HP Operations Orchestration Software

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HP Integrated Lights Out Integration Guide

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On the Web: Finding OO support and documentation

There are two Web sites where you can find support and documentation, including updates to OO Help systems, guides, and tutorials:

- The OO Support site
- HP Live Network

Support

Documentation enhancements are a continual project at Hewlett-Packard Software. You can obtain or update the HP OO documentation set and tutorials at any time from the HP Software Product Manuals Web site. You will need an HP Passport to log in to the Web site.

To obtain HP OO documentation and tutorials

1. Go to the HP Software Product Manuals Web site
   (*http://support.openview.hp.com/selfsolve/manuals*).
2. Log in with your HP Passport user name and password.

   OR

   If you do not have an HP Passport, click **New users – please register** to create an HP Passport, then return to this page and log in.

   If you need help getting an HP Passport, see your HP OO contact.

3. In the **Product** list box, scroll down to and select **Operations Orchestration**.
4. In the **Product Version** list, click the version of the manuals that you're interested in.
5. In the **Operating System** list, click the relevant operating system.
6. Click the **Search** button.
7. In the **Results** list, click the link for the file that you want.

HP Live Network

For support information, including patches, troubleshooting aids, support contract management, product manuals and more, visit the following site: *https://www.www2.hp.com/*.

This is the **HP Live Network** Web page. To sign in:

1. Click **Login**.
2. On the **HP Passport sign-in** page, enter your HP Passport user ID and password and then click **Sign-in**.
3. If you do not already have an HP Passport account, do the following:
   a. On the **HP Passport sign-in** page, click **New user registration**.
   b. On the **HP Passport new user registration** page, enter the required information and then click **Continue**.
   c. On the confirmation page that opens, check your information and then click **Register**.
   d. On the **Terms of Service** page, read the Terms of use and legal restrictions, select the **Agree** button, and then click **Submit**.
4. On the **HP Live Network** page, click **Operations Orchestration Community.**

The Operations Orchestration Community page contains links to announcements, discussions, downloads, documentation, help, and support.

Note: Contact your OO contact if you have any difficulties with this process.

In OO: How to find Help, PDFs, and tutorials

The HP Operations Orchestration software (HP OO) documentation set is made up of the following:

- Help for Central

  Central Help provides information to the following:

  - Finding and running flows
  - For HP OO administrators, configuring the functioning of HP OO
  - Generating and viewing the information available from the outcomes of flow runs

  The Central Help system is also available as a PDF document in the HP OO home directory, in the \Central\docs subdirectory.

- Help for Studio

  Studio Help instructs flow authors at varying levels of programming ability.

  The Studio Help system is also available as a PDF document in the HP OO home directory, in the \Studio\docs subdirectory.

- Animated tutorials for Central and Studio

  HP OO tutorials can each be completed in less than half an hour and provide basic instruction on the following:

  - In Central, finding, running, and viewing information from flows
  - In Studio, modifying flows

  The tutorials are available in the Central and Studio subdirectories of the HP OO home directory.

- Self-documentation for operations and flows in the Accelerator Packs and ITIL folders

  Self-documentation is available in the descriptions of the operations and steps that are included in the flows.

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Overview of Proliant iLO integration

With this integration, administrators can build HP Operations Orchestration (OO) flows that are integrated into Integrated Lights Out (iLO) management processors for HP Proliant Servers.

This document explains how this integration has been implemented and how the operations included communicate between OO and iLO.

Use cases and scenarios

1. Samples to show how to use the **Execute RIBCL** operation:
   - Activate iLO License
   - Deactivate iLO License
   - Get Auto Power On
   - Get iLO Firmware Version
   - Set Unit ID Light State
2. Manipulate iLO user accounts from a flow:
   - Create User
   - Delete User
   - Modify User
3. Manipulate physical system's power state:
   - Host Power Status
   - Power On Host
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   - Restart Host
   - Restart iLO Processor
   - Set Auto Power On
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     Enables you to set low power, dynamic power, high power, and OS controlled power on supported hardware.
   - Set Power Cap
4. Manipulate iLO Virtual Media:
   - Insert Virtual Media
   - Eject virtual media
5. Get Host Data
6. Execute RIBCL Script

