the <b>statistics</b> sub-collection for a virtual machine's network interface statistics.	
<b>network id=</b>	GUID	A reference to the network which the interface should be connected. A blank network id is allowed.	
<b>interface</b>	enumerated	The type of driver used for the nic. A list of enumerated values is available in <b>capabilities</b> .	
<b>mac address=</b>	string	The MAC address of the interface.	
<b>port_mirroring</b>	complex	Defines whether the NIC receives mirrored traffic. Define a <b>networks</b> element with a series of <b>network id=</b> references.	
<b>plugged</b>	Boolean	Defines if the NIC is plugged in to the virtual machine.	
<b>linked</b>	Boolean	Defines if the NIC is linked to the virtual machine.	

### Example 15.24. An XML representation of a network interface

```

<nic id="7a3cff5e-3cc4-47c2-8388-9adf16341f5e"
  ref="/api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/nics/
7a3cff5e-3cc4-47c2-8388-9adf16341f5e">
  <link rel="statistics"
    href="/api/vms/082c794b-771f-452f-83c9-b2b5a19c0399/nics/
7a3cff5e-3cc4-47c2-8388-9adf16341f5e/statistics"/>
  <name>nic1</name>
  <interface>virtio</interface>
  <mac address="00:1a:4a:16:84:07"/>
  <network id="00000000-0000-0000-0000-000000000009"
    href="/api/networks/00000000-0000-0000-0000-000000000009"/>
  <vm id="cdc0b102-fbfe-444a-b9cb-57d2af94f401"
    href="/api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401"/>
  <port_mirroring>
    <networks>
      <network id="56087282-d7a6-11e1-af44-001a4a400e0c"
        href="/api/networks/56087282-d7a6-11e1-af44-
001a4a400e0c"/>
    </networks>
  </port_mirroring>
</nic>

```

When adding a new network interface, the **name** and **network** elements are required. Identify the **network** element with the **id** attribute or **name** element.

#### Example 15.25. Creating a virtual machine NIC

```

POST /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/nics HTTP/1.1
Accept: application/xml
Content-type: application/xml

<nic>
  <name>nic1</name>
  <network id="00000000-0000-0000-0000-000000000009"/>
</nic>

```

An API user modifies a network interface with a **PUT** request.

#### Example 15.26. Updating a virtual machine NIC

```

PUT /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/nics/
7a3cff5e-3cc4-47c2-8388-9adf16341f5e HTTP/1.1
Accept: application/xml
Content-type: application/xml

<nic>
  <name>nic2</name>
  <network id="00000000-0000-0000-0000-000000000010"/>
  <type>e1000</type>
</nic>

```

An API user removes a network interface with a **DELETE** request.

### Example 15.27. Deleting a virtual machine NIC

```
DELETE /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/nics/
7a3cff5e-3cc4-47c2-8388-9adf16341f5e HTTP/1.1
```

```
HTTP/1.1 204 No Content
```

### IMPORTANT

The hotplugging feature only supports virtual machine operating systems with hotplugging operations. Example operating systems include:

- Red Hat Enterprise Linux 6;
- Red Hat Enterprise Linux 5;
- Windows Server 2008; and,
- Windows Server 2003.

#### 15.6.2.2. Network Interface Statistics Sub-Collection

Each virtual machine's network interface exposes a **statistics** sub-collection for network interface statistics. Each **statistic** contains the following elements:

**Table 15.6. Elements for a virtual machine's network interface statistics**

Element	Type	Description
<b>name</b>	string	The unique identifier for the statistic entry.
<b>description</b>	string	A plain text description of the statistic.
<b>unit</b>	string	The unit or rate to measure the statistical values.
<b>type</b>	One of <b>GAUGE</b> or <b>COUNTER</b>	The type of statistic measures.
<b>values type=</b>	One of <b>INTEGER</b> or <b>DECIMAL</b>	The data type for the statistical values that follow.
<b>value</b>	complex	A data set that contains <b>datum</b> .
<b>datum</b>	see <b>values type</b>	An individual piece of data from a <b>value</b> .
<b>nic id=</b>	relationship	A relationship to the containing <b>nic</b> resource.



The following table lists the statistic types for network interfaces on virtual machines.

**Table 15.7. Virtual machine NIC statistic types**

Name	Description
<code>data.current.rx</code>	The rate in bytes per second of data received.
<code>data.current.tx</code>	The rate in bytes per second of data transmitted.
<code>errors.total.rx</code>	Total errors from receiving data.
<code>errors.total.tx</code>	Total errors from transmitting data.

**Example 15.28. An XML representation of a virtual machine's NIC statistics sub-collection**

```
<statistics>
  <statistic id="ecd0559f-e88f-3330-94b4-1f091b0ffdf7"
    href="/api/vms/3a42530e-3bc5-4094-829d-489257894c2a/nics/
    6cd08e76-57c0-41ba-a728-7eba46ae1e36/statistics/
    ecd0559f-e88f-3330-94b4-1f091b0ffdf7">
    <name>data.current.rx</name>
    <description>Receive data rate</description>
    <values type="DECIMAL">
      <value>
        <datum>0</datum>
      </value>
    </values>
    <type>GAUGE</type>
    <unit>BYTES_PER_SECOND</unit>
    <nic id="6cd08e76-57c0-41ba-a728-7eba46ae1e36"
      href="/api/vms/3a42530e-3bc5-4094-829d-489257894c2a/
      nics/6cd08e76-57c0-41ba-a728-7eba46ae1e36"/>
    </statistic>
    ...
</statistics>
```







**NOTE**

This `statistics` sub-collection is read-only.

### 15.6.3. Virtual NUMA Nodes Sub-Collection

The `numanodes` sub-collection represents all virtual NUMA nodes on a virtual machine. A `vm_numa_node` representation contains the following elements:

**Table 15.8. Elements for virtual NUMA nodes**

Element	Type	Description	Properties
<b>index</b>	integer	The index number of the virtual NUMA node.	
<b>memory</b>	integer	The amount of memory allocated to the virtual NUMA node, in MB.	
<b>cpu</b>	complex	The CPU topology associated with this virtual NUMA node. Each <b>core</b> element contains an <b>index</b> attribute with the associated core's index number.	
<b>vm id=</b>	GUID	The ID of the containing virtual machine.	
<b>numa_node_pins</b>	complex	Pins the virtual NUMA node to a host NUMA node. Each <b>numa_node_pin</b> element contains a <b>pinned="true"</b> boolean and the host NUMA node's <b>index</b> number.	

### Example 15.29. An XML representation of a virtual NUMA node

```
<vm_numa_node href="/api/vms/c7ecd2dc-dbd3-4419-956f-1249651c0f2b/numanodes/3290b973-ed3e-4f0b-bbf5-9be10d229e50" id="3290b973-ed3e-4f0b-bbf5-9be10d229e50">
  <index>0</index>
  <memory>1024</memory>
  <cpu>
    <cores>
      <core index="0"/>
    </cores>
  </cpu>
  <vm href="/api/vms/c7ecd2dc-dbd3-4419-956f-1249651c0f2b" id="c7ecd2dc-dbd3-4419-956f-1249651c0f2b"/>
  <numa_node_pins>
    <numa_node_pin pinned="true" index="0">
      <host_numa_node id="417cdefb-8c47-4838-87f3-dd0498fdf6c7"/>
    </numa_node_pin>
  </numa_node_pins>
</vm_numa_node>
```

When adding a new virtual NUMA node, the **index**, **memory**, and **cpu** elements are required.

### Example 15.30. Adding a new virtual NUMA node to a virtual machine

```

POST /api/vms/c7ecd2dc-dbd3-4419-956f-1249651c0f2b/numanodes HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vm_numa_node>
  <index>0</index>
  <memory>1024</memory>
  <cpu>
    <cores>
      <core index="0"/>
    </cores>
  </cpu>
</vm_numa_node>

```

Update a virtual NUMA node with a **PUT** request. You can use a **PUT** request to pin a virtual NUMA node to a physical NUMA node on a host.

### Example 15.31. Updating a virtual NUMA node

```

PUT /api/vms/c7ecd2dc-dbd3-4419-956f-1249651c0f2b/numanodes/3290b973-
ed3e-4f0b-bbf5-9be10d229e50 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vm_numa_node>
  <numa_node_pins>
    <numa_node_pin pinned="true" index="0">
      <host_numa_node id="417cdefb-8c47-4838-87f3-dd0498fdf6c7"/>
    </numa_node_pin>
  </numa_node_pins>
</vm_numa_node>

```

Remove a virtual NUMA node with a **DELETE** request.

### Example 15.32. Removing a virtual NUMA node

```

DELETE /api/vms/c7ecd2dc-dbd3-4419-956f-1249651c0f2b/numanodes/3290b973-
ed3e-4f0b-bbf5-9be10d229e50 HTTP/1.1

HTTP/1.1 204 No Content

```

## 15.6.4. CD-ROMs Sub-Collection

The **cdroms** sub-collection represents the CD-ROM device on a virtual machine. A **cdrom** representation contains the following elements:

**Table 15.9. Elements for virtual machine CD-ROMs**

Element	Type	Description	Properties
<b>file id=</b>	string/filename	A reference to an ISO image.	

### Example 15.33. An XML representation of a CD-ROM device

```
<cdrom id="00000000-0000-0000-0000-000000000000"
  href="/api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/cdroms/
00000000-0000-0000-0000-000000000000">
  <file id="rhel-server-6.0-x86_64-dvd.iso"/>
  <vm id="cdc0b102-fbfe-444a-b9cb-57d2af94f401"
    href="/api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401"/>
</cdrom>
```

Send a **PUT** request with a **file id** element to add a new CD-ROM resource.

### Example 15.34. Adding a new CD-ROM file

```
PUT /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/cdroms/00000000-0000-
0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<cdrom>
  <file id="fedora-15-x86_64-dvd.iso"/>
</cdrom>
```

The API changes the CD-ROM using a **PUT** request:

### Example 15.35. Changing a CD-ROM file

```
PUT /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/cdroms/00000000-0000-
0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<cdrom>
  <file id="fedora-15-x86_64-dvd.iso"/>
</cdrom>
```

The API changes the CD-ROM for the current session only using a **PUT** request with an additional **current** URI argument:

### Example 15.36. Changing a CD-ROM file during a current session

```
PUT /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/cdroms/00000000-0000-
0000-0000-000000000000;current=true HTTP/1.1
Accept: application/xml
```

```
Content-type: application/xml
```

```
<cdrom>
  <file id="fedora-15-x86_64-dvd.iso"/>
</cdrom>
```

To eject the CD-ROM temporarily, send a **PUT** request to the **cdroms** sub-collection of a virtual machine, adding the **current=true** matrix parameter:

### Example 15.37. Ejecting a CD-ROM file during a current session

```
PUT /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/cdroms/00000000-0000-0000-0000-000000000000;current=true HTTP/1.1
Accept: application/xml
Content-type: application/xml
<cdrom>
  <file id=""/>
</cdrom>
```



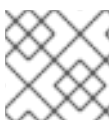
#### NOTE

Rebooting the virtual machine will connect the CD-ROM again.

To eject the CD-ROM permanently, send a **PUT** request to the **cdroms** sub-collection of a virtual machine:

### Example 15.38. Ejecting a CD-ROM file permanently

```
PUT /api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/cdroms/00000000-0000-0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml
<cdrom>
  <file id=""/>
</cdrom>
```



#### NOTE

Virtual machines only contain a single CD-ROM device.








## 15.6.5. Snapshots Sub-Collection

### 15.6.5.1. Snapshots Sub-Collection

A virtual machine saves and restores disk state as a number of snapshots. These are represented and managed through a **rel="snapshot"** sub-collection that behaves similar to other collections.

Each virtual machine snapshot is represented with an individual **snapshot** element that contains the following sub-elements:

**Table 15.10. Elements for virtual machine snapshots**

Element	Type	Description	Properties
<b>vm id=</b>	GUID	The ID and URI of the virtual machine to which this snapshot pertains.	
<b>link rel="restore"</b>	relationship	A link to restore the snapshot of the virtual machine.	
<b>link rel="prev"</b>	relationship	A link to the previous snapshot of this virtual machine.	
<b>type</b>	string	The type of the snapshot. For example, <b>active</b> or <b>regular</b> .	
<b>date</b>	<b>xsd:dateTime</b> format: <b>YYYY-MM-DDThh:mm:ss</b>	The date and time at which the snapshot was created.	
<b>snapshot_status</b>	string	The current status of the snapshot.	
<b>persist_memory_state</b>	Boolean	Defines whether the snapshot also includes the state of the memory of the virtual machine at the time the snapshot was taken.	



## NOTE

It is not possible to modify snapshot elements using **PUT**.

### Example 15.39. An XML representation of a virtual machine snapshot

```
<snapshot id="00000000-0000-0000-0000-000000000000"
  href="/api/vms/00000000-0000-0000-0000-000000000000/snapshots/
00000000-0000-0000-0000-000000000000">
  <actions>
    <link rel="restore"
      href="/api/vms/00000000-0000-0000-0000-000000000000/snapshots/
00000000-0000-0000-0000-000000000000/restore"/>
    <link rel="prev"
      href="/api/vms/00000000-0000-0000-0000-000000000000/snapshots/
    </actions>
    <vm id="00000000-0000-0000-0000-000000000000"
      href="/api/vms/00000000-0000-0000-0000-000000000000"/>
    <description>Virtual Machine 1 - Snapshot A</description>
    <type>active</type>
```

```

    <date>2010-08-16T14:24:29</date>
    <snapshot_status>ok</snapshot_status>
    <persist_memorystate>>false</persist_memorystate>
  </snapshot>

```

Use a **GET** request for a virtual machine snapshot with the **All-Content: true** header to include additional OVF data with the representation of the snapshot.

The **Accept** header defaults to **application/xml** if left blank, and the data is represented with HTML entities so as not to interfere with the XML tags. Specifying the **Accept: application/json** header will return the data in standard XML tagging. This example representation has been formatted from its standard block format to improve legibility.

#### Example 15.40. XML representation of additional ovf data for a snapshot

```

GET /api/vms/42ec2621-7ad6-4ca2-bd68-973a44b2562e/snapshots HTTP/1.1
All-Content: true

```

```

<?xml version='1.0' encoding='UTF-8'?>
<ovf:Envelope xmlns:ovf="http://schemas.dmtf.org/ovf/envelope/1/"
  xmlns:rasd="http://schemas.dmtf.org/wbem/wscim/1/cim-
schema/2/CIM_ResourceAllocationSettingData"
  xmlns:vssd="http://schemas.dmtf.org/wbem/wscim/1/cim-
schema/2/CIM_VirtualSystemSettingData"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  ovf:version="3.5.0.0">
  <References>
    <File ovf:href="ad353554-f668-46cf-aa3c-e57383de2c92/40456d92-3687-
4a85-bab3-87b4cc7af459"
      ovf:id="40456d92-3687-4a85-bab3-87b4cc7af459"
      ovf:size="10737418240"
      ovf:description="Active VM"/>
    <Nic ovf:id="be14bfc8-3dbd-4ac1-ba02-c6dfa7fc707c"/>
  </References>
  <Section xsi:type="ovf:NetworkSection_Type">
    <Info>List of networks</Info><Network ovf:name="Network 1"/>
  </Section>
  <Section
    xsi:type="ovf:DiskSection_Type">
    <Info>List of Virtual Disks</Info>
    <Disk ovf:diskId="40456d92-3687-4a85-bab3-87b4cc7af459"
      ovf:size="10" ovf:actual_size="0"
      ovf:vm_snapshot_id="a209216d-2909-4802-8886-02aad55dccc8"
      ovf:parentRef=""
      ovf:fileRef="ad353554-f668-46cf-aa3c-e57383de2c92/40456d92-3687-
4a85-bab3-87b4cc7af459"
      ovf:format="http://www.vmware.com/specifications/vmdk.html#sparse"
      ovf:volume-format="RAW"
      ovf:volume-type="Preallocated"
      ovf:disk-interface="VirtIO"
      ovf:boot="true"
      ovf:disk-alias="VM_01_Disk1"
      ovf:wipe-after-delete="false"/>
  </Section>

```

```

<Content
  ovf:id=\"out\"
  xsi:type=\"ovf:VirtualSystem_Type\">
  <CreationDate>2015/02/09 13:53:53</CreationDate>
  <ExportDate>2015/02/10 00:39:24</ExportDate>
  <DeleteProtected>>false</DeleteProtected>
  <SsoMethod>guest_agent</SsoMethod>
  <IsSmartcardEnabled>>false</IsSmartcardEnabled>
  <TimeZone>Etc/GMT</TimeZone>
<default_boot_sequence>0</default_boot_sequence>
  <Generation>1</Generation>
  <VmType>1</VmType>
  <MinAllocatedMem>1024</MinAllocatedMem>
  <IsStateless>>false</IsStateless>
  <IsRunAndPause>>false</IsRunAndPause>
  <AutoStartup>>false</AutoStartup>
  <Priority>1</Priority>
  <CreatedByUserId>fdfc627c-d875-11e0-90f0-
83df133b58cc</CreatedByUserId>
  <IsBootMenuEnabled>>false</IsBootMenuEnabled>
  <IsSpiceFileTransferEnabled>>true</IsSpiceFileTransferEnabled>
  <IsSpiceCopyPasteEnabled>>true</IsSpiceCopyPasteEnabled>
  <Name>VM_01</Name>
  <TemplateId>00000000-0000-0000-0000-000000000000</TemplateId>
  <TemplateName>Blank</TemplateName>
  <IsInitalized>>true</IsInitalized>
  <Origin>3</Origin>
  <DefaultDisplayType>1</DefaultDisplayType>
  <TrustedService>>false</TrustedService>
  <OriginalTemplateId>00000000-0000-0000-0000-
000000000000</OriginalTemplateId>
  <OriginalTemplateName>Blank</OriginalTemplateName>
  <UseLatestVersion>>false</UseLatestVersion>
  <Section ovf:id=\"42ec2621-7ad6-4ca2-bd68-973a44b2562e\"
  ovf:required=\"false\" xsi:type=\"ovf:OperatingSystemSection_Type\">
    <Info>Guest Operating System</Info>
    <Description>other</Description>
  </Section>
  <Section xsi:type=\"ovf:VirtualHardwareSection_Type\">
    <Info>1 CPU, 1024 Memeory</Info>
    <System>
      <vssd:VirtualSystemType>ENGINE 3.5.0.0</vssd:VirtualSystemType>
    </System>
    <Item>
      <rasd:Caption>1 virtual cpu</rasd:Caption>
      <rasd:Description>Number of virtual CPU</rasd:Description>
      <rasd:InstanceId>1</rasd:InstanceId>
      <rasd:ResourceType>3</rasd:ResourceType>
      <rasd:num_of_sockets>1</rasd:num_of_sockets>
      <rasd:cpu_per_socket>1</rasd:cpu_per_socket>
    </Item>
    <Item>
      <rasd:Caption>1024 MB of memory</rasd:Caption>
      <rasd:Description>Memory Size</rasd:Description>
      <rasd:InstanceId>2</rasd:InstanceId>
      <rasd:ResourceType>4</rasd:ResourceType>

```



```

    <rasd:AllocationUnits>MegaBytes</rasd:AllocationUnits>
    <rasd:VirtualQuantity>1024</rasd:VirtualQuantity>
  </Item>
  <Item>
    <rasd:Caption>VM_01_Disk1</rasd:Caption>
    <rasd:InstanceId>40456d92-3687-4a85-bab3-
87b4cc7af459</rasd:InstanceId>
    <rasd:ResourceType>17</rasd:ResourceType>
    <rasd:HostResource>ad353554-f668-46cf-aa3c-
e57383de2c92/40456d92-3687-4a85-bab3-87b4cc7af459</rasd:HostResource>
    <rasd:Parent>00000000-0000-0000-0000-000000000000</rasd:Parent>
    <rasd:Template>00000000-0000-0000-0000-
000000000000</rasd:Template>
    <rasd:ApplicationList></rasd:ApplicationList>
    <rasd:StoragePoolId>00000002-0002-0002-0002-
000000000255</rasd:StoragePoolId>
    <rasd:CreationDate>2015/02/09 13:54:41</rasd:CreationDate>
    <rasd:LastModified>1970/01/01 00:00:00</rasd:LastModified>
    <rasd:last_modified_date>2015/02/10
00:39:22</rasd:last_modified_date>
    <Type>disk</Type>
    <Device>disk</Device>
    <rasd:Address>{slot=0x06, bus=0x00, domain=0x0000, type=pci,
function=0x0}</rasd:Address>
    <BootOrder>1</BootOrder>
    <IsPlugged>true</IsPlugged>
    <IsReadOnly>false</IsReadOnly>
    <Alias>virtio-disk0</Alias>
  </Item>
  <Item>
    <rasd:Caption>Ethernet adapter on ovirtmgmt</rasd:Caption>
    <rasd:InstanceId>be14bfc8-3dbd-4ac1-ba02-
c6dfa7fc707c</rasd:InstanceId>
    <rasd:ResourceType>10</rasd:ResourceType>
    <rasd:OtherResourceType>ovirtmgmt</rasd:OtherResourceType>
    <rasd:ResourceSubType>3</rasd:ResourceSubType>
    <rasd:Connection>ovirtmgmt</rasd:Connection>
    <rasd:Linked>true</rasd:Linked>
    <rasd:Name>nic1</rasd:Name>
    <rasd:MACAddress>00:1a:4a:87:cb:00</rasd:MACAddress>
    <rasd:speed>1000</rasd:speed>
    <Type>interface</Type>
    <Device>bridge</Device>
    <rasd:Address>{slot=0x03, bus=0x00, domain=0x0000, type=pci,
function=0x0}</rasd:Address>
    <BootOrder>0</BootOrder>
    <IsPlugged>true</IsPlugged>
    <IsReadOnly>false</IsReadOnly>
    <Alias>net0</Alias>
  </Item>
  <Item>
    <rasd:Caption>USB Controller</rasd:Caption>
    <rasd:InstanceId>3</rasd:InstanceId>
    <rasd:ResourceType>23</rasd:ResourceType>
    <rasd:UsbPolicy>DISABLED</rasd:UsbPolicy>
  </Item>

```

```

    <Item>
      <rasd:Caption>Graphical Controller</rasd:Caption>
      <rasd:InstanceId>17bbf0db-7cf0-4529-9b53-
dee6dee41cfd</rasd:InstanceId>
      <rasd:ResourceType>20</rasd:ResourceType>
      <rasd:VirtualQuantity>1</rasd:VirtualQuantity>
      <rasd:SinglePciQxl>>false</rasd:SinglePciQxl>
      <Type>video</Type>
      <Device>qxl</Device>
      <rasd:Address>{slot=0x02, bus=0x00, domain=0x0000, type=pci,
function=0x0}</rasd:Address>
      <BootOrder>0</BootOrder>
      <IsPlugged>>true</IsPlugged>
      <IsReadOnly>>true</IsReadOnly>
      <Alias>video0</Alias>
      <SpecParams>
        <vram>32768</vram>
        <heads>1</heads>
      </SpecParams>
    </Item>
    <Item>
      <rasd:Caption>CDROM</rasd:Caption>
      <rasd:InstanceId>7ce1bd14-d98a-43ba-beee-
520bdfd9c698</rasd:InstanceId>
      <rasd:ResourceType>15</rasd:ResourceType>
      <Type>disk</Type>
      <Device>cdrom</Device>
      <rasd:Address>{bus=1, controller=0, type=drive, target=0,
unit=0}</rasd:Address>
      <BootOrder>0</BootOrder>
      <IsPlugged>>true</IsPlugged>
      <IsReadOnly>>true</IsReadOnly>
      <Alias>ide0-1-0</Alias></Item>
    <Item>
      <rasd:ResourceType>0</rasd:ResourceType>
      <rasd:InstanceId>8758c42f-7523-461b-82bb-
41d91e46fd36</rasd:InstanceId>
      <Type>controller</Type>
      <Device>usb</Device>
      <rasd:Address>{slot=0x01, bus=0x00, domain=0x0000, type=pci,
function=0x2}</rasd:Address>
      <BootOrder>0</BootOrder>
      <IsPlugged>>true</IsPlugged>
      <IsReadOnly>>false</IsReadOnly>
      <Alias>usb0</Alias>
    </Item>
    <Item>
      <rasd:ResourceType>0</rasd:ResourceType>
      <rasd:InstanceId>58f1a596-553e-4e95-9331-
64b5d8cebe2e</rasd:InstanceId>
      <Type>controller</Type>
      <Device>ide</Device>
      <rasd:Address>{slot=0x01, bus=0x00, domain=0x0000, type=pci,
function=0x1}</rasd:Address>
      <BootOrder>0</BootOrder>
      <IsPlugged>>true</IsPlugged>

```

```

    <IsReadOnly>>false</IsReadOnly>
    <Alias>ide0</Alias>
  </Item>
  <Item>
    <rasd:ResourceType>0</rasd:ResourceType>
    <rasd:InstanceId>2f4f8aa5-25eb-4a31-b841-
50dc48fce4a7</rasd:InstanceId>
    <Type>channel</Type>
    <Device>unix</Device>
    <rasd:Address>{bus=0, controller=0, type=virtio-serial, port=1}
  </rasd:Address>
    <BootOrder>0</BootOrder>
    <IsPlugged>>true</IsPlugged>
    <IsReadOnly>>false</IsReadOnly>
    <Alias>channel0</Alias>
  </Item>
  <Item>
    <rasd:ResourceType>0</rasd:ResourceType>
    <rasd:InstanceId>edaac3ed-2ab6-48b1-ae77-
cc98f8b45bd8</rasd:InstanceId>
    <Type>channel</Type>
    <Device>unix</Device>
    <rasd:Address>{bus=0, controller=0, type=virtio-serial, port=2}
  </rasd:Address>
    <BootOrder>0</BootOrder>
    <IsPlugged>>true</IsPlugged>
    <IsReadOnly>>false</IsReadOnly>
    <Alias>channel1</Alias>
  </Item>
  <Item>
    <rasd:ResourceType>0</rasd:ResourceType>
    <rasd:InstanceId>8dfed248-5164-41d3-8b6e-
46aef9798d84</rasd:InstanceId>
    <Type>channel</Type>
    <Device>spicevmc</Device>
    <rasd:Address>{bus=0, controller=0, type=virtio-serial, port=3}
  </rasd:Address>
    <BootOrder>0</BootOrder>
    <IsPlugged>>true</IsPlugged>
    <IsReadOnly>>false</IsReadOnly>
    <Alias>channel2</Alias>
  </Item>
  <Item>
    <rasd:ResourceType>0</rasd:ResourceType>
    <rasd:InstanceId>d184185e-ee19-442a-88f5-
6a48f14164e1</rasd:InstanceId>
    <Type>controller</Type>
    <Device>virtio-scsi</Device>
    <rasd:Address>{slot=0x04, bus=0x00, domain=0x0000, type=pci,
function=0x0}</rasd:Address>
    <BootOrder>0</BootOrder>
    <IsPlugged>>true</IsPlugged>
    <IsReadOnly>>false</IsReadOnly>
    <Alias>scsi0</Alias>
  </Item>
</Item>

```

```

    <rasd:ResourceType>0</rasd:ResourceType>
    <rasd:InstanceId>374d219e-e2ff-4755-a544-
d537c87e82df</rasd:InstanceId>
    <Type>controller</Type>
    <Device>virtio-serial</Device>
    <rasd:Address>{slot=0x05, bus=0x00, domain=0x0000, type=pci,
function=0x0}</rasd:Address>
    <BootOrder>0</BootOrder>
    <IsPlugged>true</IsPlugged>
    <IsReadOnly>>false</IsReadOnly>
    <Alias>virtio-serial0</Alias>
  </Item>
  <Item>
    <rasd:ResourceType>0</rasd:ResourceType>
    <rasd:InstanceId>cf3d7121-9db0-4fd1-bd12-
50ce4e1ce379</rasd:InstanceId>
    <Type>balloon</Type>
    <Device>memballoon</Device>
    <rasd:Address>{slot=0x07, bus=0x00, domain=0x0000, type=pci,
function=0x0}</rasd:Address>
    <BootOrder>0</BootOrder>
    <IsPlugged>true</IsPlugged>
    <IsReadOnly>>true</IsReadOnly>
    <Alias>balloon0</Alias>
    <SpecParams>
      <model>virtio</model>
    </SpecParams>
  </Item>
</Section>
</Content>
</ovf:Envelope>

```

You can create a snapshot of a virtual machine that is running (a live snapshot) or shut down by using the **POST** method:

#### Example 15.41. Creating a Virtual Machine Snapshot

```

POST /api/vms/00000000-0000-0000-0000-000000000000/snapshots/ HTTP/1.1
Accept: application/xml
Content-type: application/xml

<snapshot>
<description>Snapshot description</description>
</snapshot>

```

#### IMPORTANT

Before taking a live snapshot of a virtual machine that uses OpenStack Volume (Cinder) disks, you must freeze and thaw the guest filesystem manually. See [Section 15.7.14, “Freeze Virtual Machine Filesystems Action”](#) and [Section 15.7.15, “Thaw Virtual Machine Filesystems Action”](#) for more information.

You can restore a virtual machine snapshot using the `rel="restore"` action link in the snapshot representation:

#### Example 15.42. Restoring a Virtual Machine Snapshot

```
POST /api/vms/00000000-0000-0000-0000-000000000000/snapshots/00000000-
0000-0000-0000-000000000000/restore HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

#### 15.6.5.2. Clone a Virtual Machine from a Snapshot

API provides a function to create virtual machines from a snapshot of a previous machine. API users create a new virtual machine while retaining the original virtual machine with all snapshots intact.

Creation of a virtual machines from a snapshot requires an additional **snapshots** element to a standard representation of a virtual machine, which a user sends in a **POST** request to the **vms** collection.

The **snapshots** element contains a **snapshot id=** element to define the specific snapshot to use as a basis for the virtual machine.

#### Example 15.43. Clone Virtual Machine from Snapshot

```
POST /api/vms HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vm>
  ...
  <snapshots>
    <snapshot id="3f68ee63-0016-4f8c-9b8a-11d9f28f7c9e"/>
  </snapshots>
  ...
</vm>
```

#### 15.6.6. Statistics Sub-Collection

Each virtual machine resource exposes a **statistics** sub-collection for virtual machine-specific statistics. Each **statistic** contains the following elements:

**Table 15.11. Elements for virtual machine statistics**

Element	Type	Description
<b>name</b>	string	The unique identifier for the statistic entry.
<b>description</b>	string	A plain text description of the statistic.

Element	Type	Description
<b>unit</b>	string	The unit or rate to measure the statistical values.
<b>type</b>	One of <b>GAUGE</b> or <b>COUNTER</b>	The type of statistic measures.
<b>values type=</b>	One of <b>INTEGER</b> or <b>DECIMAL</b>	The data type for the statistical values that follow.
<b>value</b>	complex	A data set that contains <b>datum</b> .
<b>datum</b>	see <b>values type</b>	An individual piece of data from a <b>value</b> .
<b>vm id=</b>	relationship	A relationship to the containing <b>vm</b> resource.

The following table lists the statistic types for virtual machines.

**Table 15.12. Virtual machine statistic types**

Name	Description
<b>memory.installed</b>	Total memory in bytes allocated for the virtual machine's use.
<b>memory.used</b>	Current memory in bytes used by the virtual machine.
<b>cpu.current.guest</b>	Percentage of CPU used by the guest.
<b>cpu.current.hypervisor</b>	Percentage of CPU overhead on the hypervisor.
<b>cpu.current.total</b>	Total percentage of the current CPU in use.

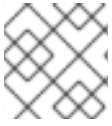
#### Example 15.44. An XML representation of a virtual machine's statistics sub-collection

```
<statistics>
  <statistic id="ef802239-b74a-329f-9955-be8fea6b50a4"
    href="/api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401/
    statistics/ef802239-b74a-329f-9955-be8fea6b50a4">
    <name>memory.installed</name>
    <description>Total memory configured</description>
    <unit>BYTES</unit>
    <type>GUAGE</type>
    <values type="DECIMAL">
      <value>
        <datum>1073741824<datum>
      </value>
    </values>
  </vm id="cdc0b102-fbfe-444a-b9cb-57d2af94f401"
```

```

        href="/api/vms/cdc0b102-fbfe-444a-b9cb-57d2af94f401"/>
    </statistic>
    ...
</statistics>

```

**NOTE**

A virtual machine's **statistics** sub-collection is read-only.

### 15.6.7. Displaying Virtual Machine Session Information

Submit a **GET** request for a virtual machine and use the **session** sub-collection to view the session information for the user that initiated the SPICE console session and the user logged in to the virtual machine.

The **session** information of a virtual machine is listed as a sub-collection:

#### Example 15.45. Displaying the session information of a virtual machine

```

GET /api/roles/a1a701f1-aa06-4f02-af17-158be31489b3/sessions HTTP/1.1
Accept: application/xml

```

```

HTTP/1.1 200 OK
Content-Type: application/xml

```

```

<sessions>
  <session id="37a6259c-c0c1-dae2-99a7-866489dff0bd"
    href= "/api/vms/a1a701f1-aa06-4f02-af17-
158be31489b3/sessions/37a6259c-c0c1-dae2-99a7-866489dff0bd">
    <vm href= "/api/vms/a1a701f1-aa06-4f02-af17-158be31489b3"
id="a1a701f1-aa06-4f02-af17-158be31489b3"/>
    <ip address="192.0.2.0"/>
    <user href= "/api/users/fdfc627c-d875-11e0-90f0-83df133b58cc"
id="fdfc627c-d875-11e0-90f0-83df133b58cc">
    <domain href= "/api/domains/696e7465-726e-616c-696e-7465726e616c"
id="696e7465-726e-616c-696e-7465726e616c">
      <name>internal</name>
    </domain>
    <user_name>admin</user_name>
    </user>
    <console_user>true</console_user>
  </session>
  <session id="37a6259c-c0c1-dae2-99a7-866489dff0bd"
    href= "/api/vms/a1a701f1-aa06-4f02-af17-
158be31489b3/sessions/37a6259c-c0c1-dae2-99a7-866489dff0bd" >
    <vm href= "/api/vms/a1a701f1-aa06-4f02-af17-158be31489b3"
id="a1a701f1-aa06-4f02-af17-158be31489b3"/>
    <user>
      <user_name>root</user_name>
    </user>
  </session>
</sessions>

```

## 15.7. ACTIONS

### 15.7.1. Start Virtual Machine Action

The start action launches a stopped, shutdown, or suspended virtual machine.

#### Example 15.46. Action to start a virtual machine

```
POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/start HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

The start action allows a **vm** element to be provided as a parameter. If a **vm** element is provided, the virtual machine uses the values from the provided element and overrides system settings at start time. Using the start action with the **vm** element in REST API is equivalent to using the **Run Once** window in the Administration or User Portal. These settings persist until a user stops the virtual machine. Examples of these elements include **os**, **domain**, **placement\_policy**, **cdroms**, **stateless** and **display type**.

#### Example 15.47. Action to start a virtual machine with overridden parameters

```
POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/start HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <pause>true</pause>
  <vm>
    <stateless>true</stateless>
    <display>
      <type>spice</type>
    </display>
    <os>
      <boot dev="cdrom"/>
    </os>
    <cdroms>
      <cdrom>
        <file id="windows-xp.iso"/>
      </cdrom>
    </cdroms>
    <floppies>
      <floppy>
        <file id="virtio-win_x86.vfd"/>
      </floppy>
    </floppies>
    <domain>
      <name>domain.example.com</name>
      <user>
        <user_name>domain_user</user_name>
        <password>domain_password</password>
      </user>
    </domain>
  </vm>
</action>
```



```

        </domain>
        <placement_policy>
            <host id="02447ac6-bcba-448d-ba2b-f0f453544ed2"/>
        </placement_policy>
    </vm>
</action>

```

## NOTE

- The **domain** element is used for Windows systems only for overriding parameters on boot with the **start** action. The **domain** element determines the domain that the Windows virtual machine joins. If the domain does not exist in the **domains** collection, this element requires additional **user** authentication details, including a **user\_name** and **password**. If the domain exists in the **domains** collection, the action requires no additional **user** authentication details.
- The CD image and floppy disk file must be available in the ISO domain already. If not, use the ISO uploader tool to upload the files. See [The ISO Uploader Tool](#) for more information.

### 15.7.2. Start Virtual Machine with Cloud-Init Action

Cloud-Init is a tool for automating the initial setup of virtual machines. You can use the tool to configure the host name, network interfaces, the DNS service, authorized keys, and set user names and passwords. You can also use the **custom\_script** tag to specify a custom script to run on the virtual machine when it boots.

## NOTE

The **cloud-init** element can only be used to start virtual machines with the cloud-init package installed. When the **cloud-init** element is used, any element within the **initialization** element but outside the **cloud-init** element will be ignored.

#### Example 15.48. Action to start a virtual machine using Cloud-Init

This example shows you how to start a virtual machine using the Cloud-Init tool to set the host name, change the root password, set a static IP for the **eth0** interface, configure DNS, and add an SSH key for the **root** user.

```

POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/start HTTP/1.1
Accept: application/xml
Content-type: application/xml

```

```

<action>
  <vm>
    <initialization>
      <cloud_init>
        <host>
          <address>MyHost.MyDomain.com</address>
        </host>
        <users>
          <user>

```

```

        <user_name>root</user_name>
        <password>p@55w0rd!</password>
    </user>
</users>
<network_configuration>
    <nics>
        <nic>
            <name>eth0</name>
            <boot_protocol>static</boot_protocol>
            <network>
                <ip address="192.168.122.31" netmask="255.255.255.0"
gateway="192.168.122.1"/>
            </network>
            <on_boot>true</on_boot>
        </nic>
    </nics>
    <dns>
        <servers>
            <host>
                <address>192.168.122.1</address>
            </host>
        </servers>
        <search_domains>
            <host>
                <address>MyDomain.com</address>
            </host>
        </search_domains>
    </dns>
</network_configuration>
<authorized_keys>
    <authorized_key>
        <user>
            <user_name>root</user_name>
        </user>
        <key>ssh-rsa AAAAB3Nza[...]75zkdD root@MyDomain.com</key>
    </authorized_key>
</authorized_keys>
</cloud_init>
    <custom_script><![CDATA[your script]]></custom_script>
</initialization>
</vm>
</action>

```

### 15.7.3. Stop Virtual Machine Action

The stop action forces a virtual machine to power-off.

