

HP Operations Orchestration

For the Windows and Linux operating systems

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Citrix XenServer Integration Guide

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Chapter 1

Introduction

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About the Citrix XenServer Integration

This integration enables administrators to create HP Operations Orchestration (OO) flows that are integrated with Citrix XenServer.

XenServer is a server virtualization platform, optimized for Windows and Linux virtual servers, that offers all what is needed in order to create and manage a virtual infrastructure. It does not need an underlying operating system as it runs directly on server hardware. This capability offers the system efficiency and scalability. XenServer works by abstracting elements from the physical machine (such as hard drives, resources, and ports) and allocating them to the virtual machines (VMs) running on it.

The OO Integration with Citrix XenServer 6 uses XML-RPC-based requests. This integration comes with a set of operations that help you to manage your hosts, networks, storage, tasks, and virtual machines. In addition, it offers you the opportunity to further develop large flows in order to automate operations across your virtual infrastructure.

To learn how to create OO flows, see the Studio Guide to Authoring Operations Orchestration Flows in the documentation set for the current OO release. The XenServer 6 integration uses the XenServer Management API to integrate with OO. To use this integration successfully you should have knowledge of XenServer technology and virtualization.

Audience

This guide is intended for users who manage a XenServer-based virtual infrastructure.

Prerequisites

To use this integration successfully, you must have a virtual infrastructure based on Citrix XenServer.

Other useful links and resources are:

- Citrix XenServer - http://www.citrix.com/English/ps2/products/product.asp?contentID=683148&ntref=prod_cat
- XenServer Management API - http://docs.vmd.citrix.com/XenServer/6.0.0/1.0/en_gb/api/

Citrix XenServer Supported Versions

Operations Orchestration Version	XenServer Version
OO Content Pack 9	5, 6

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

This chapter includes:

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Installing and Configuring the Integration

No special installation or configuration is needed to run OO integration operations for XenServer. It is assumed that the XenServer host already has the required VM templates and storage/network configurations.

Use Cases

The following are the major use cases for the Citrix XenServer integration, and the operations that you can use to implement them.

1. Host:
 - Find Hosts
2. Network:
 - Physical Network Interfaces
 - Find PIFs
 - Virtual Network Interfaces
 - Create VIF
 - Destroy VIF
 - Find VIF
 - Modify VIF
 - Virtual Networks
 - Create Virtual Network
 - Destroy Virtual Network
 - Find Virtual Networks

3. Storage:

- Storage Repositories
 - Find SR
- Virtual Block Devices
 - Create VBD
 - Destroy VBD
 - Eject VBD
 - Find VBD
 - Hot Plug VBD
 - Hot Unplug VBD
 - Insert VBD
- Virtual Disk Images
 - Create VDI
 - Destroy VDI
 - Find VDI
 - Modify VDI

4. Task:

- Cancel Task
- Find Tasks

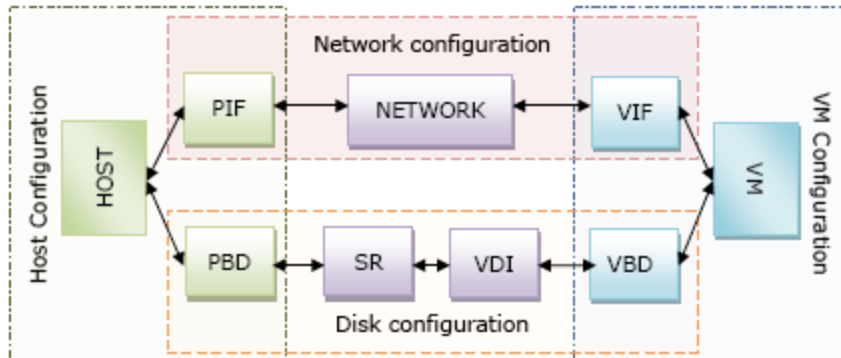
5. Virtual Machine (VM):

- Guest
 - Pause VM
 - Resume VM
 - Suspend VM
 - Unpause VM
- Power
 - Reboot VM
 - Shutdown VM
 - Start VM
- Clone VM
- Copy VM
- Create VM Snapshot
- Destroy VM
- Edit VM