Versions

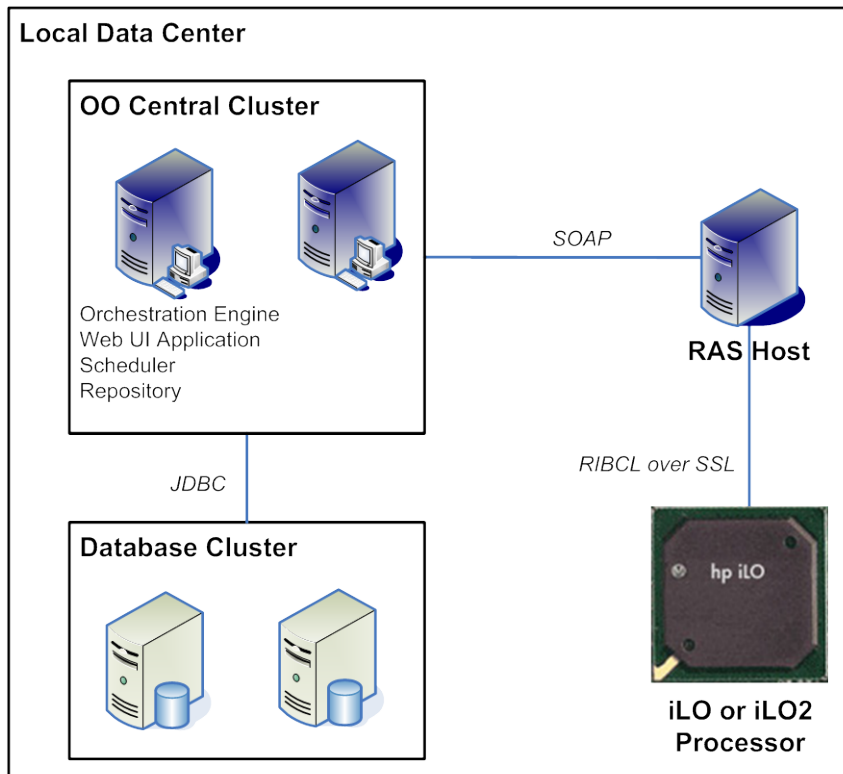| Operations Orchestration Version	Proliant iLO Version	Proliant iLO2 Version
7.60.02	1.94 or greater	1.60 or greater

Architecture

Figure 1 - HP Proliant iLO architecture

HP Proliant iLO integration operation and flow infrastructure

The HP Proliant iLO integration includes the following operations in the OO Studio Library/Integrations/Hewlett-Packard/Proliant iLO/ folder.
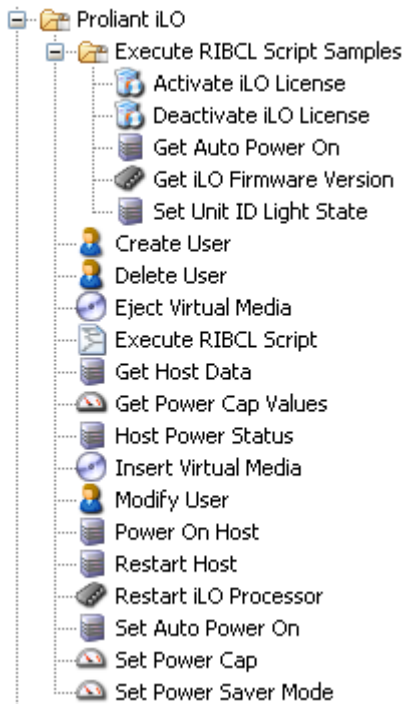
Figure 2 - HP Proliant iLO infrastructure

Common inputs in the integration

The following inputs are used consistently throughout the integration's operations.

host

The hostname or IP address that is assigned to the target iLO processor.

username

The login name for the user account that has privileges on the target iLO processor.

password

The password for the iLO user account.

port

The SSL port to connect to on the target iLO processor. This is the same SSL port that is used for the iLO web interface. The default is 443.