#### Example 15.49. Action to stop a virtual machine

```

POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/stop HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>

```

#### 15.7.4. Shutdown Virtual Machine Action

The shutdown action sends a shutdown request to a virtual machine.

##### Example 15.50. Action to send a shutdown request to a virtual machine

```
POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/shutdown HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

#### 15.7.5. Suspend Virtual Machine Action

The suspend action saves the virtual machine state to disk and stops it. Start a suspended virtual machine and restore the virtual machine state with the start action.

##### Example 15.51. Action to save virtual machine state and suspend the machine

```
POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/suspend HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

#### 15.7.6. Reboot Virtual Machine Action

The reboot action sends a reboot request to a virtual machine.

##### Example 15.52. Action to send a reboot request to a virtual machine

```
POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/reboot HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

#### 15.7.7. Enable user logon to access a virtual machine from an external console

The logon action enables users to access a virtual machine from consoles outside of the Red Hat Enterprise Virtualization environment.

This action requires the `rhev-guest-agent-gdm-plugin` and the `rhev-guest-agent-pam-module` packages to be installed and the **ovirt-guest-agent** service to be running on the virtual machine.

Users require the appropriate user permissions for the virtual machine in order to access the virtual machine from an external console.

#### Example 15.53. Logging onto a virtual machine

```
POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/logon HTTP/1.1
Content-Type: application/json
Content-Length: 2

{ }
```

### 15.7.8. Detach Virtual Machine from Pool Action

The detach action detaches a virtual machine from a pool.

#### Example 15.54. Action to detach a virtual machine

```
POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/detach HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

### 15.7.9. Migrate Virtual Machine Action

The migrate action migrates a virtual machine to another physical host. The destination **host** element is an optional element as Red Hat Enterprise Virtualization Manager automatically selects a default host for migration. If an API user requires a specific **host**, the user can specify the host with either an **id** or **name** parameter.

#### Example 15.55. Action to migrate a virtual machine to another host

```
POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/migrate HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <host id="2ab5e1da-b726-4274-bbf7-0a42b16a0fc3"/>
</action>
```

### 15.7.10. Cancel Virtual Machine Migration Action

The cancel migration action stops any migration of a virtual machine to another physical host.

#### Example 15.56. Action to cancel migration of a virtual machine to another host

```
POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/cancelmigration
HTTP/1.1
```

```

Accept: application/xml
Content-type: application/xml

<action/>

```

### 15.7.11. Export Virtual Machine Action

The export action exports a virtual machine to an **export** storage domain. A destination storage domain must be specified with a **storage\_domain** reference.

The export action reports a failed action if a virtual machine of the same name exists in the destination domain. Set the **exclusive** parameter to **true** to change this behavior and overwrite any existing virtual machine.

If snapshots of the virtual machine are not included with the exported virtual machine, set the **discard\_snapshots** parameter to **true**.

#### Example 15.57. Action to export a virtual machine to an export storage domain

```

POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/export HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <storage_domain>
    <name>export1</name>
  </storage_domain>
  <exclusive>true</exclusive>
  <discard_snapshots>true</discard_snapshots>
</action>

```

### 15.7.12. Virtual Machine Ticket Action

The ticket action generates a time-sensitive authentication token for accessing a virtual machine's display. The client-provided **action** optionally includes a **ticket** representation containing a **value** (if the token string needs to take on a particular form) and/or an **expiry** time in minutes. In any case, the response specifies the actual ticket value and expiry used.

#### Example 15.58. Action to generate authentication token for a virtual machine

```

POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/ticket HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <ticket>
    <expiry>120</expiry>
  </ticket>
</action>

200 OK

```

```
Content-Type: application/xml
```

```
<action id="94e07552-14ba-4c27-8ce6-2cc75190d3ef"
  href="/api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/ticket/
  94e07552-14ba-4c27-8ce6-2cc75190d3ef">
  <status>
    <state>complete</state>
  </status>
  <ticket>
    <value>5c7CSzK8Sw41</value>
    <expiry>120</expiry>
  </ticket>
  <link rel="parent"
    href="/api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720"/>
  <link rel="replay"
    href="/api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/ticket"/>
</action>
```

### 15.7.13. Force Remove Virtual Machine Action

An API user forces the removal of a faulty virtual machine with the **force** action. This action requires a **DELETE** method. The request body contains an **action** representation with the **force** parameter set to **true**. The request also requires an additional **Content-type: application/xml** header to process the XML representation in the body.

#### Example 15.59. Force remove action on a virtual machine

```
DELETE /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <force>true</force>
</action>
```

### 15.7.14. Freeze Virtual Machine Filesystems Action

The **freezefilesystems** action freezes a virtual machine's filesystems using the QEMU guest agent when taking a live snapshot of a running virtual machine. Normally, this is done automatically by the Manager, but this must be executed manually with the REST API for virtual machines using OpenStack Volume (Cinder) disks.

Freezing the filesystems on the guest operating system ensures a consistent snapshot. Once the snapshot is finished, the guest filesystems must then be thawed. On virtual machines not using a OpenStack Volume disk, the freezing and thawing actions can also be invoked manually using the REST API, which can be useful in the case of a failure during the snapshot process.

#### Example 15.60. Action to freeze a virtual machine's filesystems

```
POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/freezefilesystems
HTTP/1.1
```

```

Accept: application/xml
Content-type: application/xml

<action/>

```

For more information on snapshots, see [Section 15.6.5.1, “Snapshots Sub-Collection”](#) or the [Snapshots](#) section in the *Red Hat Enterprise Virtualization Virtual Machine Management Guide*.

### 15.7.15. Thaw Virtual Machine Filesystems Action

The **thawfilesystems** action thaws a virtual machine's filesystems using the QEMU guest agent when taking a live snapshot of a running virtual machine. Normally, this is done automatically by the Manager, but this must be executed manually with the REST API for virtual machines using OpenStack Volume (Cinder) disks.

Freezing the filesystems on the guest operating system ensures a consistent snapshot. Once the snapshot is finished, the guest filesystems must then be thawed. On virtual machines not using a OpenStack Volume disk, the freezing and thawing actions can also be invoked manually using the REST API, which can be useful in the case of a failure during the snapshot process. For example, if the virtual machine became unresponsive during thaw, you can execute the thaw operation again manually; otherwise the virtual machine may remain unresponsive.

#### Example 15.61. Action to thaw a virtual machine's filesystems

```

POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/thawfilesystems
HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>

```

For more information on snapshots, see [Section 15.6.5.1, “Snapshots Sub-Collection”](#) or the [Snapshots](#) section in the *Red Hat Enterprise Virtualization Virtual Machine Management Guide*.









## CHAPTER 16. FLOATING DISKS

### 16.1. FLOATING DISK ELEMENTS

The **disks** collection provides information about all disks in a Red Hat Enterprise Virtualization environment. A user attaches and detaches disks from any virtual machine and floats them between virtual machines. An API user accesses this information through the **rel="disks"** link obtained from the entry point URI.

The following table shows specific elements contained in a **disks** resource representation.

**Table 16.1. Elements for floating disks**

Element	Type	Description	Properties
<b>link</b> <b>rel="statistics"</b>	relationship	A link to the <b>statistics</b> sub-collection for a virtual machine's disk statistics.	
<b>image_id</b>	GUID	A reference to the virtual machine image stored on the defined storage domain.	
<b>storage_domains</b>	Complex	The storage domains associated with this disk. Each <b>storage_domain</b> element contains an <b>id</b> attribute with the associated storage domain's GUID. Update this element with <b>POST</b> to perform live migration of a disk from one data storage domain to another.	
<b>size</b>	integer	Size of the disk in bytes.	
<b>provisioned_size</b>	integer	The provisioned size of the disk in bytes.	 
<b>actual_size</b>	integer	Actual size of the disk in bytes.	
<b>status</b>	One of <b>illegal</b> , <b>invalid</b> , <b>locked</b> or <b>ok</b>	The status of the disk device. These states are listed in <b>disk_states</b> under <b>capabilities</b> .	
<b>interface</b>	enumerated	The type of interface driver used to connect to the disk device. A list of enumerated values is available in <b>capabilities</b> .	



Element	Type	Description	Properties
<b>format</b>	enumerated	The underlying storage format. A list of enumerated values is available in <b>capabilities</b> . Copy On Write (COW) allows snapshots, with a small performance overhead. Raw does not allow snapshots, but offers improved performance.	
<b>sparse</b>	Boolean: true or false	<b>true</b> if the physical storage for the disk should not be preallocated.	
<b>bootable</b>	Boolean: true or false	<b>true</b> if this disk is to be marked as bootable.	
<b>shareable</b>	Boolean: true or false	<b>true</b> to share the disk with multiple virtual machines.	
<b>wipe_after_delete</b>	Boolean: true or false	<b>true</b> if the underlying physical storage for the disk should be zeroed when the disk is deleted. This increases security but is a more intensive operation and may prolong delete times.	
<b>propagate_errors</b>	Boolean: true or false	<b>true</b> if disk errors should not cause virtual machine to be paused and, instead, disk errors should be propagated to the guest OS.	
<b>quota_id=</b>	GUID	Sets a quota for the disk.	
<b>lunStorage</b>	complex	A reference to a direct LUN mapping for storage usage. Requires a <b>storage</b> element that contains iSCSI or FCP device details.	
<b>active</b>	Boolean	Defines if the disk is connected to the virtual machine.	



### IMPORTANT

Search queries for disks based upon name require the **alias** search parameter instead of **name**.

## 16.2. XML REPRESENTATION OF A FLOATING DISK

### Example 16.1. An XML representation of a disk device

-

```

<disk id="ed7feafe-9aaf-458c-809a-ed789cbbd5b4"
  href="/api/disks/ed7feafe-9aaf-458c-809a-ed789cbbd5b4">
  <link rel="statistics"
    href="/api/disks/ed7feafe-9aaf-458c-809a-
ed789cbbd5b4/statistics"/>
  <storage_domains>
    <storage_domain id="fabe0451-701f-4235-8f7e-e20e458819ed"/>
  </storage_domains>
  <size>10737418240</size>
  <type>system</type>
  <status>
    <state>ok</state>
  </status>
  <interface>virtio</interface>
  <format>raw</format>
  <bootable>true</bootable>
  <shareable>true</shareable>
  <lunStorage>
    <storage>
      <logical_unit id="lun1">
        ...
      </logical_unit>
    </storage>
  </lunStorage>
</disk>

```

## 16.3. METHODS

### 16.3.1. Creating a Floating Disk

When creating a new floating disk, the API requires the **size** and **storage\_domains** elements.

#### Example 16.2. Creating a new a floating disk device

```

POST /api/disks HTTP/1.1
Accept: application/xml
Content-type: application/xml

<disk>
  <storage_domains>
    <storage_domain id="fabe0451-701f-4235-8f7e-e20e458819ed"/>
  </storage_domains>
  <size>8589934592</size>
  <type>system</type>
  <interface>virtio</interface>
  <format>cow</format>
</disk>

```

## 16.4. SUB-COLLECTIONS

### 16.4.1. Statistics Sub-Collection

Each floating disk exposes a **statistics** sub-collection for disk-specific statistics. Each **statistic** contains the following elements:

**Table 16.2. Elements for virtual machine disk statistics**

Element	Type	Description
<b>name</b>	string	The unique identifier for the statistic entry.
<b>description</b>	string	A plain text description of the statistic.
<b>unit</b>	string	The unit or rate to measure the statistical values.
<b>type</b>	One of <b>GAUGE</b> or <b>COUNTER</b>	The type of statistic measures.
<b>values type=</b>	One of <b>INTEGER</b> or <b>DECIMAL</b>	The data type for the statistical values that follow.
<b>value</b>	complex	A data set that contains <b>datum</b> .
<b>datum</b>	see <b>values type</b>	An individual piece of data from a <b>value</b> .
<b>disk id=</b>	relationship	A relationship to the containing <b>disk</b> resource.

The following table lists the statistic types for floating disks.

**Table 16.3. Disk statistic types**

Name	Description
<b>data.current.read</b>	The data transfer rate in bytes per second when reading from the disk.
<b>data.current.write</b>	The data transfer rate in bytes per second when writing to the disk.

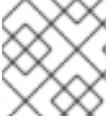
#### Example 16.3. An XML representation of a virtual machine's statistics sub-collection

```
<statistics>
  <statistic id="33b9212b-f9cb-3fd0-b364-248fb61e1272"
    href="/api/disks/f28ec14c-fc85-43e1-818d-96b49d50e27b/statistics/
    33b9212b-f9cb-3fd0-b364-248fb61e1272">
    <name>data.current.read</name>
    <description>Read data rate</description>
    <values type="DECIMAL">
      <value>
        <datum>0</datum>
      </value>
    </values>
  </statistic>
</statistics>
```

```

    </values>
    <type>GAUGE</type>
    <unit>BYTES_PER_SECOND</unit>
    <disk id="f28ec14c-fc85-43e1-818d-96b49d50e27b"
        href="/api/disks/f28ec14c-fc85-43e1-818d-96b49d50e27b"/>
    </statistic>
    ...
</statistics>

```

**NOTE**

This **statistics** sub-collection is read-only.

## 16.5. ACTIONS

### 16.5.1. Copying a Floating Disk

When copying a floating disk, the API requires the **storage\_domain** element. The optional **name** element specifies an alias for the disk.

**Example 16.4. Copying a Floating Disk**

```

POST /api/disks/54a81464-b758-495a-824b-1e7937116ae5/copy HTTP/1.1
Accept: application/xml
Content-type: application/xml

```

```

<action>
  <storage_domain id="c8e108f7-c049-40d2-ad3d-620e4638828e"/>
  <disk>
    <name>rhel_disk2</name>
  </disk>
</action>

```

## CHAPTER 17. TEMPLATES




### 17.1. VIRTUAL MACHINE TEMPLATE ELEMENTS







The **templates** collection provides information about the virtual machine templates in a Red Hat Enterprise Virtualization environment. An API user accesses this information through the **rel="templates"** link obtained from the entry point URI.

Additional information can be retrieved for **GET** requests using the **All-Content: true** header.

The following table shows specific elements contained in a virtual machine template resource representation.

**Table 17.1. Virtual machine template elements**

Element	Type	Description	Properties
<b>link rel="disks"</b>	relationship	A link to the <b>disks</b> sub-collection for virtual machine template resources.	
<b>link rel="nics"</b>	relationship	A link to the <b>nics</b> sub-collection for virtual machine template resources.	
<b>link rel="cdroms"</b>	relationship	A link to the <b>cdroms</b> sub-collection for virtual machine template resources.	
<b>link rel="permissions"</b>	relationship	A link to the <b>permissions</b> sub-collection for virtual machine template permissions.	
<b>type</b>	enumerated	The type of virtual machine the template provides. A list of enumerated values are available in <b>capabilities</b> .	
<b>status</b>	One of <b>illegal</b> , <b>locked</b> or <b>ok</b>	The template status. These states are listed in <b>template_states</b> under <b>capabilities</b> .	
<b>memory</b>	integer	The amount of memory allocated to the guest, in bytes.	
<b>cpu</b>	complex	The CPU <b>topology</b> (i.e. number of <b>sockets</b> and <b>cores</b> ) available to the guest.	
<b>os type=</b>	string, e.g. <b>RHEL5</b> or <b>WindowsXP</b>	The guest operating system type.	

Element	Type	Description	Properties
<b>os boot dev=</b>	enumerated	A list of boot devices, described by a <b>dev</b> attribute on a <b>boot</b> element. A list of enumerated values are available in <b>capabilities</b> .	
<b>os kernel</b>	string	A path to a kernel image which the template is configured to boot from.	
<b>os initrd</b>	string	A path to an initrd image to be used with the kernel above.	
<b>os cmdline</b>	string	A kernel command line parameter string to be used with the kernel above.	
<b>cluster id=</b>	GUID	A reference to the template's host cluster.	
<b>vm id=</b>	GUID	A reference to the VM on which this template is based.	 
<b>domain id=</b>	GUID	A reference to the template's domain.	
<b>creation_time</b>	<b>xsd:dateTime</b> format: <b>YYYY-MM-DDThh:mm:ss</b>	The date and time at which this template was created.	
<b>origin</b>	One of <b>rhev</b> , <b>ovirt</b> , <b>vmware</b> or <b>xen</b>	The system from which this template originated.	
<b>high_availability</b>	complex	Set <b>enabled</b> to <b>true</b> if the VM should be automatically restarted if the host crashes. A <b>priority</b> element controls the order in which VMs are restarted.	
<b>display</b>	complex	The display <b>type</b> (either <b>vnc</b> or <b>spice</b> ), port, and the number of <b>monitors</b> . The <b>allow_reconnect</b> Boolean value specifies if a client can reconnect to the machine via display.	

Element	Type	Description	Properties
<b>stateless</b>	Boolean: true or false	A stateless template contains a snapshot of its disk image taken at boot and deleted at shutdown. This means state changes do not persist after a reboot.	
<b>usb</b>	complex	Defines the USB policy for a virtual machine template. Requires an <b>enabled</b> element set to a Boolean value and a <b>type</b> element set to either <b>native</b> or <b>legacy</b> .	
<b>placement_policy</b>	complex	Sets the placement policy for virtual machine migration. Requires a default <b>host=</b> and an <b>affinity</b> (one of <b>migratable</b> , <b>user_migratable</b> or <b>pinned</b> ). Leave the <b>host</b> element empty to set no preferred host.	
<b>custom_properties</b>	complex	A set of user-defined environment variable passed as parameters to custom scripts. Each <b>custom_property</b> contains <b>name</b> and <b>value</b> attributes. A list of enumerated values are available in <b>capabilities</b> .	
<b>timezone</b>	tz database format: <b>Area/Locatio n</b>	The the Sysprep timezone setting for a Windows virtual machine template.	
<b>domain</b>	complex	The the Sysprep domain setting for a Windows virtual machine template. Requires a <b>name</b> from the <b>domains</b> collection.	

## 17.2. XML REPRESENTATION OF A VIRTUAL MACHINE TEMPLATE

### Example 17.1. An XML representation of a virtual machine template

```
<template href="/api/templates/00000000-0000-0000-0000-000000000000"
  id="00000000-0000-0000-0000-000000000000">
  <actions>
    <link href="/api/templates/00000000-0000-0000-0000-
000000000000/export"
      rel="export"/>
  </actions>
  <name>Blank</name>
  <description>Blank template</description>
```

```

    <comment>Blank template</comment>
    <link href="/api/templates/00000000-0000-0000-0000-000000000000/disks"
          rel="disks"/>
    <link href="/api/templates/00000000-0000-0000-0000-000000000000/nics"
          rel="nics"/>
    <link href="/api/templates/00000000-0000-0000-0000-000000000000/cdroms"
          rel="cdroms"/>
    <link href="/api/templates/00000000-0000-0000-0000-000000000000/permissions"
          rel="permissions"/>
    <link href="/api/templates/00000000-0000-0000-0000-000000000000/watchdogs"
          rel="watchdogs"/>
    <type>server</type>
    <status>
      <state>ok</state>
    </status>
    <memory>536870912</memory>
    <cpu>
      <topology sockets="1" cores="1"/>
      <architecture>X86_64</architecture>
    </cpu>
    <cpu_shares>0</cpu_shares>
    <os type="rhel_6x64">
      <boot dev="hd"/>
      <boot dev="cdrom"/>;
    </os>
    <cluster id="00000000-0000-0000-0000-000000000000"
            href="/api/clusters/00000000-0000-0000-0000-000000000000"/>
    <creation_time>2010-08-16T14:24:29</creation_time>
    <origin>ovirt</origin>
    <high_availability>
      <enabled>true</enabled>
      <priority>100</priority>
    </high_availability>
    <display>
      <type>spice</type>
      <monitors>1</monitors>
      <single_qxl_pci>false</single_qxl_pci>
      <allow_override>true</allow_override>
      <smartcard_enabled>true</smartcard_enabled>
    </display>
    <stateless>false</stateless>
    <delete_protected>false</delete_protected>
    <sso>
      <methods>
        <method id="GUEST_AGENT">true</enabled>
      </methods>
    </sso>
    <usb>
      <enabled>true</enabled>
    </usb>
    <migration_downtime>-1</migration_downtime>

```



```

    <version>
      <base_template href="/api/templates/00000000-0000-0000-0000-
000000000000"
        id="00000000-0000-0000-0000-000000000000"/>
      <version_number>2</version_number>
      <version_name>RHEL65_TMPL_001</version_name>
    </version>
  </template>

```

## 17.3. METHODS

### 17.3.1. Creating a New Template

Creation of a new template requires the **name** and **vm** elements. Identify the **vm** with the **id** attribute or **name** element.

#### Example 17.2. Creating a template from a virtual machine

```

POST /api/templates HTTP/1.1
Accept: application/xml
Content-type: application/xml

<template>
  <name>template1</name>
  <vm id="00000000-0000-0000-0000-000000000000"/>
</template>

```

### 17.3.2. Creating a New Template Sub Version

Creation of a new template sub version requires the **name** and **vm** elements for the new template, and the **base\_template** and **version\_name** elements for the new template version. The **base\_template** and **version\_name** elements must be specified within a **version** section enclosed in the **template** section. Identify the **vm** with the **id** attribute or **name** element.

#### Example 17.3. Creating a template sub version from a virtual machine

```

POST /api/templates HTTP/1.1
Accept: application/xml
Content-type: application/xml

<template>
  <name>template1_001</name>
  <vm id="00000000-0000-0000-0000-000000000000"/>
  <version>
    <base_template id="00000000-0000-0000-0000-000000000000"/>
    <version_name>"template1_001"</version_name>
  </version>
</template>

```

### 17.3.3. Updating a Template

The **name**, **description**, **type**, **memory**, **cpu topology**, **os**, **high\_availability**, **display**, **stateless**, **usb** and **timezone** elements can be updated after a template has been created.

#### Example 17.4. Updating a virtual machine template to contain 1 GB of memory

```
PUT /api/templates/00000000-0000-0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<template>
  <memory>1073741824</memory>
</template>
```

### 17.3.4. Updating a Template Sub Version

Only the **version\_name** element can be updated after a template sub version has been created.

#### Example 17.5. Updating a virtual machine template sub version name

```
PUT /api/templates/00000000-0000-0000-0000-000000000000 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<template>
  <version>
    <version_name>template1_002</version_name>
  </version>
</template>
```

### 17.3.5. Removing a Template

Removal of a virtual machine template requires a **DELETE** request.

#### Example 17.6. Removing a virtual machine template

```
DELETE /api/templates/00000000-0000-0000-0000-000000000000 HTTP/1.1

HTTP/1.1 204 No Content
```

## 17.4. ACTIONS

### 17.4.1. Export Template Action

The **templates** collection contains an **export** action.

The export action exports a template to an **Export** storage domain. A destination storage domain is specified with a **storage\_domain** reference.

The export action reports a failed action if a virtual machine template of the same name exists in the destination domain. Set the **exclusive** parameter to **true** to change this behavior and overwrite any existing virtual machine template.

### Example 17.7. Action to export a template to an export storage domain

```
POST /api/templates/00000000-0000-0000-0000-000000000000/export HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <storage_domain id="00000000-0000-0000-0000-000000000000"/>
  <exclusive>true<exclusive/>
</action>
```






## CHAPTER 18. VIRTUAL MACHINE POOLS

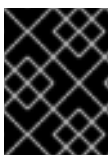
### 18.1. VIRTUAL MACHINE POOL ELEMENTS

The `vm_pools` collection provides information about the virtual machine pools in a Red Hat Enterprise Virtualization environment. An API user accesses this information through the `rel="vm_pools"` link obtained from the entry point URI.

The following table shows specific elements contained in a virtual machine pool resource representation.

**Table 18.1. Virtual machine pool elements**

Element	Type	Description	Properties
<code>name</code>	string	A user-supplied, human readable name for the pool. The <b>name</b> is unique across all pool resources.	
<code>description</code>	string	A user-supplied, human readable description of the virtual machine pool.	
<code>link rel="permissions"</code>	relationship	A link to the <b>permissions</b> sub-collection for virtual machine pool permissions.	
<code>size</code>	integer	The number of virtual machines in the pool.	
<code>cluster id=</code>	GUID	A reference to the cluster resource in which virtual machines in this pool run.	 
<code>template id=</code>	GUID	A reference to the template resource on which virtual machines in this pool are based.	 
<code>prestarted_vms</code>	integer	The number of prestarted virtual machines in the virtual machine pool.	
<code>max_user_vms</code>	integer	The maximum number of virtual machines any one user can take from the virtual machine pool.	



#### IMPORTANT

The API as documented in this chapter is experimental and subject to change. It is not covered by the backwards compatibility statement.

### 18.2. XML REPRESENTATION OF A VIRTUAL MACHINE POOL

**Example 18.1. An XML representation of a virtual machine pool**

```

<vmpool href="/api/vmpools/2d2d5e26-1b6e-11e1-8cda-001320f76e8e">
  id="2d2d5e26-1b6e-11e1-8cda-001320f76e8e"
  <actions>
    <link href="/api/vmpools/2d2d5e26-1b6e-11e1-8cda-
001320f76e8e/allocatevm"
      rel="allocatevm"/>
  </actions>
  <name>VMPool1</name>
  <description>Virtual Machine Pool 1</description>
  <size>2</size>
  <cluster href="/api/clusters/99408929-82cf-4dc7-a532-9d998063fa95"/>
    id="99408929-82cf-4dc7-a532-9d998063fa95"
  <template href="/api/templates/00000000-0000-0000-0000-
000000000000"/>
    id="00000000-0000-0000-0000-000000000000"
  <prestarted_vms>0</prestarted_vms>
  <max_user_vms>1</max_user_vms>
</vmpool>

```

## 18.3. METHODS

### 18.3.1. Creating a New Virtual Machine Pool

A new pool requires the **name**, **cluster** and **template** elements. Identify the **cluster** and **template** with the **id** attribute or **name** element.

**Example 18.2. Creating a virtual machine pool**

```

POST /api/vmpools HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vmpool>
  <name>VM_Pool_A</name>
  <cluster href="/api/clusters/99408929-82cf-4dc7-a532-9d998063fa95"/>
    id="99408929-82cf-4dc7-a532-9d998063fa95"
  <template href="/api/templates/00000000-0000-0000-0000-
000000000000"/>
    id="00000000-0000-0000-0000-000000000000"
</vmpool>

```

### 18.3.2. Updating a Virtual Machine Pool

The **name**, **description**, **size**, **prestarted\_vms** and **max\_user\_vms** can be updated after the virtual machine has been created.

**Example 18.3. Updating a virtual machine pool**

```
PUT /api/vmpools/2d2d5e26-1b6e-11e1-8cda-001320f76e8e HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vmpool>
  <name>VM_Pool_B</name>
  <description>Virtual Machine Pool B</description>
  <size>3</size>
  <prestarted_vms>1</size>
  <max_user_vms>2</size>
</vmpool>
```

### 18.3.3. Removing a Virtual Machine Pool

Removal of a virtual machine pool requires a **DELETE** request.

#### Example 18.4. Removing a virtual machine

```
DELETE /api/vmpools/2d2d5e26-1b6e-11e1-8cda-001320f76e8e HTTP/1.1

HTTP/1.1 204 No Content
```

## 18.4. ACTIONS

### 18.4.1. Allocate Virtual Machine Action

The allocate virtual machine action allocates a virtual machine in the virtual machine pool.

#### Example 18.5. Action to allocate a virtual machine from a virtual machine pool

```
POST /api/vmpools/2d2d5e26-1b6e-11e1-8cda-001320f76e8e/allocatevm
HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action/>
```

## CHAPTER 19. DOMAINS

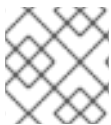
### 19.1. DOMAIN ELEMENTS

The API provides the ability to access user and group information from the organization's directory service using the `domains` collection. Domain information is referenced with the `rel="domains"` link.

**Table 19.1. Domain elements**

Element	Type	Description
<code>name</code>	string	The domain name.
<code>link rel="users"</code>	relationship	A link to the sub-collection for users associated with this domain.
<code>link rel="groups"</code>	relationship	A link to the sub-collection for groups associated with this domain.

The links to `users` and `groups` sub-collections also accept search queries.



#### NOTE

The `domains` collection and its sub-collections are read-only.

### 19.2. XML REPRESENTATION OF A DOMAIN RESOURCE

#### Example 19.1. An XML representation of a domain resource

```
<domain id="77696e32-6b38-7268-6576-2e656e676c61"
  href="/api/domains/77696e32-6b38-7268-6576-2e656e676c61">
  <name>domain.example.com</name>
  <link rel="users"
    href="/api/domains/77696e32-6b38-7268-6576-2e656e676c61/users"/>
  <link rel="groups"
    href="/api/domains/77696e32-6b38-7268-6576-2e656e676c61/groups"/>
  <link rel="users/search"
    href="/api/domains/77696e32-6b38-7268-6576-2e656e676c61/
    users?search={query}"/>
  <link rel="groups/search"
    href="/api/domains/77696e32-6b38-7268-6576-2e656e676c61/
    groups?search={query}"/>
</domain>
```

### 19.3. SUB-COLLECTIONS

#### 19.3.1. Domain Users Sub-Collection

The **users** sub-collection contains all users in the directory service. This information is used to add new users to the Red Hat Enterprise Virtualization environment.

**Table 19.2. Domain user elements**

Element	Type	Description
<b>name</b>	string	The name of the user.
<b>last_name</b>	string	The surname of the user.
<b>user_name</b>	string	The user name from directory service.
<b>domain id</b>	GUID	The containing directory service domain.
<b>groups</b>	complex	A list of directory service groups for this user.

### Example 19.2. An XML representation of a user in the users sub-collection

```
<user id="225f15cd-e891-434d-8262-a66808fcb9b1"
  href="/api/domains/77696e32-6b38-7268-6576-2e656e676c61/users/
  d3b4e7be-5f57-4dac-b937-21e1771a501f">
  <name>RHEV-M Admin</name>
  <user_name>rhevadmin@domain.example.com</user_name>
  <domain id="77696e32-6b38-7268-6576-2e656e676c61"
    href="/api/domains/77696e32-6b38-7268-6576-2e656e676c61"/>
  <groups>
    <group>
      <name>domain.example.com/Users/Enterprise Admins</name>
    </group>
    <group>
      <name>domain.example.com/Users/Domain Admins</name>
    </group>
    ...
  </groups>
</user>
```

### 19.3.2. Domain Groups Sub-Collection

The **groups** sub-collection contains all groups in the directory service. A domain **group** resource contains a set of elements.

**Table 19.3. Domain group elements**

Element	Type	Description
<b>name</b>	string	The name of the group.
<b>domain id</b>	GUID	The containing directory service domain.



**Example 19.3. An XML representation of a group in the groups sub-collection**

```
<group id="85bf8d97-273c-4a5c-b801-b17d58330dab"  
  href="/api/domains/77696e32-6b38-7268-6576-2e656e676c61/groups/  
  85bf8d97-273c-4a5c-b801-b17d58330dab">  
  <name>example.com/Users/Enterprise Admins</name>  
  <domain id="77696e32-6b38-7268-6576-2e656e676c61"  
    href="/api/domains/77696e32-6b38-7268-6576-2e656e676c61"/>  
</group>
```

## CHAPTER 20. GROUPS

### 20.1. IMPORTED GROUP ELEMENTS

The **groups** collection contains imported groups from directory services. A **group** resource contains a set of elements.

**Table 20.1. Imported group elements**

Element	Type	Description
<b>link rel="tags"</b>	relationship	A link to the <b>tags</b> sub-collection for tags attached to this group.
<b>link rel="permissions"</b>	relationship	A link to the <b>permissions</b> sub-collection for permissions attached to this group.
<b>link rel="roles"</b>	relationship	A link to the <b>roles</b> sub-collection for roles attached to this group.

### 20.2. XML REPRESENTATION OF A GROUP RESOURCE

**Example 20.1. An XML representation of a group resource**

```
<group id="85bf8d97-273c-4a5c-b801-b17d58330dab"
  href="/api/groups/85bf8d97-273c-4a5c-b801-b17d58330dab">
  <name>Everyone</name>
  <link rel="tags"
    href="/api/groups/85bf8d97-273c-4a5c-b801-b17d58330dab/tags"/>
  <link rel="permissions"
    href="/api/groups/85bf8d97-273c-4a5c-b801-
b17d58330dab/permissions"/>
  <link rel="roles"
    href="/api/groups/85bf8d97-273c-4a5c-b801-b17d58330dab/roles"/>
  <domain_entry_id>
    65656530303030302D303030302D303030302D303030
  </domain_entry_id>
  <namespace>*</namespace>
</group>
```

### 20.3. ADDING A GROUP FROM A DIRECTORY SERVICE

The API adds existing directory service groups to the Red Hat Enterprise Virtualization Manager database with a **POST** request to the **groups** collection.

**Example 20.2. Adding a group from a directory service**

```
POST /api/group HTTP/1.1
Content-Type: application/xml
```

Accept: application/xml



```
<group>
  <name>www.example.com/accounts/groups/mygroup</name>
  <domain>
    <name>example.com</name>
  </domain>
</group>
```

## CHAPTER 21. ROLES

### 21.1. ROLE ELEMENTS

The `rel="roles"` link obtained from the entry point URI provides access to a static set of system roles. Each individual `role` element contains the following:

**Table 21.1. Role elements**

Element	Type	Description	Properties
<code>link="permits"</code>	relationship	A link to the <b>permits</b> sub-collection for role permits.	
<code>mutable</code>	Boolean: true or false	Defines the ability to update or delete the role. Roles with <b>mutable</b> set to <b>false</b> are roles built into the Red Hat Enterprise Virtualization environment.	
<code>administrative</code>	Boolean: true or false	Defines the role as administrative-only.	

### 21.2. XML REPRESENTATION OF THE ROLES COLLECTION

**Example 21.1. An XML representation of the roles collection**

```
<roles>
  <role id="00000000-0000-0000-0000-000000000001"
    href="/api/roles/00000000-0000-0000-0000-000000000001">
    <name>SuperUser</name>
    <description>Roles management administrator</description>
    <link rel="permits"
      href="/api/roles/00000000-0000-0000-0000-
000000000001/permits"/>
    <mutable>>false</mutable>
    <administrative>>true</administrative>
  </role>
  <role id="00000000-0000-0000-0001-000000000001"
    href="/api/roles/00000000-0000-0000-0001-000000000001">
    <name>RHEVMUser</name>
    <description>RHEVM user</description>
    <link rel="permits"
      href="/api/roles/00000000-0000-0000-0001-
000000000001/permits"/>
    <mutable>>false</mutable>
    <administrative>>false</administrative>
  </role>
  <role id="00000000-0000-0000-0001-000000000002"
    href="/api/roles/00000000-0000-0000-0001-000000000002">
    <name>RHEVMPowerUser</name>
    <description>RHEVM power user</description>
    <link rel="permits"
      href="/api/roles/00000000-0000-0000-0001-
```

```

000000000002/permits"/>
    <mutable>false</mutable>
    <administrative>false</administrative>
  </role>
</roles>

```

## 21.3. METHODS

### 21.3.1. Creating a Role

Creation of a role requires values for **name**, **administrative** and a list of initial **permits**.

#### Example 21.2. Creating a role

```

POST /api/roles HTTP/1.1
Accept: application/xml
Content-type: application/xml

<role>
  <name>Finance Role</name>
  <administrative>true</administrative>
  <permits>
    <permit id="1"/>
  </permits>
</role>

```

### 21.3.2. Updating a Role

The **name**, **description** and **administrative** elements are updatable post-creation.

#### Example 21.3. Updating a role

```

PUT /api/roles/8de42ad7-f307-408b-80e8-9d28b85adfd7 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<role>
  <name>Engineering Role</name>
  <description>Standard users in the Engineering Role</description>
  <administrative>false</administrative>
</role>

```

### 21.3.3. Removing a Role

Removal of a role requires a **DELETE** request.

#### Example 21.4. Removing a role

```
DELETE /api/roles/8de42ad7-f307-408b-80e8-9d28b85adfd7 HTTP/1.1
```

```
HTTP/1.1 204 No Content
```

## 21.4. ROLES PERMITS SUB-COLLECTION

### 21.4.1. Roles Permits Sub-Collection

Each role contains a set of allowable actions, or **permits**, which the API lists in **capabilities**.

A role's **permits** are listed as a sub-collection:

#### Example 21.5. Listing a role's permits

```
GET /api/roles/b67dfbe2-0dbc-41e4-86d3-a2fbef02cfa9/permits HTTP/1.1
```

```
Accept: application/xml
```

```
HTTP/1.1 200 OK
```

```
Content-Type: application/xml
```

```
<permits>
  <permit id="1"
    href="/api/roles/b67dfbe2-0dbc-41e4-86d3-a2fbef02cfa9/permits/1">
    <name>create_vm</name>
    <administrative>false</administrative>
    <role id="b67dfbe2-0dbc-41e4-86d3-a2fbef02cfa9"
      href="/api/roles/b67dfbe2-0dbc-41e4-86d3-a2fbef02cfa9"/>
  </permit>
  ...
</permits>
```

### 21.4.2. Assign a Permit to a Role

Assign a **permit** to a role with a **POST** request to the **permits** sub-collection. Use either an **id** attribute or a **name** element to specify the **permit** to assign.

#### Example 21.6. Assign a permit to a role

```
POST /api/roles/b67dfbe2-0dbc-41e4-86d3-a2fbef02cfa9/permits HTTP/1.1
```

```
Accept: application/xml
```

```
Content-Type: application/xml
```

```
<permit id="1"/>
```

```
HTTP/1.1 201 Created
```

```
Content-Type: application/xml
```

```
<permits>
  <permit id="1"
    href="/api/roles/b67dfbe2-0dbc-41e4-86d3-a2fbef02cfa9/permits/1">
```

```
<name>create_vm</name>
<administrative>>false</administrative>
<role id="b67dfbe2-0dbc-41e4-86d3-a2fbef02cfa9"
      href="/api/roles/b67dfbe2-0dbc-41e4-86d3-a2fbef02cfa9"/>
</permit>
</permits>
```

### 21.4.3. Remove a Permit from a Role

Remove a **permit** from a role with a **DELETE** request to the **permit** resource.

