HP Operations Orchestration

Software Version: 10.22.0001
Windows and Linux Operating Systems

Application Program Interface (API) Guide

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Contents

Introduction

This document describes HP Operations Orchestration public Application Programming Interfaces (API).

The public API is HTTP-based.

All APIs are RESTful and use JavaScript Object Notation (JSON).

REST API Versions

HP OO 10.10 introduces a new version of the HP OO REST API v1.0. The API's documented in this guide are updated for v1.0 unless indicated. Refer to the API version 1.0 table to view the changes. HP OO 10.10 or later supports backward compatibility.

Note: HP OO version 10.10 or later may introduce new optional fields to returned representations that are not considered as an API break.

Therefore, the client should be tolerant to new attributes when deserializing

JSONs. For example, when performing a GET operation on /test, the following is

returned:

```
{
“msg” : “hello world”
}
```

We may add a new attribute in the next version and then the GET on /test will return the following, in this case the client should not break:

```
{
“msg” : “hello world”,
“msg2” : “It’s a beautiful day!”
}
```

Deprecated APIs

HP is committed to support deprecated APIs until the next major release.

Basic Concepts

See the Concepts Guide for more information on the basic concepts of HP Operations Orchestration.

RESTful APIs

All REST APIs have a prefix of `/oo/rest/v1/`. For example, `POST /oo/rest/v1/executions`.

Request Headers

The `content-type` and `accept` headers are usually added for every request.

The `content-type` represents the MIME (RFC2045) type of the request body. The `content-type` is usually `application/json` unless otherwise stated in a specific API.

The `accept` header represents the requested format of the response from the Central server. The `accept` header is also usually `application/json` unless mentioned

differently. Some APIs provide `application/rss+xml` or

`application/atom+xml`.

Integration Use Case

This chapter describes a common usage of the HP OO API and comes to demonstrate its capabilities. Keep in mind that use case described here is only one example on a common use case of HP OO platform integration. HP OO APIs allow much more than that.

Use Case Description

The most common use case when integrating with HP OO is allowing various types of end users to invoke automation using organizational portal or a third party application. For example, to remediate an incident, doing routine tasks like reset password for a user or creating a DB schema in Dev environment, and so on.

The following implementation is a suggestion and can be adopted at any level you see fit.

Use Case Implementation

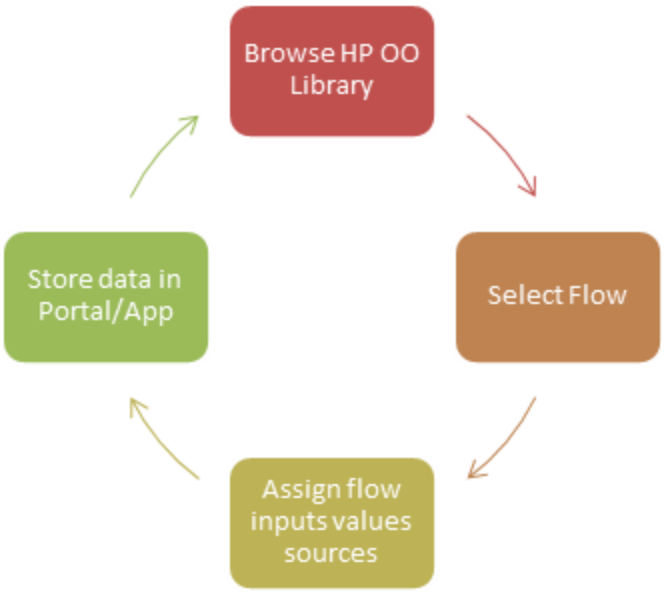
The integration includes two separate processes. These processes are described from the user perspective, but also describe the work to be done by the integration developer.

Portal/App Admin Process - Selecting Flows to Expose to Users

Process description

Before the user of the Organizational Portal/Application will be able invoke flows from it, the Admin needs to determine which flows he would like to expose to the user and for each one of them to determine from where the user is able to invoke and assign data sources for the flow inputs.

The Admin experience is:



Process implementation

This process, if used as described, requires UI development on the portal/application side in order to allow the Admin to browse the library and select a flow.

For example:

- Drop down selection box that lists all the flows in a specific folder in the library (means that the path will need to be decided in advance).
- A folders tree graphical window like the following:

Another option which is less usable for the Admin is only supplying the UI that allows the Admin to manually insert the flow UUID and input parameters value sources.

The following table describes how the implementation of the interactions with HP OO Central server look like.

Step: Browse HP OO Library

Admin Action: Browse the content library from the portal/application.

Integrator Actions (interaction with OO): Lists the folders and flows under a given path while the root of the path is the HP OO Content Library, which is 'Library/'. In this example, if the organizational portal team decides to implement in the UI the full library tree display (as shown in the image above), the integrator code is required to be recursive. That is, a REST call will be implemented for every branch that the end user clicks.

Looking at the example in the image above, the first REST call was to list the top level libraries, then when the user clicked on 'Accelerator Packs' a REST call was submitted to list the levels below it, and so on.

See API: GET /flows/tree/level

Step: Select Flow

Admin Action: Select flows to invoke in order to make them available in the portal/application and also define where.

Integrator Actions (interaction with OO): Get the selected flow details like UUID, Inputs, Description, etc. The details that will be collected depend on what information was decided to display to the Admin in the UI. For invoking the information needed is UUID and inputs information.

See API: GET /flows/{uuid}

Step: Assign flow inputs values sources

Admin Action: Bind value sources to the flow inputs. The sources will most likely be dynamic objects from the application data (like internal variable, called `SelectedItemHostname`) and not static values.

Integrator Actions (interaction with OO): Provide the capability for this in the portal/application.
Note: A validation will need to be implemented to make sure the Admin will provide value source to each of the flow inputs that are marked as `Prompt User`. Otherwise the flow will pause and will wait for inputs, for example, OO Admin will need to login to Central and enter them.

See API: GET /flows/{uuid}/inputs

Step: Store data in Portal/App

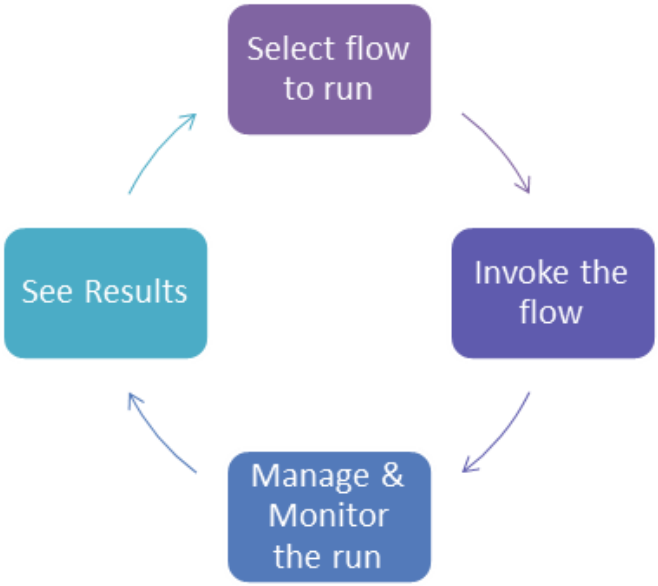
Admin Action: Store all the information in the Portal/Application.

Integrator Actions (interaction with OO): Save the relevant data to the portal/application (in its DB/Forms/Files/etc.)
Note: The flow UUID, inputs and their value source must be kept on the Portal/Application side for the flow invocation.

End User process - Invoking and Monitoring Workflows

Process description

This process occurs in the organizational portal or the third party applications, on the area that is exposed to the end user. The best practice is to have one place that holds the functionality, like an internal service, so the other areas of the application that allow users to trigger flows calls it over and over.



Process implementation

The following table describes how the implementation of the interactions with HP OO Central server looks like.

The interaction is done through the HP OO REST API.

See Flow Execution for more details.

Step: Select flow to run.

End User Action: From the portal/application, the end user will select the flow to invoke from a predefined list or just click on a button that the admin made available.

Integrator Actions (interaction with OO): Collect the information to be used later for invoking the flow. This includes UUID of the flow selected and input parameters designated values.

API to use: None

Step: Invoke the flow.

End User Action: The workflow will be invoked while the portal/application will feed it with the needed input values.

Integrator Actions (interaction with OO): Use the REST API to invoke the flow. Use the UUID and the flow input parameters names and values. It is also recommended to use the `runName` invocation parameters in order to allow better troubleshooting later on. A suggested format for the `runName` can be:
`<InvokingAppName>:<InvokingUserName>:<TargetSystemName>:<ActionName>`

API to use: Execute a Flow by UUID `POST /executions`

Step: Manage and Monitor the run.

Integrator Actions (interaction with OO): Uses the following options:

1. A code that includes a loop that continuously calls HP OO to get the status summary.
2. For being able to display to the end user progress of the run in addition to the status, develop code that performs as stated above and in addition, for the progress, continuously requests the current running steps.

API to use:

1. Get a single execution's summary:
    - Use GET /executions/{executionsId}/summary.
    - You can also use GET /executions/{executionId}/execution-log to have the above with additional information on inputs and outputs.
2. Get status on set of executions:
    - To get a short run summary on a list of executions with filtering capabilities such as – status, run name, flow UUID, use the Get Executions API: GET /Executions. This can be used for example for Grid view.
3. Get **Execution Steps (with Pagination and Filtering)**:
    - To see run's execution steps, use the Get Execution Step (with Pagination and Filtering) API:
        - `GET /executions/{executionId}/steps`.
        - This allows you to see all run's executed steps, get their inputs, outputs and more details.