Operation and flow specifics

This section describes the HP Proliant iLO integration's operations, including any operation- and flow-specific inputs.

Execute RIBCL Script Samples

Activate iLO License

The **Activate iLO License** flow applies a license key to enable iLO advanced features using the **Execute RIBCL Script** operation.

All of the flow's inputs except the following are described in *Common inputs in the integration*.

licenseKey

   The license key to apply to the iLO processor.

The flow returns the following:

returnResult

   The task or operation result.

Deactivate iLO License

The **Deactivate iLO License** flow deactivates iLO advanced features on a Proliant iLO or iLO2 processor using the **Execute RIBCL Script** operation.

All of the flow's inputs are described in *Common inputs in the integration*.

The flow returns the following:

returnResult

   The task or operation result.

Get Auto Power On

The **Get Auto Power On** flow retrieves the current auto power on (APO) setting for the host via a Proliant iLO or iLO2 processor using the **Execute RIBCL Script** operation.

All of the flow's inputs are described in *Common inputs in the integration*.

The flow returns the following:

autoPowerOn

   The current auto power on setting for the host.

Get iLO Firmware Version

The **Get iLO Firmware Version** flow retrieves the current running firmware version of a Proliant iLO or iLO2 processor using the **Execute RIBCL Script** operation.

All of the flow's inputs are described in *Common inputs in the integration*.

The flow returns the following:

firmwareVersion

   The running firmware version of a Proliant iLO or iLO2 processor.

managementProcessor

   The management processor style (for example, iLO or iLO2).

Set Unit ID Light State

The **Set Unit ID Light State** flow sets the Unit ID (UID) light state on a Proliant iLO or iLO2 processor using the **Execute RIBCL Script** operation.

All of the flow's inputs except the following are described in *Common inputs in the integration*.

uidState

Specifies whether to turn the UID light on. The valid values are **Yes** and **No**.

The flow returns the following:

returnResult

The task or operation result.

Create User

The **Create User** operation creates a new user on the Proliant iLO or iLO2 processor.

All of the flow's inputs except the following are described in *Common inputs in the integration*.

userFullName

The full name (real name) of the new user.

userLogin

The login name of the new user.

userPassword

The password for the new user login.

adminPrivilages

Specifies whether to allow the new user to administer user accounts. The valid values are **yes** and **no** (the default is **no**).

remoteConsolePrivilages

Specifies whether to allow the new user to access the remote console. The valid values are **yes** and **no** (the default is **no**).

resetServerPrivilages (optional)

Specifies whether to allow the new user to switch server power and reset the server. The valid values are **yes** and **no** (the default is **no**).

virtualMediaPrivilages (optional)

Specifies whether to allow the new user to access virtual media. The valid values are **yes** and **no** (the default is **no**).

configureIloPrivilages (optional)

Specifies whether to allow the new user to configure other iLO settings (such as global settings and networking). The valid values are **yes** and **no** (the default is **no**).

The flow returns the following:

returnResult

The task or operation result.

Delete User

The **Delete User** operation deletes an existing user on a Proliant iLO or iLO2 processor.

All of the flow's inputs except the following are described in *Common inputs in the integration*.

userLogin

The login name of the user to delete.

The flow returns the following:

returnResult

The task or operation result.

Eject Virtual Media

The **Eject Virtual Media** operation ejects the virtual media for the selected virtual media device on a Proliant iLO or iLO2 processor.

All of the flow's inputs except the following are described in *Common inputs in the integration*.

device

The virtual media device to eject. The valid values are **CDROM** and **FLOPPY**.

The flow returns the following:

returnResult

The task or operation result.

Execute RIBCL Script

The **Execute RIBCL Script** operation executes an RIBCL script on a Proliant iLO or iLO2 processor.

All of the flow's inputs except the following are described in *Common inputs in the integration*.

ribclScript

The XML of the script to execute without the RIBCL or LOGIN elements. This operation wraps the script with the RIBCL and LOGIN elements based on the username and password inputs.