#### Example 21.7. Remove a permit from a role

```
DELETE /api/roles/b67dfbe2-0dbc-41e4-86d3-a2fbef02cfa9/permits/1
HTTP/1.1





HTTP/1.1 204 No Content
```

## CHAPTER 22. USERS

### 22.1. USER ELEMENTS

Users are exposed in a top-level collection and are referenced with the **rel="users"** link. Individual **user** elements contain the following:

**Table 22.1. User elements**

Element	Type	Description	Properties
<b>user_name</b>	string	The user principal name (UPN). The UPN is used as a more convenient identifier when adding a new user.	
<b>link rel="tags"</b>	relationship	A link to the <b>tags</b> sub-collection for user resources.	
<b>link rel="roles"</b>	relationship	A link to the <b>roles</b> sub-collection for user resources.	
<b>name</b>	string	A free-text name for the user.	
<b>domain</b>	string	The containing directory service domain.	
<b>groups</b>	complex	A list of directory service groups for this user.	

### 22.2. XML REPRESENTATION OF A USER RESOURCE

#### Example 22.1. An XML representation of a user resource

```
GET /api/users HTTP/1.1
Accept: application/xml

<user id="225f15cd-e891-434d-8262-a66808fcb9b1"
  href="/api/users/225f15cd-e891-434d-8262-a66808fcb9b1">
  <name>RHEV-M Admin</name>
  <actions/>
  <link rel="roles"
    href="/api/users/225f15cd-e891-434d-8262-a66808fcb9b1/roles"/>
  <link rel="tags"
    href="/api/users/225f15cd-e891-434d-8262-a66808fcb9b1/tags"/>
  <domain>domain.example.com</domain>
  <logged_in>false</logged_in>
  <user_name>rhevadmin@domain.example.com</user_name>
  <groups>
```



```

    <group>Group Policy Creator
Owners@domain.example.com/Users</group>
    <group>Domain Admins@domain.example.com/Users</group>
    <group>Enterprise Admins@domain.example.com/Users</group>
    <group>Schema Admins@domain.example.com/Users</group>
    <group>Administrators@domain.example.com/Builtin</group>
  </groups>
</user>

```

## 22.3. METHODS

### 22.3.1. Adding a User

The API adds an existing directory service user to the Red Hat Enterprise Virtualization Manager database with a **POST** request to the **users** collection. The client-provided new user representation includes an embedded **roles** list with at least one initial **role** to assign to the user. For example, the following request assigns two initial roles to the user **joe@domain.example.com**:

#### Example 22.2. Adding a user from directory service and assigning two roles

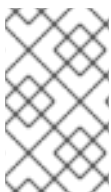
```

POST /api/users HTTP/1.1
Content-Type: application/xml
Accept: application/xml

<user>
  <user_name>joe@domain.example.com</user_name>
  <roles>
    <role>
      <name>RHEVMPowerUser</name>
    </role>
    <role id="00000000-0000-0000-0001-000000000003"/>
  </roles>
</user>

```

The new user is identified either by Red Hat Enterprise Virtualization Manager user ID or via the directory service user principal name (UPN). The user ID format reported from the directory service domain might be different to the expected Red Hat Enterprise Virtualization Manager format, such as in LDIF <sup>[5]</sup>, the ID has the opposite byte order and is base-64 encoded. Hence it is usually more convenient to refer to the new user by UPN.



#### NOTE

The user exists in the directory service domain before it is added to the Red Hat Enterprise Virtualization Manager database. An API user has the option to query this domain through the **domains** collection prior to creation of the user.

Roles are identified either by name or ID. The example above shows both approaches.

### 22.3.2. Adding Roles to a User

Further roles are attached or detached with **POST** or **DELETE** requests to the roles sub-collection of an individual user. The example below illustrates how the API adds the **RHEVMVDIUser** role to the role assignments for a particular user.

**NOTE**

The embedded user roles list of the **user** element is only used for the initial creation. All interactions post-creation with the user's role assignments go through the **roles** sub-collection.

**Example 22.3. Adding roles to a user**

```
POST /api/users/225f15cd-e891-434d-8262-a66808fcb9b1/roles HTTP/1.1
Content-Type: application/xml
Accept: application/xml

<role>
  <name>RHEVMVDIUser</name>
</role>
```

---




[5] The LDAP Data Interchange Format is described in [RFC 2849](#).

## CHAPTER 23. MAC ADDRESS POOLS

### 23.1. MAC ADDRESS POOL ELEMENTS

The `macpools` collection provides information about the MAC address pools in a Red Hat Enterprise Virtualization environment. An API user accesses this information through the `rel="macpools"` link obtained from the entry point URI. The following table shows specific elements contained in a MAC address pool resource representation.

**Table 23.1. MAC address pool elements**

Element	Type	Description	Properties
<code>name</code>	string	A plain text, human-readable name for the MAC address pool.	
<code>description</code>	string	A plain text, human-readable description of the MAC address pool.	
<code>allow_duplicates</code>	Boolean: true or false	Defines whether duplicate MAC addresses are permitted in the pool. If not specified, <code>allow_duplicates</code> defaults to false.	
<code>default_pool</code>	Boolean: true or false	Defines whether this is the default pool. If not specified, <code>default_pool</code> defaults to false.	
<code>ranges</code>	complex	Defines the range of MAC addresses for the pool. Multiple ranges can be defined within the <code>ranges</code> element.	

### 23.2. XML REPRESENTATION OF THE MAC ADDRESS POOLS COLLECTION

**Example 23.1. An XML representation of the MAC address pools collection**

```
<mac_pools>
  <mac_pool href="/api/macpools/00000000-0000-0000-0000-000000000000"
id="00000000-0000-0000-0000-000000000000">
    <name>Default</name>
    <description>Default MAC pool</description>
    <allow_duplicates>>false</allow_duplicates>
    <default_pool>>true</default_pool>
    <ranges>
      <range>
        <from>00:1A:4A:16:01:51</from>
        <to>00:1A:4A:16:01:e6</to>
      </range>
    </ranges>
  </mac_pool>
```

```
</mac_pools>
```

## 23.3. METHODS

### 23.3.1. Creating a MAC Address Pool

Creation of a MAC address pool requires values for **name** and **ranges**.

#### Example 23.2. Creating a MAC address pool

```
POST /api/macpools HTTP/1.1
Accept: application/xml
Content-type: application/xml

<mac_pool>
  <name>MACPool</name>
  <description>A MAC address pool</description>
  <allow_duplicates>true</allow_duplicates>
  <default_pool>false</default_pool>
  <ranges>
    <range>
      <from>00:1A:4A:16:01:51</from>
      <to>00:1A:4A:16:01:e6</to>
    </range>
  </ranges>
</mac_pool>
```

### 23.3.2. Updating a MAC Address Pool

The **name**, **description**, **allow\_duplicates**, and **ranges** elements are updatable post-creation.

#### Example 23.3. Updating a MAC address pool

```
PUT /api/macpools/ab39bbc1-1d64-4737-9b20-ce081f99b0e1 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<mac_pool>
  <name>UpdatedMACPool</name>
  <description>An updated MAC address pool</description>
  <allow_duplicates>false</allow_duplicates>
  <ranges>
    <range>
      <from>00:1A:4A:16:01:51</from>
      <to>00:1A:4A:16:01:e6</to>
    </range>
    <range>
      <from>02:1A:4A:01:00:00</from>
      <to>02:1A:4A:FF:FF:FF</to>
    </range>
  </ranges>
```

```
</mac_pool>
```

### 23.3.3. Removing a MAC Address Pool

Removal of a MAC address pool requires a **DELETE** request.

#### Example 23.4. Removing a MAC address pool

```
DELETE /api/macpools/ab39bbc1-1d64-4737-9b20-ce081f99b0e1 HTTP/1.1  
HTTP/1.1 204 No Content
```




## CHAPTER 24. TAGS

### 24.1. TAG ELEMENTS

The **tags** collection provides information about tags in a Red Hat Enterprise Virtualization environment. An API user accesses this information through the **rel="tags"** link obtained from the entry point URI.

The following table shows specific elements contained in a tag resource representation.

**Table 24.1. Tag elements**

Element	Type	Description	Properties
<b>host</b>	GUID	A reference to the host which the tag is attached.	
<b>user</b>	GUID	A reference to the user which the tag is attached.	
<b>vm</b>	GUID	A reference to the VM which the tag is attached.	
<b>parent</b>	complex	A reference to the VM which the tag is attached.	

### 24.2. XML REPRESENTATION OF A TAG RESOURCE

#### Example 24.1. An XML representation of a tag resource

```
<tag id="f436ebfc-67f2-41bd-8ec6-902b6f7dcb5e"
  href="/api/tags/f436ebfc-67f2-41bd-8ec6-902b6f7dcb5e">
  <name>Finance</name>
  <description>Resources for the Finance department</description>
  <parent>
    <tag id="-1" href="/api/tags/-1"/>
  </parent>
</tag>
```

### 24.3. ASSOCIATING TAGS

#### 24.3.1. Associating Tags With a Host, User or VM

The collection referenced by **link rel="tags"** from a **host**, **user** or **vm**s represents the set of tags associated with the entity.

These **tag** representations also contain a **host id**, **user id** or **vm id** reference to the entity in question.

Associating a tag with an entity is achieved by **POST**ing a tag reference (identifying the tag either by its **id** or **name**) to the collection.

### Example 24.2. Associating a tag with a virtual machine

```
POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/tags HTTP/1.1
Accept: application/xml
Content-Type: application/xml

<tag>
  <name>Finance</name>
</tag>

HTTP/1.1 201 Created
Content-Type: application/xml

<tag id="f436ebfc-67f2-41bd-8ec6-902b6f7dcb5e"
  href="/api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/tags/
f436ebfc-67f2-41bd-8ec6-902b6f7dcb5e">
  <name>Finance</name>
  <description>Resources for the Finance department</description>
  <vm id="5114bb3e-a4e6-44b2-b783-b3eea7d84720"
    href="/api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720"/>
</tag>
```

### 24.3.2. Removing a Tag

Removing an association is achieved with a **DELETE** request to the appropriate element in the collection.

### Example 24.3. Removing a tag from a virtual machine

```
DELETE /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/tags/f436ebfc-67f2-
41bd-8ec6-902b6f7dcb5e HTTP/1.1

HTTP/1.1 204 No Content
```

### 24.3.3. Querying a Collection for Tagged Resources

To query the set of entities associated with a given tag, the **collection/search** URI template for the appropriate collection should be used to search for entities matching **tag=MyTag**.

### Example 24.4. Querying a collection for tagged resources

```
GET /api/vms?search=tag%3DFinance HTTP/1.1
Accept: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<vms>
  <vm id="5114bb3e-a4e6-44b2-b783-b3eea7d84720"
```

```

    href="/api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720">
    ...
  </vm>
  ...
</vms>

```

## 24.4. PARENT TAGS

### 24.4.1. Parent Tags

An API user assigns a **parent** element to a tag to create a hierarchical link to a parent tag. The tags are presented as a flat collection, which descends from the **root** tag, with tag representations containing a link element to a parent tag



#### NOTE

The **root** tag is a special pseudo-tag assumed as the default parent tag if no parent tag is specified. The **root** tag cannot be deleted nor assigned a parent tag.

This tag hierarchy is expressed in the following way:

#### Example 24.5. Tag Hierarchy

```

<tags>
  <tag id="-1" href="/api/tags/-1">
    <name>root</name>
    <description>root</description>
    <parent>
      <tag id="-1" href="/api/tags/-1"/>
    </parent>
  </tag>
  <tag id="f436ebfc-67f2-41bd-8ec6-902b6f7dcb5e"
    href="/api/tags/f436ebfc-67f2-41bd-8ec6-902b6f7dcb5e">
    <name>Finance</name>
    <description>Resources for the Finance department</description>
    <parent>
      <tag id="-1" href="/api/tags/-1"/>
    </parent>
  </tag>
  <tag id="ac18dabf-23e5-12be-a383-a38b165ca7bd"
    href="/api/tags/ac18dabf-23e5-12be-a383-a38b165ca7bd">
    <name>Billing</name>
    <description>Billing Resources</description>
    <parent>
      <tag id="f436ebfc-67f2-41bd-8ec6-902b6f7dcb5e"
        href="/api/tags/f436ebfc-67f2-41bd-8ec6-902b6f7dcb5e"/>
    </parent>
  </tag>
</tags>

```

In this XML representation, the tags follow this hierarchy:



```

root                (id: -1)
  - Finance         (id: f436ebfc-67f2-41bd-8ec6-902b6f7dcb5e)
    - Billing       (id: ac18dabf-23e5-12be-a383-a38b165ca7bd)

```

### 24.4.2. Setting a Parent Tag

**POST**ing a new tag with a **parent** element creates an association with a parent tag, using either the **id** attribute or the **name** element to reference the parent tag

#### Example 24.6. Setting an association with a parent tag with the id attribute

```

POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/tags HTTP/1.1
Accept: application/xml
Content-Type: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<tag>
  <name>Billing</name>
  <description>Billing Resources</description>
  <parent>
    <tag id="f436ebfc-67f2-41bd-8ec6-902b6f7dcb5e"/>
  </parent>
</tag>

```

#### Example 24.7. Setting an association with a parent tag with the name element

```

POST /api/vms/5114bb3e-a4e6-44b2-b783-b3eea7d84720/tags HTTP/1.1
Accept: application/xml
Content-Type: application/xml

HTTP/1.1 200 OK
Content-Type: application/xml

<tag>
  <name>Billing</name>
  <description>Billing Resources</description>
  <parent>
    <tag>
      <name>Finance</name>
    </tag>
  </parent>
</tag>

```

### 24.4.3. Changing a Parent Tag

A tag changes a parent using a **PUT** request:

**Example 24.8. Changing the parent tag**

```
PUT /api/tags/ac18dabf-23e5-12be-a383-a38b165ca7bd HTTP/1.1
Accept: application/xml
Content-Type: application/xml
```

```
<tag>
  <parent>
    <tag id="f436ebfc-67f2-41bd-8ec6-902b6f7dcb5e"/>
  </parent>
</tag>
```

## CHAPTER 25. EVENTS

### 25.1. EVENT ELEMENTS

The `rel="events"` link obtained from the entry point URI accesses the `events` collection and lists system events from Red Hat Enterprise Virtualization Manager.

**Table 25.1. Event elements**

Element	Type	Description
<code>description</code>	string	A description of the system event
<code>code</code>	integer	The integer event code.
<code>severity</code>	One of <b>normal</b> , <b>warning</b> , <b>error</b> or <b>alert</b>	The level of severity for the event.
<code>time</code>	<code>xsd:dateTime</code> format: <b>YYYY-MM-DDThh:mm:ss</b>	The timestamp indicating when the event happened.
<code>correlation_id</code>	string	The identification string for an action that is spread across layers of Red Hat Enterprise Virtualization.
<code>user_id</code>	GUID	The identification code for the user who triggered the event.
<code>origin</code>	string	The source of the event. Standard events are reported by <b>oVirt</b> .
<code>custom_id</code>	integer	A custom identification number for custom events. Standard events have a <b>custom_id</b> of <b>-1</b> .
<code>flood_rate</code>	integer	The time, in seconds, during which the same event cannot reoccur in the event list. The default value is <b>30</b> .
<code>external_status</code>	complex	The external health status of a host. Contains the <b>state</b> element, which can be one of <b>ok</b> , <b>info</b> , <b>error</b> , <b>warning</b> , or <b>failure</b> .

### 25.2. XML REPRESENTATION OF THE EVENTS COLLECTION

**Example 25.1. An XML representation of the events collection**

```
<events>
  <event id="537" href="/api/events/537">
```

```

    <description>User vdcadmin logged in.</description>
    <code>30</code>
    <severity>normal</severity>
    <time>2011-01-12T10:48:27.827+02:00</time>
    <user id="9b9002d1-ec33-4083-8a7b-31f6b8931648"
      href="/api/users/9b9002d1-ec33-4083-8a7b-31f6b8931648"/>
  </event>
  ...
</events>

```

## 25.3. XML REPRESENTATION OF A VIRTUAL MACHINE CREATION EVENT

In addition to **user**, an **event** representation also contains a set of XML element relationships to resources relevant to the event.

### Example 25.2. An XML representation of a virtual machine creation event

```

<event id="635" href="/api/events/635">
  <description>VM bar was created by rhevadmin.</description>
  <code>34</code>
  <severity>normal</severity>
  <time>2011-07-11T16:32:03.172+02:00</time>
  <user id="4621b611-43eb-4d2b-ae5f-1180850268c4"
    href="/api/users/4621b611-43eb-4d2b-ae5f-1180850268c4"/>
  <vm id="9b22d423-e16b-4dd8-9c06-c8e9358fbc66"
    href="/api/vms/9b22d423-e16b-4dd8-9c06-c8e9358fbc66"/>
  <storage_domain id="a8a0e93d-c570-45ab-9cd6-3c68ab31221f"
    href="/api/storagedomains/a8a0e93d-c570-45ab-9cd6-3c68ab31221f"/>
</event>

```

This example representation provides XML element relationships to a virtual machine resource and a storage domain resource.

## 25.4. METHODS

### 25.4.1. Searching Events

The **events** collection provides search queries similar to other resource collections. An additional feature when searching the **events** collection is the ability to search from a certain event. This queries all of events since a specified event.

Querying from an event requires an additional **from** parameter added before the search query. This **from** argument references an event **id** code.

### Example 25.3. Searching from an event

```

GET /api/events;from=1012?search=type%3D30 HTTP/1.1
Accept: application/xml

```

This displays all events with **type** set to 30 since **id="1012"**

```

HTTP/1.1 200 OK
Content-Type: application/xml
<events>
  <event id="1018" href="/api/events/1018">
    <description>User admin logged in.</description>
    <code>30</code>
    <severity>normal</severity>
    <time>2011-07-11T14:03:22.485+10:00</time>
    <user id="80b71bae-98a1-11e0-8f20-525400866c73"
      href="/api/users/80b71bae-98a1-11e0-8f20-525400866c73"/>
  </event>
  <event id="1016" href="/api/events/1016">
    <description>User admin logged in.</description>
    <code>30</code>
    <severity>normal</severity>
    <time>2011-07-11T14:03:07.236+10:00</time>
    <user id="80b71bae-98a1-11e0-8f20-525400866c73"
      href="/api/users/80b71bae-98a1-11e0-8f20-525400866c73"/>
  </event>
  <event id="1014" href="/api/events/1014">
    <description>User admin logged in.</description>
    <code>30</code>
    <severity>normal</severity>
    <time>2011-07-11T14:02:16.009+10:00</time>
    <user id="80b71bae-98a1-11e0-8f20-525400866c73"
      href="/api/users/80b71bae-98a1-11e0-8f20-525400866c73"/>
  </event>
</events>

```

#### Example 25.4. Searching using a specific event severity

```

GET /api/events?search=severity>normal HTTP/1.1
Accept: application/xml

```

This displays all events with severity higher than **normal**. Severity levels include **normal**, **warning**, **error** and **alert**.

```

HTTP/1.1 200 OK
Content-Type: application/xml
<events>
  <event id="2823" href="/api/events/2823">
    <description>Host Host-05 has time-drift of 36002 seconds while
maximum configured value is 300 seconds.</description>
    <code>604</code>
    <severity>warning</severity>
    <time>2015-07-11T14:03:22.485+10:00</time>
    <host href= "/api/hosts/44e52bb2-27d6-4d35-8038-0c4b4db89789"
id="44e52bb2-27d6-4d35-8038-0c4b4db89789"/>
    <cluster href= "/api/clusters/00000001-0001-0001-0001-
00000000021b" id="00000001-0001-0001-0001-00000000021b"/>
    <origin>oVirt</origin>

```

```

    <custom_id>-1</custom_id>
    <flood_rate>30</flood_rate>
  </event>
  ...
</events>

```

### 25.4.2. Paginating Events

A virtualization environment generates a large amount of events after a period of time. However, the API only displays a default number of events for one search query. To display more than the default, the API separates results into pages with the **page** command in a search query.

The following search query tells the API to paginate results using a **page** value in combination with the **sortby** clause:

```
sortby time asc page 1
```

The **sortby** clause defines the base element to order of the results and whether the results are ascending or descending. For search queries of **events**, set the base element to **time** and the order to ascending (**asc**) so the API displays all events from the creation of your virtualization environment.

The **page** condition defines the page number. One page equals the default number of events to list. Pagination begins at **page 1**. To view more pages, increase the **page** value:

```
sortby time asc page 2
```

```
sortby time asc page 3
```

```
sortby time asc page 4
```

#### Example 25.5. Paginating events

This example paginates **event** resources. The URL-encoded request is:

```
GET /api/events?search=sortby%20time%20asc%20page%201 HTTP/1.1
Accept: application/xml
```

Increase the **page** value to view the next page of results.

```
GET /api/events?search=sortby%20time%20asc%20page%202 HTTP/1.1
Accept: application/xml
```

Use an additional **from** argument to set the starting **id**.

```
GET /api/events?search=sortby%20time%20asc%20page%202&from=30 HTTP/1.1
Accept: application/xml
```

### 25.4.3. Adding Events

The API can add custom events with a **POST** request to the **events** collection. A new event requires the

**description**, **severity**, **origin**, and **custom\_id** elements. Custom events can also include **flood\_rate**, **user\_id**, and the **id** codes of any resources relevant to the event. **host** and **storage\_domain** elements can contain the **external\_status** element to set an external health status.

#### Example 25.6. Adding a custom event to the event list

```
POST /api/events HTTP/1.1
Accept: application/xml
Content-type: application/xml

<event>
  <description>The heat of the host is above 30 0c</description>
  <severity>warning</severity>
  <origin>HP Openview</origin>
  <custom_id>1</custom_id>
  <flood_rate>30</flood_rate>
  <host id="f59a29cd-587d-48a3-b72a-db537eb21957" >
    <external_status>
      <state>warning</state>
    </external_status>
  </host>
</event>
```

#### 25.4.4. Removing Events

Removal of an event from the event list requires a **DELETE** request.

#### Example 25.7. Removing an event

```
DELETE /api/events/1705 HTTP/1.1

HTTP/1.1 204 No Content
```

## APPENDIX A. API USAGE WITH CURL

### A.1. API USAGE WITH CURL

This appendix provides instructions on adapting REST requests for use with **cURL**. **cURL** is a command line tool for transferring data across various protocols, including HTTP, and supports multiple platforms such as Linux, Windows, Mac and Solaris. Most Linux distributions include **cURL** as a package.

### A.2. INSTALLING CURL

A Red Hat Enterprise Linux user installs **cURL** with the following terminal command:

```
yum install curl
```

For other platforms, seek installation instructions on the **cURL** website (<http://curl.haxx.se/>).

### A.3. USING CURL

**cURL** uses a command line interface to send requests to a HTTP server. Integrating a request requires the following command syntax:

```
Usage: curl [options] uri
```

The **uri** refers to target HTTP address to send the request. This is a location on your Red Hat Enterprise Virtualization Manager host within the API entry point path (**/api**).

#### **cURL options**

##### **-X COMMAND, --request COMMAND**

The request command to use. In the context of the REST API, use **GET**, **POST**, **PUT** or **DELETE**.

Example: **-X GET**

##### **-H LINE, --header LINE**

HTTP header to include with the request. Use multiple header options if more than one header is required.

Example: **-H "Accept: application/xml" -H "Content-Type: application/xml"**

##### **-u USERNAME:PASSWORD, --user USERNAME:PASSWORD**

The user name and password of the Red Hat Enterprise Virtualization user. This attribute acts as a convenient replacement for the **Authorization:** header.

Example: **-u admin@internal:p@55w0rd!**

##### **--cacert CERTIFICATE**

The location of the certificate file for SSL communication to the REST API. The certificate file is saved locally on the client machine. Use the **-k** attribute to bypass SSL.

Example: **--cacert ~/Certificates/rhevml.cer**



**-d BODY, --data BODY**

The body to send for requests. Use with **POST**, **PUT** and **DELETE** requests. Ensure to specify the **Content-Type: application/xml** header if a body exists in the request.

Example: `-d "<cdrom><file id='rhel-server-6.0-x86_64-dvd.iso' /></cdrom>"`

**A.4. EXAMPLES****A.4.1. GET Request with cURL****Example A.1. GET request**

The following **GET** request lists the virtual machines in the **vms** collection. Note that a **GET** request does not contain a body.

```
GET /api/vms HTTP/1.1
Accept: application/xml
```

Adapt the method (**GET**), header (**Accept: application/xml**) and URI (**https://[RHEVM-Host]:443/api/vms**) into the following **cURL** command:

```
$ curl -X GET -H "Accept: application/xml" -u [USER:PASS] --cacert
[CERT] https://[RHEVM-Host]:443/api/vms
```

An XML representation of the **vms** collection displays.

**A.4.2. POST Request with cURL****Example A.2. POST request**

The following **POST** request creates a virtual machine in the **vms** collection. Note that a **POST** request requires a body.

```
POST /api/vms HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vm>
  <name>vm1</name>
  <cluster>
    <name>default</name>
  </cluster>
  <template>
    <name>Blank</name>
  </template>
  <memory>536870912</memory>
  <os>
    <boot dev="hd"/>
  </os>
</vm>
```

Adapt the method (**POST**), headers (**Accept: application/xml** and **Content-type: application/xml**), URI (**https://[RHEVM-Host]:443/api/vms**) and request body into the following **cURL** command:

```
$ curl -X POST -H "Accept: application/xml" -H "Content-type:
application/xml" -u [USER:PASS] --cacert [CERT] -d "<vm>
<name>vm1</name><cluster><name>default</name></cluster><template>
<name>Blank</name></template><memory>536870912</memory><os><boot
dev='hd'/></os></vm>" https://[RHEVM-Host]:443/api/vms
```

The REST API creates a new virtual machine and displays an XML representation of the resource.

### A.4.3. PUT Request with cURL

#### Example A.3. PUT request

The following **PUT** request updates the memory of a virtual machine resource. Note that a **PUT** request requires a body.

```
PUT /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<vm>
  <memory>1073741824</memory>
</vm>
```

Adapt the method (**PUT**), headers (**Accept: application/xml** and **Content-type: application/xml**), URI (**https://[RHEVM-Host]:443/api/vms/082c794b-771f-452f-83c9-b2b5a19c0399**) and request body into the following **cURL** command:

```
$ curl -X PUT -H "Accept: application/xml" -H "Content-type:
application/xml" -u [USER:PASS] --cacert [CERT] -d "<vm>
<memory>1073741824</memory></vm>" https://[RHEVM-
Host]:443//api/vms/082c794b-771f-452f-83c9-b2b5a19c0399
```

The REST API updates the virtual machine with a new memory configuration.

### A.4.4. DELETE Request with cURL

#### Example A.4. DELETE request

The following **DELETE** request removes a virtual machine resource.

```
DELETE /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399 HTTP/1.1
```

Adapt the method (**DELETE**) and URI (**https://[RHEVM-Host]:443/api/vms/082c794b-771f-452f-83c9-b2b5a19c0399**) into the following **cURL** command:

```
$ curl -X DELETE -u [USER:PASS] --cacert [CERT] https://[RHEVM-
```

```
Host]:443//api/vms/082c794b-771f-452f-83c9-b2b5a19c039
```

The REST API removes the virtual machine. Note the **Accept: application/xml** request header is optional due to the empty result of **DELETE** requests.

#### A.4.5. DELETE Request Including Body with cURL

##### Example A.5. DELETE request with body

The following **DELETE** request force removes a virtual machine resource as indicated with the optional body.

```
DELETE /api/vms/082c794b-771f-452f-83c9-b2b5a19c0399 HTTP/1.1
Accept: application/xml
Content-type: application/xml

<action>
  <force>true</force>
</action>
```

Adapt the method (**DELETE**), headers (**Accept: application/xml** and **Content-type: application/xml**), URI (**https://[RHEVM-Host]:443/api/vms/082c794b-771f-452f-83c9-b2b5a19c0399**) and request body into the following **cURL** command:

```
$ curl -X DELETE -H "Accept: application/xml" -H "Content-type:
application/xml" -u [USER:PASS] --cacert [CERT] -d "<action>
<force>true</force></action>" https://[RHEVM-
Host]:443//api/vms/082c794b-771f-452f-83c9-b2b5a19c039
```

The REST API force removes the virtual machine.

## APPENDIX B. ENUMERATED VALUE TRANSLATION

### B.1. ENUMERATED VALUE TRANSLATION

The API uses Red Hat Enterprise Virtualization Query Language to perform search queries. For more information on the Query Language, read the full specification in *Performing Searches in Red Hat Enterprise Virtualization* of the *Red Hat Enterprise Virtualization Administration Guide*.

Note that certain enumerated values in the API require a different search query when using the Query Language. The following table provides a translation for these key enumerated values.

**Table B.1. Enumerated Value Translations**

Resource Type	API Enumerable Type	API Enumerable Value	Query Language Property	Query Language Value
Data Centers	<code>data_center_states</code>	<code>not_operational</code>	<code>status</code>	<code>notoperational</code>
Hosts	<code>host_states</code>	<code>non_responsive</code>	<code>status</code>	<code>nonresponsive</code>
		<code>install_failed</code>		<code>installfailed</code>
		<code>preparing_for_maintenance</code>		<code>preparingformaintenance</code>
		<code>non_operational</code>		<code>nonoperational</code>
		<code>pending_approval</code>		<code>pendingapproval</code>
Virtual Machines	<code>vm_states</code>	<code>powering_up</code>	<code>status</code>	<code>poweringup</code>
		<code>powering_down</code>		<code>poweringdown</code>
		<code>migrating</code>		<code>migratingfrom</code>
		<code>migrating</code>		<code>migratingto</code>
		<code>not_responding</code>		<code>notresponding</code>
		<code>wait_for_launch</code>		<code>waitforlaunch</code>

Resource Type	API Enumerable Type	API Enumerable Value	Query Language Property	Query Language Value
		reboot_in_progress		rebootinprogress
		saving_state		savingstate
		restoring_state		restoringstate
		image_locked		imagelocked

## APPENDIX C. EVENT CODES

### C.1. EVENT CODES

This table lists all event codes.

Table C.1. Event codes

Code	Name	Severity	Message
0	UNASSIGNED	Info	
1	VDC_START	Info	Starting oVirt Engine.
2	VDC_STOP	Info	Stopping oVirt Engine.
12	VDS_FAILURE	Error	Host <code>\${VdsName}</code> is non responsive.
13	VDS_DETECTED	Info	Status of host <code>\${VdsName}</code> was set to <code>\${HostStatus}</code> .
14	VDS_RECOVER	Info	Host <code>\${VdsName}</code> is rebooting.
15	VDS_MAINTENANCE	Normal	Host <code>\${VdsName}</code> was switched to Maintenance Mode.
16	VDS_ACTIVATE	Info	Activation of host <code>\${VdsName}</code> initiated by <code>\${UserName}</code> .
17	VDS_MAINTENANCE_FAILED	Error	Failed to switch Host <code>\${VdsName}</code> to Maintenance mode.
18	VDS_ACTIVATE_FAILED	Error	Failed to activate Host <code>\${VdsName}</code> . (User: <code>\${UserName}</code> ).
19	VDS_RECOVER_FAILED	Error	Host <code>\${VdsName}</code> failed to recover.
20	USER_VDS_START	Info	Host <code>\${VdsName}</code> was started by <code>\${UserName}</code> .
21	USER_VDS_STOP	Info	Host <code>\${VdsName}</code> was stopped by <code>\${UserName}</code> .

Code	Name	Severity	Message
22	IRS_FAILURE	Error	Failed to access Storage on Host \${VdsName}.
23	VDS_LOW_DISK_SPACE	Warning	Warning, Low disk space. Host \${VdsName} has less than \${DiskSpace} MB of free space left on: \${Disks}.
24	VDS_LOW_DISK_SPACE_ERROR	Error	Critical, Low disk space. Host \${VdsName} has less than \${DiskSpace} MB of free space left on: \${Disks}. Low disk space might cause an issue upgrading this host.
25	VDS_NO_SELINUX_ENFORCEMENT	Warning	Host \${VdsName} does not enforce SELinux. Current status: \${Mode}
26	IRS_DISK_SPACE_LOW	Warning	Warning, Low disk space. \${StorageDomainName} domain has \${DiskSpace} GB of free space.
27	VDS_STATUS_CHANGE_FAILED_DUE_TO_STOP_SPM_FAILURE	Warning	Failed to change status of host \${VdsName} due to a failure to stop the spm.
28	VDS_PROVISION	Warning	Installing OS on Host \${VdsName} using Hostgroup \${HostGroupName}.
29	USER_ADD_VM_TEMPLATE_SUCCESS	Info	Template \${VmTemplateName} was created successfully.
31	USER_VDC_LOGOUT	Info	User \${UserName} logged out.
32	USER_RUN_VM	Info	VM \${VmName} started on Host \${VdsName}
33	USER_STOP_VM	Info	VM \${VmName} powered off by \${UserName} (Host: \${VdsName}) (Reason: \${Reason}).
34	USER_ADD_VM	Info	VM \${VmName} was created by \${UserName}.

Code	Name	Severity	Message
35	USER_UPDATE_VM	Info	VM <code>{VmName}</code> configuration was updated by <code>{UserName}</code> .
36	USER_ADD_VM_TEMPLATE_FAILURE	Error	Failed creating Template <code>{VmTemplateName}</code> .
37	USER_ADD_VM_STARTED	Info	VM <code>{VmName}</code> creation was initiated by <code>{UserName}</code> .
38	USER_CHANGE_DISK_VM	Info	CD <code>{DiskName}</code> was inserted to VM <code>{VmName}</code> by <code>{UserName}</code> .
39	USER_PAUSE_VM	Info	VM <code>{VmName}</code> was suspended by <code>{UserName}</code> (Host: <code>{VdsName}</code> ).
40	USER_RESUME_VM	Info	VM <code>{VmName}</code> was resumed by <code>{UserName}</code> (Host: <code>{VdsName}</code> ).
41	USER_VDS_RESTART	Info	Host <code>{VdsName}</code> was restarted by <code>{UserName}</code> .
42	USER_ADD_VDS	Info	Host <code>{VdsName}</code> was added by <code>{UserName}</code> .
43	USER_UPDATE_VDS	Info	Host <code>{VdsName}</code> configuration was updated by <code>{UserName}</code> .
44	USER_REMOVE_VDS	Info	Host <code>{VdsName}</code> was removed by <code>{UserName}</code> .
45	USER_CREATE_SNAPSHOT	Info	Snapshot ' <code>{SnapshotName}</code> ' creation for VM ' <code>{VmName}</code> ' was initiated by <code>{UserName}</code> .
46	USER_TRY_BACK_TO_SNAPSHOT	Info	Snapshot-Preview <code>{SnapshotName}</code> for VM <code>{VmName}</code> was initiated by <code>{UserName}</code> .
47	USER_RESTORE_FROM_SNAPSHOT	Info	VM <code>{VmName}</code> restored from Snapshot by <code>{UserName}</code> .



Code	Name	Severity	Message
48	USER_ADD_VM_TEMPLATE	Info	Creation of Template <code>{VmTemplateName}</code> from VM <code>{VmName}</code> was initiated by <code>{UserName}</code> .
49	USER_UPDATE_VM_TEMPLATE	Info	Template <code>{VmTemplateName}</code> configuration was updated by <code>{UserName}</code> .
50	USER_REMOVE_VM_TEMPLATE	Info	Removal of Template <code>{VmTemplateName}</code> was initiated by <code>{UserName}</code> .
51	USER_ADD_VM_TEMPLATE_FINISHED_SUCCESS	Info	Creation of Template <code>{VmTemplateName}</code> from VM <code>{VmName}</code> has been completed.
52	USER_ADD_VM_TEMPLATE_FINISHED_FAILURE	Error	Failed to complete creation of Template <code>{VmTemplateName}</code> from VM <code>{VmName}</code> .
53	USER_ADD_VM_FINISHED_SUCCESS	Info	VM <code>{VmName}</code> creation has been completed.
54	USER_FAILED_RUN_VM	Error	Failed to run VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
55	USER_FAILED_PAUSE_VM	Error	Failed to suspend VM <code>{VmName}</code> (Host: <code>{VdsName}</code> , User: <code>{UserName}</code> ).
56	USER_FAILED_STOP_VM	Error	Failed to power off VM <code>{VmName}</code> (Host: <code>{VdsName}</code> , User: <code>{UserName}</code> ).
57	USER_FAILED_ADD_VM	Error	Failed to create VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
58	USER_FAILED_UPDATE_VM	Error	Failed to update VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
59	USER_FAILED_REMOVE_VM	Error	

Code	Name	Severity	Message
60	USER_ADD_VM_FINISHED_FAILURE	Error	Failed to complete VM <code>{VmName}</code> creation.
61	VM_DOWN	Info	VM <code>{VmName}</code> is down. <code>{ExitMessage}</code>
62	VM_MIGRATION_START	Info	Migration started (VM: <code>{VmName}</code> , Source: <code>{VdsName}</code> , Destination: <code>{DestinationVdsName}</code> , User: <code>{UserName}</code> ).
63	VM_MIGRATION_DONE	Info	Migration completed (VM: <code>{VmName}</code> , Source: <code>{VdsName}</code> , Destination: <code>{DestinationVdsName}</code> , Duration: <code>{Duration}</code> , Total: <code>{TotalDuration}</code> , Actual downtime: <code>{ActualDowntime}</code> )
64	VM_MIGRATION_ABORT	Error	Migration failed: <code>{MigrationError}</code> (VM: <code>{VmName}</code> , Source: <code>{VdsName}</code> , Destination: <code>{DestinationVdsName}</code> ).
65	VM_MIGRATION_FAILED	Error	Migration failed <code>{DueToMigrationError}</code> (VM: <code>{VmName}</code> , Source: <code>{VdsName}</code> ).
66	VM_FAILURE	Error	VM <code>{VmName}</code> cannot be found on Host <code>{VdsName}</code> .
67	VM_MIGRATION_START_SYSTEM_INITIATED	Info	Migration initiated by system (VM: <code>{VmName}</code> , Source: <code>{VdsName}</code> , Destination: <code>{DestinationVdsName}</code> ).
68	USER_CREATE_SNAPSHOT_FINISHED_SUCCESS	Info	Snapshot ' <code>{SnapshotName}</code> ' creation for VM ' <code>{VmName}</code> ' has been completed.
69	USER_CREATE_SNAPSHOT_FINISHED_FAILURE	Error	Failed to complete snapshot ' <code>{SnapshotName}</code> ' creation for VM ' <code>{VmName}</code> '.