      This information allows you to track current running execution and also use this to debug your run.

End User Action: Control the run (Optional).

Users can take the following actions on the

run:

1. Pause the run.
2. Resume the run.
3. Cancel the run.

Integrator Actions (interaction with OO): Implementing some or all of this will provide more control to the end user, which can be very helpful to some end user types. But on the other hand need to have additional UI development on the portal/application side. When implementing `Pause and Resume` make sure to keep track on the run status after Resume action was activated.

API to use:

- Change the Status of an Execution

Basic Authentication

When user authentication is on, the client must provide their credentials when calling the REST

APIs. Central supports preemptive basic authentication.

The client should add a header with the following key/value:

- Key: Authorization
- Value: Basic base64 (username:password)

For example, the authorization value for admin:1234 is:

```
Basic YWRtaW46MTIzNA==
```

On an unsuccessful authentication attempt, the service returns an HTTP 401 code.

Permissions

If the user does not have the assigned permission to activate an API the following status code appears:

```
403 – Forbidden. The user attempting to execute this command does not have the needed permission.
```

Note: This applies to all the API's in the version.

CSRF Protection in HP OO 10.x

A CSRF (Cross-Site Request Forgery) attack is when a malicious web site, email, blog, instant message, or program causes a user's web browser to perform an unwanted action on a trusted site for which the user is currently authenticated. The impact of a successful cross-site request forgery attack is limited to the capabilities exposed by the vulnerable application.

For more information about CSRF protection, see https://www.owasp.org/index.php/Cross-Site_Request_Forgery_%28CSRF%29_Prevention_Cheat_Sheet#Disclosure_of_Token_in_URL.

When you upgrade to 10.22.0001 from an earlier version, CSRF protection is disabled by default.

You can enable or disable CSRF protection by setting the `csrf.protection.enabled` system configuration item to true or false. This can be done via REST API. For more information, see "Update System Configuration Item" in the *HP OO API Guide*.

To set this system configuration item, you must have Manage System Settings permissions.

You can also enable or disable CSRF protection using the HP OO Shell (OOSH) tool. Use the following command:

```
oosh> set-sys-config –key csrf.protection.enabled –value true ……
```

Make sure to specify the options (`--key, --value, --url, --user, --password`) for this command.

For more information, see the *HP OO Shell (OOSH) User Guide*.

Important: If you are working with a REST client that retains the session, continue reading the following section. If not, then this section is not relevant for you.

Adding the CSRF Token Header

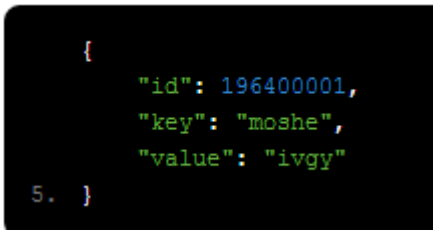
When using REST APIs, in some situations, you will need to add the CSRF token header (just for POST/DELETE/PUT).

The **POST**, **PUT**, and **DELETE** requests are protected.

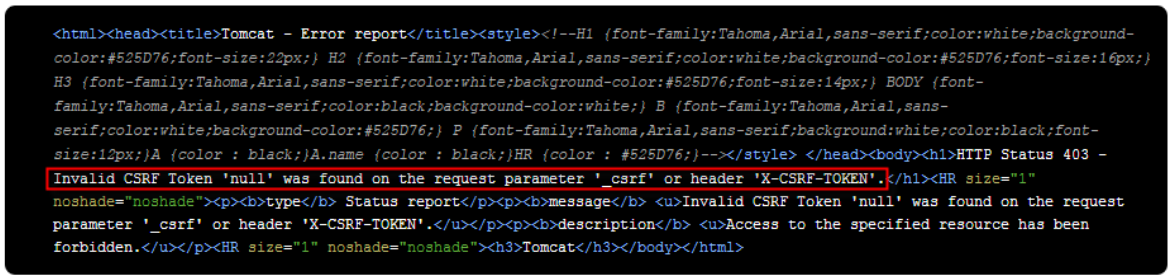
If you are working with a REST client that keeps the session, you will need to provide the CSRF token after the first call.

Following is an example for a Google Chrome REST console:

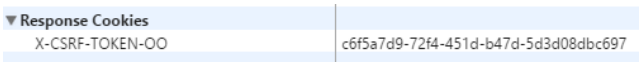
1. The **First** POST works (for example, create system configuration):



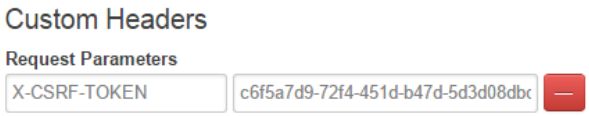
2. After the **second** POST**:**



3. Now provide the **CSRF** token on the request. Get the **X-CSRF-TOKEN** from the server response. You can use a simple dummy **GET** to give you the token value in the response cookies:



4. Now you can **POST** with this token in the header:



Following are the results:

```
{
    "id": 196400001,
    "key": "moshe",
    "value": "ivgy"
}
```

Example of handling CSRF token in code

In Java, get the X-CSRF-TOKEN from the response **cookies**:

Example for org.apache.http.client

```
private void handleCsrfToken(BasicCookieStore cookieStore, HttpRequestBase request) {

    // handle CSRF token

    if (cookieStore != null) {

        String token = null;

        for (Cookie cookie : cookieStore.getCookies()) {

            if (cookie.getName().equals("X-CSRF-TOKEN-OO")) {

                token = cookie.getValue();

                break;

            }

        }


        if (token != null) {

            request.setHeader("X-CSRF-TOKEN", token);

        }

    }

}
```

In Java, get the X-CSRF-TOKEN from the response headers:

Example for org.apache.http.client

```
private void handleCsrfToken(HttpRequestBase requestBase) throws Exception {

    HttpGet httpGet = new HttpGet(connectCommand.getUrl() + "/rest/latest/users/me");

    HttpRequestResult result = doSimpleRequest(httpGet); // dummy get

    Header[] headers = result.getResponse().getHeaders("X-CSRF-TOKEN");


    if (headers != null && headers.length > 0) {

        requestBase.addHeader(headers[0].getName(), headers[0].getValue());

    }
}
```

JavaScript example:

```
var header = xhr.getResponseHeader('X-CSRF-HEADER'); // get CSRF header name from response


var token = xhr.getResponseHeader('X-CSRF-TOKEN'); // get CSRF token value from response

xhr.setRequestHeader(header || 'X-CSRF-TOKEN', token || ''); // set CSRF header in the request
```

If you need to temporarily disable CSRF protection in order to fix your API calls, you can do this by changing the setting `csrf.protection.enabled` to false. It is recommended that you enable the CSRF protection once the required changes have been implemented.

Backward Compatibility With HP OO 9.x APIs

Some SOAP and REST APIs from HP OO 9.x are supported by HP OO 10.x, and some are not.

Some of the APIs from HP OO 9.x have equivalent REST APIs for HP OO 10.x. We recommend using the REST APIs for HP OO 10.x.

- The base path for using HP OO 10.x REST API is:
  http(s)://<OO Central Server Name / IP>:<PORT>/oo/rest/.
- The URL for using HP OO 9.x SOAP API while working with OO 10.x Central is the same as in HP OO 9.x:
  https:// <OO Central Server Name / IP>:<PORT>/PAS/services/WSCentralService.
- The URL for using HP OO 9.x REST API while working with OO 10.x Central is the same as in HP OO 9.x.
  https:// <OO Central Server Name / IP>:<PORT>/PAS/services/rest.

SOAP

In the following table you can find information on what is supported, what is not, and the HP OO 10.x API that we recommend to use. For details on the HP OO 10.x REST requests, see the section below.

Functionality	9.x Request	10.x Support for 9.x Request	10.x Equivalent REST Request
Configurations	getLWSSOConfig	Not Supported	GET /authns /lwsso-config
	updateLWSSOConfig	Not Supported	PUT /authns /lwsso-config
Clusters	getClusterNodes	Not Supported	N/A
Flows	getFlowDetails	Supported	GET /flows/{uuid}
	getFlowGraph	Partially Supported. The request will succeed, but a static image is returned saying that this feature is not	N/A
	getFlowInputDescriptions	Not Supported	GET /flows/{uuid} /inputs

Functionality	9.x Request	10.x Support for 9.x Request	10.x Equivalent REST Request
Groups and User Management **Note:** In HP OO 10.x, user groups are called user roles.	createGroup	Not Supported	POST /roles
	updateGroup	Not Supported	PUT /roles/{roleName}
	deleteGroup	Not Supported	DELETE /roles/{roleName}
	getUserGroups	Not Supported	GET /roles
	createUser	Not Supported	POST /users
	updateUser	Not Supported	PUT /users/{username}
	deleteUser	Not Supported	DELETE /users/{userIds}
Repositories **Note:** In HP OO 10.x, the concept of repository was replaced with new concepts. See the *HP OO Concepts Guide*.	getPermissions	Not Supported	In order to control content permissions, use: GET /roles/{rolesNames}/entitlements/** or PUT /roles/{roleName}/entitlements/**.
	setPermissions	Not Supported	
	getAttributes	Not Supported	
	renameRepoEntity	Not Supported	
	deleteRepoEntity	Not Supported	
	moveFlow	Not Supported	
	updateDescription	Not Supported	
	createFolder	Not Supported	
	moveFolder	Not Supported	
	list	Supported	Get Flows Library GET /flows/tree/level
	search	Supported	N/A

