

# HP Operations Orchestration Software

Software Version: 7.50

## *HP Server Automation Integration Guide*

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# Finding or updating documentation on the Web

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.

# Where to Find Help, Tutorials, and More

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.

## Support

For support information, including patches, troubleshooting aids, support contract management, product manuals and more, visit the following site:

- <http://support.openview.hp.com>

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# Overview

This integration allows administrators to build HP Operations Orchestration (OO) flows that are integrated with HP Server Automation (SA).

This document explains this integration's implementation and how to use the operations of the integration to provision, patch, update software on, and perform audits on servers, in addition to other tasks.

Please note that in the OO integration and documents, the abbreviations "SA" and "SAS" both refer to HP Server Automation.

The SA operations are found in the Central repository in the \Library\Integrations\Hewlett-Packard\Server Automation\ folder.

## Use cases and scenarios

Integrating SA and OO makes it possible to use many features of SAS in higher-level processes, including the following supported SAS use cases:

1. OS provisioning, including "bare-metal" provisioning
2. Administering SA-managed servers:
  - Managing patch levels and patch policies
  - Managing software updates and software policies
  - Patch and software compliance scans
  - Remediating servers
  - Managing device groups
3. Reporting
  - Compliance reports
  - Audit reports
4. Virtualization
  - Create virtual machines

## Flows and operations

OO operations for SA are provided in the following groups provided by OO include:

- **Audits**  
Allow you to retrieve information about Audit Tasks and Audit Results.
- **Custom Attributes/Fields**  
Allow custom attributes and fields to be attached to various SA objects.
- **Customers**  
Allows you to retrieve information about customers in the SAS system.
- **Device Groups**  
Operations related to creating, modifying, and removing device groups.

- **Folders**  
Allow you to create, delete, and retrieve information about folders in the SAS file system.
- **Jobs**  
Operations related to SA jobs that are run asynchronously (such as audits and scans).
- **OS Sequences**  
Operations for retrieving and starting OS sequences.
- **Patch Policies**  
Operations that allow patch policies to be created, deleted, and attached to or detached from servers, and to perform compliance scans.
- **Patches**  
Operations for getting information about, installing, uninstalling, and policy overrides for patches.
- **Platforms**  
Allow you to retrieve information about platforms.
- **Scripts**  
Operations for retrieving information about existing scripts and running them.
- **Servers**  
Operations for getting information about or from an SA-managed server, remediating servers etc.
- **Software Policies**  
Allow software policies to be created, modified, destroyed, attached/detached to servers, and to perform compliance scans.
- **Units**  
Allow you to retrieve information about unit objects.
- **Virtualization**  
Operations for creating virtual machines on a Hypervisor.

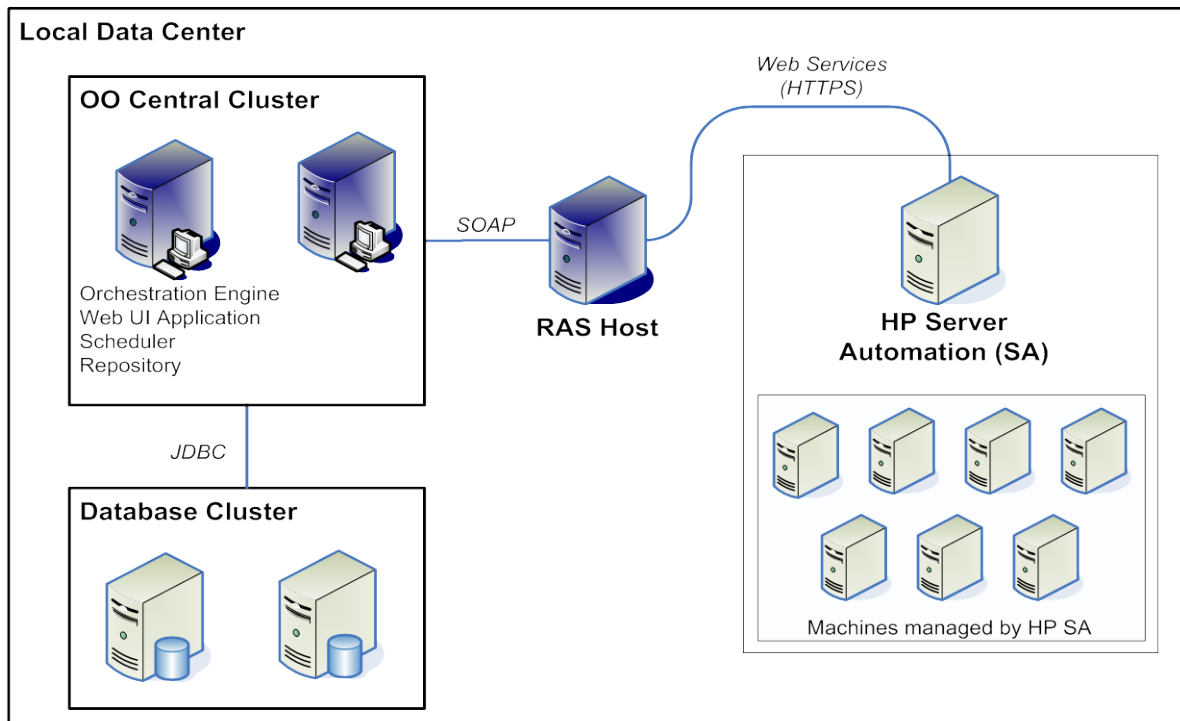
The sample flows in OO do some of the most common tasks that need to be automated in SA, such as remediating servers, installing patches, and creating virtual machines. Each of these sample flows have descriptions that describe in detail what they do.