- Find VMs
- Install VM
- Migrate VM

XenServer Components

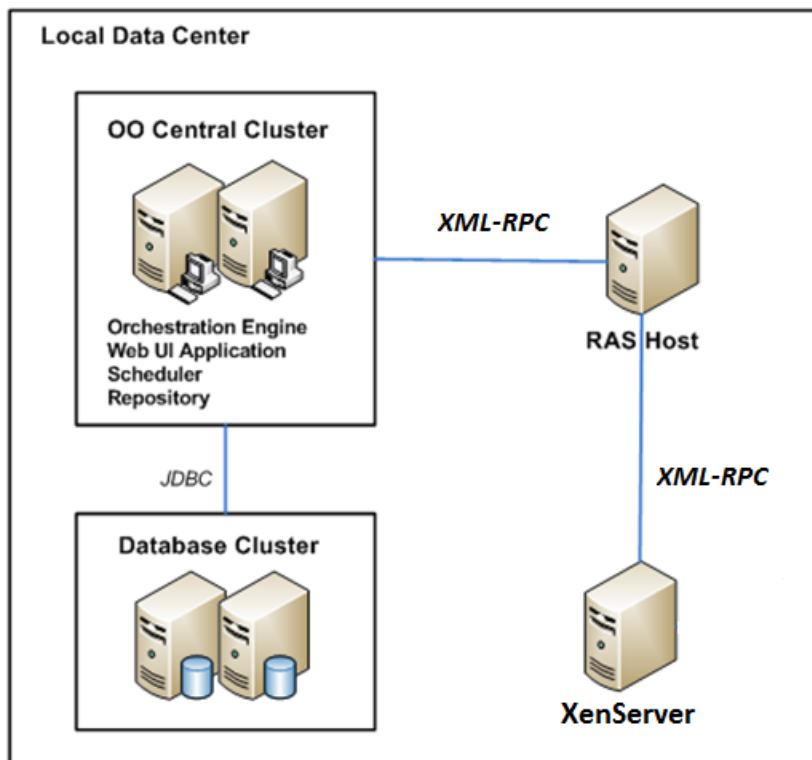
In XenServer, many components interpose between the virtual machine and the host. The diagram below displays the interactions between the different components.



The acronyms that appear in the diagram are explained below:

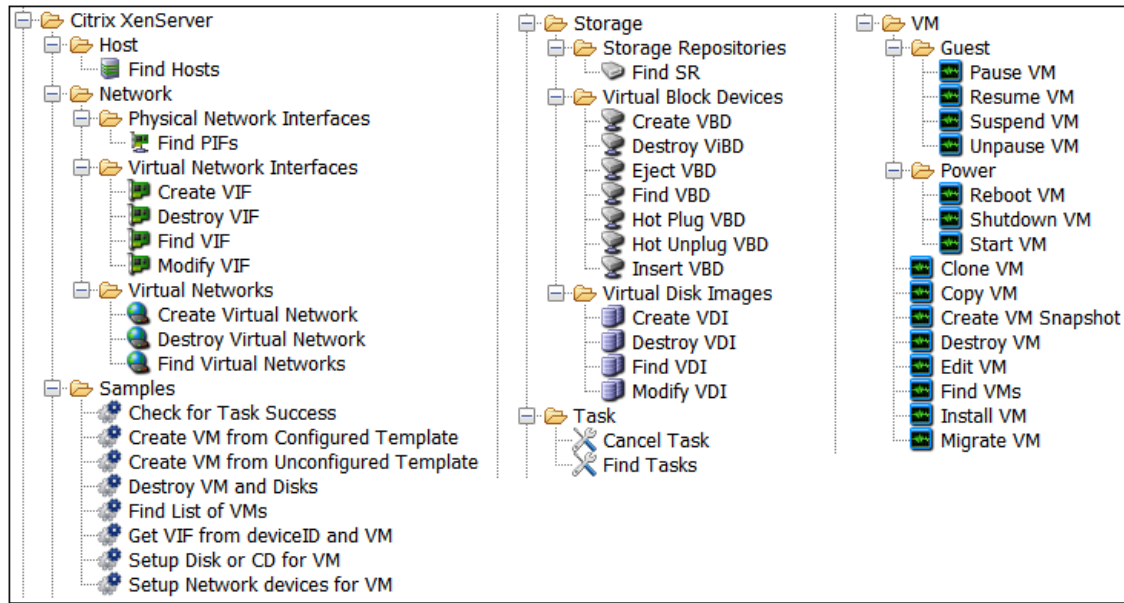
- **PIF**. Physical network interface
- **VIF**. Virtual network interface
- **PBD**. Physical block device
- **SR**. Storage repository
- **VDI**. Virtual disk image
- **VBD**. Virtual block device

Citrix XenServer Architecture



Location of Citrix XenServer Integration Operations in OO Studio

The Citrix XenServer integration includes the following operations and flows in the OO Studio Library/Integrations/Citrix XenServer folder.



Chapter 3

Troubleshooting

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Troubleshooting Overview

This section describes some troubleshooting issues related to the Citrix XenServer integration.

- Verify that the UUIDs or names provided for the operations are valid and are for the correct operation type. For example, VDI UUID's and VBD UUID's cannot be interchanged.
- The `allowedOperations` result available in most resources (to retrieve this field, execute the **Find** operation on the resource), describes the operations that can be performed on that resource in its current state. Trying to perform operations outside of the list of allowed operations will fail.