Functionality	9.x Request	10.x Support for 9.x Request	10.x Equivalent REST Request
Runs	getFlowsRunHistory	Not Supported	N/A
	getFlowRunHistory	Supported	GET /executions
	pauserun	Supported	PUT /executions/{executionId}/status
	resumerun	Supported	PUT /executions/{executionId}/status
	cancelrun	Supported	PUT /executions/{executionId}/status
	runFlow	Supported	POST /executions
	runFlowEx	Supported	POST /executions
	getRunStatus	Supported	GET /executions/{executionIds}/summary
	getRunStatusEx	Supported	GET /executions/{executionIds}/summary
	getStatusForRuns	Not Supported	N/A

Functionality	9.x Request	10.x Support for 9.x Request	10.x Equivalent REST Request
Scheduler	isScheduledFlowPaused	Not Supported	GET /schedules/ GET /schedules/{id}
	isSchedulerPaused	Not Supported	GET /schedules/ GET /schedules/{id}
	isSchedulerEnabled	Not Supported	GET /schedules/ GET /schedules/{id}
	getSchedulesForFlowCategory	Not Supported	N/A
	pauseScheduledFlow	Not Supported	PUT /schedules/{ids}/enabled
	pauseSchedule	Not Supported	PUT /schedules/{ids}/enabled
	resumeSchedule	Not Supported	PUT /schedules/{ids}/enabled
	scheduleFlow	Not Supported	POST /schedules
	getSchedule	Not Supported	GET /schedules/{id}
	deleteSchedule	Not Supported	DELETE /schedules/{ids}
	getScheduledFlows	Not Supported	GET /schedules
	getSchedulesOfFlow	Not Supported	GET /schedules
	resumeScheduledFlow	Not Supported	PUT /schedules/{ids}/enabled
	deleteScheduledFlow	Not Supported	GET /schedules DELETE /schedules/{ids}
Selection Lists	getSelectionList	Not Supported	N/A
	createSelectionList	Not Supported	N/A
Repositories	/list/{path}	Supported	N/A
Runs	/run/{flow path/uuid}	Supported	POST /executions

REST

Functionality	9.x Request	10.x Support for 9.x Request	10.x Equivalent REST Request
Repositories	/list/{path}	Supported	Get Flows Library GET /flows/tree/level
Runs	/run/{flow path/uuid}	Supported	POST /executions

External Links

- Report:

  ```
  https://localhost:8451/PAS/app?service=RCLinkService/ReportLinkDispatch&sp=SINDIVIDUAL_REPAIR_LEVEL&sp=S${flowUUID}&sp=l0&sp=l${historyId}&sp=l${runId}
  ```

  ```
  https://localhost:8451/PAS/app?service=RCLinkService/FlowLinkDispatch&sp=SRESUME&sp=l${runId}
  ```

- Guided Run:

  ```
  https://localhost:8451/PAS/app?service=RCLinkService/FlowLinkDispatch&sp=SNEWRUN&sp=S${flowUUID}&sp=l0&sp=S${flowName}_${runID}
  ```

- Run All:

  ```
  https://localhost:8451/PAS/app?service=RCLinkService/FlowLinkDispatch&sp=SNEWRUNALL&sp=S${flowUUID}&sp=l0&sp=S${flowName}_${runID}
  ```

  `${flowName}_${runID}` - can be empty.

- Instant Run:

  ```
  https://localhost:8451/PAS/app?service=RCLinkService/InstantRun&sp=S${flowUUID}&sp=l0&sp=S${flowName}_${runID}
  ```

  `${flowName}_${runID}` - can be empty.

What's New in HP OO version 10.22

Added

- Get Database Usage Statistic: `GET /db-statistics`
  Retrieves the HP OO database usage statistics (in MB) according to the given request parameters.
- Get Flow Log Level: `GET /flows/{uuid}/loglevel`
  Retrieves the log level (persistence level) of the given flow UUID.
- Update Flow Log Level: `PUT /flows/{uuid}/loglevel`
  Update the log level of the given flow UUID.
- Get System Log Level: `GET /loglevel`
  Retrieves the system default run log level (persistence level).
- Update System Log Level: `PUT /loglevel`
  Updates the system default run log level (persistence level).

Changed

- Get Flow Details: `GET /flows/{uuid}`
  Added log level info fields
- Get Execution Log: `GET /executions/{executionId}/execution-log`
  Added property: `executionLogLevel`

What's New in HP OO version 10.20

Added

- `/config-items` (all methods except `POST`): New API for accessing Configuration Items, replacing both `/content-config` and `/group-aliases` (as well as the old /system-accounts, which has been previously deprecated). Unlike the replaced APIs, this API allows accessing items located in sub-folders.
- `GET /config-items/tree`: Gets a summary of some types of Configuration Items in a tree structure.
- `GET /config-items/{type}/{path}?details=true`: Gets detailed information about a node in the Configuration Items tree.
- `GET /audit/config`

  Gets the auditing configuration.
- `PUT /audit/config`

  Updates the auditing configuration.
- `GET /audit/records`

  Gets the auditing records.
- `DELETE /audit/records`

  Purges old auditing records.
- `DELETE /debugger-events`

  Purges old Studio Debugger events data.
- `DELETE /executions`

  Purges old bound inputs, outputs and step log events.

Deprecated

- /group-aliases (all methods)
- /content-config (all methods)

These APIs have been replaced with the new `/config-items` API.

Some functionality is not included in the new API, and will be removed in the future:

- It is not possible to create (POST) new items with the new API (use content deployment instead).
- It is not possible to rename items with the new API (again, use deployment).

In addition to the deprecation, a few changes have been made to the old APIs, see below under **Changed**.

Changed

- `DELETE /content-config/{name}` and `DELETE /group-aliases/{names}`

Previously, these APIs allowed you to delete deployed Configuration Items that do not have a deployed value. Now, Configuration Items marked as deployed will never be deleted. Either way, the override value will be cleared (as before).

- `PUT /group-aliases/{name}`

This API allows renaming Group Aliases (which is a deprecated functionality that will be removed in the future). The change: if the Group Alias is marked as deployed, and you use this API to rename
it, then a new Group Alias will instantly be created with the old name. This ensures that deployed items cannot be renamed (unless redeployed).

- `/content-config (all methods)`

These APIs will now reject unsupported types of Configuration Items with 400 Bad Request. Previously, items with unsupported types could be stored, updated and so on, but they were completely useless.

- `POST /content-config and PUT /content-config/{name}`

This change affects System Accounts only. If the given System Account value is not formatted correctly, the response code will now be 400 Bad Request, instead of a generic 500 Internal Server Error, as before.

- `GET /executions`

In the status parameter, `PAUSED_SELECT_TRANSITION` has been renamed to `PAUSED_INPUT_ REQUIRED_MANUAL_OP`.

In addition, in the `pauseReason` property in the result object, `SELECT_TRANSITION` has been renamed to `INPUT_REQUIRED_MANUAL_OP`.

API V1.0 Changes in 10.10

The following table lists the updated changes to API version 1.0. Refer to earlier versions of the API Guide for details of the previous API.

Functionality	API	Changes in V1
Authentication	`GET /authns`: Get Authentication Configurations	Properties added: • boolean enable
	`PUT /authns`: Update Authentication Configurations	Properties added: • List of available domains.
LDAP Configuration	`POST /authns/ldap-config/`: Create a New LDAP Configuration	Changes and additions in the attributes sent in the request body. See Create a New LDAP Configuration.
	`PUT /authns/ldap-config/{id}`: Update an Existing LDAP Configuration	Changes and additions in the attributes sent in the request body. See Update an Existing LDAP Configuration.
	`GET /authns/ldap-config/{ldapId}`: Get LDAP Configurations	Changes and additions in the attributes returned in the response. See Get LDAP Configuration by ID.
	`POST /authns/ldap-users`: Test User Attributes	**Deprecated**. See Testing LDAP Configurations.
	`POST /authns/ldap-groups`: Test User Groups	**Deprecated**. See Testing LDAP Configurations.
	`POST /authns/ldap-users/{ldapId}`: Test User Attributes with Existing LDAP Password	**Deprecated**. See Testing LDAP Configurations.
	`POST /authns/ldap-groups/{ldapId}`: Test User Groups with Existing LDAP Password	**Deprecated**. See Testing LDAP Configurations.
	`GET /authns/ldap-config`: Get all LDAPs configruations.	Changes and additions in the attributes sent in the request body. See Get all LDAPs configurations.

Functionality	API	Changes in V1
Content Packs	`GET /content-packs`: Get Content Packs	Properties added: • @Mapping("uuid") private String id; • private String publisher; private String description; • private Long deploymentDate; @Mapping("owner") private String deployedBy;
Content Configuration	`DELETE /content-config/{name:.+}?type={type}`: Delete Content Configuration	Response status code 200 to 204. Response status code 403 added. `SYSTEM_ACCOUNT` added.
	`POST /content-config`: Create Content Configuration	Response code 403 added.
	`PUT /content-config/{name:.+}?type={type}`: Update Content Configuration	Response status code 200 to 204. `SYSTEM_ACCOUNT` added. Response code 403
	`GET /content-config`: Get All Content Configurations	Response code 403 added.
	`GET /content-config/{name:.+}`: Get Content Configuration	Request updated. Response status code 403 added.