The flow returns the following:

returnResult

The RIBCL script result if the operation fails.

rawResponse

The raw XML response from the Proliant iLO or iLO2 processor.

Note: RIBCL is XML scripting for iLO processors. For more information about RIBCL scripting, read the *HP Integrated Lights-Out Management Processor Scripting and Command Line Resource Guide* available here:
http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c00294268/c00294268.pdf

Sample scripts can be found here:
ftp://ftp.hp.com/pub/softlib2/software1/pubsw-windows/p1507541202/v60710/windows-LOsamplescripts3.00.0-2.zip

Get Host Data

The **Get Host Data** operation gets host data about the Proliant server from the Proliant iLO or iLO2 processor.

All of the flow's inputs are described in *Common inputs in the integration*.

The flow returns the following:

returnResult

The task or operation result.

biosDate

The date of the running BIOS image.

biosFamily

The BIOS family for the host.

productName

The descriptive model name of the host.

embedNIC1MAC

The MAC address of the first embedded NIC.

embedNIC2MAC

The MAC address of the second embedded NIC.

iloNICMAC

The MAC address of the iLO NIC.

serialNumber

The serial number of the host.

uuid

The UUID of the host.

Get Power Cap Values

The **Get Power Cap Values** operation gets the minimum and maximum values of the power cap setting for a Proliant iLO2 managed host.

All of the flow's inputs are described in *Common inputs in the integration*.

The flow returns the following:

returnResult

The operation result.

maxWatts

The maximum power cap value.

minWatts

The minimum power cap value.

currentPowerCap

The current power cap value.

Host Power Status

The **Host Power Status** operation retrieves the host power state using a Proliant iLO or Proliant iLO2 processor.

All of the flow's inputs are described in *Common inputs in the integration*.

The flow returns the following:

returnResult

The task or operation result.

Insert Virtual Media

The **Insert Virtual Media** operation inserts and configures the mount behavior of virtual media images on Proliant iLO or Proliant iLO2 processors.

All of the flow's inputs except the following are described in *Common inputs in the integration*.

url

The HTTP URL of the virtual media image.

Examples:

- http://hostname/image.iso
- http://username:password@hostname:port/image.bin

device

The virtual media device to use. The valid values are **CDROM** and **FLOPPY**. Use **FLOPPY** for USB key drive images.

virtualMediaBootOption

Specifies how virtual media behaves during the boot phase of the server. The following options are available:

- **CONNECT —** The virtual media is connected immediately and stays connected through subsequent server boot cycles (this is the default).
- **BOOT_ALWAYS —** The virtual media device is connected on the next and subsequent server boot cycles.
- **BOOT_ONCE —** The virtual media device is connected on the next server boot cycle and disconnected on subsequent boot cycles.

virtualMediaWriteProtect

Specifies whether to Write-protect the virtual media. This is only applicable to a **FLOPPY** device. The valid values are **yes** and **no** (the default is **yes**).

The flow returns the following:

returnResult

The task or operation result.

Modify User

The **Modify User** operation modifies an existing user on a Proliant iLO and Proliant iLO2 processor. Optional parameters that are left empty are not modified for the target user.

All of the flow's inputs except the following are described in *Common inputs in the integration*.

userLogin

> The login name of the user to modify.

userFullName

> The new full name (real name) of the user.

userPassword

> The new password for the user.

adminPrivilages

> Specifies whether to allow the user to administer user accounts. The valid values are **yes** and **no**.

remoteConsolePrivilages

> Specifies whether to allow the user access to the remote console. The valid values are **yes** and **no**.

resetServerPrivilages

> Specifies whether to allow the user to switch server power and reset the server. The valid values are **yes** and **no**.

virtualMediaPrivilages

> Specifies whether to allow the user access to virtual media. The valid values are **yes** and **no**.

configureIloPrivilages

> Specifies whether to allow the user to configure other iLO settings (such as global settings, and networking). The valid values are **yes** and **no**.

The flow returns the following:

returnResult

> The task or operation result.

