

HP Operations Orchestration

For Windows and Linux operating systems

Software Version: Content Pack 10

VMware vCloud Integration Guide

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Chapter 1

Introduction

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About VMware vCloud Integration

vCloud Director (vCD) provides the interface, automation, and management required by enterprises and service providers to build private and public clouds.

vCSD uses the REST-ful vCloud API to communicate between vSphere datacenters. vCSD is intended to replace the VMWare Lab Manager product.

The vCloud architecture is reflected in the integration by a set of objects common to cloud computing environments and also by a new layer of abstraction: **vApp**. A vApp is a collection of virtual machines (and potentially other vApp containers) that are operated and monitored as a unit. The set of objects common to cloud computing environments have the following high-level properties:

- Catalogs
- Organizations
- Networks
- vApps
- VMs
- Tasks
- Virtual Datacenters (vCenters)

Tip: For more information about vCloud Director see:
<http://www.vmware.com/files/pdf/products/vCloud/VMware-vCloud-Director-Datasheet.pdf>

VMware vCloud Supported Versions

Operations Orchestration Version	VMware vCloud
OO Content Pack 10	1.0, 1.5

Downloading OO Releases and Documents on HP Live Network

HP Live Network provides an Operations Orchestration Community page where you can find and download supported releases of OO and associated documents.

To download OO releases and documents, visit the following site:

<https://hpln.hp.com/>

Note: This site requires that you register for an HP Passport and sign-in.

To register for an HP Passport ID:

1. Go to: <http://h20229.www2.hp.com/passport-registration.html>

Or

Click the **New users - please register** link on the HP Passport login page.

2. On the HP Live Network page, click **Operations Orchestration**.
3. On the left-hand side, click **Operations Orchestration Content Packs**.
4. In the **Operations Orchestration Content Packs** box, click **Content**. The HP Passport and sign-in page appears.
5. Enter your user ID and Password to access to continue.
6. Click **HP Operations Orchestration 9.00**.
7. Search for the required HP Operations Orchestration Content Pack.

Chapter 2

Getting Started

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Installing and Configuring the Installation

The VMware vCloud integration does not require any special installation and configuration instructions. The only requirement is that the system that has the RSJRAS service running on it can access the vCloud server. To verify that the vCloud API is accessible, go to the following Web page:

`http://<vCloudServer>/api/<version>/schema/master.xsd`

The displayed xml should look something like this:

```
<xs:schema targetNamespace="http://www.vmware.com/vcloud/v1"
  elementFormDefault="qualified" version="1.0">
  <xs:include
    schemaLocation="http://<vCloudServer>/api/v1.0/schema/vcloud.xsd"/>
  <xs:include
    schemaLocation="http://<vCloudServer>/api/v1.0/schema/admin.xsd"/>
</xs:schema>
```

VMware vCloud Use Cases

The following are the major use cases for the VMware vCloud integration, and the operations and flows that you can use to implement them.

1. Managing Catalogs:
 - Create Catalogs
 - Create Template From vApp
 - Delete Catalog
 - Delete Media Image

- Delete vApp Template
 - Deploy vApp From Template
 - Download vApp Template as OVF
 - Get Catalogs
 - Get Media
 - Get vApp Templates
 - Publish Catalog
 - Unpublish Catalog
 - Upload Media Image to Catalog
 - Upload OVF as vApp Template
2. Managing Organizations:
- Networks
 - Create Direct Organization Network
 - Delete Organization Network
 - Get External Networks
 - Get Organization Networks
 - Create Organization
 - Create Organization vDC
 - Delete Organization
 - Delete Organization vDC
 - Disable Organization
 - Disable Organization vDC
 - Enable Organization
 - Enable Organization vDC
 - Get Organization Tasks
 - Get Organization vDCs
 - Get Organizations
 - Modify Organization
3. Managing vApps:
- VMs
 - Edit VM Network
 - Get vApp VMs
 - Get VM Details