Code	Name	Severity	Message
70	USER_RUN_VM_AS_STATE_LESS_FINISHED_FAILURE	Error	Failed to complete starting of VM \${VmName}.
71	USER_TRY_BACK_TO_SNAPSHOT_FINISH_SUCCESS	Info	Snapshot-Preview \${SnapshotName} for VM \${VmName} has been completed.
72	USER_CHANGE_FLOPPY_VM	Info	Floppy \${DiskName} was inserted in VM \${VmName} by \${UserName}
73	USER_INITIATED_SHUTDOWN_VM	Info	VM shutdown initiated by \${UserName} on VM \${VmName} (Host: \${VdsName}) (Reason: \${Reason}).
74	USER_FAILED_SHUTDOWN_VM	Error	Failed to initiate shutdown on VM \${VmName} (Host: \${VdsName}, User: \${UserName}).
75	USER_FAILED_CHANGE_FLOPPY_VM	Error	Failed to change floppy \${DiskName} (User: \${UserName}).
76	USER_STOPPED_VM_INSTEAD_OF_SHUTDOWN	Info	VM \${VmName} was powered off ungracefully by \${UserName} (Host: \${VdsName}) (Reason: \${Reason}).
77	USER_FAILED_STOPPING_VM_INSTEAD_OF_SHUTDOWN	Error	Failed to power off VM \${VmName} (Host: \${VdsName}, User: \${UserName}).
78	USER_ADD_DISK_TO_VM	Info	Add-Disk operation of \${DiskAlias} was initiated on VM \${VmName} by \${UserName}.
79	USER_FAILED_ADD_DISK_TO_VM	Error	Add-Disk operation failed on VM \${VmName} (User: \${UserName}).
80	USER_REMOVE_DISK_FROM_VM	Info	Disk was removed from VM \${VmName} by \${UserName}.

Code	Name	Severity	Message
81	USER_FAILED_REMOVE_DISK_FROM_VM	Error	Failed to remove Disk from VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
82	USER_MOVED_VM	Info	VM <code>{VmName}</code> moving to Domain <code>{StorageDomainName}</code> was initiated by <code>{UserName}</code> .
83	USER_FAILED_MOVE_VM	Error	Failed to initiate moving of VM <code>{VmName}</code> to Domain <code>{StorageDomainName}</code> (User: <code>{UserName}</code> ).
84	USER_MOVED_TEMPLATE	Info	Template <code>{VmTemplateName}</code> moving to Domain <code>{StorageDomainName}</code> was initiated by <code>{UserName}</code> .
85	USER_FAILED_MOVE_TEMPLATE	Error	Failed to initiate moving Template <code>{VmTemplateName}</code> to Domain <code>{StorageDomainName}</code> (User: <code>{UserName}</code> ).
86	USER_COPIED_TEMPLATE	Info	Template <code>{VmTemplateName}</code> copy to Domain <code>{StorageDomainName}</code> was initiated by <code>{UserName}</code> .
87	USER_FAILED_COPY_TEMPLATE	Error	Failed to initiate copy of Template <code>{VmTemplateName}</code> to Domain <code>{StorageDomainName}</code> (User: <code>{UserName}</code> ).
88	USER_UPDATE_VM_DISK	Info	VM <code>{VmName}</code> <code>{DiskAlias}</code> disk was updated by <code>{UserName}</code> .
89	USER_FAILED_UPDATE_VM_DISK	Error	Failed to update VM <code>{VmName}</code> disk <code>{DiskAlias}</code> (User: <code>{UserName}</code> ).
90	VDS_FAILED_TO_GET_HOST_HARDWARE_INFO	Warning	Could not get hardware information for host <code>{VdsName}</code>

Code	Name	Severity	Message
91	USER_MOVED_VM_FINISHED_SUCCESS	Info	Moving VM \${VmName} to Domain \${StorageDomainName} has been completed.
92	USER_MOVED_VM_FINISHED_FAILURE	Error	Failed to complete moving of VM \${VmName} to Domain \${StorageDomainName}.
93	USER_MOVED_TEMPLATE_FINISHED_SUCCESS	Info	Template \${VmTemplateName} moving to Domain \${StorageDomainName} has been completed.
94	USER_MOVED_TEMPLATE_FINISHED_FAILURE	Error	Failed to complete moving of Template \${VmTemplateName} to Domain \${StorageDomainName}.
95	USER_COPIED_TEMPLATE_FINISHED_SUCCESS	Info	Template \${VmTemplateName} copy to Domain \${StorageDomainName} has been completed.
96	USER_COPIED_TEMPLATE_FINISHED_FAILURE	Error	Failed to complete copy of Template \${VmTemplateName} to Domain \${StorageDomainName}.
97	USER_ADD_DISK_TO_VM_FINISHED_SUCCESS	Info	The disk \${DiskAlias} was successfully added to VM \${VmName}.
98	USER_ADD_DISK_TO_VM_FINISHED_FAILURE	Error	Add-Disk operation failed to complete on VM \${VmName}.
99	USER_TRY_BACK_TO_SNAPSHOT_FINISH_FAILURE	Error	Failed to complete Snapshot-Preview \${SnapshotName} for VM \${VmName}.
100	USER_RESTORE_FROM_SNAPSHOT_FINISH_SUCCESS	Info	VM \${VmName} restoring from Snapshot has been completed.
101	USER_RESTORE_FROM_SNAPSHOT_FINISH_FAILURE	Error	Failed to complete restoring from Snapshot of VM \${VmName}.

Code	Name	Severity	Message
102	USER_FAILED_CHANGE_DISK_VM	Error	Failed to change disk in VM <code>{VmName}</code> (Host: <code>{VdsName}</code> , User: <code>{UserName}</code> ).
103	USER_FAILED_RESUME_VM	Error	Failed to resume VM <code>{VmName}</code> (Host: <code>{VdsName}</code> , User: <code>{UserName}</code> ).
104	USER_FAILED_ADD_VDS	Error	Failed to add Host <code>{VdsName}</code> (User: <code>{UserName}</code> ).
105	USER_FAILED_UPDATE_VDS	Error	Failed to update Host <code>{VdsName}</code> (User: <code>{UserName}</code> ).
106	USER_FAILED_REMOVE_VDS	Error	Failed to remove Host <code>{VdsName}</code> (User: <code>{UserName}</code> ).
107	USER_FAILED_VDS_RESTART	Error	Failed to restart Host <code>{VdsName}</code> , (User: <code>{UserName}</code> ).
108	USER_FAILED_ADD_VM_TEMPLATE	Error	Failed to initiate creation of Template <code>{VmTemplateName}</code> from VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
109	USER_FAILED_UPDATE_VM_TEMPLATE	Error	Failed to update Template <code>{VmTemplateName}</code> (User: <code>{UserName}</code> ).
110	USER_FAILED_REMOVE_VM_TEMPLATE	Error	Failed to initiate removal of Template <code>{VmTemplateName}</code> (User: <code>{UserName}</code> ).
111	USER_STOP_SUSPENDED_VM	Info	Suspended VM <code>{VmName}</code> has had its save state cleared by <code>{UserName}</code> (Reason: <code>{Reason}</code> ).
112	USER_STOP_SUSPENDED_VM_FAILED	Error	Failed to power off suspended VM <code>{VmName}</code> (User: <code>{UserName}</code> ).

Code	Name	Severity	Message
113	USER_REMOVE_VM_FINISHED	Info	VM \${VmName} was successfully removed.
114	USER_VDC_LOGIN_FAILED	Error	User \${UserName} failed to log in.
115	USER_FAILED_TRY_BACK_TO_SNAPSHOT	Error	Failed to preview Snapshot \${SnapshotName} for VM \${VmName} (User: \${UserName}).
116	USER_FAILED_RESTORE_FROM_SNAPSHOT	Error	Failed to restore VM \${VmName} from Snapshot (User: \${UserName}).
117	USER_FAILED_CREATE_SNAPSHOT	Error	Failed to create Snapshot \${SnapshotName} for VM \${VmName} (User: \${UserName}).
118	USER_FAILED_VDS_START	Error	Failed to start Host \${VdsName}, (User: \${UserName}).
119	VM_DOWN_ERROR	Error	VM \${VmName} is down with error. \${ExitMessage}.
120	VM_MIGRATION_TO_SERVER_FAILED	Error	Migration failed\${DueToMigrationError} (VM: \${VmName}, Source: \${VdsName}, Destination: \${DestinationVdsName}).
121	SYSTEM_VDS_RESTART	Info	Host \${VdsName} was restarted by the engine.
122	SYSTEM_FAILED_VDS_RESTART	Error	A restart initiated by the engine to Host \${VdsName} has failed.
123	VDS_SLOW_STORAGE_RESPONSE_TIME	Warning	Slow storage response time on Host \${VdsName}.
124	VM_IMPORT	Info	Started VM import of \${ImportedVmName} (User: \${UserName})

Code	Name	Severity	Message
125	VM_IMPORT_FAILED	Error	Failed to import VM <code>{ImportedVmName}</code> (User: <code>{UserName}</code> )
126	VM_NOT_RESPONDING	Warning	VM <code>{VmName}</code> is not responding.
127	VDS_RUN_IN_NO_KVM_MODE	Error	Host <code>{VdsName}</code> running without virtualization hardware acceleration
128	VM_MIGRATION_TRYING_RERUN	Warning	Failed to migrate VM <code>{VmName}</code> to Host <code>{DestinationVdsName}</code> <code>{DueToMigrationError}</code> . Trying to migrate to another Host.
129	VM_CLEARED	Info	Unused
130	USER_SUSPEND_VM_FINISH_FAILURE_WILL_TRY_AGAIN	Error	Failed to complete suspending of VM <code>{VmName}</code> , will try again.
131	USER_EXPORT_VM	Info	VM <code>{VmName}</code> exported to <code>{ExportPath}</code> by <code>{UserName}</code>
132	USER_EXPORT_VM_FAILED	Error	Failed to export VM <code>{VmName}</code> to <code>{ExportPath}</code> (User: <code>{UserName}</code> )
133	USER_EXPORT_TEMPLATE	Info	Template <code>{VmTemplateName}</code> exported to <code>{ExportPath}</code> by <code>{UserName}</code>
134	USER_EXPORT_TEMPLATE_FAILED	Error	Failed to export Template <code>{VmTemplateName}</code> to <code>{ExportPath}</code> (User: <code>{UserName}</code> )
135	TEMPLATE_IMPORT	Info	Started Template import of <code>{ImportedVmTemplateName}</code> (User: <code>{UserName}</code> )
136	TEMPLATE_IMPORT_FAILED	Error	Failed to import Template <code>{ImportedVmTemplateName}</code> (User: <code>{UserName}</code> )



Code	Name	Severity	Message
137	USER_FAILED_VDS_STOP	Error	Failed to stop Host <code>{VdsName}</code> , (User: <code>{UserName}</code> ).
138	VM_PAUSED_ENOSPC	Error	VM <code>{VmName}</code> has been paused due to no Storage space error.
139	VM_PAUSED_ERROR	Error	VM <code>{VmName}</code> has been paused due to unknown storage error.
140	VM_MIGRATION_FAILED_DURING_MOVE_TO_MAINTENANCE	Error	Migration failed <code>{DueToMigrationError}</code> while Host is in 'preparing for maintenance' state. Consider manual intervention: stopping/migrating Vms as Host's state will not turn to maintenance while VMs are still running on it.(VM: <code>{VmName}</code> , Source: <code>{VdsName}</code> , Destination: <code>{DestinationVdsName}</code> ).
141	VDS_VERSION_NOT_SUPPORTED_FOR_CLUSTER	Error	Host <code>{VdsName}</code> is installed with VDSM version ( <code>{VdsSupportedVersions}</code> ) and cannot join cluster <code>{VdsGroupName}</code> which is compatible with VDSM versions <code>{CompatibilityVersion}</code> .
142	VM_SET_TO_UNKNOWN_STATUS	Warning	VM <code>{VmName}</code> was set to the Unknown status.
143	VM_WAS_SET_DOWN_DUE_TO_HOST_REBOOT_OR_MANUAL_FENCE	Info	Vm <code>{VmName}</code> was shut down due to <code>{VdsName}</code> host reboot or manual fence
144	VM_IMPORT_INFO	Info	Value of field <code>{FieldName}</code> of imported VM <code>{VmName}</code> is <code>{FieldValue}</code> . The field is reset to the default value
145	VM_PAUSED_EIO	Error	VM <code>{VmName}</code> has been paused due to storage I/O problem.

Code	Name	Severity	Message
146	VM_PAUSED_EPERM	Error	VM <code>{VmName}</code> has been paused due to storage permissions problem.
147	VM_POWER_DOWN_FAILED	Warning	Shutdown of VM <code>{VmName}</code> failed.
148	VM_MEMORY_UNDER_GUARANTEED_VALUE	Error	VM <code>{VmName}</code> on host <code>{VdsName}</code> was guaranteed <code>{MemGuaranteed}</code> MB but currently has <code>{MemActual}</code> MB
149	USER_ADD	Info	User ' <code>{NewUserName}</code> ' was added successfully to the system.
150	USER_INITIATED_RUN_VM	Info	Starting VM <code>{VmName}</code> was initiated by <code>{UserName}</code> .
151	USER_INITIATED_RUN_VM_FAILED	Warning	Failed to run VM <code>{VmName}</code> on Host <code>{VdsName}</code> .
152	USER_RUN_VM_ON_NON_DEFAULT_VDS	Warning	Guest <code>{VmName}</code> started on Host <code>{VdsName}</code> . (Default Host parameter was ignored - assigned Host was not available).
153	USER_STARTED_VM	Info	VM <code>{VmName}</code> was started by <code>{UserName}</code> (Host: <code>{VdsName}</code> ).
154	VDS_CLUSTER_VERSION_NOT_SUPPORTED	Error	Host <code>{VdsName}</code> is compatible with versions ( <code>{VdsSupportedVersions}</code> ) and cannot join Cluster <code>{VdsGroupName}</code> which is set to version <code>{CompatibilityVersion}</code> .
155	VDS_ARCHITECTURE_NOT_SUPPORTED_FOR_CLUSTER	Error	Host <code>{VdsName}</code> has architecture <code>{VdsArchitecture}</code> and cannot join Cluster <code>{VdsGroupName}</code> which has architecture <code>{VdsGroupArchitecture}</code> .

Code	Name	Severity	Message
156	CPU_TYPE_UNSUPPORTED_IN_THIS_CLUSTER_VERSION	Error	Host \${VdsName} moved to Non-Operational state as host CPU type is not supported in this cluster compatibility version or is not supported at all
157	USER_REBOOT_VM	Info	User \${UserName} initiated reboot of VM \${VmName}.
158	USER_FAILED_REBOOT_VM	Error	Failed to reboot VM \${VmName} (User: \${UserName}).
159	USER_FORCE_SELECTED_SPM	Info	Host \${VdsName} was force selected by \${UserName}
160	USER_ACCOUNT_DISABLED_OR_LOCKED	Error	User \${UserName} cannot login, as it got disabled or locked. Please contact the system administrator.
161	VM_CANCEL_MIGRATION	Info	Migration cancelled (VM: \${VmName}, Source: \${VdsName}, User: \${UserName}).
162	VM_CANCEL_MIGRATION_FAILED	Error	Failed to cancel migration for VM: \${VmName}
163	VM_STATUS_RESTORED	Info	VM \${VmName} status was restored to \${VmStatus}.
164	VM_SET_TICKET	Info	User \${UserName} initiated console session for VM \${VmName}
165	VM_SET_TICKET_FAILED	Error	User \${UserName} failed to initiate a console session for VM \${VmName}
166	VM_MIGRATION_NO_VDS_TO_MIGRATE_TO	Warning	No available host was found to migrate VM \${VmName} to.
167	VM_CONSOLE_CONNECTED	Info	User \${UserName} is connected to VM \${VmName}.

Code	Name	Severity	Message
168	VM_CONSOLE_DISCONNECTED	Info	User <code>{UserName}</code> got disconnected from VM <code>{VmName}</code> .
169	VM_FAILED_TO_PRESTART_IN_POOL	Warning	Cannot pre-start VM in pool <code>{VmPoolName}</code> . The system will continue trying.
170	USER_CREATE_LIVE_SNAPSHOT_FINISHED_FAILURE	Warning	Failed to create live snapshot <code>{SnapshotName}</code> for VM <code>{VmName}</code> . VM restart is recommended. Note that using the created snapshot might cause data inconsistency.
171	USER_RUN_VM_AS_STATELESS_WITH_DISKS_NOT_ALLOWING_SNAPSHOT	Warning	VM <code>{VmName}</code> was run as stateless with one or more of disks that do not allow snapshots (User: <code>{UserName}</code> ).
172	USER_REMOVE_VM_FINISHED_WITH_ILLEGAL_DISKS	Warning	VM <code>{VmName}</code> has been removed, but the following disks could not be removed: <code>{DisksNames}</code> . These disks will appear in the main disks tab in illegal state, please remove manually when possible.
173	USER_CREATE_LIVE_SNAPSHOT_NO_MEMORY_FAILURE	Error	Failed to save memory as part of Snapshot <code>{SnapshotName}</code> for VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
174	VM_IMPORT_FROM_CONFIGURATION_EXECUTED_SUCCESSFULLY	Info	VM <code>{VmName}</code> has been successfully imported from the given configuration.
175	VM_IMPORT_FROM_CONFIGURATION_ATTACH_DISKS_FAILED	Warning	VM <code>{VmName}</code> has been imported from the given configuration but the following disk(s) failed to attach: <code>{DiskAliases}</code> .

Code	Name	Severity	Message
176	VM_BALLOON_DRIVER_ERROR	Error	The Balloon driver on VM <code>{VmName}</code> on host <code>{VdsName}</code> is requested but unavailable.
177	VM_BALLOON_DRIVER_UNCONTROLLED	Error	The Balloon device on VM <code>{VmName}</code> on host <code>{VdsName}</code> is inflated but the device cannot be controlled (guest agent is down).
178	VM_MEMORY_NOT_IN_RECOMMENDED_RANGE	Warning	VM <code>{VmName}</code> was configured with <code>{VmMemInMb}</code> mb of memory while the recommended value range is <code>{VmMinMemInMb}</code> mb - <code>{VmMaxMemInMb}</code> mb
179	USER_INITIATED_RUN_VM_AND_PAUSE	Info	Starting in paused mode VM <code>{VmName}</code> was initiated by <code>{UserName}</code> .
180	TEMPLATE_IMPORT_FROM_CONFIGURATION_SUCCESS	Info	Template <code>{VmTemplateName}</code> has been successfully imported from the given configuration.
181	TEMPLATE_IMPORT_FROM_CONFIGURATION_FAILED	Error	Failed to import Template <code>{VmTemplateName}</code> from the given configuration.
182	USER_FAILED_ATTACH_USER_TO_VM	Error	Failed to attach User <code>{AdUserName}</code> to VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
183	USER_ATTACH_TAG_TO_TEMPLATE	Info	Tag <code>{TagName}</code> was attached to Templates(s) <code>{TemplatesNames}</code> by <code>{UserName}</code> .
184	USER_ATTACH_TAG_TO_TEMPLATE_FAILED	Error	Failed to attach Tag <code>{TagName}</code> to Templates(s) <code>{TemplatesNames}</code> (User: <code>{UserName}</code> ).

Code	Name	Severity	Message
185	USER_DETACH_TEMPLATE_FROM_TAG	Info	Tag <code>\${TagName}</code> was detached from Template(s) <code>\${TemplatesNames}</code> by <code>\${UserName}</code> .
186	USER_DETACH_TEMPLATE_FROM_TAG_FAILED	Error	Failed to detach Tag <code>\${TagName}</code> from TEMPLATE(s) <code>\${TemplatesNames}</code> (User: <code>\${UserName}</code> ).
187	VDS_STORAGE_CONNECTION_FAILED_BUT_LAST_VDS	Error	Failed to connect Host <code>\${VdsName}</code> to Data Center, due to connectivity errors with the Storage. Host <code>\${VdsName}</code> will remain in Up state (but inactive), as it is the last Host in the Data Center, to enable manual intervention by the Administrator.
188	VDS_STORAGES_CONNECTION_FAILED	Error	Failed to connect Host <code>\${VdsName}</code> to the Storage Domains <code>\${failedStorageDomains}</code> .
189	VDS_STORAGE_VDS_STAT_S_FAILED	Error	Host <code>\${VdsName}</code> reports about one of the Active Storage Domains as Problematic.
190	UPDATE_OVF_FOR_STORAGE_DOMAIN_FAILED	Warning	Failed to update VMs/Templates OVF data for Storage Domain <code>\${StorageDomainName}</code> in Data Center <code>\${StoragePoolName}</code> .
191	CREATE_OVF_STORE_FOR_STORAGE_DOMAIN_FAILED	Warning	Failed to create OVF store disk for Storage Domain <code>\${StorageDomainName}</code> . The Disk with the id <code>\${DiskId}</code> might be removed manually for automatic attempt to create new one. OVF updates won't be attempted on the created disk.

Code	Name	Severity	Message
192	CREATE_OVF_STORE_FOR_STORAGE_DOMAIN_INITIATE_FAILED	Warning	Failed to create OVF store disk for Storage Domain <code>{StorageDomainName}</code> . \n OVF data won't be updated meanwhile for that domain.
193	DELETE_OVF_STORE_FOR_STORAGE_DOMAIN_FAILED	Warning	Failed to delete the OVF store disk for Storage Domain <code>{StorageDomainName}</code> . \n In order to detach the domain please remove it manually or try to detach the domain again for another attempt.
194	VM_CANCEL_CONVERSION	Info	Conversion cancelled (VM: <code>{VmName}</code> , Source: <code>{VdsName}</code> , User: <code>{UserName}</code> ).
195	VM_CANCEL_CONVERSION_FAILED	Error	Failed to cancel conversion for VM: <code>{VmName}</code>
196	VM_RECOVERED_FROM_PAUSE_ERROR	Normal	VM <code>{VmName}</code> has recovered from paused back to up.
200	IMPORTEXPOR_GET_VMS_INFO_FAILED	Error	Failed to retrieve VM/Templates information from export domain <code>{StorageDomainName}</code>
201	IRS_DISK_SPACE_LOW_ERROR	Error	Critical, Low disk space. <code>{StorageDomainName}</code> domain has <code>{DiskSpace}</code> GB of free space.
202	IMPORTEXPOR_GET_EXTERNAL_VMS_INFO_FAILED	Error	Failed to retrieve VMs information from external server <code>{URL}</code>
204	IRS_HOSTED_ON_VDS	Info	Storage Pool Manager runs on Host <code>{VdsName}</code> (Address: <code>{ServerIp}</code> ).
205	PROVIDER_ADDED	Info	Provider <code>{ProviderName}</code> was added. (User: <code>{UserName}</code> )

Code	Name	Severity	Message
206	PROVIDER_ADDITION_FAILED	Error	Failed to add provider <code>{ProviderName}</code> . (User: <code>{UserName}</code> )
207	PROVIDER_UPDATED	Info	Provider <code>{ProviderName}</code> was updated. (User: <code>{UserName}</code> )
208	PROVIDER_UPDATE_FAILED	Error	Failed to update provider <code>{ProviderName}</code> . (User: <code>{UserName}</code> )
209	PROVIDER_REMOVED	Info	Provider <code>{ProviderName}</code> was removed. (User: <code>{UserName}</code> )
210	PROVIDER_REMOVAL_FAILED	Error	Failed to remove provider <code>{ProviderName}</code> . (User: <code>{UserName}</code> )
213	PROVIDER_CERTIFICATE_IMPORTED	Info	Certificate for provider <code>{ProviderName}</code> was imported. (User: <code>{UserName}</code> )
214	PROVIDER_CERTIFICATE_IMPORT_FAILED	Error	Failed importing Certificate for provider <code>{ProviderName}</code> . (User: <code>{UserName}</code> )
250	USER_UPDATE_VM_CLUSTER_DEFAULT_HOST_CLEARED	Info	<code>{VmName}</code> cluster was updated by <code>{UserName}</code> , Default host was reset to auto assign.
251	USER_REMOVE_VM_TEMPLATE_FINISHED	Info	Removal of Template <code>{VmTemplateName}</code> has been completed.
252	SYSTEM_FAILED_UPDATE_VM	Error	Failed to Update VM <code>{VmName}</code> that was initiated by system.
253	SYSTEM_UPDATE_VM	Info	VM <code>{VmName}</code> configuration was updated by system.
254	VM_ALREADY_IN_REQUESTED_STATUS	Info	VM <code>{VmName}</code> is already <code>{VmStatus}</code> , <code>{Action}</code> was skipped. User: <code>{UserName}</code> .



Code	Name	Severity	Message
302	USER_ADD_VM_POOL_WITH_VMS	Info	VM Pool <code>{VmPoolName}</code> (containing <code>{VmsCount}</code> VMs) was created by <code>{UserName}</code> .
303	USER_ADD_VM_POOL_WITH_VMS_FAILED	Error	Failed to create VM Pool <code>{VmPoolName}</code> (User: <code>{UserName}</code> ).
304	USER_REMOVE_VM_POOL	Info	VM Pool <code>{VmPoolName}</code> was removed by <code>{UserName}</code> .
305	USER_REMOVE_VM_POOL_FAILED	Error	Failed to remove VM Pool <code>{VmPoolName}</code> (User: <code>{UserName}</code> ).
306	USER_ADD_VM_TO_POOL	Info	VM <code>{VmName}</code> was added to VM Pool <code>{VmPoolName}</code> by <code>{UserName}</code> .
307	USER_ADD_VM_TO_POOL_FAILED	Error	Failed to add VM <code>{VmName}</code> to VM Pool <code>{VmPoolName}</code> (User: <code>{UserName}</code> ).
308	USER_REMOVE_VM_FROM_POOL	Info	VM <code>{VmName}</code> was removed from VM Pool <code>{VmPoolName}</code> by <code>{UserName}</code> .
309	USER_REMOVE_VM_FROM_POOL_FAILED	Error	Failed to remove VM <code>{VmName}</code> from VM Pool <code>{VmPoolName}</code> (User: <code>{UserName}</code> ).
310	USER_ATTACH_USER_TO_POOL	Info	User <code>{AdUserName}</code> was attached to VM Pool <code>{VmPoolName}</code> by <code>{UserName}</code> .
311	USER_ATTACH_USER_TO_POOL_FAILED	Error	Failed to attach User <code>{AdUserName}</code> to VM Pool <code>{VmPoolName}</code> (User: <code>{UserName}</code> ).
312	USER_DETACH_USER_FROM_POOL	Info	User <code>{AdUserName}</code> was detached from VM Pool <code>{VmPoolName}</code> by <code>{UserName}</code> .

Code	Name	Severity	Message
313	USER_DETACH_USER_FROM_POOL_FAILED	Error	Failed to detach User <code>{AdUserName}</code> from VM Pool <code>{VmPoolName}</code> (User: <code>{UserName}</code> ).
314	USER_UPDATE_VM_POOL	Info	VM Pool <code>{VmPoolName}</code> configuration was updated by <code>{UserName}</code> .
315	USER_UPDATE_VM_POOL_FAILED	Error	Failed to update VM Pool <code>{VmPoolName}</code> configuration (User: <code>{UserName}</code> ).
316	USER_ATTACH_USER_TO_VM_FROM_POOL	Info	Attaching User <code>{AdUserName}</code> to VM <code>{VmName}</code> in VM Pool <code>{VmPoolName}</code> was initiated by <code>{UserName}</code> .
317	USER_ATTACH_USER_TO_VM_FROM_POOL_FAILED	Error	Failed to attach User <code>{AdUserName}</code> to VM from VM Pool <code>{VmPoolName}</code> (User: <code>{UserName}</code> ).
318	USER_ATTACH_USER_TO_VM_FROM_POOL_FINISHED_SUCCESS	Info	User <code>{AdUserName}</code> successfully attached to VM <code>{VmName}</code> in VM Pool <code>{VmPoolName}</code> .
319	USER_ATTACH_USER_TO_VM_FROM_POOL_FINISHED_FAILURE	Error	Failed to attach user <code>{AdUserName}</code> to VM <code>{VmName}</code> in VM Pool <code>{VmPoolName}</code> .
320	USER_ADD_VM_POOL_WITH_VMS_ADD_VDS_FAILED	Error	Pool <code>{VmPoolName}</code> Created, but some Vms failed to create (User: <code>{UserName}</code> ).
325	USER_REMOVE_ADUSER	Info	User <code>{AdUserName}</code> was removed by <code>{UserName}</code> .
326	USER_FAILED_REMOVE_ADUSER	Error	Failed to remove User <code>{AdUserName}</code> (User: <code>{UserName}</code> ).
327	USER_FAILED_ADD_ADUSER	Warning	Failed to add User <code>{NewUserName}</code> to the system.

Code	Name	Severity	Message
342	USER_REMOVE_SNAPSHOT	Info	Snapshot '\${SnapshotName}' deletion for VM '\${VmName}' was initiated by \${UserName}.
343	USER_FAILED_REMOVE_SNAPSHOT	Error	Failed to remove Snapshot \${SnapshotName} for VM \${VmName} (User: \${UserName}).
344	USER_UPDATE_VM_POOL_WITH_VMS	Info	VM Pool \${VmPoolName} was updated by \${UserName}, \${VmsCount} VMs were added.
345	USER_UPDATE_VM_POOL_WITH_VMS_FAILED	Error	Failed to update VM Pool \${VmPoolName}(User: \${UserName}).
346	USER_PASSWORD_CHANGED	Info	Password changed successfully for \${UserName}
347	USER_PASSWORD_CHANGE_FAILED	Error	Failed to change password. (User: \${UserName})
348	USER_CLEAR_UNKNOWN_VMS	Info	All VMs' status on Non Responsive Host \${VdsName} were changed to 'Down' by \${UserName}
349	USER_FAILED_CLEAR_UNKNOWN_VMS	Error	Failed to clear VMs' status on Non Responsive Host \${VdsName}. (User: \${UserName}).
350	USER_ADD_BOOKMARK	Info	Bookmark \${BookmarkName} was added by \${UserName}.
351	USER_ADD_BOOKMARK_FAILED	Error	Failed to add bookmark: \${BookmarkName} (User: \${UserName}).
352	USER_UPDATE_BOOKMARK	Info	Bookmark \${BookmarkName} was updated by \${UserName}.
353	USER_UPDATE_BOOKMARK_FAILED	Error	Failed to update bookmark: \${BookmarkName} (User: \${UserName})

Code	Name	Severity	Message
354	USER_REMOVE_BOOKMARK	Info	Bookmark <code>{BookmarkName}</code> was removed by <code>{UserName}</code> .
355	USER_REMOVE_BOOKMARK_FAILED	Error	Failed to remove bookmark <code>{BookmarkName}</code> (User: <code>{UserName}</code> )
356	USER_REMOVE_SNAPSHOT_FINISHED_SUCCESS	Info	Snapshot ' <code>{SnapshotName}</code> ' deletion for VM ' <code>{VmName}</code> ' has been completed.
357	USER_REMOVE_SNAPSHOT_FINISHED_FAILURE	Error	Failed to delete snapshot ' <code>{SnapshotName}</code> ' for VM ' <code>{VmName}</code> '.
358	USER_VM_POOL_MAX_SUBSEQUENT_FAILURES_REACHED	Warning	Not all VMs were successfully created in VM Pool <code>{VmPoolName}</code> .
359	USER_REMOVE_SNAPSHOT_FINISHED_FAILURE_PARTIAL_SNAPSHOT	Warning	Due to partial snapshot removal, Snapshot ' <code>{SnapshotName}</code> ' of VM ' <code>{VmName}</code> ' now contains only the following disks: ' <code>{DiskAliases}</code> '.
360	USER_DETACH_USER_FROM_VM	Info	User <code>{AdUserName}</code> was detached from VM <code>{VmName}</code> by <code>{UserName}</code> .
361	USER_FAILED_DETACH_USER_FROM_VM	Error	Failed to detach User <code>{AdUserName}</code> from VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
370	USER_EXTEND_DISK_SIZE_FAILURE	Error	Failed to extend size of the disk ' <code>{DiskAlias}</code> ' to <code>{NewSize}</code> GB, User: <code>{UserName}</code> .
371	USER_EXTEND_DISK_SIZE_SUCCESS	Info	Size of the disk ' <code>{DiskAlias}</code> ' was successfully updated to <code>{NewSize}</code> GB by <code>{UserName}</code> .

Code	Name	Severity	Message
372	USER_EXTEND_DISK_SIZE_UPDATE_VM_FAILURE	Warning	Failed to update VM '\${VmName}' with the new volume size. VM restart is recommended.
373	USER_REMOVE_DISK_SNAPSHOT	Info	Disk '\${DiskAlias}' from Snapshot(s) '\${Snapshots}' of VM '\${VmName}' deletion was initiated by \${UserName}.
374	USER_FAILED_REMOVE_DISK_SNAPSHOT	Error	Failed to delete Disk '\${DiskAlias}' from Snapshot(s) \${Snapshots} of VM \${VmName} (User: \${UserName}).
375	USER_REMOVE_DISK_SNAPSHOT_FINISHED_SUCCESS	Info	Disk '\${DiskAlias}' from Snapshot(s) '\${Snapshots}' of VM '\${VmName}' deletion has been completed (User: \${UserName}).
376	USER_REMOVE_DISK_SNAPSHOT_FINISHED_FAILURE	Error	Failed to complete deletion of Disk '\${DiskAlias}' from snapshot(s) '\${Snapshots}' of VM '\${VmName}' (User: \${UserName}).
377	USER_EXTENDED_DISK_SIZE	Info	Extending disk '\${DiskAlias}' to \${NewSize} GB was initiated by \${UserName}.
378	USER_REGISTER_DISK_FINISHED_SUCCESS	Info	Disk '\${DiskAlias}' has been successfully registered as a floating disk.
379	USER_REGISTER_DISK_FINISHED_FAILURE	Error	Failed to register Disk '\${DiskAlias}'.
380	USER_EXTEND_DISK_SIZE_UPDATE_HOST_FAILURE	Warning	Failed to refresh volume size on host '\${VdsName}'. Please try the operation again.
400	USER_ATTACH_VM_TO_AD_GROUP	Info	Group \${GroupName} was attached to VM \${VmName} by \${UserName}.

Code	Name	Severity	Message
401	USER_ATTACH_VM_TO_AD_GROUP_FAILED	Error	Failed to attach Group <code>{GroupName}</code> to VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
402	USER_DETACH_VM_TO_AD_GROUP	Info	Group <code>{GroupName}</code> was detached from VM <code>{VmName}</code> by <code>{UserName}</code> .
403	USER_DETACH_VM_TO_AD_GROUP_FAILED	Error	Failed to detach Group <code>{GroupName}</code> from VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
404	USER_ATTACH_VM_POOL_TO_AD_GROUP	Info	Group <code>{GroupName}</code> was attached to VM Pool <code>{VmPoolName}</code> by <code>{UserName}</code> .
405	USER_ATTACH_VM_POOL_TO_AD_GROUP_FAILED	Error	Failed to attach Group <code>{GroupName}</code> to VM Pool <code>{VmPoolName}</code> (User: <code>{UserName}</code> ).
406	USER_DETACH_VM_POOL_TO_AD_GROUP	Info	Group <code>{GroupName}</code> was detached from VM Pool <code>{VmPoolName}</code> by <code>{UserName}</code> .
407	USER_DETACH_VM_POOL_TO_AD_GROUP_FAILED	Error	Failed to detach Group <code>{GroupName}</code> from VM Pool <code>{VmPoolName}</code> (User: <code>{UserName}</code> ).
408	USER_REMOVE_AD_GROUP	Info	Group <code>{GroupName}</code> was removed by <code>{UserName}</code> .
409	USER_REMOVE_AD_GROUP_FAILED	Error	Failed to remove group <code>{GroupName}</code> (User: <code>{UserName}</code> ).
430	USER_UPDATE_TAG	Info	Tag <code>{TagName}</code> configuration was updated by <code>{UserName}</code> .
431	USER_UPDATE_TAG_FAILED	Error	Failed to update Tag <code>{TagName}</code> (User: <code>{UserName}</code> ).
432	USER_ADD_TAG	Info	New Tag <code>{TagName}</code> was created by <code>{UserName}</code> .

Code	Name	Severity	Message
433	USER_ADD_TAG_FAILED	Error	Failed to create Tag named <code>{TagName}</code> (User: <code>{UserName}</code> ).
434	USER_REMOVE_TAG	Info	Tag <code>{TagName}</code> was removed by <code>{UserName}</code> .
435	USER_REMOVE_TAG_FAILED	Error	Failed to remove Tag <code>{TagName}</code> (User: <code>{UserName}</code> ).
436	USER_ATTACH_TAG_TO_USER	Info	Tag <code>{TagName}</code> was attached to User(s) <code>{AttachUsersNames}</code> by <code>{UserName}</code> .
437	USER_ATTACH_TAG_TO_USER_FAILED	Error	Failed to attach Tag <code>{TagName}</code> to User(s) <code>{AttachUsersNames}</code> (User: <code>{UserName}</code> ).
438	USER_ATTACH_TAG_TO_USER_GROUP	Info	Tag <code>{TagName}</code> was attached to Group(s) <code>{AttachGroupsNames}</code> by <code>{UserName}</code> .
439	USER_ATTACH_TAG_TO_USER_GROUP_FAILED	Error	Failed to attach Group(s) <code>{AttachGroupsNames}</code> to Tag <code>{TagName}</code> (User: <code>{UserName}</code> ).
440	USER_ATTACH_TAG_TO_VM	Info	Tag <code>{TagName}</code> was attached to VM(s) <code>{VmsNames}</code> by <code>{UserName}</code> .
441	USER_ATTACH_TAG_TO_VM_FAILED	Error	Failed to attach Tag <code>{TagName}</code> to VM(s) <code>{VmsNames}</code> (User: <code>{UserName}</code> ).
442	USER_ATTACH_TAG_TO_VDS	Info	Tag <code>{TagName}</code> was attached to Host(s) <code>{VdsNames}</code> by <code>{UserName}</code> .
443	USER_ATTACH_TAG_TO_VDS_FAILED	Error	Failed to attach Tag <code>{TagName}</code> to Host(s) <code>{VdsNames}</code> (User: <code>{UserName}</code> ).