Power On Host

The **Power On Host** operation switches the host power on or off via a Proliant iLO and Proliant iLO2 processor.

All of the flow's inputs except the following are described in *Common inputs in the integration*.

hostPower

> The desired power state for the host. The valid values are **yes** (on) and **no** (off). If the power is on and **hostPower** is **no**, an ACPI signal is initiated to start a graceful shutdown of the operating system (the same as momentary press of the power button).

force

> Specifies whether to force the power state change by using the virtual power press and hold method. The valid values are **yes** and **no.** The default value is **no**.

The flow returns the following:

returnResult

> The task or operation result.

Restart Host

The **Restart Host** operation performs a warm boot of the server if it is currently on via the Proliant iLO or iLO2 processor.

All of the flow's inputs are described in *Common inputs in the integration*.

The flow returns the following:

returnResult

The task or operation result.

Restart iLO Processor

The **Restart iLO Processor** operation restarts the Proliant iLO or iLO2 processor.

All of the flow's inputs are described in *Common inputs in the integration*.

The flow returns the following:

returnResult

The task or operation result.

Set Auto Power On

The **Set Auto Power On** operation sets automatic power on and power on delay settings for the host via a Proliant iLO or iLO2 processor. This configures whether or not the host automatically powers on when power has been restored after a power outage. This can be configured with a variable delay for hosts with iLO2.

All of the flow's inputs except the following are described in *Common inputs in the integration*.

autoPowerOn

The desired auto power on setting. Possible values include:

- **yes –** Enables automatic power on with a minimum delay.
- **no** – Disables automatic power on.
- **15** – Enables automatic power on with a 15-second delay (no delay if not iLO2).
- **30** – Enables automatic power on with a 40-second delay (no delay if not iLO2).
- **45** – Enables automatic power on with a 45-second delay (no delay if not iLO2).
- **60** – Enables automatic power on with a 60-second delay (no delay if not iLO2).
- **random** – Enables automatic power on with a random delay of up to 60 seconds (no delay if not iLO2).

The flow returns the following:

returnResult

The task or operation result.

Set Power Cap

The **Set Power Cap** operation sets the power cap for the hosts via the Proliant iLO2 processor. Use the **Get Power Cap Values** operation to determine a valid range for the watts input for this operation.

All of the flow's inputs except the following are described in *Common inputs in the integration.*

watts

The desired power cap value. The valid values are numeric. Use zero (**0**) to disable the power cap.

The flow returns the following:

returnResult

The task or operation result.

Set Power Saver Mode

The **Set Power Saver Mode** operation sets the power saver mode for the host via the Proliant iLO or iLO2 processor.

All of the flow's inputs except the following are described in *Common inputs in the integration.*

powerSaverMode

The desired power saver mode. The valid values are:

- **1 –** Operating system control mode (disables the power saver).
- **2 –** HP static low power mode.
- **3 –** HP dynamic power savings mode.
- **4** – HP static high performance mode (valid for iLO2 processors only).

The flow returns the following:

returnResult

The task or operation result.

Troubleshooting

General troubleshooting procedures and tools

The best troubleshooting tools are the iLO Web interface and iLO online configuration utility (HPONCFG). This integration uses the same protocol and scripting language as the HPONCFG utility.

Error messages

Failed to Connect

Could not establish a connection to the iLO system with the hostname provided.

Invalid Login

The iLO username and/or password specified are incorrect.

This feature requires an installed license key

Virtual media and power cap features are enabled with the Proliant iLO Advanced Pack.

An invalid Virtual Media option has been given

The only valid options are **CDROM** and **FLOPPY**.

Unsupported Feature

The feature requested was not supported for the specified system. Different generations of HP Proliant systems have different power saving capabilities.

Security

HP Proliant iLO and iLO2 are accessed via the RIBCL XML Scripting interface over SSL. The SSL server certificates on the iLO processor are not verified. This is the same method used as the HPONCFG utility that is included with the Proliant Support Pack.

Tools

Following are OO tools that you can use with the VMware Virtual Infrastructure 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 located in the %OO-home%/Studio/tools/ folder.