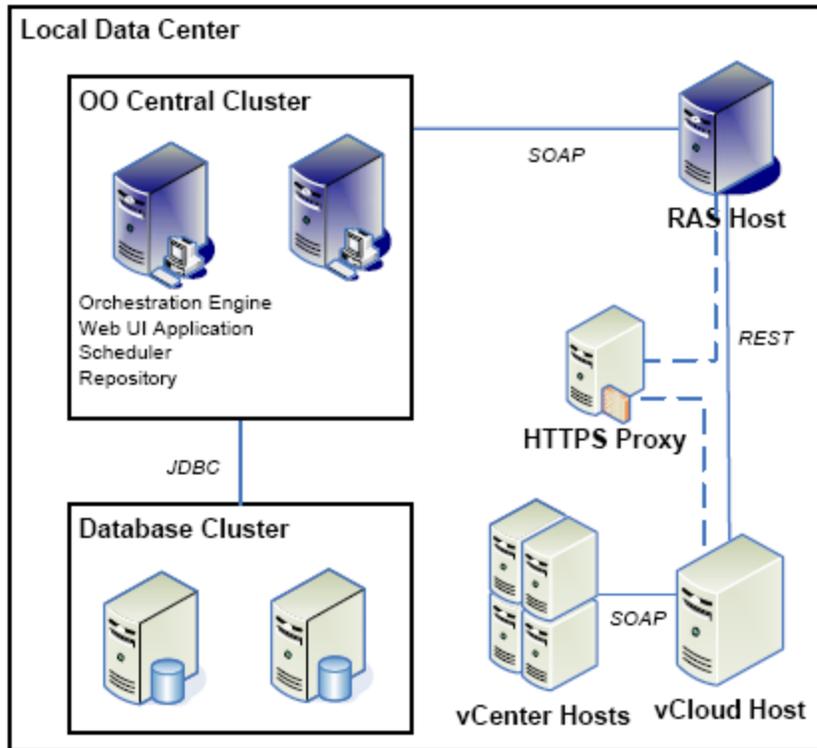
- Get VM Disk Details
 - Get VM NIC Details
 - Get VM State
 - Power Off VM
 - Power On VM
 - Set VM Computer Name
 - Set VM CPU Count
 - Set VM Memory Size
 - Delete vApp
 - Get vApp Lease Settings
 - Get vApp State
 - Get vApps
 - Recompose vApp
 - Reset vApp
 - Set vApp Lease Settings
 - Start vApp
 - Stop vApp
 - Suspend vApp
4. Managing vCenters
- Get vCenters
 - Get Virtual Machines
 - Import Virtual Machine as vApp
 - Import Virtual Machine as vApp Template

VMware vCloud Architecture

The vCloud API communicates with the vCloud server over HTTPS using RESTful conventions. GET requests are used to retrieve current representations of vCloud objects. POST and PUT requests are used to create or modify vCloud objects. DELETE requests are typically used to delete vCloud objects. The vCloud objects are described using XML as defined in the VMware vCloud API versions 1.0 and 1.5.

The API information for all vCD versions can be found at the following web site:

http://www.vmware.com/support/pubs/vcd_pubs.html



VMware vCloud Terminology

The following terms are used in the VMware vCloud integration guide's descriptions of its OO operations and flows.

Catalog. Catalogs are used to organize vApp templates and media images (ISO or FLOPPY images) in an organization. The vApp templates and media images of an organization are stored in an organization vDC, but can be referenced by a catalog.

External network. This is the network equivalent of a provider vDC. Organization networks can connect to external networks to communicate with networks outside of the vCloud environment.

Href. An object reference, expressed in URL format. Because this URL includes the object identifier portion of the id attribute value, it uniquely identifies the object, persists for the life of the object, and is never reused. The value of the href attribute is a reference to a view of the object, and can be used to access a representation of the object that is valid in a particular context. Although URLs have a well-known syntax and a well-understood interpretation, a client should treat each href as an opaque string. The rules that govern how the server constructs href strings might change in future releases.

Id. The object identifier, expressed in URN format. The value of the id attribute uniquely identifies the object, persists for the life of the object, and is never reused. The id attribute value is intended to provide a context-free identifier that can be used with the vCloud API entityResolver and is also suitable for use by clients that need to access the object using a different API.

Organization. Organizations provide resources to a group of users and set policies that determine how users can consume those resources. Organizations enable multi-tenancy in a vCloud environment.

Organization network. This is the network equivalent of an organization vDC. Organization networks:

- Are networks to which vApps can actually connect
 - Can be internal and only available to vApps in the organization but across organization vDCs
 - Can be attached to external networks for communication with networks outside of the vCloud environment
-

Organization Virtual Datacenter (vDC). An organization can have multiple vDCs. The resources of an organization vDC are partitioned from those of a provider vDC.

OVF. Open Virtualization Format. This is an open and portable format for the packaging and distribution of one or more virtual machines. This integration uses the OVF format to import and export vApp templates.

Virtual Datacenter (Provider vDC). A provider vDC manages and provides the CPU, memory, and storage resources of a vCenter resource pool to organization vDCs.

Runtime and storage leases. Runtime and storage leases are defined policies that automatically shut down running vApps after a specified runtime. Once the vApp is shut down, it can be automatically moved to an expired items location or deleted after the storage lease has expired. Templates can also be automatically moved to an expired items location or deleted if the template storage lease is expired. The default runtime and storage lease policies are defined per organization.