Code	Name	Severity	Message
444	USER_DETACH_VDS_FROM_TAG	Info	Tag <code>{TagName}</code> was detached from Host(s) <code>{VdsNames}</code> by <code>{UserName}</code> .
445	USER_DETACH_VDS_FROM_TAG_FAILED	Error	Failed to detach Tag <code>{TagName}</code> from Host(s) <code>{VdsNames}</code> (User: <code>{UserName}</code> ).
446	USER_DETACH_VM_FROM_TAG	Info	Tag <code>{TagName}</code> was detached from VM(s) <code>{VmsNames}</code> by <code>{UserName}</code> .
447	USER_DETACH_VM_FROM_TAG_FAILED	Error	Failed to detach Tag <code>{TagName}</code> from VM(s) <code>{VmsNames}</code> (User: <code>{UserName}</code> ).
448	USER_DETACH_USER_FROM_TAG	Info	Tag <code>{TagName}</code> detached from User(s) <code>{DetachUsersNames}</code> by <code>{UserName}</code> .
449	USER_DETACH_USER_FROM_TAG_FAILED	Error	Failed to detach Tag <code>{TagName}</code> from User(s) <code>{DetachUsersNames}</code> (User: <code>{UserName}</code> ).
450	USER_DETACH_USER_GROUP_FROM_TAG	Info	Tag <code>{TagName}</code> was detached from Group(s) <code>{DetachGroupsNames}</code> by <code>{UserName}</code> .
451	USER_DETACH_USER_GROUP_FROM_TAG_FAILED	Error	Failed to detach Tag <code>{TagName}</code> from Group(s) <code>{DetachGroupsNames}</code> (User: <code>{UserName}</code> ).
452	USER_ATTACH_TAG_TO_USER_EXISTS	Warning	Tag <code>{TagName}</code> already attached to User(s) <code>{AttachUsersNamesExists}</code> .
453	USER_ATTACH_TAG_TO_USER_GROUP_EXISTS	Warning	Tag <code>{TagName}</code> already attached to Group(s) <code>{AttachGroupsNamesExists}</code> .
454	USER_ATTACH_TAG_TO_VM_EXISTS	Warning	Tag <code>{TagName}</code> already attached to VM(s) <code>{VmsNamesExists}</code> .



Code	Name	Severity	Message
455	USER_ATTACH_TAG_TO_VDS_EXISTS	Warning	Tag \${TagName} already attached to Host(s) \${VdsNamesExists}.
456	USER_LOGGED_IN_VM	Info	User \${GuestUser} logged in to VM \${VmName}.
457	USER_LOGGED_OUT_VM	Info	User \${GuestUser} logged out from VM \${VmName}.
458	USER_LOCKED_VM	Info	User \${GuestUser} locked VM \${VmName}.
459	USER_UNLOCKED_VM	Info	User \${GuestUser} unlocked VM \${VmName}.
460	USER_ATTACH_TAG_TO_TEMPLATE_EXISTS	Warning	Tag \${TagName} already attached to Template(s) \${TemplatesNamesExists}.
467	UPDATE_TAGS_VM_DEFAULT_DISPLAY_TYPE	Info	Vm \${VmName} tag default display type was updated
468	UPDATE_TAGS_VM_DEFAULT_DISPLAY_TYPE_FAILED	Info	Failed to update Vm \${VmName} tag default display type
470	USER_ATTACH_VM_POOL_TO_AD_GROUP_INTERNAL	Info	Group \${GroupName} was attached to VM Pool \${VmPoolName}.
471	USER_ATTACH_VM_POOL_TO_AD_GROUP_FAILED_INTERNAL	Error	Failed to attach Group \${GroupName} to VM Pool \${VmPoolName}.
472	USER_ATTACH_USER_TO_POOL_INTERNAL	Info	User \${AdUserName} was attached to VM Pool \${VmPoolName}.
473	USER_ATTACH_USER_TO_POOL_FAILED_INTERNAL	Error	Failed to attach User \${AdUserName} to VM Pool \${VmPoolName} (User: \${UserName}).
493	VDS_ALREADY_IN_REQUESTED_STATUS	Warning	Host \${HostName} is already \${AgentStatus}, Power Management \${Operation} operation skipped.

Code	Name	Severity	Message
494	VDS_MANUAL_FENCE_STATUS	Info	Manual fence for host <code>{VdsName}</code> was started.
495	VDS_MANUAL_FENCE_STATUS_FAILED	Error	Manual fence for host <code>{VdsName}</code> failed.
496	VDS_FENCE_STATUS	Info	Host <code>{VdsName}</code> power management was verified successfully.
497	VDS_FENCE_STATUS_FAILED	Error	Failed to verify Host <code>{VdsName}</code> power management.
498	VDS_APPROVE	Info	Host <code>{VdsName}</code> was successfully approved by user <code>{UserName}</code> .
499	VDS_APPROVE_FAILED	Error	Failed to approve Host <code>{VdsName}</code> .
500	VDS_FAILED_TO_RUN_VMS	Error	Host <code>{VdsName}</code> will be switched to Error status for <code>{Time}</code> minutes because it failed to run a VM.
501	USER_SUSPEND_VM	Info	Suspending VM <code>{VmName}</code> was initiated by User <code>{UserName}</code> (Host: <code>{VdsName}</code> ).
502	USER_FAILED_SUSPEND_VM	Error	Failed to suspend VM <code>{VmName}</code> (Host: <code>{VdsName}</code> ).
503	USER_SUSPEND_VM_OK	Info	VM <code>{VmName}</code> on Host <code>{VdsName}</code> is suspended.
504	VDS_INSTALL	Info	Host <code>{VdsName}</code> installed
505	VDS_INSTALL_FAILED	Error	Host <code>{VdsName}</code> installation failed. <code>{FailedInstallMessage}</code> .
506	VDS_INITIATED_RUN_VM	Info	VM <code>{VmName}</code> was restarted on Host <code>{VdsName}</code>
509	VDS_INSTALL_IN_PROGRESS	Info	Installing Host <code>{VdsName}</code> . <code>{Message}</code> .

Code	Name	Severity	Message
510	VDS_INSTALL_IN_PROGRESS_WARNING	Warning	Host \${VdsName} installation in progress . \${Message}.
511	VDS_INSTALL_IN_PROGRESS_ERROR	Error	Failed to install Host \${VdsName}. \${Message}.
512	USER_SUSPEND_VM_FINISH_SUCCESS	Info	Suspending VM \${VmName} has been completed.
513	VDS_RECOVER_FAILED_VMS_UNKNOWN	Error	Host \${VdsName} cannot be reached, VMs state on this host are marked as Unknown.
514	VDS_INITIALIZING	Warning	Host \${VdsName} is initializing. Message: \${ErrorMessage}
515	VDS_CPU_LOWER_THAN_CLUSTER	Warning	Host \${VdsName} moved to Non-Operational state as host does not meet the cluster's minimum CPU level. Missing CPU features : \${CpuFlags}
516	VDS_CPU_RETRIEVE_FAILED	Warning	Failed to determine Host \${VdsName} CPU level - could not retrieve CPU flags.
517	VDS_SET_NONOPERATIONAL	Info	Host \${VdsName} moved to Non-Operational state.
518	VDS_SET_NONOPERATIONAL_FAILED	Error	Failed to move Host \${VdsName} to Non-Operational state.
519	VDS_SET_NONOPERATIONAL_NETWORK	Warning	Host \${VdsName} does not comply with the cluster \${VdsGroupName} networks, the following networks are missing on host: '\${Networks}'
520	USER_ATTACH_USER_TO_VM	Info	User \${AdUserName} was attached to VM \${VmName} by \${UserName}.
521	USER_SUSPEND_VM_FINISH_FAILURE	Error	Failed to complete suspending of VM \${VmName}.

Code	Name	Severity	Message
522	VDS_SET_NONOPERATIONAL_DOMAIN	Warning	Host \${VdsName} cannot access the Storage Domain(s) \${StorageDomainNames} attached to the Data Center \${StoragePoolName}. Setting Host state to Non-Operational.
523	VDS_SET_NONOPERATIONAL_DOMAIN_FAILED	Error	Host \${VdsName} cannot access the Storage Domain(s) \${StorageDomainNames} attached to the Data Center \${StoragePoolName}. Failed to set Host state to Non-Operational.
524	VDS_DOMAIN_DELAY_INTERVAL	Warning	Storage domain \${StorageDomainName} experienced a high latency of \${Delay} seconds from host \${VdsName}. This may cause performance and functional issues. Please consult your Storage Administrator.
525	VDS_INITIATED_RUN_AS_STATELESS_VM_NOT_YET_RUNNING	Info	Starting VM \${VmName} as stateless was initiated.
528	USER_EJECT_VM_DISK	Info	CD was ejected from VM \${VmName} by \${UserName}.
529	USER_EJECT_VM_FLOPPY	Info	Floppy was ejected from VM \${VmName} by \${UserName}
530	VDS_MANUAL_FENCE_FAILED_CALL_FENCE_SPM	Warning	Manual fence did not revoke the selected SPM (\${VdsName}) since the master storage domain\n was not active or could not use another host for the fence operation.
531	VDS_LOW_MEM	Warning	Available memory of host \${HostName} [\${AvailableMemory} MB] is under defined threshold [\${Threshold} MB].

Code	Name	Severity	Message
532	VDS_HIGH_MEM_USE	Warning	Used memory of host \${HostName} [\${UsedMemory}%] exceeded defined threshold [\${Threshold}%].
533	VDS_HIGH_NETWORK_USE	Warning	
534	VDS_HIGH_CPU_USE	Warning	Used CPU of host \${HostName} [\${UsedCpu}%] exceeded defined threshold [\${Threshold}%].
535	VDS_HIGH_SWAP_USE	Warning	Used swap memory of host \${HostName} [\${UsedSwap}%] exceeded defined threshold [\${Threshold}%].
536	VDS_LOW_SWAP	Warning	Available swap memory of host \${HostName} [\${AvailableSwapMemory} MB] is under defined threshold [\${Threshold} MB].
537	VDS_INITIATED_RUN_VM_AS_STATELESS	Info	VM \${VmName} was restarted on Host \${VdsName} as stateless
538	USER_RUN_VM_AS_STATELESS	Info	VM \${VmName} started on Host \${VdsName} as stateless
539	VDS_AUTO_FENCE_STATUSES	Info	Auto fence for host \${VdsName} was started.
540	VDS_AUTO_FENCE_STATUSES_FAILED	Error	Auto fence for host \${VdsName} failed.
541	VDS_AUTO_FENCE_FAILED_CALL_FENCE_SPM	Warning	Auto fence did not revoke the selected SPM (\${VdsName}) since the master storage domain\n was not active or could not use another host for the fence operation.
550	VDS_PACKAGES_IN_PROGRESS	Info	Package update Host \${VdsName}. \${Message}.

Code	Name	Severity	Message
551	VDS_PACKAGES_IN_PROGRESS_WARNING	Warning	Host <code>{VdsName}</code> update packages in progress . <code>{Message}</code> .
552	VDS_PACKAGES_IN_PROGRESS_ERROR	Error	Failed to update packages Host <code>{VdsName}</code> . <code>{Message}</code> .
555	USER_MOVE_TAG	Info	Tag <code>{TagName}</code> was moved from <code>{OldParentTagName}</code> to <code>{NewParentTagName}</code> by <code>{UserName}</code> .
556	USER_MOVE_TAG_FAILED	Error	Failed to move Tag <code>{TagName}</code> from <code>{OldParentTagName}</code> to <code>{NewParentTagName}</code> (User: <code>{UserName}</code> ).
600	USER_VDS_MAINTENANCE	Info	Host <code>{VdsName}</code> was switched to Maintenance mode by <code>{UserName}</code> (Reason: <code>{Reason}</code> ).
601	CPU_FLAGS_NX_IS_MISSING	Warning	Host <code>{VdsName}</code> is missing the NX cpu flag. This flag can be enabled via the host BIOS. Please set Disable Execute (XD) for an Intel host, or No Execute (NX) for AMD. Please make sure to completely power off the host for this change to take effect.
602	USER_VDS_MAINTENANCE_MIGRATION_FAILED	Warning	Host <code>{VdsName}</code> cannot change into maintenance mode - not all Vms have been migrated successfully. Consider manual intervention: stopping/migrating Vms: <code>{failedVms}</code> (User: <code>{UserName}</code> ).

Code	Name	Severity	Message
603	VDS_SET_NONOPERATIONAL_IFACE_DOWN	Warning	Host \${VdsName} moved to Non-Operational state because interfaces which are down are needed by required networks in the current cluster: '\${NicsWithNetworks}'.
604	VDS_TIME_DRIFT_ALERT	Warning	Host \${VdsName} has time-drift of \${Actual} seconds while maximum configured value is \${Max} seconds.
605	PROXY_HOST_SELECTION	Info	Host \${Proxy} from \${Origin} was chosen as a proxy to execute fencing on Host \${VdsName}.
606	HOST_REFRESHED_CAPABILITIES	Info	Successfully refreshed the capabilities of host \${VdsName}.
607	HOST_REFRESH_CAPABILITIES_FAILED	Error	Failed to refresh the capabilities of host \${VdsName}.
608	HOST_INTERFACE_HIGH_NETWORK_USE	Warning	Host \${HostName} has network interface which exceeded the defined threshold [\${Threshold}%] (\${InterfaceName}: transmit rate[\${TransmitRate}%], receive rate [\${ReceiveRate}%])
609	HOST_INTERFACE_STATE_UP	Normal	Interface \${InterfaceName} on host \${VdsName}, changed state to up
610	HOST_INTERFACE_STATE_DOWN	Warning	Interface \${InterfaceName} on host \${VdsName}, changed state to down
611	HOST_BOND_SLAVE_STATE_UP	Normal	Slave \${SlaveName} of bond \${BondName} on host \${VdsName}, changed state to up

Code	Name	Severity	Message
612	HOST_BOND_SLAVE_STATE_DOWN	Warning	Slave <code>{SlaveName}</code> of bond <code>{BondName}</code> on host <code>{VdsName}</code> , changed state to down
613	FENCE_KDUMP_LISTENER_IS_NOT_ALIVE	Error	Unable to determine if Kdump is in progress on host <code>{VdsName}</code> , because fence_kdump listener is not running.
614	KDUMP_FLOW_DETECTED_ON_VDS	Info	Kdump flow is in progress on host <code>{VdsName}</code> .
615	KDUMP_FLOW_NOT_DETECTED_ON_VDS	Info	Kdump flow is not in progress on host <code>{VdsName}</code> .
616	KDUMP_FLOW_FINISHED_ON_VDS	Info	Kdump flow finished on host <code>{VdsName}</code> .
617	KDUMP_DETECTION_NOT_CONFIGURED_ON_VDS	Warning	Kdump integration is enabled for host <code>{VdsName}</code> , but kdump is not configured properly on host.
618	HOST_REGISTRATION_FAILED_INVALID_CLUSTER	Info	No default or valid cluster was found, Host <code>{VdsName}</code> registration failed
700	DISK_ALIGNMENT_SCAN_START	Info	Starting alignment scan of disk <code>'{DiskAlias}'</code> .
701	DISK_ALIGNMENT_SCAN_FAILURE	Warning	Alignment scan of disk <code>'{DiskAlias}'</code> failed.
702	DISK_ALIGNMENT_SCAN_SUCCESS	Info	Alignment scan of disk <code>'{DiskAlias}'</code> is complete.
809	USER_ADD_VDS_GROUP	Info	Cluster <code>{VdsGroupName}</code> was added by <code>{UserName}</code>
810	USER_ADD_VDS_GROUP_FAILED	Error	Failed to add Host cluster (User: <code>{UserName}</code> )
811	USER_UPDATE_VDS_GROUP	Info	Host cluster <code>{VdsGroupName}</code> was updated by <code>{UserName}</code>



Code	Name	Severity	Message
812	USER_UPDATE_VDS_GROUP_FAILED	Error	Failed to update Host cluster (User: \${UserName})
813	USER_REMOVE_VDS_GROUP	Info	Host cluster \${VdsGroupName} was removed by \${UserName}
814	USER_REMOVE_VDS_GROUP_FAILED	Error	Failed to remove Host cluster (User: \${UserName})
815	USER_VDC_LOGOUT_FAILED	Error	Failed to log User \${UserName} out.
816	MAC_POOL_EMPTY	Warning	No MAC addresses left in the MAC Address Pool.
817	CERTIFICATE_FILE_NOT_FOUND	Error	Could not find oVirt Engine Certificate file.
818	RUN_VM_FAILED	Error	Cannot run VM \${VmName} on Host \${VdsName}. Error: \${ErrMsg}
819	VDS_REGISTER_ERROR_UPDATING_HOST	Error	Host registration failed - cannot update Host Name for Host \${VdsName2}. (Host: \${VdsName1})
820	VDS_REGISTER_ERROR_UPDATING_HOST_ALL_TAKEN	Error	Host registration failed - all available Host Names are taken. (Host: \${VdsName1})
821	VDS_REGISTER_HOST_IS_ACTIVE	Error	Host registration failed - cannot change Host Name of active Host \${VdsName2}. (Host: \${VdsName1})
822	VDS_REGISTER_ERROR_UPDATING_NAME	Error	Host registration failed - cannot update Host Name for Host \${VdsName2}. (Host: \${VdsName1})
823	VDS_REGISTER_ERROR_UPDATING_NAMES_ALL_TAKEN	Error	Host registration failed - all available Host Names are taken. (Host: \${VdsName1})

Code	Name	Severity	Message
824	VDS_REGISTER_NAME_IS_ACTIVE	Error	Host registration failed - cannot change Host Name of active Host \${VdsName2}. (Host: \${VdsName1})
825	VDS_REGISTER_AUTO_APPROVE_PATTERN	Error	Host registration failed - auto approve pattern error. (Host: \${VdsName1})
826	VDS_REGISTER_FAILED	Error	Host registration failed. (Host: \${VdsName1})
827	VDS_REGISTER_EXISTING_VDS_UPDATE_FAILED	Error	Host registration failed - cannot update existing Host. (Host: \${VdsName1})
828	VDS_REGISTER_SUCCEEDED	Info	Host \${VdsName1} registered.
829	VM_MIGRATION_ON_CONNECT_CHECK_FAILED	Error	VM migration logic failed. (VM name: \${VmName})
830	VM_MIGRATION_ON_CONNECT_CHECK_SUCCEEDED	Info	Migration check failed to execute.
831	USER_VDC_SESSION_TERMINATED	Info	User \${UserName} forcibly logout user \${TerminatedSessionUsername} .
832	USER_VDC_SESSION_TERMINATION_FAILED	Error	User \${UserName} failed to forcibly logout user \${TerminatedSessionUsername} .
833	MAC_ADDRESS_IS_IN_USE	Warning	Network Interface \${IfaceName} has MAC address \${MACAddr} which is in use.
834	VDS_REGISTER_EMPTY_ID	Warning	Host registration failed, empty host id (Host: \${VdsHostName})
835	SYSTEM_UPDATE_VDS_GROUP	Info	Host cluster \${VdsGroupName} was updated by system
836	SYSTEM_UPDATE_VDS_GROUP_FAILED	Info	Failed to update Host cluster by system

Code	Name	Severity	Message
837	MAC_ADDRESSES_POOL_NOT_INITIALIZED	Warning	Mac Address Pool is not initialized. \${Message}
838	MAC_ADDRESS_IS_IN_USE_UNPLUG	Warning	Network Interface \${IfaceName} has MAC address \${MACAddr} which is in use, therefore it is being unplugged from VM \${VmName}.
840	HOST_UPGRADE_STARTED	Info	Host \${VdsName} upgrade was started (User: \${UserName}).
841	HOST_UPGRADE_FAILED	Error	Failed to upgrade Host \${VdsName} (User: \${UserName}).
842	HOST_UPGRADE_FINISHED	Info	Host \${VdsName} upgrade was completed successfully.
845	HOST_CERTIFICATION_IS_ABOUT_TO_EXPIRE	Warning	Host \${VdsName} certification is about to expire at \${ExpirationDate}. Please renew the host's certification.
846	ENGINE_CERTIFICATION_HAS_EXPIRED	Info	Engine's certification has expired at \${ExpirationDate}. Please renew the engine's certification.
847	ENGINE_CERTIFICATION_IS_ABOUT_TO_EXPIRE	Warning	Engine's certification is about to expire at \${ExpirationDate}. Please renew the engine's certification.
848	ENGINE_CA_CERTIFICATION_HAS_EXPIRED	Info	Engine's CA certification has expired at \${ExpirationDate}.
849	ENGINE_CA_CERTIFICATION_IS_ABOUT_TO_EXPIRE	Warning	Engine's CA certification is about to expire at \${ExpirationDate}.

Code	Name	Severity	Message
850	USER_ADD_PERMISSION	Info	User/Group <code>{SubjectName}</code> , Namespace <code>{Namespace}</code> , Authorization provider: <code>{Authz}</code> was granted permission for Role <code>{RoleName}</code> on <code>{VdcObjectType}</code> <code>{VdcObjectName}</code> , by <code>{UserName}</code> .
851	USER_ADD_PERMISSION_FAILED	Error	User <code>{UserName}</code> failed to grant permission for Role <code>{RoleName}</code> on <code>{VdcObjectType}</code> <code>{VdcObjectName}</code> to User/Group <code>{SubjectName}</code> .
852	USER_REMOVE_PERMISSION	Info	User/Group <code>{SubjectName}</code> Role <code>{RoleName}</code> permission was removed from <code>{VdcObjectType}</code> <code>{VdcObjectName}</code> by <code>{UserName}</code>
853	USER_REMOVE_PERMISSION_FAILED	Error	User <code>{UserName}</code> failed to remove permission for Role <code>{RoleName}</code> from <code>{VdcObjectType}</code> <code>{VdcObjectName}</code> to User/Group <code>{SubjectName}</code>
854	USER_ADD_ROLE	Info	Role <code>{RoleName}</code> granted to <code>{UserName}</code>
855	USER_ADD_ROLE_FAILED	Error	Failed to grant role <code>{RoleName}</code> (User <code>{UserName}</code> )
856	USER_UPDATE_ROLE	Info	<code>{UserName}</code> Role was updated to the <code>{RoleName}</code> Role
857	USER_UPDATE_ROLE_FAILED	Error	Failed to update role <code>{RoleName}</code> to <code>{UserName}</code>
858	USER_REMOVE_ROLE	Info	Role <code>{RoleName}</code> removed from <code>{UserName}</code>

Code	Name	Severity	Message
859	USER_REMOVE_ROLE_FAILED	Error	Failed to remove role <code>{RoleName}</code> (User <code>{UserName}</code> )
860	USER_ATTACHED_ACTION_GROUP_TO_ROLE	Info	Action group <code>{ActionGroup}</code> was attached to Role <code>{RoleName}</code> by <code>{UserName}</code>
861	USER_ATTACHED_ACTION_GROUP_TO_ROLE_FAILED	Error	Failed to attach Action group <code>{ActionGroup}</code> to Role <code>{RoleName}</code> (User: <code>{UserName}</code> )
862	USER_DETACHED_ACTION_GROUP_FROM_ROLE	Info	Action group <code>{ActionGroup}</code> was detached from Role <code>{RoleName}</code> by <code>{UserName}</code>
863	USER_DETACHED_ACTION_GROUP_FROM_ROLE_FAILED	Error	Failed to attach Action group <code>{ActionGroup}</code> to Role <code>{RoleName}</code> by <code>{UserName}</code>
864	USER_ADD_ROLE_WITH_ACTION_GROUP	Info	Role <code>{RoleName}</code> was added by <code>{UserName}</code>
865	USER_ADD_ROLE_WITH_ACTION_GROUP_FAILED	Error	Failed to add role <code>{RoleName}</code>
866	USER_ADD_SYSTEM_PERMISSION	Info	User/Group <code>{SubjectName}</code> was granted permission for Role <code>{RoleName}</code> on <code>{VdcObjectType}</code> by <code>{UserName}</code> .
867	USER_ADD_SYSTEM_PERMISSION_FAILED	Error	User <code>{UserName}</code> failed to grant permission for Role <code>{RoleName}</code> on <code>{VdcObjectType}</code> to User/Group <code>{SubjectName}</code> .
868	USER_REMOVE_SYSTEM_PERMISSION	Info	User/Group <code>{SubjectName}</code> Role <code>{RoleName}</code> permission was removed from <code>{VdcObjectType}</code> by <code>{UserName}</code>

Code	Name	Severity	Message
869	USER_REMOVE_SYSTEM_PERMISSION_FAILED	Error	User <code>{UserName}</code> failed to remove permission for Role <code>{RoleName}</code> from <code>{VdcObjectType}</code> to User/Group <code>{SubjectName}</code>
870	USER_ADD_PROFILE	Info	Profile created for <code>{UserName}</code>
871	USER_ADD_PROFILE_FAILED	Error	Failed to create profile for <code>{UserName}</code>
872	USER_UPDATE_PROFILE	Info	Updated profile for <code>{UserName}</code>
873	USER_UPDATE_PROFILE_FAILED	Error	Failed to update profile for <code>{UserName}</code>
874	USER_REMOVE_PROFILE	Info	Removed profile for <code>{UserName}</code>
875	USER_REMOVE_PROFILE_FAILED	Error	Failed to remove profile for <code>{UserName}</code>
876	HOST_CERTIFICATION_IS_INVALID	Error	Host <code>{VdsName}</code> certification is invalid. The certification has no peer certificates.
877	HOST_CERTIFICATION_HAS_EXPIRED	Info	
878	ENGINE_CERTIFICATION_IS_ABOUT_TO_EXPIRE_ALERT	Info	Engine's certification is about to expire at <code>{ExpirationDate}</code> . Please renew the engine's certification.
879	HOST_CERTIFICATION_IS_ABOUT_TO_EXPIRE_ALERT	Info	Host <code>{VdsName}</code> certification is about to expire at <code>{ExpirationDate}</code> . Please renew the host's certification.
880	HOST_CERTIFICATION_ENROLLMENT_STARTED	Normal	Enrolling certificate for host <code>{VdsName}</code> was started (User: <code>{UserName}</code> ).

Code	Name	Severity	Message
881	HOST_CERTIFICATION_ENROLLMENT_FINISHED	Normal	Enrolling certificate for host \${VdsName} was completed successfully (User: \${UserName}).
882	HOST_CERTIFICATION_ENROLLMENT_FAILED	Error	Failed to enroll certificate for host \${VdsName} (User: \${UserName}).
883	ENGINE_CA_CERTIFICATION_IS_ABOUT_TO_EXPIRE_ALERT	Info	Engine's CA certification is about to expire at \${ExpirationDate}.
900	AD_COMPUTER_ACCOUNT_SUCCEEDED	Info	Account creation successful.
901	AD_COMPUTER_ACCOUNT_FAILED	Error	Account creation failed.
918	USER_FORCE_REMOVE_STORAGE_POOL	Info	Data Center \${StoragePoolName} was forcibly removed by \${UserName}
919	USER_FORCE_REMOVE_STORAGE_POOL_FAILED	Error	Failed to forcibly remove Data Center \${StoragePoolName}. (User: \${UserName})
920	NETWORK_ATTACH_NETWORK_TO_VDS	Info	Attach network: \${NetworkName} to Host: \${VdsName} by \${UserName}.
921	NETWORK_ATTACH_NETWORK_TO_VDS_FAILED	Error	Failed to attach network: \${NetworkName} to Host: \${VdsName} (User: \${UserName}).
922	NETWORK_DETACH_NETWORK_FROM_VDS	Info	Detach network: \${NetworkName} from Host: \${VdsName} by \${UserName}.
923	NETWORK_DETACH_NETWORK_FROM_VDS_FAILED	Error	Failed to detach network: \${NetworkName} from Host: \${VdsName} (User: \${UserName}).

Code	Name	Severity	Message
924	NETWORK_ADD_BOND	Info	Add bond: <code>\${BondName}</code> with interfaces: <code>\${Interfaces}</code> for Host: <code>\${VdsName}</code> by <code>\${UserName}</code> .
925	NETWORK_ADD_BOND_FAILED	Error	Failed to add bond: <code>\${BondName}</code> with interfaces: <code>\${Interfaces}</code> for Host: <code>\${VdsName}</code> (User: <code>\${UserName}</code> ).
926	NETWORK_REMOVE_BOND	Info	Remove bond: <code>\${BondName}</code> for Host: <code>\${VdsName}</code> (User: <code>\${UserName}</code> ).
927	NETWORK_REMOVE_BOND_FAILED	Error	Failed to remove bond: <code>\${BondName}</code> for Host: <code>\${VdsName}</code> (User: <code>\${UserName}</code> ).
928	NETWORK_VDS_NETWORK_MATCH_CLUSTER	Info	Vds <code>\${VdsName}</code> network match to cluster <code>\${VdsGroupName}</code>
929	NETWORK_VDS_NETWORK_NOT_MATCH_CLUSTER	Error	Vds <code>\${VdsName}</code> network does not match to cluster <code>\${VdsGroupName}</code>
930	NETWORK_REMOVE_VM_INTERFACE	Info	Interface <code>\${InterfaceName}</code> ( <code>\${InterfaceType}</code> ) was removed from VM <code>\${VmName}</code> . (User: <code>\${UserName}</code> )
931	NETWORK_REMOVE_VM_INTERFACE_FAILED	Error	Failed to remove Interface <code>\${InterfaceName}</code> ( <code>\${InterfaceType}</code> ) from VM <code>\${VmName}</code> . (User: <code>\${UserName}</code> )
932	NETWORK_ADD_VM_INTERFACE	Info	Interface <code>\${InterfaceName}</code> ( <code>\${InterfaceType}</code> ) was added to VM <code>\${VmName}</code> . (User: <code>\${UserName}</code> )
933	NETWORK_ADD_VM_INTERFACE_FAILED	Error	Failed to add Interface <code>\${InterfaceName}</code> ( <code>\${InterfaceType}</code> ) to VM <code>\${VmName}</code> . (User: <code>\${UserName}</code> )



Code	Name	Severity	Message
934	NETWORK_UPDATE_VM_INTERFACE	Info	Interface \${InterfaceName} (\${InterfaceType}) was updated for VM \${VmName}. \${LinkState} (User: \${UserName})
935	NETWORK_UPDATE_VM_INTERFACE_FAILED	Error	Failed to update Interface \${InterfaceName} (\${InterfaceType}) for VM \${VmName}. (User: \${UserName})
936	NETWORK_ADD_TEMPLATE_INTERFACE	Info	Interface \${InterfaceName} (\${InterfaceType}) was added to Template \${VmTemplateName}. (User: \${UserName})
937	NETWORK_ADD_TEMPLATE_INTERFACE_FAILED	Error	Failed to add Interface \${InterfaceName} (\${InterfaceType}) to Template \${VmTemplateName}. (User: \${UserName})
938	NETWORK_REMOVE_TEMPLATE_INTERFACE	Info	Interface \${InterfaceName} (\${InterfaceType}) was removed from Template \${VmTemplateName}. (User: \${UserName})
939	NETWORK_REMOVE_TEMPLATE_INTERFACE_FAILED	Error	Failed to remove Interface \${InterfaceName} (\${InterfaceType}) from Template \${VmTemplateName}. (User: \${UserName})
940	NETWORK_UPDATE_TEMPLATE_INTERFACE	Info	Interface \${InterfaceName} (\${InterfaceType}) was updated for Template \${VmTemplateName}. (User: \${UserName})
941	NETWORK_UPDATE_TEMPLATE_INTERFACE_FAILED	Error	Failed to update Interface \${InterfaceName} (\${InterfaceType}) for Template \${VmTemplateName}. (User: \${UserName})

Code	Name	Severity	Message
942	NETWORK_ADD_NETWORK	Info	Network <code>{NetworkName}</code> was added to Data Center: <code>{StoragePoolName}</code>
943	NETWORK_ADD_NETWORK_FAILED	Error	Failed to add Network <code>{NetworkName}</code> to Data Center: <code>{StoragePoolName}</code>
944	NETWORK_REMOVE_NETWORK	Info	Network <code>{NetworkName}</code> was removed from Data Center: <code>{StoragePoolName}</code>
945	NETWORK_REMOVE_NETWORK_FAILED	Error	Failed to remove Network <code>{NetworkName}</code> from Data Center: <code>{StoragePoolName}</code>
946	NETWORK_ATTACH_NETWORK_TO_VDS_GROUP	Info	Network <code>{NetworkName}</code> attached to Cluster <code>{VdsGroupName}</code>
947	NETWORK_ATTACH_NETWORK_TO_VDS_GROUP_FAILED	Error	Failed to attach Network <code>{NetworkName}</code> to Cluster <code>{VdsGroupName}</code>
948	NETWORK_DETACH_NETWORK_TO_VDS_GROUP	Info	Network <code>{NetworkName}</code> detached from Cluster <code>{VdsGroupName}</code>
949	NETWORK_DETACH_NETWORK_TO_VDS_GROUP_FAILED	Error	Failed to detach Network <code>{NetworkName}</code> from Cluster <code>{VdsGroupName}</code>
950	USER_ADD_STORAGE_POOL	Info	Data Center <code>{StoragePoolName}</code> , Compatibility Version <code>{CompatibilityVersion}</code> and Quota Type <code>{QuotaEnforcementType}</code> was added by <code>{UserName}</code>
951	USER_ADD_STORAGE_POOL_FAILED	Error	Failed to add Data Center <code>{StoragePoolName}</code> . (User: <code>{UserName}</code> )
952	USER_UPDATE_STORAGE_POOL	Info	Data Center <code>{StoragePoolName}</code> was updated by <code>{UserName}</code>

Code	Name	Severity	Message
953	USER_UPDATE_STORAGE_POOL_FAILED	Error	Failed to update Data Center \${StoragePoolName}. (User: \${UserName})
954	USER_REMOVE_STORAGE_POOL	Info	Data Center \${StoragePoolName} was removed by \${UserName}
955	USER_REMOVE_STORAGE_POOL_FAILED	Error	Failed to remove Data Center \${StoragePoolName}. (User: \${UserName})
956	USER_ADD_STORAGE_DOMAIN	Info	Storage Domain \${StorageDomainName} was added by \${UserName}
957	USER_ADD_STORAGE_DOMAIN_FAILED	Error	Failed to add Storage Domain \${StorageDomainName}. (User: \${UserName})
958	USER_UPDATE_STORAGE_DOMAIN	Info	Storage Domain \${StorageDomainName} was updated by \${UserName}
959	USER_UPDATE_STORAGE_DOMAIN_FAILED	Error	Failed to update Storage Domain \${StorageDomainName}. (User: \${UserName})
960	USER_REMOVE_STORAGE_DOMAIN	Info	Storage Domain \${StorageDomainName} was removed by \${UserName}
961	USER_REMOVE_STORAGE_DOMAIN_FAILED	Error	Failed to remove Storage Domain \${StorageDomainName}. (User: \${UserName})
962	USER_ATTACH_STORAGE_DOMAIN_TO_POOL	Info	Storage Domain \${StorageDomainName} was attached to Data Center \${StoragePoolName} by \${UserName}
963	USER_ATTACH_STORAGE_DOMAIN_TO_POOL_FAILED	Error	Failed to attach Storage Domain \${StorageDomainName} to Data Center \${StoragePoolName}. (User: \${UserName})

Code	Name	Severity	Message
964	USER_DETACH_STORAGE_DOMAIN_FROM_POOL	Info	Storage Domain <code>\${StorageDomainName}</code> was detached from Data Center <code>\${StoragePoolName}</code> by <code>\${UserName}</code>
965	USER_DETACH_STORAGE_DOMAIN_FROM_POOL_FAILED	Error	Failed to detach Storage Domain <code>\${StorageDomainName}</code> to Data Center <code>\${StoragePoolName}</code> . (User: <code>\${UserName}</code> )
966	USER_ACTIVATED_STORAGE_DOMAIN	Info	Storage Domain <code>\${StorageDomainName}</code> (Data Center <code>\${StoragePoolName}</code> ) was activated by <code>\${UserName}</code>
967	USER_ACTIVATE_STORAGE_DOMAIN_FAILED	Error	Failed to activate Storage Domain <code>\${StorageDomainName}</code> (Data Center <code>\${StoragePoolName}</code> ) by <code>\${UserName}</code>
968	USER_DEACTIVATED_STORAGE_DOMAIN	Info	Storage Domain <code>\${StorageDomainName}</code> (Data Center <code>\${StoragePoolName}</code> ) was deactivated and has moved to 'Preparing for maintenance' until it will no longer be accessed by any Host of the Data Center.
969	USER_DEACTIVATE_STORAGE_DOMAIN_FAILED	Error	Failed to deactivate Storage Domain <code>\${StorageDomainName}</code> (Data Center <code>\${StoragePoolName}</code> ).
970	SYSTEM_DEACTIVATED_STORAGE_DOMAIN	Warning	Storage Domain <code>\${StorageDomainName}</code> (Data Center <code>\${StoragePoolName}</code> ) was deactivated by system because it's not visible by any of the hosts.
971	SYSTEM_DEACTIVATE_STORAGE_DOMAIN_FAILED	Error	Failed to deactivate Storage Domain <code>\${StorageDomainName}</code> (Data Center <code>\${StoragePoolName}</code> ).