Functionality	API	Changes in V1
Flow Execution	`GET /executions`: Get Executions Summary (with pagination and filtering)	Request parameters updated. `Run inputs`, removed. Attributes added: • `ownerDomain` • `triggeringSource`
	`GET /executions/{executionId} /execution-log`: Get Execution Log	The `flowInputs` property was removed
	`PUT /executions/{executionId} /status`: Change the Status of an Execution	Response status code changed to 204.
	`POST /executions`: Execute a Flow by UUID	Return value deprecate
	`POST /executions`: Ad-hoc Flow Execution	Return value deprecated.
	`GET /executions/{id}`: Retrieve Feed Events	Removed for all executions except for runs that were triggered from the remote debugger, you can retrieve the executions events
Flow Library	`GET /flows/tree/sub`: Get Partial Tree	**Deprecated**. `Get /flows/library`: Get Flows Library replaces deprecated API.
	`GET /flows/tree`: Find Tree Item By Path	**Deprecated**. `Get /flows/library`: Get Flows Library replaces deprecated API.

Functionality	API	Changes in V1
Scheduler	`PUT /schedules/{ids}/enabled`: Enable Flow-Schedule	Response status code 400 added.
	`PUT /schedules/{id}`: Update Flow- Schedule	Response status code 204 added.
	`DELETE /schedules/{ids}`: Delete Flow- Schedule	Response status code changed to 204.
	`GET /schedules`: Get Flow-Schedules	Attribute added: • `username`
Deployment	`GET /content-packs`: Retrieve Details for Deployed Content Packs	Properties added: • `"id":` • `"publisher":` • `"description":` • `"deploymentDate":` • `"deployedBy`
Group Aliases	`PUT /group-aliases/{name}`: Update a Group Alias	Response status code changed to 204
Users	`POST /users`: Create New Internal User	Response status code 409 added.
	`PUT /users/{username}`: Update Existing User	
	`DELETE /users/{userNames}`: Delete an Internal User	`userNames` replaces `userIds`
Roles	`GET /roles/{roleName}`: Get Specified Role	Updated permissions.
	`POST /roles`: Create New Role	Response status code 409 added. New permissions added.
	`PUT /roles/{roleName}`: Update an Existing Role	Response code 404 added.

REST APIs

This section includes the RESTful APIs used in HP Operations Orchestration.

Flow Execution

These APIs enable you to execute flows.

Get Executions Summary (with pagination and filtering)

Request: `GET /executions`

Description: Returns a paginated list of executions summary, with filtering. The returned objects include the execution summary, detailed objects with data about the execution.

Request parameters:

Attribute	Type	Description	Required
`pageNum`	Integer	The number of the returned page. Default value: 1	No
`pageSize`	Integer	The size of the returned page. Default value: 200	No
`flowPath`	String	Return runs that their flow path contains this string.	No
`status`	Array of Predefined Values	Return runs with the following statues. Possible values: `RUNNING, COMPLETED, COMPLETED_RESOLVED, COMPLETED_DIAGNOSED, COMPLETED_ERROR, COMPLETED_NO_ACTION_TAKEN, SYSTEM_FAILURE, PAUSED, PAUSED_USER_PAUSED, PAUSED_INPUT_REQUIRED, PAUSED_INPUT_REQUIRED_MANUAL_OP, PAUSED_DISPLAY, PAUSED_GATED_TRANSITION, PAUSED_HAND_OFF, PAUSED_INTERRUPT, PAUSED_NO_WORKERS_IN_GROUP, PAUSED_BRANCH_PAUSED, CANCELED`	No
`owner`	String	Return runs when the owner name contains this string.	No
`runName`	String	Return runs with a run name that contains this string.	No
`runId`	String	Return runs when the run id contains this string.	No

Attribute	Type	Description	Required
flowUuid	String	Return runs where the flow UUID contains this string.	No
startedAfter	Long	Returns runs where the start time is after this time.	No
startedBefore	Long	Returns runs where the start time is before this time.	No

Examples:

```
GET /executions?pageNum=1&pageSize=100&flowUuid=4c&flowPath=Library/cp-filters&status=COMPLETED_RESOLVED&owner=anonymous&runName=getAllFilter&runId=30
```

```
GET /executions?pageNum=4&pageSize=15&status=PAUSED_INPUT_REQUIRED,PAUSED_HAND_OFF
```

Response status codes:

Code	Meaning	Returned When
200	OK	Returns empty list if nothing found or not viewable.
400	Bad Request	Illegal arguments. One of the arguments is not valid.

Response entity body:

An array which contains all of the executions summary which match the requested filters. Each element in the array represents an execution.

The returned array is ordered by descending starting times. Therefore, the execution that has the latest starting time will be first, and would be empty if no execution exists for the given filters.

Attribute	Type	Description	Comments
executionId	String	The run ID.	
branchId	String	The branch id (if it exists).	
startTime	Date	The run start time.	
endTime	Date	The run end time (if ended)	
status	Predefined Value	The status of the execution. Possible values: `RUNNING, COMPLETED, SYSTEM_FAILURE, PAUSED, CANCELED` See Flow Execution Status	

Attribute	Type	Description	Comments
resultStatusType	String	The run result (if ended).	
resultStatusName	String	The run result (if ended).	Is null if status is not "COMPLETED"
pauseReason	Predefined Value	The reason for the pause. Possible values: USER_PAUSED, INPUT_REQUIRED, INPUT_REQUIRED_MANUAL_OP, DISPLAY, GATED_TRANSITION, HAND_OFF, INTERRUPT, NO_WORKERS_IN_GROUP, BRANCH_PAUSED	Is null if status is not "PAUSED"
owner	String	The run owner.	
triggeredBy	String	The domain\user that triggered the execution. If the domain is an LDAP domain that was deleted from OO, the domain will be shown as N/A.	
flowUuid	String	The uuid of the flow which was executed.	
flowPath	String	The path of the flow which was executed.	
executionName	String	The name of the execution.	
roi	Double	The value of the ROI of the execution.	
ownerDomain	String	The name of the domain on which the run owner belongs to. If the domain is an LDAP domain that was deleted from OO, the ownerDomain will be N/A.	
triggeringSource	String	The source of which the run was triggered (scheduler, studio, and do on).	

Example:


```
[
   {

      "executionId":"100749",
      "branchId":null,
      "startTime":1371106274153,
      "endTime":1371106277160,
      "status":"COMPLETED",
      "resultStatusType":"RESOLVED",
      "resultStatusName":"success",
      "pauseReason":null,
      "owner":"anonymousUser",
      "ownerDomain:null"
      "triggeredBy":"anonymousUser",
      "flowUuid":"06fe8531-868b-4e79-aa7a-13a5e30a66ec",
      "flowPath":"Library/Utility Operations/Samples/Generate/Number.xml",
      "executionName":"Generate Random Number",
      "triggeringSource":"central"
      "roi":null
   },
   {
      "executionId":"100267",
      "branchId":null,
      "startTime":1371104522563,
      "endTime":1371104576253,
      "status":"COMPLETED",
      "resultStatusType":"ERROR",
      "resultStatusName":"failure",
      "pauseReason":null,
      "owner":"anonymousUser",
      "ownerDomain:null"
      "triggeredBy":"anonymousUser",
      "flowUuid":"1901edde-3cac-4da6-915c-fd254e23169c",
      "flowPath":"Library/Multihost Connectivity Diagnostic.xml",
      "executionName":"Multihost Connectivity Diagnostic",
      "triggeringSource":"central"
      "roi":null
   }
]
```

Get Execution Summary

Request: `GET /executions/{executionIds}/summary`

Description: Retrieves the details of a specific

execution. **Example**:

`GET /executions/3332190961082830376,679861347442169334/summary`

Request path variables:

Attribute	Description
`executionIds`	The ids of the executions

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested execution log was.
403	Forbidden	
404	Not Found	The requested execution log was not found.

Response entity body:

- **on success:** Returns a JSON object with the following format:


```
[{
        "executionId":"3332190961082830376",
        "branchId":null,
        "startTime":1371475041169,
        "endTime":null,
        "status":"PAUSED",
        "resultStatusType":"RESOLVED",
        "resultStatusName":"HAHA",
        "pauseReason":"USER_PAUSED",
        "owner":"anonymous",
        "ownerDomain:null"
        "triggeredBy":"anonymous",
        "flowUuid":"a8e8fc10-b584-4d39-921f-987b29c9dd19",
        "flowPath":null,
        "executionName":"mock flow",
        "triggeringSource:central"
        "roi":null
},
{
        "executionId":"679861347442169334",
        "branchId":null,
        "startTime":1371475041169,
        "endTime":null,
        "status":"PAUSED",
        "resultStatusType":"RESOLVED",
        "resultStatusName":"HAHA",
        "pauseReason":"USER_PAUSED",
        "owner":"anonymous",
        "ownerDomain:null"
        "triggeredBy":"anonymous",
        "flowUuid":"a8e8fc10-b584-4d39-921f-987b29c9dd19",
        "flowPath":null,
        "executionName":"mock flow",
        "triggeringSource:central"
        "roi":null
}
]
```


See returned items in the Get Execution API for more information.

Get Execution Step Count

Request: `GET /executions/{executionId}/steps/count`

Description: Returns the total number of executed steps for the given execution, including finished steps and currently executing (or paused) steps. If a step has been executed more than once (e.g., in a loop), this will be reflected in the result. The count includes virtual steps such as lanes.

This command is useful when retrieving steps with pagination. It allows one to compute the total number of pages, or the page number in which a given step could be found.