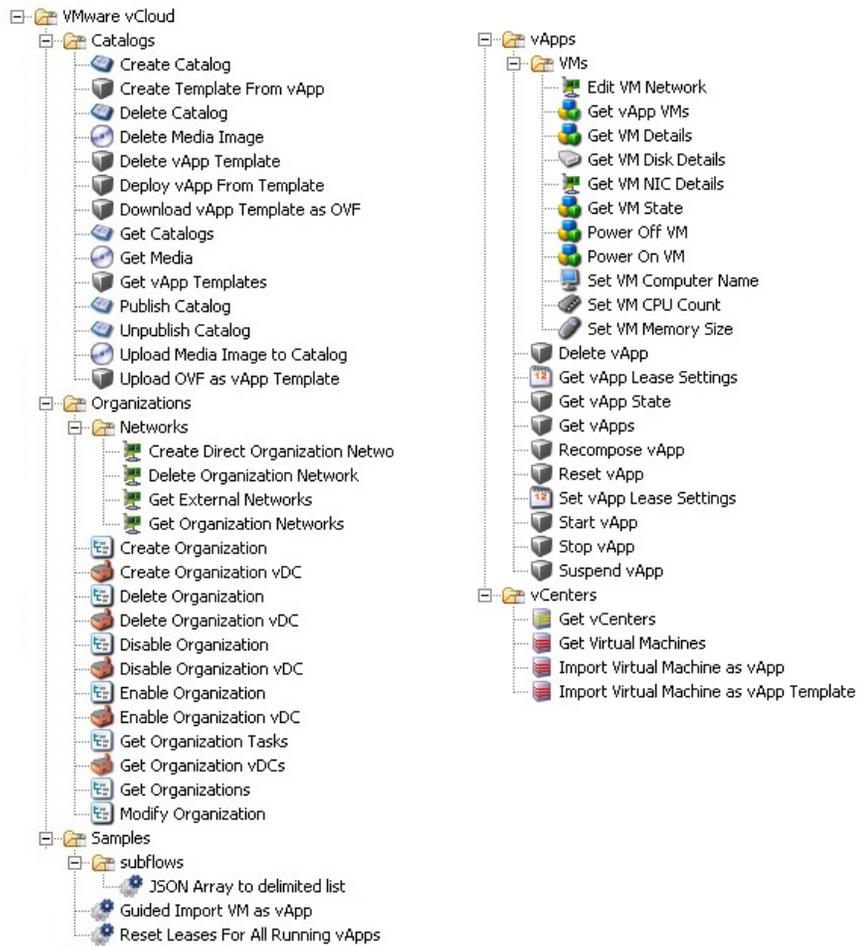
Tasks. Asynchronous operations that members of an organization initiate are tracked by task objects, which are kept on the organization's tasks list.

vApp. A collection of one or more virtual machines defined by Open Virtualization Format (OVF) to specify and encapsulate all of the components of a multi-tier application.

vCenter. A management server for a collection of VMware vSphere (ESX/ESXi) hypervisor hosts.

Location of VMware vCloud Integration Operations and Flows in OO Studio

The VMware vCloud integration includes the following operations and flows in the **OO Studio Library/Integrations/VMware/VMware vCloud/** folder.



Chapter 3

VMware vCloud Security

This section describes how security is handled by the VMware vCloud integration.

VMware vCloud servers are accessed via REST over HTTPS. Usernames and passwords are used to authenticate a user and create a session for the duration of an operation. Sessions are closed at the completion of each operation.

Chapter 4

OO Tools You Can Use with the VMware vCloud Integration

Following are OO tools that you can use with the VMware vCloud integration:

- **RSFlowInvoke.exe and JRSFlowInvoke.jar**

RSFlowInvoke (RSFlowInvoke.exe or the Java version, JRSFlowInvoke.jar) is a command-line utility that allows you to start a flow without using Central (although the Central service must be running). RSFlowInvoke is useful when you want to start a flow from an external system, such as a monitoring application that can use a command line to start a flow.

- **Web Services Wizard (wswizard.exe)**

When you run the Web Services Wizard, you provide it with the WSDL for a given Web service. The WSDL string you provide as a pointer can be a file's location and name or a URL. The Web Services Wizard displays a list of the methods in the API of the Web service that you specify.

When you run the wizard, pick the methods you want to use, and with one click for each method you have selected, the wizard creates an HP OO operation that can execute the method. This allows you to use the Web Services Wizard to create operations from your monitoring tool's API.

These tools are available in the Operations Orchestration home directory under the **/Studio/tools/** folder.