Code	Name	Severity	Message
972	USER_EXTENDED_STORAGE_DOMAIN	Info	Storage \${StorageDomainName} has been extended by \${UserName}. Please wait for refresh.
973	USER_EXTENDED_STORAGE_DOMAIN_FAILED	Error	Failed to extend Storage Domain \${StorageDomainName}. (User: \${UserName})
974	USER_REMOVE_VG	Info	Volume group \${VgId} was removed by \${UserName}.
975	USER_REMOVE_VG_FAILED	Error	Failed to remove Volume group \${VgId}. (User: \${UserName})
976	USER_ACTIVATE_STORAGE_POOL	Info	Data Center \${StoragePoolName} was activated. (User: \${UserName})
977	USER_ACTIVATE_STORAGE_POOL_FAILED	Error	Failed to activate Data Center \${StoragePoolName}. (User: \${UserName})
978	SYSTEM_FAILED_CHANGE_STORAGE_POOL_STATUS	Error	Failed to change Data Center \${StoragePoolName} status.
979	SYSTEM_CHANGE_STORAGE_POOL_STATUS_NO_HOST_FOR_SPM	Error	Fencing failed on Storage Pool Manager \${VdsName} for Data Center \${StoragePoolName}. Setting status to Non-Operational.
980	SYSTEM_CHANGE_STORAGE_POOL_STATUS_PROBLEMATIC	Warning	Invalid status on Data Center \${StoragePoolName}. Setting status to Non Responsive.
981	USER_FORCE_REMOVE_STORAGE_DOMAIN	Info	Storage Domain \${StorageDomainName} was forcibly removed by \${UserName}
982	USER_FORCE_REMOVE_STORAGE_DOMAIN_FAILED	Error	Failed to forcibly remove Storage Domain \${StorageDomainName}. (User: \${UserName})

Code	Name	Severity	Message
983	RECONSTRUCT_MASTER_FAILED_NO_MASTER	Warning	No valid Data Storage Domains are available in Data Center <code>\${StoragePoolName}</code> (please check your storage infrastructure).
984	RECONSTRUCT_MASTER_DONE	Info	Reconstruct Master Domain for Data Center <code>\${StoragePoolName}</code> completed.
985	RECONSTRUCT_MASTER_FAILED	Error	Failed to Reconstruct Master Domain for Data Center <code>\${StoragePoolName}</code> .
986	SYSTEM_CHANGE_STORAGE_POOL_STATUS_PROBLEMATIC_SEARCHING_NEW_SPM	Warning	Data Center is being initialized, please wait for initialization to complete.
987	SYSTEM_CHANGE_STORAGE_POOL_STATUS_PROBLEMATIC_WITH_ERROR	Warning	Invalid status on Data Center <code>\${StoragePoolName}</code> . Setting Data Center status to Non Responsive (On host <code>\${VdsName}</code> , Error: <code>\${Error}</code> ).
988	USER_CONNECT_HOSTS_TO_LUN_FAILED	Error	Failed to connect Host <code>\${VdsName}</code> to device. (User: <code>\${UserName}</code> )
989	SYSTEM_CHANGE_STORAGE_POOL_STATUS_PROBLEMATIC_FROM_NON_OPERATIONAL	Info	Try to recover Data Center <code>\${StoragePoolName}</code> . Setting status to Non Responsive.
990	SYSTEM_MASTER_DOMAIN_NOT_IN_SYNC	Warning	Sync Error on Master Domain between Host <code>\${VdsName}</code> and oVirt Engine. Domain: <code>\${StorageDomainName}</code> is marked as Master in oVirt Engine database but not on the Storage side. Please consult with Support on how to fix this issue.
991	RECOVERY_STORAGE_POOL	Info	Data Center <code>\${StoragePoolName}</code> was recovered by <code>\${UserName}</code>

Code	Name	Severity	Message
992	RECOVERY_STORAGE_POOL_FAILED	Error	Failed to recover Data Center <code>{StoragePoolName}</code> (User: <code>{UserName}</code> )
993	SYSTEM_CHANGE_STORAGE_POOL_STATUS_RESET_IRS	Info	Data Center <code>{StoragePoolName}</code> was reset. Setting status to Non Responsive (Elect new Storage Pool Manager).
994	CONNECT_STORAGE_SERVERS_FAILED	Warning	Failed to connect Host <code>{VdsName}</code> to Storage Servers
995	CONNECT_STORAGE_POOL_FAILED	Warning	Failed to connect Host <code>{VdsName}</code> to Storage Pool <code>{StoragePoolName}</code>
996	STORAGE_DOMAIN_ERROR	Error	The error message for connection <code>{Connection}</code> returned by VDSM was: <code>{ErrorMessage}</code>
997	REFRESH_REPOSITORY_IMAGE_LIST_FAILED	Error	Refresh image list failed for domain(s): <code>{imageDomains}</code> . Please check domain activity.
998	REFRESH_REPOSITORY_IMAGE_LIST_SUCCEEDED	Info	Refresh image list succeeded for domain(s): <code>{imageDomains}</code>
999	STORAGE_ALERT_VG_METADATA_CRITICALLY_FULL	Error	The system has reached the 80% watermark on the VG metadata area size on <code>{StorageDomainName}</code> . This is due to a high number of Vdisks or large Vdisks size allocated on this specific VG.
1000	STORAGE_ALERT_SMALL_VG_METADATA	Warning	The allocated VG metadata area size is smaller than 50MB on <code>{StorageDomainName}</code> , which might limit its capacity (the number of Vdisks and/or their size).

Code	Name	Severity	Message
1001	USER_RUN_VM_FAILURE_STATELESS_SNAPSHOT_LEFT	Error	Failed to start VM <code>{VmName}</code> , because exist snapshot for stateless state. Snapshot will be deleted.
1002	USER_ATTACH_STORAGE_DOMAINS_TO_POOL	Info	Storage Domains were attached to Data Center <code>{StoragePoolName}</code> by <code>{UserName}</code>
1003	USER_ATTACH_STORAGE_DOMAINS_TO_POOL_FAILED	Error	Failed to attach Storage Domains to Data Center <code>{StoragePoolName}</code> . (User: <code>{UserName}</code> )
1004	STORAGE_DOMAIN_TASKS_ERROR	Warning	Storage Domain <code>{StorageDomainName}</code> is down while there are tasks running on it. These tasks may fail.
1005	UPDATE_OVF_FOR_STORAGE_POOL_FAILED	Warning	Failed to update VMs/Templates OVF data in Data Center <code>{StoragePoolName}</code> .
1006	UPGRADE_STORAGE_POOL_ENCOUNTERED_PROBLEMS	Warning	Data Center <code>{StoragePoolName}</code> has encountered problems during upgrade process.
1007	REFRESH_REPOSITORY_IMAGE_LIST_INCOMPLETE	Warning	Refresh image list probably incomplete for domain <code>{imageDomain}</code> , only <code>{imageListSize}</code> images discovered.
1008	NUMBER_OF_LVS_ON_STORAGE_DOMAIN_EXCEEDED_THRESHOLD	Warning	The number of LVs on the domain <code>{storageDomainName}</code> exceeded <code>{maxNumOfLVs}</code> , you are approaching the limit where performance may degrade.
1010	RELOAD_CONFIGURATIONS_SUCCESS	Info	System Configurations reloaded successfully.



Code	Name	Severity	Message
1011	RELOAD_CONFIGURATION_FAILURE	Error	System Configurations failed to reload.
1012	NETWORK_ACTIVATE_VM_INTERFACE_SUCCESS	Info	Network Interface <code>{InterfaceName}</code> ( <code>{InterfaceType}</code> ) was plugged to VM <code>{VmName}</code> . (User: <code>{UserName}</code> )
1013	NETWORK_ACTIVATE_VM_INTERFACE_FAILURE	Error	Failed to plug Network Interface <code>{InterfaceName}</code> ( <code>{InterfaceType}</code> ) to VM <code>{VmName}</code> . (User: <code>{UserName}</code> )
1014	NETWORK_DEACTIVATE_VM_INTERFACE_SUCCESS	Info	Network Interface <code>{InterfaceName}</code> ( <code>{InterfaceType}</code> ) was unplugged from VM <code>{VmName}</code> . (User: <code>{UserName}</code> )
1015	NETWORK_DEACTIVATE_VM_INTERFACE_FAILURE	Error	Failed to unplug Network Interface <code>{InterfaceName}</code> ( <code>{InterfaceType}</code> ) from VM <code>{VmName}</code> . (User: <code>{UserName}</code> )
1016	UPDATE_FOR_OVF_STORES_FAILED	Warning	Failed to update OVF disks <code>{DisksIds}</code> , OVF data isn't updated on those OVF stores (Data Center <code>{DataCenterName}</code> , Storage Domain <code>{StorageDomainName}</code> ).
1017	RETRIEVE_OVF_STORE_FAILED	Warning	Failed to retrieve VMs and Templates from the OVF disk of Storage Domain <code>{StorageDomainName}</code> .
1018	OVF_STORE_DOES_NOT_EXIST	Warning	This Data center compatibility version does not support importing a data domain with its entities (VMs and Templates). The imported domain will be imported without them.

Code	Name	Severity	Message
1019	UPDATE_DESCRIPTION_F OR_DISK_FAILED	Error	Failed to update the meta data description of disk <code>\${DiskName}</code> (Data Center <code>\${DataCenterName}</code> , Storage Domain <code>\${StorageDomainName}</code> ).
1020	UPDATE_DESCRIPTION_F OR_DISK_SKIPPED_SINC E_STORAGE_DOMAIN_NOT _ACTIVE	Warning	Not updating the metadata of Disk <code>\${DiskName}</code> (Data Center <code>\${DataCenterName}</code> ). Since the Storage Domain <code>\${StorageDomainName}</code> is not in active.
1021	RETRIEVE_UNREGISTERE D_ENTITIES_NOT_SUPPO RTED_IN_DC_VERSION	Warning	Skipping retrieval attempt of VMs and Templates from the OVF_STORE disk of Storage Domain <code>\${StorageDomainName}</code> since it is not supported by the Data Center version.
1022	USER_REFRESH_LUN_STO RAGE_DOMAIN	Info	Resize LUNs operation succeeded.
1023	USER_REFRESH_LUN_STO RAGE_DOMAIN_FAILED	Error	Failed to resize LUNs.
1024	USER_REFRESH_LUN_STO RAGE_DIFFERENT_SIZE_ DOMAIN_FAILED	Error	Failed to resize LUNs.\n Not all the hosts are seeing the same LUN size.
1025	VM_PAUSED	Info	VM <code>\${VmName}</code> has been paused.
1026	FAILED_TO_STORE_ENTI RE_DISK_FIELD_IN_DIS K_DESCRIPTION_METADA TA	Warning	Failed to store field <code>\${DiskFieldName}</code> as a part of <code>\${DiskAlias}</code> 's description metadata due to storage space limitations. The field <code>\${DiskFieldName}</code> will be truncated.

Code	Name	Severity	Message
1027	FAILED_TO_STORE_ENTIRE_DISK_FIELD_AND_REST_OF_FIELDS_IN_DISK_DESCRIPTION_METADATA	Warning	Failed to store field <code>{DiskFieldName}</code> as a part of <code>{DiskAlias}</code> 's description metadata due to storage space limitations. The value will be truncated and the following fields will not be stored at all: <code>{DiskFieldsNames}</code> .
1028	FAILED_TO_STORE_DISK_FIELDS_IN_DISK_DESCRIPTION_METADATA	Warning	Failed to store the following fields in the description metadata of disk <code>{DiskAlias}</code> due to storage space limitations: <code>{DiskFieldsNames}</code> .
1029	STORAGE_DOMAIN_MOVED_TO_MAINTENANCE	Info	Storage Domain <code>{StorageDomainName}</code> (Data Center <code>{StoragePoolName}</code> ) successfully moved to Maintenance as it's no longer accessed by any Host of the Data Center.
1030	USER_DEACTIVATED_LAST_MASTER_STORAGE_DOMAIN	Info	Storage Domain <code>{StorageDomainName}</code> (Data Center <code>{StoragePoolName}</code> ) was deactivated.
1098	NETWORK_UPDATE_DISPLAY_FOR_HOST_WITH_ACTIVE_VM	Warning	Display Network was updated on Host <code>{VdsName}</code> with active VMs attached. The change will be applied to those VMs after their next reboot. Running VMs might lose display connectivity until then.
1099	NETWORK_UPDATE_DISPLAY_FOR_CLUSTER_WITH_ACTIVE_VM	Warning	Display Network ( <code>{NetworkName}</code> ) was updated for Cluster <code>{VdsGroupName}</code> with active VMs attached. The change will be applied to those VMs after their next reboot.

Code	Name	Severity	Message
1100	NETWORK_UPDATE_DISPLAY_TO_VDS_GROUP	Info	Update Display Network ( <code>{NetworkName}</code> ) for Cluster <code>{VdsGroupName}</code> . (User: <code>{UserName}</code> )
1101	NETWORK_UPDATE_DISPLAY_TO_VDS_GROUP_FAILED	Error	Failed to update Display Network ( <code>{NetworkName}</code> ) for Cluster <code>{VdsGroupName}</code> . (User: <code>{UserName}</code> )
1102	NETWORK_UPDATE_NETWORK_TO_VDS_INTERFACE	Info	Update Network <code>{NetworkName}</code> in Host <code>{VdsName}</code> . (User: <code>{UserName}</code> )
1103	NETWORK_UPDATE_NETWORK_TO_VDS_INTERFACE_FAILED	Error	Failed to update Network <code>{NetworkName}</code> in Host <code>{VdsName}</code> . (User: <code>{UserName}</code> )
1104	NETWORK_COMMIT_NETWORK_CHANGES	Info	Network changes were saved on host <code>{VdsName}</code>
1105	NETWORK_COMMIT_NETWORK_CHANGES_FAILED	Error	Failed to commit network changes on <code>{VdsName}</code>
1106	NETWORK_HOST_USING_WRONG_CLUSTER_VLAN	Warning	<code>{VdsName}</code> is having wrong vlan id: <code>{VlanIdHost}</code> , expected vlan id: <code>{VlanIdCluster}</code>
1107	NETWORK_HOST_MISSING_CLUSTER_VLAN	Warning	<code>{VdsName}</code> is missing vlan id: <code>{VlanIdCluster}</code> that is expected by the cluster
1108	VDS_NETWORK_MTU_DIFFER_FROM_LOGICAL_NETWORK	Info	
1109	BRIDGED_NETWORK_OVER_MULTIPLE_INTERFACES	Warning	Bridged network <code>{NetworkName}</code> is attached to multiple interfaces: <code>{Interfaces}</code> on Host <code>{VdsName}</code> .

Code	Name	Severity	Message
1110	VDS_NETWORKS_OUT_OF_SYNC	Warning	Host \${VdsName}'s following network(s) are not synchronized with their Logical Network configuration: \${Networks}.
1112	NETWORK_UPDTAE_NETWORK_ON_CLUSTER	Info	Network \${NetworkName} on Cluster \${VdsGroupName} updated.
1113	NETWORK_UPDTAE_NETWORK_ON_CLUSTER_FAILED	Error	Failed to update Network \${NetworkName} on Cluster \${VdsGroupName}.
1114	NETWORK_UPDATE_NETWORK	Info	Network \${NetworkName} was updated on Data Center: \${StoragePoolName}
1115	NETWORK_UPDATE_NETWORK_FAILED	Error	Failed to update Network \${NetworkName} on Data Center: \${StoragePoolName}
1116	NETWORK_UPDATE_VM_INTERFACE_LINK_UP	Info	Link State is UP.
1117	NETWORK_UPDATE_VM_INTERFACE_LINK_DOWN	Info	Link State is DOWN.
1118	INVALID_INTERFACE_FOR_MANAGEMENT_NETWORK_CONFIGURATION	Error	Failed to configure management network on host \${VdsName}. Host \${VdsName} has an invalid interface \${InterfaceName} for the management network configuration.
1119	VLAN_ID_MISMATCH_FOR_MANAGEMENT_NETWORK_CONFIGURATION	Error	Failed to configure management network on host \${VdsName}. Host \${VdsName} has an interface \${InterfaceName} for the management network configuration with VLAN-ID (\${VlanId}), which is different from data-center definition (\${MgmtVlanId}).

Code	Name	Severity	Message
1120	SETUP_NETWORK_FAILED_FOR_MANAGEMENT_NETWORK_CONFIGURATION	Error	Failed to configure management network on host <code>{VdsName}</code> due to setup networks failure.
1121	PERSIST_NETWORK_FAILED_FOR_MANAGEMENT_NETWORK	Warning	Failed to activate host <code>{VdsName}</code> due to failure in persisting the management network configuration.
1122	ADD_VNIC_PROFILE	Info	VM network interface profile <code>{VnicProfileName}</code> was added to network <code>{NetworkName}</code> in Data Center: <code>{DataCenterName}</code> . (User: <code>{UserName}</code> )
1123	ADD_VNIC_PROFILE_FAILED	Error	Failed to add VM network interface profile <code>{VnicProfileName}</code> to network <code>{NetworkName}</code> in Data Center: <code>{DataCenterName}</code> (User: <code>{UserName}</code> )
1124	UPDATE_VNIC_PROFILE	Info	VM network interface profile <code>{VnicProfileName}</code> was updated for network <code>{NetworkName}</code> in Data Center: <code>{DataCenterName}</code> . (User: <code>{UserName}</code> )
1125	UPDATE_VNIC_PROFILE_FAILED	Error	Failed to update VM network interface profile <code>{VnicProfileName}</code> for network <code>{NetworkName}</code> in Data Center: <code>{DataCenterName}</code> . (User: <code>{UserName}</code> )
1126	REMOVE_VNIC_PROFILE	Info	VM network interface profile <code>{VnicProfileName}</code> was removed from network <code>{NetworkName}</code> in Data Center: <code>{DataCenterName}</code> . (User: <code>{UserName}</code> )

Code	Name	Severity	Message
1127	REMOVE_VNIC_PROFILE_FAILED	Error	Failed to remove VM network interface profile <code>{VnicProfileName}</code> from network <code>{NetworkName}</code> in Data Center: <code>{DataCenterName}</code> . (User: <code>{UserName}</code> )
1128	NETWORK_WITHOUT_INTERFACES	Warning	Network <code>{NetworkName}</code> is not attached to any interface on host <code>{VdsName}</code> .
1129	VNIC_PROFILE_UNSUPPORTED_FEATURES	Warning	VM <code>{VmName}</code> has network interface <code>{NicName}</code> which is using profile <code>{VnicProfile}</code> with unsupported feature(s) <code>'{UnsupportedFeatures}'</code> by VM cluster <code>{VdsGroupName}</code> (version <code>{CompatibilityVersion}</code> ).
1131	REMOVE_NETWORK_BY_LABEL_FAILED	Error	Network <code>{Network}</code> cannot be removed from the following hosts: <code>{HostNames}</code> in data-center <code>{StoragePoolName}</code> .
1132	LABEL_NETWORK	Info	Network <code>{NetworkName}</code> was labeled <code>{Label}</code> in data-center <code>{StoragePoolName}</code> .
1133	LABEL_NETWORK_FAILED	Error	Failed to label network <code>{NetworkName}</code> with label <code>{Label}</code> in data-center <code>{StoragePoolName}</code> .
1134	UNLABEL_NETWORK	Info	Network <code>{NetworkName}</code> was unlabeled in data-center <code>{StoragePoolName}</code> .
1135	UNLABEL_NETWORK_FAILED	Error	Failed to unlabeled network <code>{NetworkName}</code> in data-center <code>{StoragePoolName}</code> .
1136	LABEL_NIC	Info	Network interface card <code>{NicName}</code> was labeled <code>{Label}</code> on host <code>{VdsName}</code> .

Code	Name	Severity	Message
1137	LABEL_NIC_FAILED	Error	Failed to label network interface card <code>{NicName}</code> with label <code>{Label}</code> on host <code>{VdsName}</code> .
1138	UNLABEL_NIC	Info	Label <code>{Label}</code> was removed from network interface card <code>{NicName}</code> on host <code>{VdsName}</code> .
1139	UNLABEL_NIC_FAILED	Error	Failed to remove label <code>{Label}</code> from network interface card <code>{NicName}</code> on host <code>{VdsName}</code> .
1140	SUBNET_REMOVED	Info	Subnet <code>{SubnetName}</code> was removed from provider <code>{ProviderName}</code> . (User: <code>{UserName}</code> )
1141	SUBNET_REMOVAL_FAILED	Error	Failed to remove subnet <code>{SubnetName}</code> from provider <code>{ProviderName}</code> . (User: <code>{UserName}</code> )
1142	SUBNET_ADDED	Info	Subnet <code>{SubnetName}</code> was added on provider <code>{ProviderName}</code> . (User: <code>{UserName}</code> )
1143	SUBNET_ADDITION_FAILED	Error	Failed to add subnet <code>{SubnetName}</code> on provider <code>{ProviderName}</code> . (User: <code>{UserName}</code> )
1144	CONFIGURE_NETWORK_BY_LABELS_WHEN_CHANGING_CLUSTER_FAILED	Error	Failed to configure networks on host <code>{VdsName}</code> while changing its cluster.
1145	PERSIST_NETWORK_ON_HOST	Info	<code>(\$ {Sequence} / \$ {Total})</code> : Applying changes for network(s) <code>{NetworkNames}</code> on host <code>{VdsName}</code> . (User: <code>{UserName}</code> )



Code	Name	Severity	Message
1146	PERSIST_NETWORK_ON_HOST_FINISHED	Info	(\${Sequence}/\${Total}): Successfully applied changes for network(s) \${NetworkNames} on host \${VdsName}. (User: \${UserName})
1147	PERSIST_NETWORK_ON_HOST_FAILED	Error	(\${Sequence}/\${Total}): Failed to apply changes for network(s) \${NetworkNames} on host \${VdsName}. (User: \${UserName})
1148	MULTI_UPDATE_NETWORK_NOT_POSSIBLE	Warning	Cannot apply network \${NetworkName} changes to hosts on unsupported data center \${StoragePoolName}. (User: \${UserName})
1149	REMOVE_PORT_FROM_EXTERNAL_PROVIDER_FAILED	Warning	Failed to remove vNIC \${NicName} from external network provider \${ProviderName}. The vNIC can be identified on the provider by device id \${NicId}.
1150	IMPORTEXPONENT_EXPORT_VM	Info	Vm \${VmName} was exported successfully to \${StorageDomainName}
1151	IMPORTEXPONENT_EXPORT_VM_FAILED	Error	Failed to export Vm \${VmName} to \${StorageDomainName}
1152	IMPORTEXPONENT_IMPORT_VM	Info	Vm \${VmName} was imported successfully to Data Center \${StoragePoolName}, Cluster \${VdsGroupName}
1153	IMPORTEXPONENT_IMPORT_VM_FAILED	Error	Failed to import Vm \${VmName} to Data Center \${StoragePoolName}, Cluster \${VdsGroupName}
1154	IMPORTEXPONENT_REMOVE_TEMPLATE	Info	Template \${VmTemplateName} was removed from \${StorageDomainName}

Code	Name	Severity	Message
1155	IMPORTEXPOR_REMOVE_TEMPLATE_FAILED	Error	Failed to remove Template <code>{VmTemplateName}</code> from <code>{StorageDomainName}</code>
1156	IMPORTEXPOR_EXPORT_TEMPLATE	Info	Template <code>{VmTemplateName}</code> was exported successfully to <code>{StorageDomainName}</code>
1157	IMPORTEXPOR_EXPORT_TEMPLATE_FAILED	Error	Failed to export Template <code>{VmTemplateName}</code> to <code>{StorageDomainName}</code>
1158	IMPORTEXPOR_IMPORT_TEMPLATE	Info	Template <code>{VmTemplateName}</code> was imported successfully to Data Center <code>{StoragePoolName}</code> , Cluster <code>{VdsGroupName}</code>
1159	IMPORTEXPOR_IMPORT_TEMPLATE_FAILED	Error	Failed to import Template <code>{VmTemplateName}</code> to Data Center <code>{StoragePoolName}</code> , Cluster <code>{VdsGroupName}</code>
1160	IMPORTEXPOR_REMOVE_VM	Info	Vm <code>{VmName}</code> was removed from <code>{StorageDomainName}</code>
1161	IMPORTEXPOR_REMOVE_VM_FAILED	Error	Failed to remove Vm <code>{VmName}</code> remove from <code>{StorageDomainName}</code>
1162	IMPORTEXPOR_STARTING_EXPORT_VM	Info	Starting export Vm <code>{VmName}</code> to <code>{StorageDomainName}</code>
1163	IMPORTEXPOR_STARTING_IMPORT_TEMPLATE	Info	Starting to import Template <code>{VmTemplateName}</code> to Data Center <code>{StoragePoolName}</code> , Cluster <code>{VdsGroupName}</code>
1164	IMPORTEXPOR_STARTING_EXPORT_TEMPLATE	Info	Starting to export Template <code>{VmTemplateName}</code> to <code>{StorageDomainName}</code>
1165	IMPORTEXPOR_STARTING_IMPORT_VM	Info	Starting to import Vm <code>{VmName}</code> to Data Center <code>{StoragePoolName}</code> , Cluster <code>{VdsGroupName}</code>

Code	Name	Severity	Message
1166	IMPORTEXPOR_T_STARTIN G_REMOVE_TEMPLATE	Info	Starting to remove Template \${VmTemplateName} remove \${StorageDomainName}
1167	IMPORTEXPOR_T_STARTIN G_REMOVE_VM	Info	Starting to remove Vm \${VmName} remove from \${StorageDomainName}
1168	IMPORTEXPOR_T_FAILED_ TO_IMPORT_VM	Warning	Failed to read VM '\${ImportedVmName}' OVF, it may be corrupted. Underlying error message: \${ErrorMessage}
1169	IMPORTEXPOR_T_FAILED_ TO_IMPORT_TEMPLATE	Warning	Failed to read Template '\${Template}' OVF, it may be corrupted. Underlying error message: \${ErrorMessage}
1170	IMPORTEXPOR_T_IMPORT_ TEMPLATE_INVALID_INT ERFACES	Normal	While importing Template \${EntityName}, the Network/s \${Networks} were found to be Non-VM Networks or do not exist in Cluster. Network Name was not set in the Interface/s \${Interfaces}.
1171	USER_ACCOUNT_PASSWOR D_EXPIRED	Error	User \${UserName} cannot login, as the user account password has expired. Please contact the system administrator.
1172	AUTH_FAILED_INVALID_ CREDENTIALS	Error	User \${UserName} cannot login, please verify the username and password.
1173	AUTH_FAILED_CLOCK_SK EW_TOO_GREAT	Error	User \${UserName} cannot login, the engine clock is not synchronized with directory services. Please contact the system administrator.
1174	AUTH_FAILED_NO_KDCS_ FOUND	Error	User \${UserName} cannot login, authentication domain cannot be found. Please contact the system administrator.

Code	Name	Severity	Message
1175	AUTH_FAILED_DNS_ERROR	Error	User \${UserName} cannot login, there's an error in DNS configuration. Please contact the system administrator.
1176	AUTH_FAILED_OTHER	Error	User \${UserName} cannot login, unknown kerberos error. Please contact the system administrator.
1177	AUTH_FAILED_DNS_COMMUNICATION_ERROR	Error	User \${UserName} cannot login, cannot lookup DNS for SRV records. Please contact the system administrator.
1178	AUTH_FAILED_CONNECTION_TIMED_OUT	Error	User \${UserName} cannot login, connection to LDAP server has timed out. Please contact the system administrator.
1179	AUTH_FAILED_WRONG_REALM	Error	User \${UserName} cannot login, please verify your domain name.
1180	AUTH_FAILED_CONNECTION_ERROR	Error	User \${UserName} cannot login, connection refused or some configuration problems exist. Possible DNS error. Please contact the system administrator.
1181	AUTH_FAILED_CANNOT_FIND_LDAP_SERVER_FOR_DOMAIN	Error	User \${UserName} cannot login, cannot find valid LDAP server for domain. Please contact the system administrator.
1182	AUTH_FAILED_NO_USER_INFORMATION_WAS_FOUND	Error	User \${UserName} cannot login, no user information was found. Please contact the system administrator.
1183	AUTH_FAILED_CLIENT_NOT_FOUND_IN_KERBEROS_DATABASE	Error	User \${UserName} cannot login, user was not found in domain. Please contact the system administrator.

Code	Name	Severity	Message
1184	AUTH_FAILED_INTERNAL_KERBEROS_ERROR	Error	User \${UserName} cannot login, an internal error has occurred in the Kerberos implementation of the JVM. Please contact the system administrator.
1185	USER_ACCOUNT_EXPIRED	Error	The account for \${UserName} got expired. Please contact the system administrator.
1186	IMPORTEXPONENT_NO_PROXY_HOST_AVAILABLE_IN_DC	Error	No Host in Data Center '\${StoragePoolName}' can serve as a proxy to retrieve remote VMs information (User: \${UserName}).
1187	IMPORTEXPONENT_HOST_CANNOT_SERVE_AS_PROXY	Error	Host \${VdsName} cannot be used as a proxy to retrieve remote VMs information since it is not up (User: \${UserName}).
1189	IMPORTEXPONENT_IMPORT_VM_FAILED_UPDATING_OVF	Error	Failed to import Vm \${VmName} to Data Center \${StoragePoolName}, Cluster \${VdsGroupName}, could not update VM data in export.
1190	USER_RESTORE_FROM_SNAPSHOT_START	Info	Restoring VM \${VmName} from snapshot started by user \${UserName}.
1191	VM_DISK_ALREADY_CHANGED	Info	CD \${DiskName} is already inserted to VM \${VmName}, disk change action was skipped. User: \${UserName}.
1192	VM_DISK_ALREADY_EJECTED	Info	CD is already ejected from VM \${VmName}, disk change action was skipped. User: \${UserName}.
1193	IMPORTEXPONENT_STARTING_CONVERT_VM	Info	Starting to convert Vm \${VmName}
1194	IMPORTEXPONENT_CONVERT_FAILED	Info	Failed to convert Vm \${VmName}

Code	Name	Severity	Message
1195	IMPORTEXPOR_CANNOT_GET_OVF	Info	Failed to get the configuration of converted Vm <code>\${VmName}</code>
1196	IMPORTEXPOR_INVALID_OVF	Info	Failed to process the configuration of converted Vm <code>\${VmName}</code>
1200	ENTITY_RENAMED	Info	<code>\${EntityType}</code> <code>\${OldEntityName}</code> was renamed from <code>\${OldEntityName}</code> to <code>\${NewEntityName}</code> by <code>\${UserName}</code> .
1201	UPDATE_HOST_NIC_VFS_CONFIG	Info	The VFs configuration of network interface card <code>\${NicName}</code> on host <code>\${VdsName}</code> was updated.
1202	UPDATE_HOST_NIC_VFS_CONFIG_FAILED	Error	Failed to update the VFs configuration of network interface card <code>\${NicName}</code> on host <code>\${VdsName}</code> .
1203	ADD_VFS_CONFIG_NETWORK	Info	Network <code>\${NetworkName}</code> was added to the VFs configuration of network interface card <code>\${NicName}</code> on host <code>\${VdsName}</code> .
1204	ADD_VFS_CONFIG_NETWORK_FAILED	Info	Failed to add <code>\${NetworkName}</code> to the VFs configuration of network interface card <code>\${NicName}</code> on host <code>\${VdsName}</code> .
1205	REMOVE_VFS_CONFIG_NETWORK	Info	Network <code>\${NetworkName}</code> was removed from the VFs configuration of network interface card <code>\${NicName}</code> on host <code>\${VdsName}</code> .
1206	REMOVE_VFS_CONFIG_NETWORK_FAILED	Info	Failed to remove <code>\${NetworkName}</code> from the VFs configuration of network interface card <code>\${NicName}</code> on host <code>\${VdsName}</code> .

Code	Name	Severity	Message
1207	ADD_VFS_CONFIG_LABEL	Info	Label \${Label} was added to the VFs configuration of network interface card \${NicName} on host \${VdsName}.
1208	ADD_VFS_CONFIG_LABEL_FAILED	Info	Failed to add \${Label} to the VFs configuration of network interface card \${NicName} on host \${VdsName}.
1209	REMOVE_VFS_CONFIG_LABEL	Info	Label \${Label} was removed from the VFs configuration of network interface card \${NicName} on host \${VdsName}.
1210	REMOVE_VFS_CONFIG_LABEL_FAILED	Info	Failed to remove \${Label} from the VFs configuration of network interface card \${NicName} on host \${VdsName}.
1300	NUMA_ADD_VM_NUMA_NODE_SUCCESS	Info	Add VM NUMA node successfully.
1301	NUMA_ADD_VM_NUMA_NODE_FAILED	Error	Add VM NUMA node failed.
1310	NUMA_UPDATE_VM_NUMA_NODE_SUCCESS	Info	Update VM NUMA node successfully.
1311	NUMA_UPDATE_VM_NUMA_NODE_FAILED	Error	Update VM NUMA node failed.
1320	NUMA_REMOVE_VM_NUMA_NODE_SUCCESS	Info	Remove VM NUMA node successfully.
1321	NUMA_REMOVE_VM_NUMA_NODE_FAILED	Error	Remove VM NUMA node failed.
1402	USER_LOGIN_ON_BEHALF_FAILED	Error	Failed to execute login on behalf - \${LoginOnBehalfLogInfo}.
2000	USER_HOTPLUG_DISK	Info	VM \${VmName} disk \${DiskAlias} was plugged by \${UserName}.

Code	Name	Severity	Message
2001	USER_FAILED_HOTPLUG_DISK	Error	Failed to plug disk <code>{DiskAlias}</code> to VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
2002	USER_HOTUNPLUG_DISK	Info	VM <code>{VmName}</code> disk <code>{DiskAlias}</code> was unplugged by <code>{UserName}</code> .
2003	USER_FAILED_HOTUNPLUG_DISK	Error	Failed to unplug disk <code>{DiskAlias}</code> from VM <code>{VmName}</code> (User: <code>{UserName}</code> ).
2004	USER_COPIED_TEMPLATE_DISK	Info	User <code>{UserName}</code> is copying template disk <code>{DiskAlias}</code> to domain <code>{StorageDomainName}</code> .
2005	USER_FAILED_COPY_TEMPLATE_DISK	Error	User <code>{UserName}</code> failed to copy template disk <code>{DiskAlias}</code> to domain <code>{StorageDomainName}</code> .
2006	USER_COPIED_TEMPLATE_DISK_FINISHED_SUCCESS	Info	User <code>{UserName}</code> finished copying template disk <code>{DiskAlias}</code> to domain <code>{StorageDomainName}</code> .
2007	USER_COPIED_TEMPLATE_DISK_FINISHED_FAILURE	Error	User <code>{UserName}</code> finished with error copying template disk <code>{DiskAlias}</code> to domain <code>{StorageDomainName}</code> .
2008	USER_MOVED_VM_DISK	Info	User <code>{UserName}</code> moving disk <code>{DiskAlias}</code> to domain <code>{StorageDomainName}</code> .
2009	USER_FAILED_MOVED_VM_DISK	Error	User <code>{UserName}</code> failed to move disk <code>{DiskAlias}</code> to domain <code>{StorageDomainName}</code> .
2010	USER_MOVED_VM_DISK_FINISHED_SUCCESS	Info	User <code>{UserName}</code> finished moving disk <code>{DiskAlias}</code> to domain <code>{StorageDomainName}</code> .
2011	USER_MOVED_VM_DISK_FINISHED_FAILURE	Error	User <code>{UserName}</code> have failed to move disk <code>{DiskAlias}</code> to domain <code>{StorageDomainName}</code> .



Code	Name	Severity	Message
2012	USER_FINISHED_REMOVE_DISK_NO_DOMAIN	Info	Disk \${DiskAlias} was successfully removed (User \${UserName}).
2013	USER_FINISHED_FAILED_REMOVE_DISK_NO_DOMAIN	Warning	Failed to remove disk \${DiskAlias} (User \${UserName}).
2014	USER_FINISHED_REMOVE_DISK	Info	Disk \${DiskAlias} was successfully removed from domain \${StorageDomainName} (User \${UserName}).
2015	USER_FINISHED_FAILED_REMOVE_DISK	Warning	Failed to remove disk \${DiskAlias} from storage domain \${StorageDomainName} (User: \${UserName}).
2016	USER_ATTACH_DISK_TO_VM	Info	Disk \${DiskAlias} was successfully attached to VM \${VmName} by \${UserName}.
2017	USER_FAILED_ATTACH_DISK_TO_VM	Error	Failed to attach Disk \${DiskAlias} to VM \${VmName} (User: \${UserName}).
2018	USER_DETACH_DISK_FROM_VM	Info	Disk \${DiskAlias} was successfully detached from VM \${VmName} by \${UserName}.
2019	USER_FAILED_DETACH_DISK_FROM_VM	Error	Failed to detach Disk \${DiskAlias} from VM \${VmName} (User: \${UserName}).
2020	USER_ADD_DISK	Info	Add-Disk operation of '\${DiskAlias}' was initiated by \${UserName}.
2021	USER_ADD_DISK_FINISHED_SUCCESS	Info	The disk '\${DiskAlias}' was successfully added.
2022	USER_ADD_DISK_FINISHED_FAILURE	Error	Add-Disk operation failed to complete.
2023	USER_FAILED_ADD_DISK	Error	Add-Disk operation failed (User: \${UserName}).

Code	Name	Severity	Message
2024	USER_RUN_UNLOCK_ENTITY_SCRIPT	Info	
2025	USER_MOVE_IMAGE_GROUP_FAILED_TO_DELETE_SRC_IMAGE	Warning	Possible failure while deleting <code>\${DiskAlias}</code> from the source Storage Domain <code>\${StorageDomainName}</code> during the move operation. The Storage Domain may be manually cleaned-up from possible leftovers (User: <code>\${UserName}</code> ).
2026	USER_MOVE_IMAGE_GROUP_FAILED_TO_DELETE_DEST_IMAGE	Warning	Possible failure while clearing possible leftovers of <code>\${DiskAlias}</code> from the target Storage Domain <code>\${StorageDomainName}</code> after the move operation failed to copy the image to it properly. The Storage Domain may be manually cleaned-up from possible leftovers (User: <code>\${UserName}</code> ).
2027	USER_IMPORT_IMAGE	Info	User <code>\${UserName}</code> importing image <code>\${RepoImageName}</code> to domain <code>\${StorageDomainName}</code> .
2028	USER_IMPORT_IMAGE_FINISHED_SUCCESS	Info	User <code>\${UserName}</code> successfully imported image <code>\${RepoImageName}</code> to domain <code>\${StorageDomainName}</code> .
2029	USER_IMPORT_IMAGE_FINISHED_FAILURE	Error	User <code>\${UserName}</code> failed to import image <code>\${RepoImageName}</code> to domain <code>\${StorageDomainName}</code> .
2030	USER_EXPORT_IMAGE	Info	User <code>\${UserName}</code> exporting image <code>\${RepoImageName}</code> to domain <code>\${DestinationStorageDomainName}</code> .
2031	USER_EXPORT_IMAGE_FINISHED_SUCCESS	Info	User <code>\${UserName}</code> successfully exported image <code>\${RepoImageName}</code> to domain <code>\${DestinationStorageDomainName}</code> .