Request path variables:

Attribute	Description
`executionId`	Execution ID whose steps to count.

Request parameters:

Attribute	Type	Description	Required	Default
`upToPath`	String	If provided, the result will only count steps positioned before this path (exclusive). • The given value is a step path in the execution tree: The paths of the steps at the top level of the flow are 0.0 for the 1st step, 0.1 for the 2nd and so on. • If the 2nd step (0.1) is a subflow, then the paths of the steps in that subflow are 0.1.0, 0.1.1 and so on.	No	N/A

Example:

```
GET /executions/100300001/steps/count?upToPath=0.7.0.13
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Successful. If there are no results, the result will be empty, but this is still OK.
400	Bad Request	If any of the arguments are invalid.
404	Not Found	If the execution cannot be viewed or does not exist.

Get Execution Steps (with Pagination and Filtering)

Request: `GET /executions/{executionId}/steps`

Description: Returns a paginated list of executed steps, with optional filtering. If a step has been executed more than once (e.g., loop), this will be reflected in the result. The result includes virtual steps such as lanes.

The returned objects are step logs – detailed objects with all available data about the steps. Step logs are created as soon as the step begins to execute, and are updated with more data when the step finishes.

Request path variables:

Attribute	Description
`executionId`	Execution ID whose steps to retrieve.

Request parameters – pagination (optional):

Attribute	Type	Description	Default	Required
`pageNum`	Long	The wanted page number (1 or greater).	1	No
`pageSize`	Long	The size of each page – can be 1 to 10000.	50	No
`order`	Predefined Value	The order of the returned steps – **asc** for ascending or **desc** for descending. The order is by step path.	asc	No

Request parameters – filtering criteria:

General notes about filtering:

- All filtering parameters are optional
- Only steps that satisfy all of the given criteria will be returned
- Filtering is performed before the pagination. In other words, when filtering, the pagination will give you pages of search results.
- Filtering by text is case insensitive
- Range conditions (such as roiFrom and roiUpTo) are exclusive – see the example below for details.

Attribute	Type	Description
`path`	String	Get the step with this exact path. See Get Execution Step Count

Attribute	Type	Description
pathFrom	String	Get steps whose paths are greater than this path. Greater refers to a collapsible tree representation of the execution, the greater path would show up lower in the tree. For example, 0.10.0 is greater than both 0.10 (its parent) and
pathUpTo	String	Get steps whose path is less than this path (also see pathFrom).
nameContains	String	Get steps whose names contain this substring.
types	Predefined Value	Get steps of the given types (comma-separated list, no spaces). The types are: operation, subflow, return_step, other. other represents special steps like Multi Instance, as well as lanes.
startTime	Long	Get steps that started at this exact timestamp. Timestamps are “Unix time” numbers with millisecond resolution (the number of milliseconds elapsed since
startTimeFrom	Long	Get steps that started after this timestamp.
startTimeUpTo	Long	Get steps that started before this timestamp.
durationSec	Long	Gets steps with this exact execution time (seconds).
durationSecFrom	Long	Get steps that took longer to execute than this value (seconds).
durationSecUpTo	Long	Get steps that took less time to execute than this value (seconds).
inputsContain	String	Get steps where any of the inputs contain this sub-string, in either the input name or its value. It is also possible to make a search in the form name=value. Note: Values over 4,000 bytes cannot be searched.
rawResultsContain	String	Get steps where any of the raw results contain this sub- string, in either the result name or its value. It is also possible to make a search in the form name=value.

Attribute	Type	Description
responseTypes	Predefined Value	Get steps having one of the given response types (comma-separated list, no spaces). The types are: resolved, error, diagnosed, no_action_taken, exception. exception means the step's execution could not be completed.
transitionContains	String	Get steps whose outgoing transition messages contain this sub-string. The transition message is either the transition's description, or the transition's name if no description has been defined. Note: Transition descriptions over 4,000 bytes (for all locales combined) cannot be searched.
roi	Double	Get steps whose outgoing transitions have this exact ROI value.
roiFrom	Double	Get steps whose outgoing transitions have ROI values greater than this.
roiUpTo	Double	Get steps whose outgoing transitions have ROI values less than this.
currentFlowContains	String	Get steps that belong to flows whose names contain this sub-string.
userContains	String	Get steps that executed while the given Central user name (or a sub-string in it) was the execution
workerIdContains	String	Get operation-type steps that were executed by the given worker UUID (or a sub-string in it).

Example:

```
GET /executions/100300001/steps?pageNum=3&pageSize=20&order=desc
       &pathFrom=0.7.2&pathUpTo=0.9&path=0.9
       &nameContains=ping
       &types=operation,subflow
       &startTime=1391359774000&startTimeFrom=1391359774000&startTimeUpTo=1391359780000
       &durationSecFrom=300&durationSecUpTo=400&durationSec=400
       &inputsContain=localhost
       &resultsContain=ping+completed
       &responseTypes=resolved,diagnosed
       &transitionContains=success
       &roi=7.5&roiFrom=7.5&roiUpTo=30
       &currentFlowContains=My+Subflow
       &userContains=jon
       &workerIdContains=5c2002da
```

This will search execution 100300001 for steps satisfying all of the criteria, and return the 3rd page out of the result set (with 20 steps per result page). The steps will be searched in descending path order, starting with the step that has the greatest path (normally the main flow's return step).

The combination of these three conditions: `roi=7.5&roiFrom=7.5&roiUpTo=30`, will search for: `7.5 ≤ roi < 30`.

Following are the possible search ranges:

Use paramaters…	To search for…
`roi=7.5`	`roi = 7.5`
`roiFrom=7.5`	`roi > 7.5`
`roi=7.5&roiFrom=7.5`	`roi ≥ 7.5`
`roiFrom=7.5&roiUpTo=30`	`7.5 < roi < 30`
`roi=7.5&roiFrom=7.5&roiUpTo=30`	`7.5 ≤ roi < 30`
`roiUpTo=7.5&roiFrom=30`	`roi < 7.5 or roi > 30`
`roiUpTo=7.5&roiFrom=7.5`	`roi ≠ 7.5`

Response Attributes:

StepInfo object:

This object is one of the attributes of a step. It represents a summary of the main step details.

Attribute	Type	Description	Comments
`stepId`	String	Step UUID	
`stepName`	String	Step name	
`path`	String	Step path within the execution tree.	See Get Execution Step Count for a description of step paths
`responseType`	Predefined Value	Same as in the `StepTransitionLog` object.	
`startTime`	Long	Step execution start time.	
`endTime`	Long	Step execution end time.	
`paused`	Boolean	`true` if this step's execution is currently paused, `false` otherwise.	

Attribute	Type	Description	Comments
orderNumber	String	Sortable hexadecimal representation of	
flowName	String	Name of the flow containing this step.	
flowId	String	UUID of the flow containing this step.	
type	Predefined Value	Step type. The list of possible types depends on the OO version. The current types are: OPERATION, SUBFLOW, RETURN_STEP, PARALLEL, MULTI_INSTANCE, NON_BLOCKING, BRANCH.	BRANCH is a virtual step, representing an execution branch such as a lane.
updateTime	Long	Time of the last update to this step's information	
transitionMessage	String	Same as transitionDescription, or same as transitionName if no description was set (both are in the	

StepTransitionLog object:

This object is one of the attributes of a step. It represents all information about the step's response and outgoing transition.

Attribute	Type	Description	Comments
transitionName	String	Outgoing transition name.	
transitionDescription	String	Outgoing transition description (if one was set in Studio).	
responseName	String	Response name (given by the step's inner operation/flow).	
responseType	Predefined Value	Response type, can be one of: RESOLVED, ERROR, DIAGNOSED, NO_ACTION_TAKEN, EXCEPTION.	EXCEPTION means the step's execution could not be completed.
transitionValue	Double	Outgoing transition's ROI value.	

Full step object:

Attribute	Type	Description	Comments
`stepInfo`	Object	Represents a summary of the main step details. See **StepInfo** object.	
`stepTransitionLog`	Object	Represents all information about this step's response and outgoing transition. See **StepTransitionLog** object.	Only relevant to steps that have outgoing transitions.
`description`	String	Unused.	
`stepPrimaryResult`	String	Primary result of the step's inner operation/flow.	
`operationGroup`	String	Name of the worker group which the worker executing this step belongs	Only relevant to operation steps.
`errorList`	List of strings	If unexpected errors have occurred during the step's execution, they will be listed here.	
`stepInputs`	List of StepInput objects	The step's bound inputs. Each `StepInput`object has three fields: **name** (String), **value** (String) and **termName** (currently unused).	
`stepResult`	Map (String to String)	A name-to-value map of the step results (the results defined in the step properties).	
`rawResult`	Map (String to String)	A name-to-value map of the step's raw results (provided by the inner operation/flow).	
`extraData`	Map (String to String)	A name-to-value map of extra data (for example, subflow steps have a `FLOW_UUID` entry).	
`executionId`	String	ID of the execution this step is a part of.	
`status`	Predefined Value	Step execution status, can be one of: `RUNNING`, `COMPLETED`, `ERROR`, `PAUSED`, `CANCELED`	
`workerId`	String	UUID of the worker which executed this step.	Only relevant to operation steps.
`user`	String	User name of the OO user account which owned the execution at the time this step was executed.	

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Successful. If there are no results, the result will be empty, but this is still OK.
400	Bad Request	If any of the arguments are invalid
404	Not Found	The requested execution was not found or is not viewable.

Response entity body:

- **on success**: Returns a JSON array of steps (will be empty if there are no results). Each step is an object with the following format:


```
{
   "stepInfo":{
      "stepId":"93969d82-e4e7-48de-8b6f-bd3c7c9dec02",
      "stepName":"Chop",
      "path":"0.0",
      "responseType":"RESOLVED",
      "startTime":1396539495159,
      "endTime":1396539495162,
      "paused":false,
      "orderNumber":"0000000000",
      "flowName":"My Flow",
      "flowId":"7407b97b-fd42-47d2-a670-498278882b81",
      "type":"OPERATION",
      "updatedTime":1396539495252,
      "transitionMessage":"success"
   },
   "stepTransitionLog":{
      "transitionName":"success",
      "transitionDescription":null,
      "responseName":"success",
      "responseType":"RESOLVED",
      "transitionValue":"100.0"
   }, "description":null,
   "stepPrimaryResult":"bee",
   "operationGroup":"RAS_Operator_Path",
   "errorList":[

   ],
   "stepInputs":[
      {
         "name":"foo",
         "termName":null,
         "value":"bar"
      },
```

```
        {
           "name":"Field_1",
           "termName":null,
           "value":"beer"
        }
     ],
     "stepResult":{
           "step_result1":"example",
           "step_result2":"another example"
     },
     "rawResult":{
        "response":"success",
        "FailureMessage":null,
        "Result":"bee",
        "TimedOut":"false",
        "returnResult":"bee",
        "Field_1":"beer"
     },
     "extraData":{

     },
     "executionId":"100337054",
     "status":"COMPLETED",
     "workerId":"f61428ff-e55a-4942-8351-f5b6b0b99b14",
     "user":"anonymousUser"
  }
```

Get a Single Execution Step

Request: `GET /executions/{executionId}/steps/{stepPath}`

Description: Returns data about a single step of an execution. For more details, see Get Execution Steps (with Filtering and Pagination).

Request path variables:

Attribute	Description
`executionId`	Execution ID whose step to retrieve.
`stepPath`	The step's path in the execution tree. Step paths work as follows: • The paths of the steps at the top level of the execution are 0.0 for the 1st step, 0.1 for the 2nd and so on. • If the 2nd step (0.1) is a subflow, then the paths of the steps in that subflow will be 0.1.0, 0.1.1 and so on. **Note:** Virtual steps such as lanes also have a path.

Example:

```
GET /executions/100300001/steps/0.7.0.13
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Successful.
400	Bad Request	Any of the arguments are invalid.
404	Not Found	The requested step wasn't found in the given execution, or the execution is not viewable

Get Execution Steps as a CSV File

Request: `GET /executions/{executionId}/steps?mediaType=csv`

Description: Returns all executed steps for the given execution, as a CSV

file. Request path variables:

Attribute	Description
`executionId`	Execution ID whose steps to retrieve.

Request parameters:

The `mediaType` parameter must be set to `csv`. Otherwise, the request will be treated as Get Execution Steps (with Filtering and Pagination). There are no other parameters.

Example:

```
GET /executions/100300001/steps?mediaType=csv
```

Code	Meaning	Returned When
200	Successful (OK)	Successful. If there are no results, the result will be empty, but this is still OK.
404	Not Found	If the execution cannot be viewed or does not exist.
400	Bad Request	If any of the arguments are invalid.

Execution Pauses

Request: `GET /executions/{executionId}/pauses`

Description: Retrieves current pauses for the given execution id.

Request path variables:

Attribute	Description
`executionId`	The ID of the execution which the client wishes to retrieve its pauses.

Example:

```
GET /executions/100001/pauses
```

Response status codes:

Code	Meaning	Returned When
200	OK	All requested pauses were returned.
404	Not Found	The provided execution ID doesn't exist.

Response entity body:

An array which contains all the current pauses of the requested execution. Each element in the array represents a pause of a lane in the execution tree.

The returned array is not ordered and is empty if no pauses exist for the given

execution id. There are five possible reasons for pauses, which can be differentiated by

inspecting the
pauseReason attribute.

Note: There are different return attributes between the different types:

Reason 1: Input Required

Attribute	Type	Description	Comments
`pauseReason`	Predefined Value	The value `INPUT_REQUIRED`	
`pauseId`	Long	An ID for the returned pause.	
`executionId`	String	The execution ID	
`branchId`	String	The ID of the branch were the pause has occurred.	null ID represents the main branch.

Attribute	Type	Description	Comments
stepId	String	The UUID of the step in which the pause has occurred.	
stepName	String	The name of the step in the flow.	
requiredInputs	FlowInput	See the Get Flow Inputs	

Example:

```
[
   {
      "pauseId":101100014,
      "executionId":"100100355",
      "branchId":null,
      "stepId":"fa351d72-d381-4159-b81b-5fff493f7e41",
      "stepName":"Parallel Split",
      "pauseReason":"INPUT_REQUIRED",
      "requiredInputs":[
         {
            "uuid":null,
            "name":"parallelInput",
            "valueDelimiter":null,
            "description":"Just checking",
            "encrypted":false,
            "multiValue":false,
            "mandatory":false,
            "sources":null,
            "type":"String",
            "validationId":null,
            "defaultValue":null
         }
      ]
   }
]
```

Reason 2: Display

Attribute	Type	Description	Comments
pauseReason	Predefined Value	The value DISPLAY	
pauseId	Long	An ID for the returned pause.	
executionId	String	The execution ID.	
branchId	String	The ID of the branch were the pause has occurred.	A null ID represents the main branch.

Attribute	Type	Description	Comments
stepId	String	The UUID of the step in which the pause has occurred.	
stepName	String	The name of the step in the flow.	
title	String	The author's specified localized title for the prompt message that should be presented to the user.	
text	String	The author's specified localized message that should be presented to the user	
height	String	For future use.	Ignore this field.
width	String	For future use.	Ignore this field.

Example:


```
[
   {
      "pauseId":101100010,
      "executionId":"100100312",
      "branchId":null,
      "stepId":"c12fc96a-f938-4a8c-81a1-5dbcc3b81e6d",
      "stepName":"Resolved : success",
      "pauseReason":"DISPLAY",
      "title":"Return Step title with input: value1",
      "text":"Return Step text:\ninput1: value1",
      "height":"0.0",
      "width":"0.0"
   }
]
```


Reason 3: Gated Transition

Attribute	Type	Description	Comments
pauseReason	Predefined Value	The value GATED_TRANSITION	
pauseId	Long	An ID for the returned pause.	
executionId	String	The execution ID.	
branchId	String	The ID of the branch were the pause has occurred.	A null ID represents the main branch.
stepId	String	The UUID of the step in which the pause has occurred.	

Attribute	Type	Description	Comments
stepName	String	The name of the step in the flow.	
roleName	String	The role which the user is missing in order to pass the gated transition.	
userName	String	The user which is trying to pass through the gated transition.	

Example:

```
[
   {
      "pauseId":101100008,
      "executionId":"100100274",
      "branchId":null,
      "stepId":"2ba782f2-ea84-4f66-936d-4226d4bfa134",
      "stepName":"UUID Generator",
      "pauseReason":"GATED_TRANSITION",
      "roleName":"AUDITOR",
      "userName":"anonymousUser"
   }
]
```

Reason 4: Hand Off

Attribute	Type	Description	Comments
pauseReason	Predefined Value	The value HAND_OFF	
pauseId	Long	An ID for the returned pause.	
executionId	String	The execution ID.	
branchId	String	The ID of the branch were the pause has occurred.	A null ID represents the main branch.
stepId	String	The UUID of the step in which the pause has occurred.	
stepName	String	The name of the step in the flow.	

Example:


```
[
   {
      "pauseId":101100009,
      "executionId":"100100293",
      "branchId":null,
      "stepId":"70eaf376-72ca-4440-9f60-a743fcfa56b2",
      "stepName":"UUID Generator",
      "pauseReason":"HAND_OFF"
   }
]
```


Reason 5: No Workers In Group

Attribute	Type	Description	Comments
pauseReason	Predefined Value	The value NO_WORKERS_IN_GROUP	
pauseId	Long	An ID for the returned pause.	
executionId	String	The execution ID	
branchId	String	The ID of the branch were the pause has occurred.	A null ID represents the main branch.
stepId	String	The UUID of the step in which the pause has occurred.	Would be null, please ignore
stepName	String	The name of the step in the flow.	Would be null, please ignore
groupName	String	The unavailable group.	

Example:


```
[
   {
      "pauseId":101100012,
      "executionId":"100100341",
      "branchId":null,
      "stepId":null,
      "stepName":null,
      "pauseReason":"NO_WORKERS_IN_GROUP",
      "groupName":"RAS_Operator_Path"
   }
]
```

Get Execution Log

Request: `GET /executions/{executionId}/execution-log`

Description: This API retrieves the extended summary of a specific execution. It is an extension of the Execution Summary API and holds additional information, such as the inputs and outputs of that execution.

Request path variables:

Attribute	Description
`executionId`	The id of the execution

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested execution log was.
403	Forbidden	
404	Not Found	The requested execution log was not found or not viewable.