For example, trying to take a snapshot of VDI when the VDI is on an SR that does not support snapshots, will fail with the following message:

```
com.xensource.xenapi.Types$BadServerResponse [SR_OPERATION_NOT_SUPPORTED, OpaqueRef:b9a7118b-bb3f-3adb-2cfd-8a974a7459fe]
```

- In many cases, the error message from the XenServer API clearly explains what caused the error:

```
You attempted an operation on a VM that was not in an appropriate power state at the time; for example, you attempted to start a VM that was already running. The parameters returned are the VM's handle, and the expected and actual VM state at the time of the call.
```

- In other cases, the message may not describe the error's cause but rather suggest the error, the state that the resource is in, and the state that the resource needs to be in for the call to succeed.

Error Messages

This section lists the error messages you may receive while using this integration.

`ACTIVATION_WHILE_NOT_FREE`

An activation key can only be applied when the Edition is set to "free".

`AUTH_ALREADY_ENABLED`

External authentication for this host is already enabled.

`AUTH_DISABLE_FAILED`

The host failed to disable external authentication.

`AUTH_ENABLE_FAILED`

The host failed to enable external authentication.

`AUTH_ENABLE_FAILED_DOMAIN_LOOKUP_FAILED`

The host failed to enable external authentication.

`AUTH_ENABLE_FAILED_PERMISSION_DENIED`

The host failed to enable external authentication.

`AUTH_ENABLE_FAILED_UNAVAILABLE`

The host failed to enable external authentication.

`AUTH_ENABLE_FAILED_WRONG_CREDENTIALS`

The host failed to enable external authentication.

`AUTH_IS_DISABLED`

External authentication is disabled, unable to resolve subject name.

`BACKUP_SCRIPT_FAILED`

The backup could not be performed because the backup script failed.

`BOOTLOADER_FAILED`

The bootloader returned an error.

`CANNOT_CONTACT_HOST`

Cannot forward messages because the host cannot be contacted. The host may be switched off or there may be network connectivity problems.

`CANNOT_CREATE_STATE_FILE`

An HA statefile could not be created, perhaps because no SR with the appropriate capability was found.

`CANNOT_ENABLE_REDO_LOG`

Could not enable redo log.

`CANNOT_EVACUATE_HOST`

This host cannot be evacuated.

`CANNOT_FETCH_PATCH`

The requested update could not be obtained from the master.

`CANNOT_FIND_OEM_BACKUP_PARTITION`

The backup partition to stream the update to cannot be found.

`CANNOT_FIND_PATCH`

The requested update could not be found. This can occur when you designate a new master or xe patch-clean. Please upload the update again.

`CANNOT_FIND_STATE_PARTITION`

This operation could not be performed because the state partition could not be found.

`CANNOT_PLUG_VIF`

Cannot plug VIF.

`CANNOT_RESET_CONTROL_DOMAIN`

The power-state of a control domain cannot be reset.

`CERTIFICATE_ALREADY_EXISTS`

A certificate already exists with the specified name.

`CERTIFICATE_CORRUPT`

The specified certificate is corrupt or unreadable.

`CERTIFICATE_DOES_NOT_EXIST`

The specified certificate does not exist.

`CERTIFICATE_NAME_INVALID`

The specified name is invalid.

`CHANGE_PASSWORD_REJECTED`

The system rejected the password change request; perhaps the new password was too short?

`CPU_FEATURE_MASKING_NOT_SUPPORTED`

The CPU does not support masking of features.

`CRL_ALREADY_EXISTS`

A CRL already exists with the specified name.

`CRL_CORRUPT`

The specified CRL is corrupt or unreadable.

`CRL_DOES_NOT_EXIST`

The specified CRL does not exist.

`CRL_NAME_INVALID`

The specified CRL name is invalid.

`DB_UNIQUENESS_CONSTRAINT_VIOLATION`

You attempted an operation which would have resulted in duplicate keys in the database.

`DEFAULT_SR_NOT_FOUND`

The default SR reference does not point to a valid SR.

`DEVICE_ALREADY_ATTACHED`

The device is already attached to a VM.

`DEVICE_ALREADY_DETACHED`

The device is not currently attached.

`DEVICE_ALREADY_EXISTS`

A device with the name given already exists on the selected VM.

`DEFAULT_ATTACH_TIMEOUT`

A timeout happened while attempting to attach a device to a VM.

`DEVICE_DETACH_REJECTED`

The VM rejected the attempt to detach the device.

`DEVICE_DETACH_TIMEOUT`

A timeout happened while attempting to detach a device from a VM.