Code	Name	Severity	Message
2032	USER_EXPORT_IMAGE_FINISHED_FAILURE	Error	User \${UserName} failed to export image \${RepoImageName} to domain \${DestinationStorageDomainName}.
2033	HOT_SET_NUMBER_OF_CPUS	Info	Hotplug CPU: changed the number of CPUs on VM \${vmName} from \${previousNumberOfCpus} to \${numberOfCpus}
2034	FAILED_HOT_SET_NUMBER_OF_CPUS	Error	Failed to hot set number of CPUs to VM \${vmName}. Underlying error message: \${ErrorMessage}
2035	USER_ISCSI_BOND_HOST_RESTART_WARNING	Warning	The following Networks has been removed from the iSCSI bond \${IscsiBondName}: \${NetworkNames}. for those changes to take affect, the hosts must be moved to maintenance and activated again.
2036	ADD_DISK_INTERNAL	Info	Add-Disk operation of '\${DiskAlias}' was initiated by the system.
2037	ADD_DISK_INTERNAL_FAILURE	Info	Add-Disk operation of '\${DiskAlias}' failed to complete.
2038	USER_REMOVE_DISK_INITIATED	Info	Removal of Disk \${DiskAlias} from domain \${StorageDomainName} was initiated by \${UserName}.
2039	HOT_SET_MEMORY	Info	Hotset memory: changed the amount of memory on VM \${vmName} from \${previousMem} to \${newMem}
2040	FAILED_HOT_SET_MEMORY	Error	Failed to hot set memory to VM \${vmName}. Underlying error message: \${ErrorMessage}

Code	Name	Severity	Message
3000	USER_ADD_QUOTA	Info	Quota <code>{QuotaName}</code> has been added by <code>{UserName}</code> .
3001	USER_FAILED_ADD_QUOTA	Error	Failed to add Quota <code>{QuotaName}</code> . The operation was initiated by <code>{UserName}</code> .
3002	USER_UPDATE_QUOTA	Info	Quota <code>{QuotaName}</code> has been updated by <code>{UserName}</code> .
3003	USER_FAILED_UPDATE_QUOTA	Error	Failed to update Quota <code>{QuotaName}</code> . The operation was initiated by <code>{UserName}</code> .
3004	USER_DELETE_QUOTA	Info	Quota <code>{QuotaName}</code> has been deleted by <code>{UserName}</code> .
3005	USER_FAILED_DELETE_QUOTA	Error	Failed to delete Quota <code>{QuotaName}</code> . The operation was initiated by <code>{UserName}</code> .
3006	USER_EXCEEDED_QUOTA_VDS_GROUP_GRACE_LIMIT	Error	Cluster-Quota <code>{QuotaName}</code> limit exceeded and operation was blocked. Utilization: <code>{Utilization}</code> , Requested: <code>{Requested}</code> - Please select a different quota or contact your administrator to extend the quota.
3007	USER_EXCEEDED_QUOTA_VDS_GROUP_LIMIT	Warning	Cluster-Quota <code>{QuotaName}</code> limit exceeded and entered the grace zone. Utilization: <code>{Utilization}</code> (It is advised to select a different quota or contact your administrator to extend the quota).
3008	USER_EXCEEDED_QUOTA_VDS_GROUP_THRESHOLD	Warning	Cluster-Quota <code>{QuotaName}</code> is about to exceed. Utilization: <code>{Utilization}</code>

Code	Name	Severity	Message
3009	USER_EXCEEDED_QUOTA_STORAGE_GRACE_LIMIT	Error	Storage-Quota \${QuotaName} limit exceeded and operation was blocked. Utilization(used/requested): \${CurrentStorage}%/\${Requested}% - Please select a different quota or contact your administrator to extend the quota.
3010	USER_EXCEEDED_QUOTA_STORAGE_LIMIT	Warning	Storage-Quota \${QuotaName} limit exceeded and entered the grace zone. Utilization: \${CurrentStorage}% (It is advised to select a different quota or contact your administrator to extend the quota).
3011	USER_EXCEEDED_QUOTA_STORAGE_THRESHOLD	Warning	Storage-Quota \${QuotaName} is about to exceed. Utilization: \${CurrentStorage}%
3012	QUOTA_STORAGE_RESIZE_LOWER_THEN_CONSUMPTION	Warning	Storage-Quota \${QuotaName}: the new size set for this quota is less than current disk utilization.
3013	MISSING_QUOTA_STORAGE_PARAMETERS_PERMISSIVE_MODE	Warning	Missing Quota for Disk, proceeding since in Permissive (Audit) mode.
3014	MISSING_QUOTA_CLUSTER_PARAMETERS_PERMISSIVE_MODE	Warning	Missing Quota for VM \${VmName}, proceeding since in Permissive (Audit) mode.
3015	USER_EXCEEDED_QUOTA_VDS_GROUP_GRACE_LIMIT_PERMISSIVE_MODE	Warning	Cluster-Quota \${QuotaName} limit exceeded, proceeding since in Permissive (Audit) mode. Utilization: \${Utilization}, Requested: \${Requested} - Please select a different quota or contact your administrator to extend the quota.

Code	Name	Severity	Message
3016	USER_EXCEEDED_QUOTA_STORAGE_GRACE_LIMIT_PERMISSIVE_MODE	Warning	Storage-Quota <code>{QuotaName}</code> limit exceeded, proceeding since in Permissive (Audit) mode. Utilization(used/requested): <code>{CurrentStorage}%/{Requested}%</code> - Please select a different quota or contact your administrator to extend the quota.
4000	GLUSTER_VOLUME_CREATE	Info	Gluster Volume <code>{glusterVolumeName}</code> created on cluster <code>{vdsGroupName}</code> .
4001	GLUSTER_VOLUME_CREATE_FAILED	Error	Creation of Gluster Volume <code>{glusterVolumeName}</code> failed on cluster <code>{vdsGroupName}</code> .
4002	GLUSTER_VOLUME_OPTION_ADDED	Info	Volume Option <code>{Key}</code>
4003	GLUSTER_VOLUME_OPTION_SET_FAILED	Error	Volume Option <code>{Key}</code>
4004	GLUSTER_VOLUME_START	Info	Gluster Volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> started.
4005	GLUSTER_VOLUME_START_FAILED	Error	Could not start Gluster Volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4006	GLUSTER_VOLUME_STOP	Info	Gluster Volume <code>{glusterVolumeName}</code> stopped on cluster <code>{vdsGroupName}</code> .
4007	GLUSTER_VOLUME_STOP_FAILED	Error	Could not stop Gluster Volume <code>{glusterVolumeName}</code> on cluster <code>{vdsGroupName}</code> .
4008	GLUSTER_VOLUME_OPTIONS_RESET	Info	Volume Option <code>{Key}</code>
4009	GLUSTER_VOLUME_OPTIONS_RESET_FAILED	Error	Could not reset Gluster Volume <code>{glusterVolumeName}</code> Options on cluster <code>{vdsGroupName}</code> .

Code	Name	Severity	Message
4010	GLUSTER_VOLUME_DELETE	Info	Gluster Volume <code>{glusterVolumeName}</code> deleted on cluster <code>{vdsGroupName}</code> .
4011	GLUSTER_VOLUME_DELETE_FAILED	Error	Could not delete Gluster Volume <code>{glusterVolumeName}</code> on cluster <code>{vdsGroupName}</code> .
4012	GLUSTER_VOLUME_REBALANCE_START	Info	Gluster Volume <code>{glusterVolumeName}</code> rebalance started on cluster <code>{vdsGroupName}</code> .
4013	GLUSTER_VOLUME_REBALANCE_START_FAILED	Error	Could not start Gluster Volume <code>{glusterVolumeName}</code> rebalance on cluster <code>{vdsGroupName}</code> .
4014	GLUSTER_VOLUME_REMOVE_BRICKS	Info	Bricks removed from Gluster Volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4015	GLUSTER_VOLUME_REMOVE_BRICKS_FAILED	Error	Could not remove bricks from Gluster Volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4016	GLUSTER_VOLUME_REPLACE_BRICK_FAILED	Error	Replace Gluster Volume <code>{glusterVolumeName}</code> Brick failed on cluster <code>{vdsGroupName}</code>
4017	GLUSTER_VOLUME_REPLACE_BRICK_START	Info	Gluster Volume <code>{glusterVolumeName}</code> Replace Brick started on cluster <code>{vdsGroupName}</code> .
4018	GLUSTER_VOLUME_REPLACE_BRICK_START_FAILED	Error	Could not start Gluster Volume <code>{glusterVolumeName}</code> Replace Brick on cluster <code>{vdsGroupName}</code> .
4019	GLUSTER_VOLUME_ADD_BRICK	Info	<code>{NoOfBricks}</code> brick(s) added to volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .

Code	Name	Severity	Message
4020	GLUSTER_VOLUME_ADD_BRICK_FAILED	Error	Failed to add bricks to the Gluster Volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4021	GLUSTER_SERVER_REMOVE_FAILED	Error	Failed to remove host <code>{VdsName}</code> from Cluster <code>{VdsGroupName}</code> .
4022	GLUSTER_VOLUME_PROFILE_START	Info	Gluster Volume <code>{glusterVolumeName}</code> profiling started on cluster <code>{vdsGroupName}</code> .
4023	GLUSTER_VOLUME_PROFILE_START_FAILED	Error	Could not start profiling on gluster volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code>
4024	GLUSTER_VOLUME_PROFILE_STOP	Info	Gluster Volume <code>{glusterVolumeName}</code> profiling stopped on cluster <code>{vdsGroupName}</code> .
4025	GLUSTER_VOLUME_PROFILE_STOP_FAILED	Error	Could not stop Profiling on gluster volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4026	GLUSTER_VOLUME_CREATED_FROM_CLI	Warning	Detected new volume <code>{glusterVolumeName}</code> on cluster <code>{VdsGroupName}</code> , and added it to engine DB.
4027	GLUSTER_VOLUME_DELETED_FROM_CLI	Info	Detected deletion of volume <code>{glusterVolumeName}</code> on cluster <code>{VdsGroupName}</code> , and deleted it from engine DB.
4028	GLUSTER_VOLUME_OPTION_SET_FROM_CLI	Warning	Detected new option <code>{key}</code>
4029	GLUSTER_VOLUME_OPTION_RESET_FROM_CLI	Warning	Detected option <code>{key}</code>



Code	Name	Severity	Message
4030	GLUSTER_VOLUME_PROPERTIES_CHANGED_FROM_CLI	Warning	Detected changes in properties of volume <code>{glusterVolumeName}</code> of cluster <code>{VdsGroupName}</code> , and updated the same in engine DB.
4031	GLUSTER_VOLUME_BRICK_ADDED_FROM_CLI	Warning	Detected new brick <code>{brick}</code> on volume <code>{glusterVolumeName}</code> of cluster <code>{VdsGroupName}</code> , and added it to engine DB.
4032	GLUSTER_VOLUME_BRICK_REMOVED_FROM_CLI	Info	Detected brick <code>{brick}</code> removed from Volume <code>{glusterVolumeName}</code> of cluster <code>{VdsGroupName}</code> , and removed it from engine DB.
4033	GLUSTER_SERVER_REMOVED_FROM_CLI	Info	Detected server <code>{VdsName}</code> removed from Cluster <code>{VdsGroupName}</code> , and removed it from engine DB.
4034	GLUSTER_VOLUME_INFO_FAILED	Error	Failed to fetch gluster volume list from server <code>{VdsName}</code> .
4035	GLUSTER_COMMAND_FAILED	Error	Gluster command <code>[{Command}]</code> failed on server <code>{VdsName}</code> .
4038	GLUSTER_SERVER_REMOVE	Info	Host <code>{VdsName}</code> removed from Cluster <code>{VdsGroupName}</code> .
4039	GLUSTER_VOLUME_STARTED_FROM_CLI	Warning	Detected that Volume <code>{glusterVolumeName}</code> of Cluster <code>{VdsGroupName}</code> was started, and updated engine DB with it's new status.
4040	GLUSTER_VOLUME_STOPPED_FROM_CLI	Warning	Detected that Volume <code>{glusterVolumeName}</code> of Cluster <code>{VdsGroupName}</code> was stopped, and updated engine DB with it's new status.

Code	Name	Severity	Message
4041	GLUSTER_VOLUME_OPTION_CHANGED_FROM_CLI	Info	Detected change in value of option <code>{key}</code> from <code>{oldValue}</code> to <code>{newValue}</code> on volume <code>{glusterVolumeName}</code> of cluster <code>{VdsGroupName}</code> , and updated it to engine DB.
4042	GLUSTER_HOOK_ENABLE	Info	Gluster Hook <code>{GlusterHookName}</code> enabled on cluster <code>{VdsGroupName}</code> .
4043	GLUSTER_HOOK_ENABLE_FAILED	Error	Failed to enable Gluster Hook <code>{GlusterHookName}</code> on cluster <code>{VdsGroupName}</code> . <code>{FailureMessage}</code>
4044	GLUSTER_HOOK_ENABLE_PARTIAL	Warning	Gluster Hook <code>{GlusterHookName}</code> enabled on some of the servers on cluster <code>{VdsGroupName}</code> . <code>{FailureMessage}</code>
4045	GLUSTER_HOOK_DISABLE	Info	Gluster Hook <code>{GlusterHookName}</code> disabled on cluster <code>{VdsGroupName}</code> .
4046	GLUSTER_HOOK_DISABLE_FAILED	Error	Failed to disable Gluster Hook <code>{GlusterHookName}</code> on cluster <code>{VdsGroupName}</code> . <code>{FailureMessage}</code>
4047	GLUSTER_HOOK_DISABLE_PARTIAL	Warning	Gluster Hook <code>{GlusterHookName}</code> disabled on some of the servers on cluster <code>{VdsGroupName}</code> . <code>{FailureMessage}</code>
4048	GLUSTER_HOOK_LIST_FAILED	Error	Failed to retrieve hook list from <code>{VdsName}</code> of Cluster <code>{VdsGroupName}</code> .
4049	GLUSTER_HOOK_CONFLICT_DETECTED	Warning	Detected conflict in hook <code>{HookName}</code> of Cluster <code>{VdsGroupName}</code> .
4050	GLUSTER_HOOK_DETECTED_NEW	Info	Detected new hook <code>{HookName}</code> in Cluster <code>{VdsGroupName}</code> .

Code	Name	Severity	Message
4051	GLUSTER_HOOK_DETECTE D_DELETE	Info	Detected removal of hook \${HookName} in Cluster \${VdsGroupName}.
4052	GLUSTER_VOLUME_OPTIO N_MODIFIED	Info	Volume Option \${Key} changed to \${Value} from \${oldvalue} on \${glusterVolumeName} of cluster \${vdsGroupName}.
4053	GLUSTER_HOOK_GETCONT ENT_FAILED	Error	Failed to read content of hook \${HookName} in Cluster \${VdsGroupName}.
4054	GLUSTER_SERVICES_LIS T_FAILED	Error	Could not fetch statuses of services from server \${VdsName}. Updating statuses of all services on this server to UNKNOWN.
4055	GLUSTER_SERVICE_TYPE _ADDED_TO_CLUSTER	Info	Service type \${ServiceType} was not mapped to cluster \${VdsGroupName}. Mapped it now.
4056	GLUSTER_CLUSTER_SERV ICE_STATUS_CHANGED	Info	Status of service type \${ServiceType} changed from \${OldStatus} to \${NewStatus} on cluster \${VdsGroupName}
4057	GLUSTER_SERVICE_ADDE D_TO_SERVER	Info	Service \${ServiceName} was not mapped to server \${VdsName}. Mapped it now.
4058	GLUSTER_SERVER SERVI CE_STATUS_CHANGED	Info	Status of service \${ServiceName} on server \${VdsName} changed from \${OldStatus} to \${NewStatus}. Updating in engine now.
4059	GLUSTER_HOOK_UPDATED	Info	Gluster Hook \${GlusterHookName} updated on conflicting servers.
4060	GLUSTER_HOOK_UPDATE_ FAILED	Error	Failed to update Gluster Hook \${GlusterHookName} on conflicting servers. \${FailureMessage}

Code	Name	Severity	Message
4061	GLUSTER_HOOK_ADDED	Info	Gluster Hook <code>{GlusterHookName}</code> added on conflicting servers.
4062	GLUSTER_HOOK_ADD_FAILED	Error	Failed to add Gluster Hook <code>{GlusterHookName}</code> on conflicting servers. <code>{FailureMessage}</code>
4063	GLUSTER_HOOK_REMOVED	Info	Gluster Hook <code>{GlusterHookName}</code> removed from all servers in cluster <code>{VdsGroupName}</code> .
4064	GLUSTER_HOOK_REMOVE_FAILED	Error	Failed to remove Gluster Hook <code>{GlusterHookName}</code> from cluster <code>{VdsGroupName}</code> . <code>{FailureMessage}</code>
4065	GLUSTER_HOOK_REFRESH	Info	Refreshed gluster hooks in Cluster <code>{VdsGroupName}</code> .
4066	GLUSTER_HOOK_REFRESH_FAILED	Error	Failed to refresh gluster hooks in Cluster <code>{VdsGroupName}</code> .
4067	GLUSTER_SERVICE_STARTED	Info	<code>{servicetype}</code> service started on host <code>{VdsName}</code> of cluster <code>{VdsGroupName}</code> .
4068	GLUSTER_SERVICE_START_FAILED	Error	Could not start <code>{servicetype}</code> service on host <code>{VdsName}</code> of cluster <code>{VdsGroupName}</code> .
4069	GLUSTER_SERVICE_STOPPED	Info	<code>{servicetype}</code> services stopped on host <code>{VdsName}</code> of cluster <code>{VdsGroupName}</code> .
4070	GLUSTER_SERVICE_STOP_FAILED	Error	Could not stop <code>{servicetype}</code> service on host <code>{VdsName}</code> of cluster <code>{VdsGroupName}</code> .
4071	GLUSTER_SERVICES_LIST_NOT_FETCHED	Info	Could not fetch list of services from <code>{ServiceGroupType}</code> named <code>{ServiceGroupName}</code> .

Code	Name	Severity	Message
4072	GLUSTER_SERVICE_RESTARTED	Info	<code>{servicetype} service restarted on host {VdsName} on cluster {VdsGroupName}.</code>
4073	GLUSTER_SERVICE_RESTART_FAILED	Error	<code>Could not re-start {servicetype} service on host {VdsName} on cluster {VdsGroupName}.</code>
4074	GLUSTER_VOLUME_OPTIONS_RESET_ALL	Info	<code>All Volume Options reset on {glusterVolumeName} of cluster {vdsGroupName}.</code>
4075	GLUSTER_HOST_UUID_NOT_FOUND	Error	<code>Could not find gluster uuid of server {VdsName} on Cluster {VdsGroupName}.</code>
4076	GLUSTER_VOLUME_BRICK_ADDED	Info	<code>Brick [{brickpath}] on host [{servername}] added to volume [{glusterVolumeName}]</code>
4077	GLUSTER_CLUSTER_SERVICE_STATUS_ADDED	Info	<code>Status of service type {ServiceType} set to {NewStatus} on cluster {VdsGroupName}</code>
4078	GLUSTER_VOLUME_REBALANCE_STOP	Info	<code>Gluster Volume {glusterVolumeName} rebalance stopped of cluster {vdsGroupName}.</code>
4079	GLUSTER_VOLUME_REBALANCE_STOP_FAILED	Error	<code>Could not stop rebalance of gluster volume {glusterVolumeName} of cluster {vdsGroupName}.</code>
4080	START_REMOVING_GLUSTER_VOLUME_BRICKS	Info	<code>Started removing bricks from Volume {glusterVolumeName} of cluster {vdsGroupName}</code>
4081	START_REMOVING_GLUSTER_VOLUME_BRICKS_FAILED	Error	<code>Could not start remove bricks from Volume {glusterVolumeName} of cluster {vdsGroupName}</code>
4082	GLUSTER_VOLUME_REMOVE_BRICKS_STOP	Info	<code>Stopped removing bricks from Volume {glusterVolumeName} of cluster {vdsGroupName}</code>

Code	Name	Severity	Message
4083	GLUSTER_VOLUME_REMOVE_BRICKS_STOP_FAILED	Error	Failed to stop remove bricks from Volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code>
4084	GLUSTER_VOLUME_REMOVE_BRICKS_COMMIT	Info	Gluster volume <code>{glusterVolumeName}</code> remove bricks committed on cluster <code>{vdsGroupName}</code> . <code>{NoOfBricks}</code> brick(s) removed from volume <code>{glusterVolumeName}</code> .
4085	GLUSTER_VOLUME_REMOVE_BRICKS_COMMIT_FAILED	Error	Gluster volume <code>{glusterVolumeName}</code> remove bricks could not be committed on cluster <code>{vdsGroupName}</code>
4086	GLUSTER_BRICK_STATUS_CHANGED	Warning	Detected change in status of brick <code>{brickpath}</code> of volume <code>{glusterVolumeName}</code> from <code>{oldValue}</code> to <code>{newValue}</code> .
4087	GLUSTER_VOLUME_REBALANCE_FINISHED	Info	<code>{action}</code> <code>{status}</code> on volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4088	GLUSTER_VOLUME_MIGRATE_BRICK_DATA_FINISHED	Info	<code>{action}</code> <code>{status}</code> for brick(s) on volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> . Please review to abort or commit.
4089	GLUSTER_VOLUME_REBALANCE_START_DETECTED_FROM_CLI	Info	Detected start of rebalance on volume <code>{glusterVolumeName}</code> of Cluster <code>{VdsGroupName}</code> from CLI.
4090	START_REMOVING_GLUSTER_VOLUME_BRICKS_DETECTED_FROM_CLI	Info	Detected start of brick removal for bricks <code>{brick}</code> on volume <code>{glusterVolumeName}</code> of Cluster <code>{VdsGroupName}</code> from CLI.

Code	Name	Severity	Message
4091	GLUSTER_VOLUME_REBALANCE_NOT_FOUND_FROM_CLI	Warning	Could not find information for rebalance on volume <code>{glusterVolumeName}</code> of Cluster <code>{VdsGroupName}</code> from CLI. Marking it as unknown.
4092	REMOVE_GLUSTER_VOLUME_BRICKS_NOT_FOUND_FROM_CLI	Warning	Could not find information for remove brick on volume <code>{glusterVolumeName}</code> of Cluster <code>{VdsGroupName}</code> from CLI. Marking it as unknown.
4093	GLUSTER_VOLUME_DETAILS_REFRESH	Info	Refreshed details of the volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4094	GLUSTER_VOLUME_DETAILS_REFRESH_FAILED	Error	Failed to refresh the details of volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4095	GLUSTER_HOST_UUID_ALREADY_EXISTS	Error	Gluster UUID of host <code>{VdsName}</code> on Cluster <code>{VdsGroupName}</code> already exists.
4096	USER_FORCE_SELECTED_SPM_STOP_FAILED	Error	Failed to force select <code>{VdsName}</code> as the SPM due to a failure to stop the current SPM.
4097	GLUSTER_GEOREP_SESSION_DELETED_FROM_CLI	Warning	Detected deletion of geo-replication session <code>{geoRepSessionKey}</code> from volume <code>{glusterVolumeName}</code>
4098	GLUSTER_GEOREP_SESSION_DETECTED_FROM_CLI	Warning	Detected new geo-replication session <code>{geoRepSessionKey}</code> for volume <code>{glusterVolumeName}</code> . Adding it to engine.
4099	GLUSTER_GEOREP_SESSION_REFRESH	Info	Refreshed geo-replication sessions for volume <code>{glusterVolumeName}</code> .
4100	GLUSTER_GEOREP_SESSION_REFRESH_FAILED	Error	Failed to refresh geo-replication sessions for volume <code>{glusterVolumeName}</code> .

Code	Name	Severity	Message
4101	GEOREP_SESSION_STOP	Info	Geo-replication session on volume <code>{glusterVolumeName}</code> has been stopped.
4102	GEOREP_SESSION_STOP_FAILED	Error	Failed to stop geo-replication session on volume <code>{glusterVolumeName}</code>
4103	GEOREP_SESSION_DELETED	Info	Geo-replication session deleted on volume <code>{glusterVolumeName}</code>
4104	GEOREP_SESSION_DELETE_FAILED	Error	Failed to delete geo-replication session on volume <code>{glusterVolumeName}</code>
4105	GLUSTER_GEOREP_CONFIG_SET	Info	Configuration <code>{key}</code> has been set to <code>{value}</code> on the geo-rep session <code>{geoRepSessionKey}</code> .
4106	GLUSTER_GEOREP_CONFIG_SET_FAILED	Error	Failed to set the configuration <code>{key}</code> to <code>{value}</code> on geo-rep session <code>{geoRepSessionKey}</code> .
4107	GLUSTER_GEOREP_CONFIG_LIST	Info	Refreshed configuration options for geo-replication session <code>{geoRepSessionKey}</code>
4108	GLUSTER_GEOREP_CONFIG_LIST_FAILED	Error	Failed to refresh configuration options for geo-replication session <code>{geoRepSessionKey}</code>
4109	GLUSTER_GEOREP_CONFIG_SET_DEFAULT	Info	Configuration of <code>{key}</code> of session <code>{geoRepSessionKey}</code> reset to its default value .
4110	GLUSTER_GEOREP_CONFIG_SET_DEFAULT_FAILED	Error	Failed to set <code>{key}</code> of session <code>{geoRepSessionKey}</code> to its default value.
4111	GLUSTER_VOLUME_SNAPSHOT_HOT_DELETED	Info	Gluster volume snapshot <code>{snapname}</code> deleted.
4112	GLUSTER_VOLUME_SNAPSHOT_HOT_DELETE_FAILED	Error	Failed to delete gluster volume snapshot <code>{snapname}</code> .



Code	Name	Severity	Message
4113	GLUSTER_VOLUME_ALL_S NAPSHOTS_DELETED	Info	Deleted all the gluster volume snapshots for the volume <code>\${glusterVolumeName}</code> of cluster <code>\${vdsGroupName}</code> .
4114	GLUSTER_VOLUME_ALL_S NAPSHOTS_DELETE_FAILED	Error	Failed to delete all the gluster volume snapshots for the volume <code>\${glusterVolumeName}</code> of cluster <code>\${vdsGroupName}</code> .
4115	GLUSTER_VOLUME_SNAPS HOT_ACTIVATED	Info	Activated the gluster volume snapshot <code>\${snapname}</code> on volume <code>\${glusterVolumeName}</code> of cluster <code>\${vdsGroupName}</code> .
4116	GLUSTER_VOLUME_SNAPS HOT_ACTIVATE_FAILED	Error	Failed to activate the gluster volume snapshot <code>\${snapname}</code> on volume <code>\${glusterVolumeName}</code> of cluster <code>\${vdsGroupName}</code> .
4117	GLUSTER_VOLUME_SNAPS HOT_DEACTIVATED	Info	De-activated the gluster volume snapshot <code>\${snapname}</code> on volume <code>\${glusterVolumeName}</code> of cluster <code>\${vdsGroupName}</code> .
4118	GLUSTER_VOLUME_SNAPS HOT_DEACTIVATE_FAILED	Error	Failed to de-activate gluster volume snapshot <code>\${snapname}</code> on volume <code>\${glusterVolumeName}</code> of cluster <code>\${vdsGroupName}</code> .
4119	GLUSTER_VOLUME_SNAPS HOT_RESTORED	Info	Restored the volume <code>\${glusterVolumeName}</code> of cluster <code>\${vdsGroupName}</code> to the state of gluster volume snapshot <code>\${snapname}</code> .
4120	GLUSTER_VOLUME_SNAPS HOT_RESTORE_FAILED	Error	Failed to restore the volume <code>\${glusterVolumeName}</code> of cluster <code>\${vdsGroupName}</code> to the state of gluster volume snapshot <code>\${snapname}</code> .
4121	GLUSTER_VOLUME_SNAPS HOT_CONFIG_UPDATED	Info	Updated Gluster volume snapshot configuration(s).

Code	Name	Severity	Message
4122	GLUSTER_VOLUME_SNAPS_HOT_CONFIG_UPDATE_FAILED	Error	Failed to update gluster volume snapshot configuration(s).
4123	GLUSTER_VOLUME_SNAPS_HOT_CONFIG_UPDATE_FAILED_PARTIALLY	Error	Failed to update gluster volume snapshot configuration(s) <code>\${failedSnapshotConfigs}</code> .
4124	NEW_STORAGE_DEVICE_DETECTED	Info	Found new storage device <code>\${storageDevice}</code> on host <code>\${VdsName}</code> , and added it to engine DB."
4125	STORAGE_DEVICE_REMOVED_FROM_THE_HOST	Info	Detected deletion of storage device <code>\${storageDevice}</code> on host <code>\${VdsName}</code> , and deleting it from engine DB."
4126	SYNC_STORAGE_DEVICES_IN_HOST	Info	Manually synced the storage devices from host <code>\${VdsName}</code>
4127	SYNC_STORAGE_DEVICES_IN_HOST_FAILED	Error	Failed to sync storage devices from host <code>\${VdsName}</code>
4128	GEOREP_OPTION_SET_FROM_CLI	Warning	Detected new option <code>\${key}</code>
4129	GEOREP_OPTION_CHANGED_FROM_CLI	Warning	Detected change in value of option <code>\${key}</code> from <code>\${oldValue}</code> to <code>\${value}</code> for geo-replication session on volume <code>\${glusterVolumeName}</code> of cluster <code>\${VdsGroupName}</code> , and updated it to engine.
4130	GLUSTER_MASTER_VOLUME_STOP_FAILED_DURING_SNAPSHOT_RESTORE	Error	Could not stop master volume <code>\${glusterVolumeName}</code> of cluster <code>\${vdsGroupName}</code> during snapshot restore.
4131	GLUSTER_MASTER_VOLUME_SNAPSHOT_RESTORE_FAILED	Error	Could not restore master volume <code>\${glusterVolumeName}</code> of cluster <code>\${vdsGroupName}</code> .
4132	GLUSTER_VOLUME_SNAPSHOT_CREATED	Info	Snapshot <code>\${snapname}</code> created for volume <code>\${glusterVolumeName}</code> of cluster <code>\${vdsGroupName}</code> .

Code	Name	Severity	Message
4133	GLUSTER_VOLUME_SNAPS HOT_CREATE_FAILED	Error	Could not create snapshot for volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4134	GLUSTER_VOLUME_SNAPS HOT_SCHEDULED	Info	Snapshots scheduled on volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4135	GLUSTER_VOLUME_SNAPS HOT_SCHEDULE_FAILED	Error	Failed to schedule snapshots on the volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4136	GLUSTER_VOLUME_SNAPS HOT_RESCHEDULED	Info	Rescheduled snapshots on volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4137	GLUSTER_VOLUME_SNAPS HOT_RESCHEDULE_FAILED	Error	Failed to reschedule snapshots on volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> .
4138	CREATE_GLUSTER_BRICK	Info	Brick <code>{brickName}</code> created successfully on host <code>{vdsName}</code> of cluster <code>{vdsGroupName}</code> .
4139	CREATE_GLUSTER_BRICK_FAILED	Error	Failed to create brick <code>{brickName}</code> on host <code>{vdsName}</code> of cluster <code>{vdsGroupName}</code> .
4140	GLUSTER_GEO_REP_PUB_KEY_FETCH_FAILED	Error	Failed to fetch public keys.
4141	GLUSTER_GET_PUB_KEY	Info	Public key fetched.
4142	GLUSTER_GEOREP_PUBLIC_KEY_WRITE_FAILED	Error	Failed to write public keys to <code>{VdsName}</code>
4143	GLUSTER_WRITE_PUBLIC_KEYS	Info	Public keys written to <code>{VdsName}</code>
4144	GLUSTER_GEOREP_SETUP_MOUNT_BROKER_FAILED	Error	Failed to setup geo-replication mount broker for user <code>{geoRepUserName}</code> on the slave volume <code>{geoRepSlaveVolumeName}</code> .

Code	Name	Severity	Message
4145	GLUSTER_SETUP_GEOREP_MOUNT_BROKER	Info	Geo-replication mount broker has been setup for user <code>{geoRepUserName}</code> on the slave volume <code>{geoRepSlaveVolumeName}</code> .
4146	GLUSTER_GEOREP_SESSION_CREATE_FAILED	Error	Failed to create geo-replication session between master volume : <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> and slave volume : <code>{geoRepSlaveVolumeName}</code> for the user <code>{geoRepUserName}</code> .
4147	CREATE_GLUSTER_VOLUME_GEOREP_SESSION	Info	Created geo-replication session between master volume : <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> and slave volume : <code>{geoRepSlaveVolumeName}</code> for the user <code>{geoRepUserName}</code> .
4148	GLUSTER_VOLUME_SNAPSHOT_SOFT_LIMIT_REACHED	Info	Gluster Volume Snapshot soft limit reached for the volume <code>{glusterVolumeName}</code> on cluster <code>{vdsGroupName}</code> .
4149	HOST_FEATURES_INCOMPATIBLE_WITH_CLUSTER	Error	Host <code>{VdsName}</code> does not comply with the list of features supported by cluster <code>{VdsGroupName}</code> . <code>{UnsupportedFeature}</code> is not supported by the Host
4150	GLUSTER_VOLUME_SNAPSHOT_SCHEDULE_DELETED	Info	Snapshot schedule deleted for volume <code>{glusterVolumeName}</code> of <code>{vdsGroupName}</code> .
4151	GLUSTER_BRICK_STATUS_DOWN	Info	Status of brick <code>{brickpath}</code> of volume <code>{glusterVolumeName}</code> on cluster <code>{VdsGroupName}</code> is down.

Code	Name	Severity	Message
4152	GLUSTER_VOLUME_SNAPS HOT_DETECTED_NEW	Info	Found new gluster volume snapshot <code>{snapname}</code> for volume <code>{glusterVolumeName}</code> on cluster <code>{VdsGroupName}</code> , and added it to engine DB."
4153	GLUSTER_VOLUME_SNAPS HOT_DELETED_FROM_CLI	Info	Detected deletion of gluster volume snapshot <code>{snapname}</code> for volume <code>{glusterVolumeName}</code> on cluster <code>{VdsGroupName}</code> , and deleting it from engine DB."
4154	GLUSTER_VOLUME_SNAPS HOT_CLUSTER_CONFIG_DE TECTED_NEW	Info	Found new gluster volume snapshot configuration <code>{snapConfigName}</code> with value <code>{snapConfigValue}</code> on cluster <code>{VdsGroupName}</code> , and added it to engine DB."
4155	GLUSTER_VOLUME_SNAPS HOT_VOLUME_CONFIG_DE TECTED_NEW	Info	Found new gluster volume snapshot configuration <code>{snapConfigName}</code> with value <code>{snapConfigValue}</code> for volume <code>{glusterVolumeName}</code> on cluster <code>{VdsGroupName}</code> , and added it to engine DB."
4156	GLUSTER_VOLUME_SNAPS HOT_HARD_LIMIT_REACH ED	Info	Gluster Volume Snapshot hard limit reached for the volume <code>{glusterVolumeName}</code> on cluster <code>{vdsGroupName}</code> .
4157	GLUSTER_CLI_SNAPSHOT _SCHEDULE_DISABLE_FA ILED	Error	Failed to disable gluster CLI based snapshot schedule on cluster <code>{vdsGroupName}</code> .
4158	GLUSTER_CLI_SNAPSHOT _SCHEDULE_DISABLED	Info	Disabled gluster CLI based scheduling successfully on cluster <code>{vdsGroupName}</code> .
4159	SET_UP_PASSWORDLESS_ SSH	Info	Password-less SSH has been setup for user <code>{geoRepUserName}</code> on the nodes of remote volume <code>{geoRepSlaveVolumeName}</code> from the nodes of the volume <code>{glusterVolumeName}</code> .

Code	Name	Severity	Message
4160	SET_UP_PASSWORDLESS_SSH_FAILED	Error	Failed to setup Passwordless ssh for user <code>{geoRepUserName}</code> on the nodes of remote volume <code>{geoRepSlaveVolumeName}</code> from the nodes of the volume <code>{glusterVolumeName}</code> .
4436	GLUSTER_SERVER_ADD_FAILED	Error	Failed to add host <code>{VdsName}</code> into Cluster <code>{VdsGroupName}</code> .
4437	GLUSTER_SERVERS_LIST_FAILED	Error	Failed to fetch gluster peer list from server <code>{VdsName}</code> on Cluster <code>{VdsGroupName}</code> .
4595	GLUSTER_VOLUME_GEO_REP_START_FAILED_EXCEPTION	Error	Failed to start geo-replication session on volume <code>{glusterVolumeName}</code>
4596	GLUSTER_VOLUME_GEO_REP_START	Info	Geo-replication session on volume <code>{glusterVolumeName}</code> has been started.
4597	GLUSTER_VOLUME_GEO_REP_PAUSE_FAILED	Error	Failed to pause geo-replication session on volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code>
4598	GLUSTER_VOLUME_GEO_REP_RESUME_FAILED	Error	Failed to resume geo-replication session on volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code>
4599	GLUSTER_VOLUME_GEO_REP_RESUME	Info	Geo-replication session on volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> has been resumed.
4600	GLUSTER_VOLUME_GEO_REP_PAUSE	Info	Geo-replication session on volume <code>{glusterVolumeName}</code> of cluster <code>{vdsGroupName}</code> has been paused.
9000	VDS_ALERT_FENCE_IS_NOT_CONFIGURED	Info	Failed to verify Power Management configuration for Host <code>{VdsName}</code> .