## Versions and Components

Operations Orchestration version	HP Server Automation (SA) Versions
7.50	6.X , 7.0, & 7.5



## Architecture



## Installation and configuration instructions

No special installations are required for using the HP SA integration provided by OO. You need to know the URL, username and password to connect to SA. If the port and protocol for the connection are changed from the defaults, you would need to retrieve those from the SA administrator as well. You will need to know the version of SA you're connecting to.

### Operation specifics

The **coreVersion** input is used to pass the version of SAS to OO operations in the SA integration, as the SA operations now support multiple versions of SAS (unless otherwise specified in the **Description** tab of an operation). Each SA operation will provide an SAS versions selection list so that users can select the proper version. If the version is not provided, OO will use the latest supported version by default.

Some operations are run asynchronously, returning information about the SA jobs they represent. Often users will have to query these jobs to see if they are completed or wait for them to complete.

Certain operations may also need approval, in which case a job can only continue after it has been approved.

Operations related to OS provisioning, virtualization and many other functions may need certain pre-work or set up using the SA user interface or other SA tools.

# Troubleshooting

## General troubleshooting procedures

When troubleshooting issues related to the SA integration, there are several steps that can be verified.

1. Verify that the same operation works when it is performed through the SA UI with the given parameters.
2. Verify that your connection parameters and the **coreVersion** are correct.
3. If you have access to the twister Web interface of SA, you can run the underlying API call to see if it is able to run successfully. Twister provides a nice UI to execute these API calls. The OO operations are using similar API calls under the hood. You can contact your SA administrator to find out where the twister Web interface is located (on default installations twister is at: [https://\\${coreHost}:1032/twister/docs/index.html](https://${coreHost}:1032/twister/docs/index.html)).
4. The exact Web services that are used by the OO integration are exposed by SA (osapi). This allows you to run the exact service calls that are run under the hood of the operations provided by OO. SA does not provide an interface to execute these services, so you would need to use the OO Web Services Wizard (wswizard.exe) or a third party tool. You can contact your SA administrator to find out where the osapi is located (on default installations the osapi is at: [https://\\${coreHost}/osapi/com/opsware/folder/FolderService](https://${coreHost}/osapi/com/opsware/folder/FolderService)).

## Customizing the Integration

You can add new operations to your SA integration in the following ways:

- By creating operations built by the OO Web Services Wizard (wswizard.exe) with the exact Web services that are used by the OO integration are exposed by SA (osapi). You can use the OO Web Services Wizard to create operations against any of the exposed Web service calls. The wswizard.exe wizard is located in the `\%OO_home%\Studio\tools\` folder. There are many operations created in this fashion in the current OO integration under the `\Library\Integrations\Hewlett-Packard\Server Automation\` folder. You can contact your SA administrator to find out where the osapi is located (on default installations the osapi is at: [https://\\${coreHost}/osapi/com/opsware/folder/FolderService](https://${coreHost}/osapi/com/opsware/folder/FolderService)).
- By running OCLI commands against SA via and SSH operation. SA does have a command line interface tool that allows you to run remote calls via SSH. Refer to the SA documentation for more information about the OCLI interface and commands. There are many operations created using the OCLI under the `\Library\Integrations\Hewlett-Packard\Server Automation\` folder.

# Launching Flows

Using the various REST-based services, you can use the following URL syntaxes to interact with HP OO Central.

**Note:** In the following, synchronous flow execution means that Central does not return a result until the flow run has completed. In asynchronous flow execution, the flow result is returned immediately after the flow is launched.

- To retrieve a list of flows from Central:

`https://<ooserver>:<port>/PAS/services/http/list`

where

`<ooserver>` is the machine on which Central is installed.

`<port>` is the port that was specified for the HTTPS (HTTP over Secure Sockets Layer [SSL]) protocol when Central was installed.

- To synchronously execute a flow identified by name and location in the Library or Central repository:

`https://<ooserver>:<port>/PAS/services/http/execute/<library_path>`

where

`<ooserver>` is the machine on which Central is installed.

`<port>` is the port that was specified for the HTTPS (HTTP over SSL) protocol when Central was installed.

`<library_path>` is the location of the flow within the Central repository, including the name of the flow.

- To synchronously execute a flow by UUID:

`https://<ooserver>:<port>/PAS/services/http/execute/<flow_UUID>`

where

`<ooserver>` is the machine on which Central is installed.

`<port>` is the port that was specified for the HTTPS (HTTP over SSL) protocol when Central was installed.

`<flow_UUID>` is the universally unique ID of the flow within the Central repository.

- To asynchronously execute a flow by name:

`https://<ooserver>:<port>/PAS/services/http/execute_async/<library_path>`

where

`<ooserver>` is the machine on which Central is installed.

`<port>` is the port that was specified for the HTTPS (HTTP over SSL) protocol when Central was installed.

`<library_path>` is the location of the flow within the Central repository, including the name of the flow.

- To execute a flow by UUID (returns immediately after the flow is launched):

`https://<ooserver>:<port>/PAS/services/http/execute_async/<flow_UUID>`

where

`<ooserver>` is the machine on which Central is installed.

<port> is the port that was specified for the HTTPS (HTTP over SSL) protocol when Central was installed.

<flow\_UUID> is the universally unique ID of the flow within the Central repository.

## Security

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

SA provides many out-of-the-box security features to manage users, groups, and overall security.

## Tools

### **RSFlowInvoke.exe and JRSFlowInvoke.jar**

Command-line tools with which flows can be started from outside the OO Central Web application. These tools are available in the \\%OO\_home%\Studio\tools\ folder.

### **wswizard.exe**

This is the OO Web Services Wizard used to create operations from an arbitrary set of web services. This tool is available in the \\%OO\_home%\Studio\tools\ folder.