DEVICE_NOT_ATTACHED

The operation could not be performed because the VBD was not connected to the VM.

DOMAIN_BUILDER_ERROR

An internal error generated by the domain builder.

DOMAIN_EXISTS

The operation could not be performed because a domain still exists for the specified VM.

DUPLICATE_VM

Cannot restore this VM because it would create a duplicate.

EVENTS_LOST

Some events have been lost from the queue and cannot be retrieved.

FEATURE_RESTRICTED

The use of this feature is restricted.

FIELD_TYPE_ERROR

The value specified is of the wrong type.

HANDLE_INVALID

You gave an invalid object reference. The object may have recently been deleted. The class parameter gives the type of reference given, and the handle parameter echoes the bad value given.

HA_ABORT_NEW_MASTER

This host cannot accept the proposed new master setting at this time.

HA_CONSTRAINT_VIOLATION_NETWORK_NOT_SHARED

This operation cannot be performed because the referenced network is not properly shared. The network must either be entirely virtual or must be physically present via a currently attached PIF on every host.

HOST_BROKEN

The host failed in the middle of an automatic failover operation and needs to retry the failover action.

HOST_NAME_INVALID

The host name is invalid.

IMPORT_ERROR

The VM could not be imported.

INTERFACE_HAS_NO_IP

The specified interface cannot be used because it has no IP address.

INTERNAL_ERROR

The server failed to handle your request, due to an internal error. The given message may give details useful for debugging the problem.

INVALID_DEVICE

The device name is invalid.

JOINING_HOST_SERVICE_FAILED

There was an error connecting to the host. The service contacted didn't reply properly.

LICENSE_RESTRICTION

This operation is not allowed under your license. Please contact your support representative.

LOCATION_NOT_UNIQUE

A VDI with the specified location already exists within the SR.

MAC_DOES_NOT_EXIST

The MAC address specified doesn't exist on this host.

MAC_INVALID

The MAC address specified is not valid.

MESSAGE_DEPRECATED

This message has been deprecated.

NETWORK_ALREADY_CONNECTED

You tried to create a PIF, but the network you tried to attach it to is already attached to some other PIF, and so the creation failed.

NETWORK_CONTAINS_PIF

The network contains active PIFs and cannot be deleted.

OPERATION_NOT_ALLOWED

You attempted an operation that was not allowed.

OUT_OF_SPACE

There is not enough space to upload the update.

PATCH_APPLY_FAILED

The patch apply failed. Please see attached output.

PATCH_IS_APPLIED

The specified patch is applied and cannot be destroyed.

PERMISSION_DENIED

Caller not allowed to perform this operation.

PIF_DEVICE_NOT_FOUND

The specified device was not found.

POOL_AUTH_DISABLE_FAILED

The pool failed to disable the external authentication of at least one host.

SESSION_INVALID

You gave an invalid session reference. It may have been invalidated by a server restart, or timed out. You should get a new session handle, using one of the session.login_calls. This error does not invalidate the current connection. The handle parameter echoes the bad value given.

SR_FULL

The SR is full. Requested new size exceeds the maximum size.

TASK_CANCELLED

The request was asynchronously cancelled.

UUID_INVALID

The uuid you supplied was invalid.

VBD_IS_EMPTY

Operation could not be performed because the drive is empty.

VIF_IN_USE

Network has active VIFs.

VM_CRASHED

The VM crashed.

VM_DUPLICATE_VBD_DEVICE

The specified VM has a duplicate VBD device and cannot be started.

VM_HALTED

The VM unexpectedly halted.

VM_HVM_REQUIRED

HVM is required for this operation.

VM_IS_PROTECTED

This operation cannot be performed because the specified VM is protected by xHA.

VM_IS_TEMPLATE

The operation attempted is not valid for a template VM.

XENAPI_MISSING_PLUGIN

The requested plugin could not be found.

XENAPI_PLUGIN_FAILURE

There was a failure communicating with the plugin.

XMLRPC_UNMARSHAL_FAILURE

The server failed to unmarshal the XMLRPC message; it was expecting one element and received something else.

Note: You can find more error messages and their descriptions in the error handling section of the documentation of the [Citrix XenServer Management API](#).

Chapter 4

Security

Passwords and inputs sent between XenServer and OO are encrypted if the HTTPS protocol is used. If the HTTP protocol is used, information passing between OO and XenServer may not be encrypted.

The XenServer API allows all users of the host machine to open XenServer sessions. In this case, all users on a XenServer host will be able to execute OO flows against that host using their username/password.

Chapter 5

Tools

Following are OO tools that you can use with the Citrix XenServer integration:

- **RSFlowInvoke.exe and JRSFlowInvoke.**

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 WebServices 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 folder in **/Studio/tools/**.