Response entity body:

- **on success:** Returns a JSON object with the following format:

```
{
   "executionSummary":{
      "executionId":"348246628680024354",
      "branchId":null,
      "startTime":1371366300297,
      "endTime":null,
      "status":"PAUSED",
      "resultStatusType":"RESOLVED",
      "resultStatusName":"HAHA",
      "pauseReason":"USER_PAUSED",
      "owner":"anonymous",
      "ownerDomain:null",
      "triggeredBy":"anonymous",
      "flowUuid":"a8e8fc10-b584-4d39-921f-987b29c9dd19",
      "flowPath":null,
      "executionName":"mock flow",
      "branchesCount":0,
      "triggeringSource:central"
      "roi":null
   },
   "executionLogLevel": "STANDARD",
```

```
   "flowVars":[
      {
         "name":"flowVar0",
         "termName":"flowVar0TermName",
         "value":"flowVar0Value"
      },
      {
         "name":"flowVar1",
         "termName":"flowVar1TermName",
         "value":"flowVar1Value"
      },
      {
         "name":"flowVar2",
         "termName":"flowVar2TermName",
         "value":"flowVar2Value"
      },
      {
         "name":"flowVar3",
         "termName":"flowVar3TermName",
         "value":"flowVar3Value"
      },
      {
         "name":"flowVar4",
         "termName":"flowVar4TermName",
         "value":"flowVar4Value"
      }
   ],
   "flowOutput":{
      "flowOutput4":"flowOutput4Value",
      "flowOutput3":"flowOutput3Value",
      "flowOutput0":"flowOutput0Value",
      "flowOutput2":"flowOutput2Value",
      "flowOutput1":"flowOutput1Value"
   }
}
```


Response Attributes

Attribute	Type	Description
`executionSummary`	Predefined Value	An array which contains all of the executions summary which match the requested filters.
`flowVars`	List of `FlowInput` objects	The flow's bound inputs. Each `FlowInput` object has three fields: `name` (String), `value` (String) and `termName` (domain term that the input is recorded under).
`flowOutput`	Map (String to String)	A name-to-value map of the flows outputs.

Change the Status of an Execution

Request: `PUT /executions/{executionId}/status`

Description: Update an existing execution status.

Request path variables:

Attribute	Description
`executionId`	The ID of the execution which the user wants to update the status.

Response status codes:

Code	Meaning	Returned When
204	Returned	`NO_CONTENT`
400	Bad request	If one of the parameters are invalid.
403	Forbidden	The user attempting to execute this command is not allowed to update the status. In order to prevent this the following check that the following is set: • The user has run privilege rights on this flow. • The user is the owner of the execution or has "manage others" permission. In addition, when performing reassign to another user, the target user must have both RUN and VIEW privileges on the flow.
409	Conflict	In case the status was already in the requested state.

Request entity body:

The execution status can be changed to one of the following states: `CANCEL`, `PAUSE`, `REASSIGN`, or `RESUME`.

The desired status should be set in the `action` attribute.

To cancel an execution:

Attribute	Type	Description	Required	Default value
`action`	Predefined Value	The value `CANCEL`	Yes	

Example:

```
{
   "action":"CANCEL"
}
```

To pause an execution:

Attribute	Type	Description	Required	Default value
`action`	Predefined Value	The value `PAUSE`	Yes	

Example:

```
{
   "action":"PAUSE"
}
```

For reassigning an execution to another user

Attribute	Type	Description	Required	Default value
`action`	Predefined Value	The value `REASSIGN`	Yes	
`data`	Key value	Contains the key `userName` and the reassigned user as value.	Yes	

Example:

```
{
   "action":"REASSIGN",
   "data":{
      "userName":"John"
   }
}
```

For resuming an execution

Attribute	Type	Description	Required	Default value
`action`	Predefined Value	The value `"REASSIGN"`	Yes	

Attribute	Type	Description	Required	Default value
`data`	Key value	Should contain two key-value pairs: • `branchId` key for the branch that should be resumed. Null should be provided for the brach root. • `input_binding` key is used to provide the required inputs for an execution which is waiting for inputs. The `input_binding` value must be an object using the format: `{input_name : input_value}`		• `brachId` is required. • `input_binding` only required when resuming an execution which has the `pauseReason` `INPUT_REQUIRED`. See Execution Pauses.

Examples:

- Resume without inputs:

```
{
   "action":"RESUME",
   "data":{
      "branchId":null
   }
}
```

- Resume with inputs:

```
{
   "action":"RESUME",
   "data":{
      "branchId":"f47ac10b-58cc-4372-a567-0e02b2c3d479:1",
      "input_binding":{
         "Input 1":"VALUE2",
         "Input 2":[
            "VALUE1",
            "VALUE2",
            "VALUE3"
         ],
         "Input 3":null,
         "Input 4":"434"
      }
   }
}
```

Execute a Flow by UUID

Request: `POST /executions`

Description: Executes a flow specified by UUID.

Request entity body: The body of this request must include a JSON object with the following format:

```
{
       "uuid":"8d52dfc3-1de5-48d4-9c2a-887718de4696",
       "runName”: “run1",
       "logLevel": "STANDARD",
       "inputs":
               {
                   "input1":"value for input1",
                   .
                   .
                   .
                   "inputn":"value for inputn"
               }
}
```

- There is an option to change the group alias mapping during a specific flow execution, by specifying an input called `OO_ALIAS_GROUP_MAPPING`.

  For example to map the group alias `newAlias` to the worker group `group name` provide the following input:

  ```
  "inputs":
  {
  "OO_ALIAS_GROUP_MAPPING":"{\"newAlias\":\"group name\"}"
  .
  .
  .
  }
  ```

`inputs` and `runName`, are optional and can be omitted.

> **Note:** If the flows was defined with inputs which are either set as prompt user or/and are required, the flow will pause.

`LogLevel` is also optional – if not specified, the default level for the given flow will be used.

The logLevel attribute receives one of these values: `STANDARD`, `EXTENDED`.

Response status codes:

Code	Meaning	Returned When
201	Created	A new flow execution was created.
400	Bad Request	One of the arguments are not correct.

Response entity body:

- **on success:** Returns a JSON object of the created execution.

> **Note:** The return value is deprecated and should not be used.

```
{
"feedUrl":"http://localhost:8080/oo/rest/executions/100302424/steps",
"executionId":"100302424",
"errorCode":"NO_ERROR"
}
```

The `feedUrl` is a link to the list of steps executed so far. It contains the host name or IP address and not `localhost`. In this example, the action was executed on the local Central server.

In addition, a location header containing a URI to retrieve the created execution for example:

```
/executions/ 78bec456-db6a-4c05-99ad-0675b230bfeb
```

See the Get Execution API for more information.

Ad-hoc Flow Execution

Request: `POST /executions`

Description: Ad-hoc Flow execution enables executing a flow without the need to first deploy the flow by providing the AFL flow xml.

Note: This feature will work only when authentication is not enabled in Central.

Note: You can view the `afl_xml_schema.xsd` file, which describes the HP OO flow AFL (Automation Flow Language). You can view this file in the online help, or download it from **<online- help folder>/ Content/Resources/OtherDocs/**. You can also download this file from HPLN, located in the Operations Orchestration 10.x folder in the Resources Tab.

Request entity body:

The body of this request must include a JSON object with the following format:

```
{
       "aflContent":"AFL Flow",
       “runName”: “run1”,
       "logLevel": "STANDARD",
       "inputs":
              {
                   "input1":"value for input1",
                   .
                   .
                   .
                   "inputn":"value for inputn"
              }
}
```

- There is an option to change the group alias mapping during a specific flow execution, by specifying an input called `OO_ALIAS_GROUP_MAPPING`.

  For example to map the group alias `newAlias` to the worker group `group name` provide the following input:

  ```
  "inputs":
  {
  "OO_ALIAS_GROUP_MAPPING":"{\"newAlias\":\"group name\"}"
  .
  .
  .
  }
  ```

The `aflContent` must include a JSON encoded AFL

flow. `inputs` and `runName`, are optional and can be

omitted.

`logLevel` is also optional – if not specified, the system default level will be used.

The `logLevel` attribute receives one of these values: `STANDARD`, `EXTENDED`.

Response status codes:

Code	Meaning	Returned When
201	Created	A new flow execution was created.
400	Bad Request	

Response entity body:

- **on success:** Returns a JSON object of the created execution.

> **Note:** The return value is deprecated and should not be used.

The `feedUrl` is the link to the execution's status feed. See Get Flow Execution Status for more information.

In addition, a location header containing a URI to retrieve the created execution for example:

```
/executions/78bec456-db6a-4c05-99ad-0675b230bfeb
```

Flow Execution Status

The following are the possible values of the status attribute, which appears in the APIs:

Status	Description
`RUNNING`	The flow execution is in progress.
`COMPLETED`	The flow has finished. In order to understand the result (for example, success or failure) use the `resultStatusType` attribute.
`SYSTEM_FAILURE`	The execution failed due to an unexpected error in the system.
`PAUSED`	The flow execution paused. For pause reasons, see the Execution Pauses API.
`PENDING_PAUSE`	A flow execution pause request was submitted, and the system is waiting for an action to complete in order to enter the pause state.
`CANCELED`	The flow execution was canceled by the user.
`PENDING_CANCEL`	A flow execution cancel request was submitted, and the system is waiting for an action to complete in order to cancel the execution.