Code	Name	Severity	Message
9001	VDS_ALERT_FENCE_TEST_FAILED	Info	Power Management test failed for Host <code>{VdsName}</code> . <code>{Reason}</code>
9002	VDS_ALERT_FENCE_OPERATION_FAILED	Info	Failed to power fence host <code>{VdsName}</code> . Please check the host status and it's power management settings, and then manually reboot it and click "Confirm Host Has Been Rebooted"
9003	VDS_ALERT_FENCE_OPERATION_SKIPPED	Info	Host <code>{VdsName}</code> became non responsive. It has no power management configured. Please check the host status, manually reboot it, and click "Confirm Host Has Been Rebooted"
9004	VDS_ALERT_FENCE_NO_PROXY_HOST	Info	There is no other host in the data center that can be used to test the power management settings.
9005	VDS_ALERT_FENCE_STATUS_VERIFICATION_FAILED	Info	Failed to verify Host <code>{Host}</code> <code>{Status}</code> status, Please <code>{Status}</code> Host <code>{Host}</code> manually.
9006	CANNOT_HIBERNATE_RUNNING_VMS_AFTER_CLUSTER_CPU_UPGRADE	Warning	Hibernation of VMs after CPU upgrade of Cluster <code>{VdsGroup}</code> is not supported. Please stop and restart those VMs in case you wish to hibernate them
9007	VDS_ALERT_SECONDARY_AGENT_USED_FOR_FENCE_OPERATION	Info	Secondary fence agent was used to <code>{Operation}</code> Host <code>{VdsName}</code>
9008	VDS_HOST_NOT_RESPONDING_CONNECTING	Warning	Host <code>{VdsName}</code> is not responding. It will stay in Connecting state for a grace period of <code>{Seconds}</code> seconds and after that an attempt to fence the host will be issued.

Code	Name	Severity	Message
9009	VDS_ALERT_PM_HEALTH_CHECK_FENCE_AGENT_NO_N_RESPONSIVE	Info	Health check on Host <code>{VdsName}</code> indicates that Fence-Agent <code>{AgentId}</code> is non-responsive.
9010	VDS_ALERT_PM_HEALTH_CHECK_START_MIGHT_FAIL	Info	Health check on Host <code>{VdsName}</code> indicates that future attempts to Start this host using Power-Management are expected to fail.
9011	VDS_ALERT_PM_HEALTH_CHECK_STOP_MIGHT_FAIL	Info	Health check on Host <code>{VdsName}</code> indicates that future attempts to Stop this host using Power-Management are expected to fail.
9012	VDS_ALERT_PM_HEALTH_CHECK_RESTART_MIGHT_FAIL	Info	Health check on Host <code>{VdsName}</code> indicates that future attempts to Restart this host using Power-Management are expected to fail.
9013	VDS_ALERT_FENCE_OPERATION_SKIPPED_BROKEN_CONNECTIVITY	Info	Host <code>{VdsName}</code> became non responsive and was not restarted due to Fencing Policy: <code>{Percents}</code> percents of the Hosts in the Cluster have connectivity issues.
9014	VDS_ALERT_NOT_RESTARTED_DUE_TO_POLICY	Info	Host <code>{VdsName}</code> became non responsive and was not restarted due to the Cluster Fencing Policy.
9015	VDS_ALERT_FENCE_DISABLED_BY_CLUSTER_POLICY	Info	Host <code>{VdsName}</code> became Non Responsive and was not restarted due to disabled fencing in the Cluster Fencing Policy.
9016	FENCE_DISABLED_IN_CLUSTER_POLICY	Info	Fencing is disabled in Fencing Policy of the Cluster <code>{VdsGroupName}</code> , so HA VMs running on a non-responsive host will not be restarted elsewhere.



Code	Name	Severity	Message
9017	FENCE_OPERATION_STARTED	Info	Power management \${Action} of Host \${VdsName} initiated.
9018	FENCE_OPERATION_SUCCEEDED	Info	Power management \${Action} of Host \${VdsName} succeeded.
9019	FENCE_OPERATION_FAILED	Error	Power management \${Action} of Host \${VdsName} failed.
9020	FENCE_OPERATION_USING_AGENT_AND_PROXY_STARTED	Info	Executing power management \${Action} on Host \${Host} using Proxy Host \${ProxyHost} and Fence Agent \${AgentType}:\${AgentIp}.
9021	FENCE_OPERATION_USING_AGENT_AND_PROXY_FAILED	Warning	Execution of power management \${Action} on Host \${Host} using Proxy Host \${ProxyHost} and Fence Agent \${AgentType}:\${AgentIp} failed.
9022	ENGINE_NO_FULL_BACKUP	Info	There is no full backup available, please run engine-backup to prevent data loss in case of corruption.
9023	ENGINE_NO_WARM_BACKUP	Info	Full backup was created on \${Date} and it's too old. Please run engine-backup to prevent data loss in case of corruption.
9024	ENGINE_BACKUP_STARTED	Normal	Engine backup started.
9025	ENGINE_BACKUP_COMPLETED	Normal	Engine backup completed successfully.
9026	ENGINE_BACKUP_FAILED	Error	Engine backup failed.
9500	TASK_STOPPING_ASYNC_TASK	Info	Stopping async task \${CommandName} that started at \${Date}

Code	Name	Severity	Message
9501	TASK_CLEARING_ASYNC_TASK	Info	Clearing asynchronous task <code>{CommandName}</code> that started at <code>{Date}</code>
9506	USER_ACTIVATE_STORAGE_DOMAIN_FAILED_ASYNC	Warning	Failed to autorecover Storage Domain <code>{StorageDomainName}</code> (Data Center <code>{StoragePoolName}</code> ).
9600	IMPORTEXPOR_IMPORT_VM_INVALID_INTERFACES	Warning	While importing VM <code>{EntityName}</code> , the Network/s <code>{Networks}</code> were found to be Non-VM Networks or do not exist in Cluster or are missing a suitable VM network interface profile. Network Name was not set in the Interface/s <code>{Interfaces}</code> .
9601	VDS_SET_NON_OPERATIONAL_VM_NETWORK_IS_BRIDGELESS	Warning	Host <code>{VdsName}</code> does not comply with the cluster <code>{VdsGroupName}</code> networks, the following VM networks are non-VM networks: <code>'{Networks}'</code>
9602	HA_VM_FAILED	Error	Highly Available VM <code>{VmName}</code> failed. It will be restarted automatically.
9603	HA_VM_RESTART_FAILED	Error	Restart of the Highly Available VM <code>{VmName}</code> failed.
9604	EMULATED_MACHINES_INCOMPATIBLE_WITH_CLUSTER	Warning	Host <code>{VdsName}</code> does not comply with the cluster <code>{VdsGroupName}</code> emulated machine. The cluster emulated machine is <code>{clusterEmulatedMachines}</code> and the host emulated machines are <code>{hostSupportedEmulatedMachines}</code> .

Code	Name	Severity	Message
9605	EXCEEDED_MAXIMUM_NUM_OF_RESTART_HA_VM_ATTEMPTS	Error	Highly Available VM <code>{VmName}</code> could not be restarted automatically, exceeded the maximum number of attempts.
9606	IMPORTEXPOR_T_VM_INVALID_INTERFACES	Warning	While previewing a snapshot of VM <code>{EntityName}</code> , the Network/s <code>{Networks}</code> were found to be Non-VM Networks or do not exist in Cluster. Network Name was not set in the Interface/s <code>{Interfaces}</code> .
9607	ADD_VM_FROM_SNAPSHOT_INVALID_INTERFACES	Warning	While adding vm <code>{EntityName}</code> from snapshot, the Network/s <code>{Networks}</code> were found to be Non-VM Networks or do not exist in Cluster. Network Name was not set in the Interface/s <code>{Interfaces}</code> .
9608	RNG_SOURCES_INCOMPATIBLE_WITH_CLUSTER	Warning	Host <code>{VdsName}</code> does not comply with the cluster <code>{VdsGroupName}</code> Random Number Generator sources. The Hosts supported sources are: <code>{hostSupportedRngSources}</code> ; and the cluster requirements are: <code>{clusterRequiredRngSources}</code> .
9609	EMULATED_MACHINES_INCOMPATIBLE_WITH_CLUSTER_LEVEL	Warning	Host <code>{VdsName}</code> does not comply with the cluster <code>{VdsGroupName}</code> emulated machines. The current cluster compatibility level supports <code>{clusterEmulatedMachines}</code> and the host emulated machines are <code>{hostSupportedEmulatedMachines}</code> .

Code	Name	Severity	Message
9610	MIXING_RHEL_VERSIONS_IN_CLUSTER	Warning	Not possible to mix RHEL 6.x and 7.x hosts in one cluster. Tried adding <code>\${addingRhel}</code> host to a cluster with <code>\${previousRhel}</code> hosts.
9700	DWH_STARTED	Info	ETL Service started.
9701	DWH_STOPPED	Info	ETL Service stopped.
9704	DWH_ERROR	Error	Error in ETL Service.
9801	EXTERNAL_EVENT_NORMAL	Info	An external event with NORMAL severity has been added.
9802	EXTERNAL_EVENT_WARNING	Warning	An external event with WARNING severity has been added.
9803	EXTERNAL_EVENT_ERROR	Error	An external event with ERROR severity has been added.
9804	EXTERNAL_ALERT	Info	An external event with ALERT severity has been added.
9901	WATCHDOG_EVENT	Warning	Watchdog event ( <code>\${wdaction}</code> ) triggered on <code>\${VmName}</code> at <code>\${wdevent}</code> (host time).
9910	USER_ADD_CLUSTER_POLICY	Info	Scheduling Policy <code>\${ClusterPolicy}</code> was added. (User: <code>\${UserName}</code> )
9911	USER_FAILED_TO_ADD_CLUSTER_POLICY	Error	Failed to add Scheduling Policy: <code>\${ClusterPolicy}</code> . (User: <code>\${UserName}</code> )
9912	USER_UPDATE_CLUSTER_POLICY	Info	Scheduling Policy <code>\${ClusterPolicy}</code> was updated. (User: <code>\${UserName}</code> )
9913	USER_FAILED_TO_UPDATE_CLUSTER_POLICY	Error	Failed to update Scheduling Policy: <code>\${ClusterPolicy}</code> . (User: <code>\${UserName}</code> )

Code	Name	Severity	Message
9914	USER_REMOVE_CLUSTER_POLICY	Info	Scheduling Policy <code>{ClusterPolicy}</code> was removed. (User: <code>{UserName}</code> )
9915	USER_FAILED_TO_REMOVE_CLUSTER_POLICY	Error	Failed to remove Scheduling Policy: <code>{ClusterPolicy}</code> . (User: <code>{UserName}</code> )
9920	FAILED_TO_CONNECT_TO_SCHEDULER_PROXY	Error	Failed to connect to external scheduler proxy. External filters, scoring functions and load balancing will not be performed.
10000	VDS_UNTRUSTED	Error	Host <code>{VdsName}</code> was set to non-operational. Host is not trusted by the attestation service.
10001	USER_UPDATE_VM_FROM_TRUSTED_TO_UNTRUSTED	Warning	The VM <code>{VmName}</code> was updated from trusted cluster to non-trusted cluster.
10002	USER_UPDATE_VM_FROM_UNTRUSTED_TO_TRUSTED	Warning	The VM <code>{VmName}</code> was updated from non-trusted cluster to trusted cluster.
10003	IMPORTEXPOR_IMPORT_VM_FROM_TRUSTED_TO_UNTRUSTED	Warning	The VM <code>{VmName}</code> was created in trusted cluster and imported into a non-trusted cluster
10004	IMPORTEXPOR_IMPORT_VM_FROM_UNTRUSTED_TO_TRUSTED	Warning	The VM <code>{VmName}</code> was created in non-trusted cluster and imported into a trusted cluster
10005	USER_ADD_VM_FROM_TRUSTED_TO_UNTRUSTED	Warning	The VM <code>{VmName}</code> was created in an untrusted cluster. It was originated from the Template <code>{VmTemplateName}</code> which was created in a trusted cluster.

Code	Name	Severity	Message
10006	USER_ADD_VM_FROM_UNTRUSTED_TO_TRUSTED	Warning	The VM <code>\${VmName}</code> was created in a trusted cluster. It was originated from the Template <code>\${VmTemplateName}</code> which was created in an untrusted cluster.
10007	IMPORTEXPOR_IMPORT_TEMPLATE_FROM_TRUSTED_TO_UNTRUSTED	Warning	The Template <code>\${VmTemplateName}</code> was created in trusted cluster and imported into a non-trusted cluster
10008	IMPORTEXPOR_IMPORT_TEMPLATE_FROM_UNTRUSTED_TO_TRUSTED	Warning	The Template <code>\${VmTemplateName}</code> was created in non-trusted cluster and imported into a trusted cluster
10009	USER_ADD_VM_TEMPLATE_FROM_TRUSTED_TO_UNTRUSTED	Warning	The non-trusted Template <code>\${VmTemplateName}</code> was created from trusted Vm <code>\${VmName}</code> .
10010	USER_ADD_VM_TEMPLATE_FROM_UNTRUSTED_TO_TRUSTED	Warning	The trusted template <code>\${VmTemplateName}</code> was created from non-trusted Vm <code>\${VmName}</code> .
10011	USER_UPDATE_VM_TEMPLATE_FROM_TRUSTED_TO_UNTRUSTED	Warning	The Template <code>\${VmTemplateName}</code> was updated from trusted cluster to non-trusted cluster.
10012	USER_UPDATE_VM_TEMPLATE_FROM_UNTRUSTED_TO_TRUSTED	Warning	The Template <code>\${VmTemplateName}</code> was updated from non-trusted cluster to trusted cluster.
10100	USER_ADDED_NETWORK_QOS	Info	Network QoS <code>\${QosName}</code> was added. (User: <code>\${UserName}</code> )
10101	USER_FAILED_TO_ADD_NETWORK_QOS	Error	Failed to add Network QoS <code>\${QosName}</code> . (User: <code>\${UserName}</code> )
10102	USER_REMOVED_NETWORK_QOS	Info	Network QoS <code>\${QosName}</code> was removed. (User: <code>\${UserName}</code> )

Code	Name	Severity	Message
10103	USER_FAILED_TO_REMOVE_NETWORK_QOS	Error	Failed to remove Network QoS \${QoSName}. (User: \${UserName})
10104	USER_UPDATED_NETWORK_QOS	Info	Network QoS \${QoSName} was updated. (User: \${UserName})
10105	USER_FAILED_TO_UPDATE_NETWORK_QOS	Error	Failed to update Network QoS \${QoSName}. (User: \${UserName})
10110	USER_ADDED_QOS	Info	QoS \${QoSName} was added. (User: \${UserName})
10111	USER_FAILED_TO_ADD_QOS	Error	Failed to add QoS \${QoSName}. (User: \${UserName})
10112	USER_REMOVED_QOS	Info	QoS \${QoSName} was removed. (User: \${UserName})
10113	USER_FAILED_TO_REMOVE_QOS	Error	Failed to remove QoS \${QoSName}. (User: \${UserName})
10114	USER_UPDATED_QOS	Info	QoS \${QoSName} was updated. (User: \${UserName})
10115	USER_FAILED_TO_UPDATE_QOS	Error	Failed to update QoS \${QoSName}. (User: \${UserName})
10120	USER_ADDED_DISK_PROFILE	Info	Disk Profile \${ProfileName} was successfully added (User: \${UserName}).
10121	USER_FAILED_TO_ADD_DISK_PROFILE	Error	Failed to add Disk Profile (User: \${UserName}).
10122	USER_REMOVED_DISK_PROFILE	Info	Disk Profile \${ProfileName} was successfully removed (User: \${UserName}).
10123	USER_FAILED_TO_REMOVE_DISK_PROFILE	Error	Failed to remove Disk Profile \${ProfileName} (User: \${UserName}).

Code	Name	Severity	Message
10124	USER_UPDATED_DISK_PROFILE	Info	Disk Profile <code>{ProfileName}</code> was successfully updated (User: <code>{UserName}</code> ).
10125	USER_FAILED_TO_UPDATE_DISK_PROFILE	Error	Failed to update Disk Profile <code>{ProfileName}</code> (User: <code>{UserName}</code> ).
10130	USER_ADDED_CPU_PROFILE	Info	CPU Profile <code>{ProfileName}</code> was successfully added (User: <code>{UserName}</code> ).
10131	USER_FAILED_TO_ADD_CPU_PROFILE	Error	Failed to add CPU Profile (User: <code>{UserName}</code> ).
10132	USER_REMOVED_CPU_PROFILE	Info	CPU Profile <code>{ProfileName}</code> was successfully removed (User: <code>{UserName}</code> ).
10133	USER_FAILED_TO_REMOVE_CPU_PROFILE	Error	Failed to remove CPU Profile <code>{ProfileName}</code> (User: <code>{UserName}</code> ).
10134	USER_UPDATED_CPU_PROFILE	Info	CPU Profile <code>{ProfileName}</code> was successfully updated (User: <code>{UserName}</code> ).
10135	USER_FAILED_TO_UPDATE_CPU_PROFILE	Error	Failed to update CPU Profile <code>{ProfileName}</code> (User: <code>{UserName}</code> ).
10200	USER_UPDATED_MOM_POLICIES	Info	Mom policy was updated on host <code>{VdsName}</code> .
10201	USER_FAILED_TO_UPDATE_MOM_POLICIES	Warning	Mom policy could not be updated on host <code>{VdsName}</code> .
10250	PM_POLICY_UP_TO_MAINTENANCE	Info	Host <code>{Host}</code> is not currently needed, activating maintenance mode in preparation for shutdown.
10251	PM_POLICY_MAINTENANCE_TO_DOWN	Info	Host <code>{Host}</code> is not currently needed, shutting down.



Code	Name	Severity	Message
10252	PM_POLICY_TO_UP	Info	Reactivating host \${Host} according to the current power management policy.
10300	CLUSTER_ALERT_HA_RESERVATION	Info	Cluster \${ClusterName} failed the HA Reservation check, HA VMs on host(s): \${Hosts} will fail to migrate in case of a failover, consider adding resources or shutting down unused VMs.
10301	CLUSTER_ALERT_HA_RESERVATION_DOWN	Info	Cluster \${ClusterName} passed the HA Reservation check.
10350	USER_ADDED_AFFINITY_GROUP	Info	Affinity Group \${affinityGroupName} was added. (User: \${UserName})
10351	USER_FAILED_TO_ADD_AFFINITY_GROUP	Error	Failed to add Affinity Group \${affinityGroupName}. (User: \${UserName})
10352	USER_UPDATED_AFFINITY_GROUP	Info	Affinity Group \${affinityGroupName} was updated. (User: \${UserName})
10353	USER_FAILED_TO_UPDATE_AFFINITY_GROUP	Error	Failed to update Affinity Group \${affinityGroupName}. (User: \${UserName})
10354	USER_REMOVED_AFFINITY_GROUP	Info	Affinity Group \${affinityGroupName} was removed. (User: \${UserName})
10355	USER_FAILED_TO_REMOVE_AFFINITY_GROUP	Error	Failed to remove Affinity Group \${affinityGroupName}. (User: \${UserName})
10400	ISCSI_BOND_ADD_SUCCESS	Info	iSCSI bond '\${IscsiBondName}' was successfully created in Data Center '\${StoragePoolName}'.
10401	ISCSI_BOND_ADD_FAILED	Error	Failed to create iSCSI bond '\${IscsiBondName}' in Data Center '\${StoragePoolName}'.

Code	Name	Severity	Message
10402	ISCSI_BOND_EDIT_SUCCESS	Info	iSCSI bond <code>'\${IscsiBondName}'</code> was successfully updated.
10403	ISCSI_BOND_EDIT_FAILED	Error	Failed to update iSCSI bond <code>'\${IscsiBondName}'</code> .
10404	ISCSI_BOND_REMOVE_SUCCESS	Info	iSCSI bond <code>'\${IscsiBondName}'</code> was removed from Data Center <code>'\${StoragePoolName}'</code>
10405	ISCSI_BOND_REMOVE_FAILED	Error	Failed to remove iSCSI bond <code>'\${IscsiBondName}'</code> from Data Center <code>'\${StoragePoolName}'</code>
10406	ISCSI_BOND_EDIT_SUCCESS_WITH_WARNING	Warning	iSCSI bond <code>'\${IscsiBondName}'</code> was successfully updated but some of the hosts encountered connection issues.
10407	ISCSI_BOND_ADD_SUCCESS_WITH_WARNING	Warning	iSCSI bond <code>'\${IscsiBondName}'</code> was successfully created in Data Center <code>'\${StoragePoolName}'</code> but some of the hosts encountered connection issues.
10450	USER_SET_HOSTED_ENGINE_MAINTENANCE	Info	Hosted Engine HA maintenance mode was updated on host <code>\${VdsName}</code> .
10451	USER_FAILED_TO_SET_HOSTED_ENGINE_MAINTENANCE	Error	Hosted Engine HA maintenance mode could not be updated on host <code>\${VdsName}</code> .
10452	VDS_MAINTENANCE_MANUAL_HA	Warning	Host <code>\${VdsName}</code> was switched to Maintenance mode, but Hosted Engine HA maintenance could not be enabled. Please enable it manually.

Code	Name	Severity	Message
10453	USER_VDS_MAINTENANCE_MANUAL_HA	Warning	Host \${VdsName} was switched to Maintenance mode by \${UserName}, but Hosted Engine HA maintenance could not be enabled. Please enable it manually.
10454	VDS_ACTIVATE_MANUAL_HA	Warning	Host \${VdsName} was activated by \${UserName}, but the Hosted Engine HA service may still be in maintenance mode. If necessary, please correct this manually.
10455	VDS_ACTIVATE_MANUAL_HA_ASYNC	Warning	Host \${VdsName} was autorecovered, but the Hosted Engine HA service may still be in maintenance mode. If necessary, please correct this manually.
10456	HOSTED_ENGINE_VM_IMPORT_SUCCEEDED	Normal	Hosted Engine VM was imported successfully
10460	HOSTED_ENGINE_DOMAIN_IMPORT_SUCCEEDED	Normal	Hosted Engine storage domain imported successfully
10461	HOSTED_ENGINE_DOMAIN_IMPORT_FAILED	Error	Failed to import the Hosted Engine Storage Domain
10500	EXTERNAL_SCHEDULER_PLUGIN_ERROR	Error	Running the external scheduler plugin '\${PluginName}' failed: '\${ErrorMessage}'
10501	EXTERNAL_SCHEDULER_ERROR	Error	Running the external scheduler failed: '\${ErrorMessage}'
10550	VM_SLA_POLICY	Info	VM \${VmName} SLA Policy was set. CPU limit is set to \${cpuLimit}
10551	FAILED_VM_SLA_POLICY	Error	Failed to set SLA Policy to VM \${VmName}. Underlying error message: \${ErrorMessage}

Code	Name	Severity	Message
10600	USER_REMOVE_AUDIT_LOG	Info	Event list message <code>\${AuditLogId}</code> was removed by User <code>\${UserName}</code> .
10601	USER_REMOVE_AUDIT_LOG_FAILED	Error	User <code>\${UserName}</code> failed to remove event list message <code>\${AuditLogId}</code> .
10602	USER_CLEAR_ALL_AUDIT_LOG	Info	
10603	USER_CLEAR_ALL_AUDIT_LOG_FAILED	Error	
10604	USER_DISPLAY_ALL_AUDIT_LOG	Info	
10605	USER_DISPLAY_ALL_AUDIT_LOG_FAILED	Error	
10700	MAC_POOL_ADD_SUCCESS	Info	MAC Pool <code>'\${MacPoolName}'</code> (id
10701	MAC_POOL_ADD_FAILED	Error	Failed to create MAC Pool <code>'\${MacPoolName}'</code> . (User: <code>\${UserName}</code> )
10702	MAC_POOL_EDIT_SUCCESS	Info	MAC Pool <code>'\${MacPoolName}'</code> (id
10703	MAC_POOL_EDIT_FAILED	Error	Failed to update MAC Pool <code>'\${MacPoolName}'</code> (id
10704	MAC_POOL_REMOVE_SUCCESS	Info	MAC Pool <code>'\${MacPoolName}'</code> (id
10705	MAC_POOL_REMOVE_FAILED	Error	Failed to remove MAC Pool <code>'\${MacPoolName}'</code> (id
10750	CINDER_PROVIDER_ERROR	Error	An error occurred on Cinder provider: <code>'\${CinderException}'</code>
10751	CINDER_DISK_CONNECTION_FAILURE	Error	Failed to retrieve connection information for Cinder Disk <code>'\${DiskAlias}'</code> .

Code	Name	Severity	Message
10752	CINDER_DISK_CONNECTION_VOLUME_DRIVER_UNSUPPORTED	Error	Unsupported volume driver for Cinder Disk <code>'\${DiskAlias}'</code> .
10753	USER_FINISHED_FAILED_REMOVE_CINDER_DISK	Error	Failed to remove disk <code>\${DiskAlias}</code> from storage domain <code>\${StorageDomainName}</code> . The following entity id could not be deleted from the Cinder provider <code>'\${imageId}'</code> . (User: <code>\${UserName}</code> ).
10754	USER_ADDED_LIBVIRT_SECRET	Info	Authentication Key <code>\${LibvirtSecretUUID}</code> was added. (User: <code>\${UserName}</code> ).
10755	USER_FAILED_TO_ADD_LIBVIRT_SECRET	Error	Failed to add Authentication Key <code>\${LibvirtSecretUUID}</code> . (User: <code>\${UserName}</code> ).
10756	USER_UPDATE_LIBVIRT_SECRET	Info	Authentication Key <code>\${LibvirtSecretUUID}</code> was updated. (User: <code>\${UserName}</code> ).
10757	USER_FAILED_TO_UPDATE_LIBVIRT_SECRET	Error	Failed to update Authentication Key <code>\${LibvirtSecretUUID}</code> . (User: <code>\${UserName}</code> ).
10758	USER_REMOVED_LIBVIRT_SECRET	Info	Authentication Key <code>\${LibvirtSecretUUID}</code> was removed. (User: <code>\${UserName}</code> ).
10759	USER_FAILED_TO_REMOVE_LIBVIRT_SECRET	Error	Failed to remove Authentication Key <code>\${LibvirtSecretUUID}</code> . (User: <code>\${UserName}</code> ).
10760	FAILED_TO_REGISTER_LIBVIRT_SECRET	Error	Failed to register Authentication Keys for storage domain <code>\${StorageDomainName}</code> on host <code>\${VdsName}</code> .

Code	Name	Severity	Message
10761	FAILED_TO_UNREGISTER_LIBVIRT_SECRET	Error	Failed to unregister Authentication Keys for storage domain <code>{StorageDomainName}</code> on host <code>{VdsName}</code> .
10762	FAILED_TO_REGISTER_LIBVIRT_SECRET_ON_VDS	Error	Failed to register Authentication Keys on host <code>{VdsName}</code> .
10763	NO_LIBRBD_PACKAGE_AVAILABLE_ON_VDS	Error	Librbd1 package is not available on host <code>{VdsName}</code> , which is mandatory for using Cinder storage domains.
10764	FAILED_TO_FREEZE_VM	Warning	Failed to freeze guest filesystems on VM <code>{VmName}</code> . Note that using the created snapshot might cause data inconsistency.
10765	FAILED_TO_THAW_VM	Warning	Failed to thaw guest filesystems on VM <code>{VmName}</code> . The filesystems might be unresponsive until the VM is restarted.
10766	FREEZE_VM_INITIATED	Normal	Freeze of guest filesystems on VM <code>{VmName}</code> was initiated.
10767	FREEZE_VM_SUCCESS	Normal	Guest filesystems on VM <code>{VmName}</code> have been frozen successfully.
10768	THAW_VM_SUCCESS	Normal	Guest filesystems on VM <code>{VmName}</code> have been thawed successfully.
10769	USER_FAILED_TO_FREEZE_VM	Warning	Failed to freeze guest filesystems on <code>{VmName}</code> (Host: <code>{VdsName}</code> , User: <code>{UserName}</code> ).
10770	USER_FAILED_TO_THAW_VM	Warning	Failed to thaw guest filesystems on <code>{VmName}</code> (Host: <code>{VdsName}</code> , User: <code>{UserName}</code> ).

Code	Name	Severity	Message
10771	VDS_CANNOT_CONNECT_TO_GLUSTERFS	Error	Host \${VdsName} cannot connect to Glusterfs. Verify that glusterfs-cli package is installed on the host.
10780	AFFINITY_RULES_ENFORCEMENT_MANAGER_START	Normal	Affinity Rules Enforcement Manager started.
10781	AFFINITY_RULES_ENFORCEMENT_MANAGER_INTERVAL_REACHED	Normal	
10800	VM_ADD_HOST_DEVICES	Info	Host devices \${NamesAdded} were attached to Vm \${VmName} by User \${UserName}.
10801	VM_REMOVE_HOST_DEVICES	Info	Host devices \${NamesRemoved} were detached from Vm \${VmName} by User \${UserName}.
10802	VDS_BROKER_COMMAND_FAILURE	Error	VDSM \${VdsName} command failed: \${message}
10803	IRS_BROKER_COMMAND_FAILURE	Error	VDSM command failed: \${message}
10804	VDS_UNKNOWN_HOST	Error	The address of host \${VdsName} could not be determined
10810	SYSTEM_CHANGE_STORAGE_POOL_STATUS_UP_REPORTING_HOSTS	Normal	Data Center \${StoragePoolName} status was changed to UP as some of its hosts are in status UP.
10811	SYSTEM_CHANGE_STORAGE_POOL_STATUS_NON_RESPONSIVE_NO_REPORTING_HOSTS	Info	Data Center \${StoragePoolName} status was changed to Non Responsive as none of its hosts are in status UP.
10900	HOST_SYNC_ALL_NETWORKS_FAILED	Error	Failed to sync all host \${VdsName} networks
10901	HOST_SYNC_ALL_NETWORKS_FINISHED	Info	Managed to sync all host \${VdsName} networks.

Code	Name	Severity	Message
10902	PERSIST_HOST_SETUP_NETWORK_ON_HOST	Info	(\${Sequence}/\${Total}): Applying network's changes on host \${VdsName}. (User: \${UserName})
10903	PERSIST_SETUP_NETWORK_ON_HOST_FINISHED	Info	(\${Sequence}/\${Total}): Successfully applied changes on host \${VdsName}. (User: \${UserName})
10904	PERSIST_SETUP_NETWORK_ON_HOST_FAILED	Error	(\${Sequence}/\${Total}): Failed to apply changes on host \${VdsName}. (User: \${UserName})
11000	USER_ADD_EXTERNAL_JOB	Info	New external Job \${description} was added by user \${UserName}
11001	USER_ADD_EXTERNAL_JOB_FAILED	Error	Failed to add new external Job \${description}



## APPENDIX D. TIMEZONES

### D.1. TIMEZONES

The API maps Windows Standard Format timezone names to tz database format when specifying a timezone for a virtual machine or VM template. This means the API only accepts certain tz database codes, which the following table lists:

**Table D.1. Accepted tz database codes**

tz database Format	Windows Standard Format
Africa/Cairo	Egypt Standard Time
Africa/Casablanca	Morocco Standard Time
Africa/Johannesburg	South Africa Standard Time
Africa/Lagos	W. Central Africa Standard Time
Africa/Nairobi	E. Africa Standard Time
Africa/Reykjavik	Greenwich Standard Time
Africa/Windhoek	Namibia Standard Time
America/Anchorage	Alaskan Standard Time
America/Bogota	SA Pacific Standard Time
America/Buenos_Aires	Argentina Standard Time
America/Caracas	Venezuela Standard Time
America/Chicago	Central Standard Time
America/Chihuahua	Mexico Standard Time
America/Chihuahua	Mountain Standard Time
America/Denver	Mountain Standard Time
America/Godthab	Greenland Standard Time
America/Guatemala	Central America Standard Time
America/Halifax	Atlantic Standard Time

tz database Format	Windows Standard Format
America/La_Paz	SA Western Standard Time
America/Los_Angeles	Pacific Standard Time
America/Manaus	Central Brazilian Standard Time
America/Mexico_City	Central Standard Time
America/Mexico_City	Mexico Standard Time
America/Montevideo	Montevideo Standard Time
America/New_York	Eastern Standard Time
America/Phoenix	US Mountain Standard Time
America/Regina	Canada Central Standard Time
America/Santiago	Pacific SA Standard Time
America/Sao_Paulo	E. South America Standard Time
America/St_Johns	Newfoundland Standard Time
America/Tijuana	Pacific Standard Time
Asia/Amman	Jordan Standard Time
Asia/Baghdad	Arabic Standard Time
Asia/Baku	Azerbaijan Standard Time
Asia/Bangkok	SE Asia Standard Time
Asia/Beirut	Middle East Standard Time
Asia/Calcutta	India Standard Time
Asia/Colombo	Sri Lanka Standard Time
Asia/Dhaka	Central Asia Standard Time
Asia/Dubai	Arabian Standard Time
Asia/Irkutsk	North Asia East Standard Time

tz database Format	Windows Standard Format
Asia/Jerusalem	Israel Standard Time
Asia/Kabul	Afghanistan Standard Time
Asia/Karachi	Pakistan Standard Time
Asia/Katmandu	Nepal Standard Time
Asia/Krasnoyarsk	North Asia Standard Time
Asia/Novosibirsk	N. Central Asia Standard Time
Asia/Rangoon	Myanmar Standard Time
Asia/Riyadh	Arab Standard Time
Asia/Seoul	Korea Standard Time
Asia/Shanghai	China Standard Time
Asia/Singapore	Singapore Standard Time
Asia/Taipei	Taipei Standard Time
Asia/Tashkent	West Asia Standard Time
Asia/Tehran	Iran Standard Time
Asia/Tokyo	Tokyo Standard Time
Asia/Vladivostok	Vladivostok Standard Time
Asia/Yakutsk	Yakutsk Standard Time
Asia/Yekaterinburg	Ekaterinburg Standard Time
Asia/Yerevan	Armenian Standard Time
Asia/Yerevan	Caucasus Standard Time
Atlantic/Azores	Azores Standard Time
Atlantic/Cape_Verde	Cape Verde Standard Time
Atlantic/South_Georgia	Mid-Atlantic Standard Time

tz database Format	Windows Standard Format
Australia/Adelaide	Gen. Australia Standard Time
Australia/Brisbane	E. Australia Standard Time
Australia/Darwin	AUS Central Standard Time
Australia/Hobart	Tasmania Standard Time
Australia/Perth	W. Australia Standard Time
Australia/Sydney	AUS Eastern Standard Time
Etc/GMT-3	Georgian Standard Time
Etc/GMT+12	Dateline Standard Time
Etc/GMT+3	SA Eastern Standard Time
Etc/GMT+5	US Eastern Standard Time
Europe/Berlin	W. Europe Standard Time
Europe/Budapest	Central Europe Standard Time
Europe/Istanbul	GTB Standard Time
Europe/Kiev	FLE Standard Time
Europe/London	GMT Standard Time
Europe/Minsk	E. Europe Standard Time
Europe/Moscow	Russian Standard Time
Europe/Paris	Romance Standard Time
Europe/Warsaw	Central European Standard Time
Indian/Mauritius	Mauritius Standard Time
Pacific/Apia	Samoa Standard Time
Pacific/Auckland	New Zealand Standard Time
Pacific/Fiji	Fiji Standard Time

tz database Format	Windows Standard Format
<b>Pacific/Guadalcanal</b>	<b>Central Pacific Standard Time</b>
<b>Pacific/Honolulu</b>	<b>Hawaiian Standard Time</b>
<b>Pacific/Port_Moresby</b>	<b>West Pacific Standard Time</b>
<b>Pacific/Tongatapu</b>	<b>Tonga Standard Time</b>

## APPENDIX E. REVISION HISTORY

<b>Revision 3.6-13</b>	<b>Wed 14 Dec 2016</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>
<a href="#">BZ#1377738</a> - Updated Hot plugging vCPUs example.		
<b>Revision 3.6-12</b>	<b>Thur 07 Apr 2016</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>
<a href="#">BZ#1302539</a> - Added a section about MAC address pools.		
<a href="#">BZ#1302712</a> - Added instructions for refreshing LUN size.		
<a href="#">BZ#1213803</a> - Added instructions for importing iSCSI or FCP block storage.		
<b>Revision 3.6-11</b>	<b>Wed 9 Mar 2016</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>
<a href="#">BZ#1285925</a> - Added content for freezing and thawing guest filesystems, which is required for taking snapshots of virtual machines with OpenStack Volume (Cinder) disks.		
<b>Revision 3.6-10</b>	<b>Tue 1 Mar 2016</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>
<a href="#">BZ#1304924</a> - Added instructions for defining iSCSI credentials per host.		
<a href="#">BZ#1149441</a> - Updated the Host Networking API.		
<b>Revision 3.6-9</b>	<b>Mon 22 Feb 2016</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>
Initial revision for Red Hat Enterprise Virtualization 3.6 general availability.		
<b>Revision 3.6-8</b>	<b>Fri 19 Feb 2016</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>
<a href="#">BZ#1309152</a> - Added information about hot plugging vCPUs.		
<b>Revision 3.6-7</b>	<b>Mon 8 Feb 2016</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>
<a href="#">BZ#1285344</a> - Added information regarding external health status of hosts and storage domains.		
<a href="#">BZ#1252755</a> - Added instructions for copying a virtual disk.		
<a href="#">BZ#1285345</a> - Added multi-host pinning information.		
<a href="#">BZ#1124128</a> - Added NUMA content to the guide.		
<b>Revision 3.6-6</b>	<b>Fri 15 Jan 2016</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>
<a href="#">BZ#1281667</a> - Added severity levels and error messages to the table that lists event codes.		
<b>Revision 3.6-5</b>	<b>Thu 14 Jan 2016</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>
<a href="#">BZ#1284288</a> - Changed references to the 'rhev' management network to 'ovirtgmt'.		
<b>Revision 3.6-4</b>	<b>Wed 23 Dec 2015</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>
<a href="#">BZ#1194228</a> - Added information about the All-Content header.		
<b>Revision 3.6-3</b>	<b>Wed 18 Nov 2015</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>
Final revision for Red Hat Enterprise Virtualization 3.6 beta.		
<b>Revision 3.6-2</b>	<b>Wed 18 Nov 2015</b>	<b>Red Hat Enterprise Virtualization Documentation Team</b>

[BZ#1255281](#) - Added details about how to hot plug memory into virtual machines.

[BZ#1255229](#) - Updated the power management REST API example.

[BZ#1250784](#) - Added instructions for specifying default 'wipe after delete' behavior on storage domains.

[BZ#1278783](#) - Updated the examples for creating and updateing a virtual machine pool.

**Revision 3.6-1****Mon 10 Aug 2015****Red Hat Enterprise Virtualization  
Documentation Team**

Initial creation for the Red Hat Enterprise Virtualization 3.6 release.