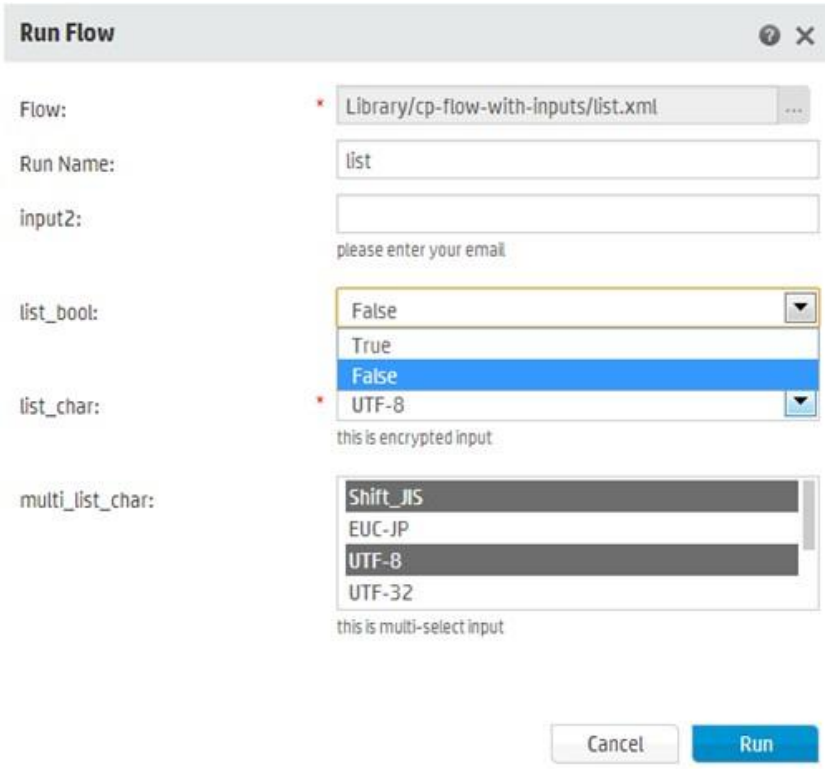
Flow Input

Defines for the client how an input should be presented to the end user.

Attribute	Type	Description	Comments
`uuid`	String	The UUID of this input.	null is possible
`name`	String	A unique name of this input.	
`valueDelimiter`	String	The expected delimiter in the value, in case this is a multiple value input.	null is possible
`description`	String	A localized description of this input, this provides more information to the user.	
`encrypted`	Boolean	Indicates whether this is a classified input. It is advised to mask the user input in the presentation.	
`multiValue`	Boolean	Indicates whether multiple values are expected. They will be delimited by the `valueDelimiter` attribute.	
`mandatory`	Boolean	Set if the user must provide this input. In this case the attribute is `true` and the user does not provide the required input, the operation which requests this input will fail.	
`sources`	Array	Suggested input values for the user.	null is possible
`type`	Predefined Value	`String:` Indicates that a free text input is expected. `SelectionList`: User should choose `value`/`values` from the supplied sources.	
`validationId`	String	For future use.	Would be null. Please ignore this attribute.
`defaultValue`	String	A default value for this input. This is a hint for the UI and could be used by the user.	null is possible

Example from Central UI:

`input2`, `list_bool`, `list_char`, `multi_list_char` are flow inputs.



Example:

```
[
   {
      "uuid":"8e1b1288-3f1a-45ef-b23b-cbdf21bb607b",
      "name":"input2",
      "valueDelimiter":",",
      "description":"please enter your email",
      "encrypted":false,
      "multiValue":false,
      "mandatory":false,
      "sources":null,
      "type":"String",
      "validationId":null,
      "defaultValue":null
   },
   {
      "uuid":"fdd88ec2-b76f-4aec-a5af-509549bd41fb",
      "name":"list_bool",
      "valueDelimiter":",",
      "description":"choose yes or no",
      "encrypted":false,
      "multiValue":false,
      "mandatory":false,
      "sources":[
         "True",
```

```
            "False"
         ],
         "type":"SelectionList",
         "validationId":null,
         "defaultValue":null
      },
      {
         "uuid":"3406b528-a856-49d1-82b3-516b7c8243c5",
         "name":"list_char",
         "valueDelimiter":",",
         "description":"this is encrypted input",
         "encrypted":false,
         "multiValue":false,
         "mandatory":true,
         "sources":[
            "Shift_JIS",
            "EUC-JP",
            "UTF-8",
            "UTF-32",
            "ISO-2022-JP",
            "UTF-16",
            "Windows-31J"
         ],
         "type":"SelectionList",
         "validationId":null,
         "defaultValue":null
      },
      {
         "uuid":"c4bcf870-a7f9-4160-8be0-eea2fc4978d4",
         "name":"multi_list_char",
         "valueDelimiter":",",
         "description":"this is multi-select input",
         "encrypted":false,
         "multiValue":true,
         "mandatory":false,
         "sources":[
            "Shift_JIS",
            "EUC-JP",
            "UTF-8",
            "UTF-32",
            "ISO-2022-JP",
            "UTF-16",
            "Windows-31J"
         ],
         "type":"SelectionList",
         "validationId":null,
         "defaultValue":null
      }
   ]
```

Purge Debugger Execution Events

Request: `DELETE /debugger-events`

Description: Purges debugger events of remote executions.

This command is useful for keeping the database clean from debugger events, which become useless after executions have completed and also affect the size and memory the database occupies.

Request parameters:

Attribute	Type	Description	Required	Default
`endedBefore`	Long	Time to use as upper limit for purging	Yes	
`maxAmount`	Long	Max number of executions to purge	No	100

Example:

```
DELETE /debugger-event?endedBefore=1411998175833
DELETE /debugger-event?endedBefore=1411998175833&maxAmount=1000
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Successful. If there are no results, the result will be empty (which is OK).
400	Bad Request	If any of the arguments are invalid.
403	Forbidden	The user attempting to execute this command does not have the Manage Data Cleanup permission.

Response entity body:

- **on success**: returns the number of purged executions.

Purge Execution Step Data, Inputs and Outputs

Request: `DELETE /executions`

Description: Purges step data, run inputs and run outputs according to time and amount of executions to purge.

Request parameters:

Attribute	Type	Description	Is required?	Default value
`endedBefore`	Long	Time to use as upper limit for purging	Yes	
`maxAmount`	Integer	Max number of executions whose inputs, outputs and steps will be purged	No	100
`purgeItems`	Predefined Value	List of items that should be purged. Valid values: `flowInputs`, `flowOutputs`, `steps`	Yes	

Example:

```
DELETE /executions?endedBefore=1412150176345&maxAmount=200&
purgeItems=steps,flowInputs,flowOutputs
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Successful. The requested contents were deleted.
400	Bad Request	If any of the parameters are invalid.
403	Forbidden	The user attempting to execute this command does not have the Manage Data Cleanup permission.

Response entity body:

- **on success**: Returns the amount of executions actually purged.

Delete StepLog data

Request: `DELETE /steps-log`

Description: Purge step data according to time and amount of executions to purge.

Request parameters:

Attribute	Type	Description	Default value	Required?
`endedBefore`	Long	The time in milliseconds to start purging	30 days back (in milliseconds)	No
`maxAmount`	int	The max amount of executions on which step's data is purged	100	No

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The step data was deleted successfully.
400	Bad Request	

Response entity body:

- **on success**: Returns a JSON string of the number of executions that their step data has been purged.

Flow Library

APIs relating to the Flow Library

Get Flows Library

Request: `GET /flows/library`

Description: Retrieves all flows deployed in the system. This returns an ordered list, and contains all the folders and flows in the flow library, ordered according to the tree structure.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested library was returned.

Response entity body:

A List of elements which contains all of the flows that exist in the system.

Attribute	Type	Description	Comments
`id`	String	The id of node.	For a non-leaf (folder) node, the id is the same as the path. For a leaf node (deployed entity), the id is the entity's id.
`name`	String	The name of the node.	Folder name or flow name.
`parentId`	String	The id of the parent node.	Null if this is a root node.
`leaf`	Boolean	Whether the node is a leaf or not.	`leaf` is a flow, `not leaf` = folder
`path`	String	The path of the node.	
`runnable`	Boolean	Whether the node is a runnable or not.	
`childrenIds`	Array of Strings	List of the the node's children id	

Example:


```
[{"id":"Library/cp-dotnet/InputsOutputsResponses/flows",
"name":"flows",
"parentId":"Library/cp-dotnet/InputsOutputsResponses",
"leaf":false,
"path":"Library/cp-dotnet/InputsOutputsResponses/flows",
"runnable":false,
"childrenIds":["Library/cp-dotnet/InputsOutputsResponses/flows/DOTNET_Action  inputs and outputs 2 op.xml","Library/cp-dotnet/InputsOutputsResponses/flows/DOTNET_Action inputs and outputs.xml"]},

{"id":"0e98f028-3a59-4cce-9196-4690bd48ea95",
"name":"DOTNET_Action inputs and outputs 2 op",
"parentId":"Library/cp-dotnet/InputsOutputsResponses/flows",
"leaf":true,
"path":"Library/cp-dotnet/InputsOutputsResponses/flows/DOTNET_Action inputs and outputs 2 op.xml",
"runnable":true,
"childrenIds":[]}]
```

Read Next Level of Library Tree

Request: `GET /flows/tree/level`

Description: Returns a flat list of all tree Items under the path (lazy loading).

Request parameters:

Attribute	Description	Required
`path`	Return the tree items under this path. Default value is root.	No

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested items were found

Response entity body:

- **on success:** Returns a JSON object with the following format:

```
[
   {
      "id":"library/Accelerator Packs",
      "name":"Accelerator Packs",
      "leaf":false,
      "path":"Library/Accelerator Packs",
      "runnable":false,
      "children":null
   },
   {
      "id":"library/How Do I flows",
      "name":"How Do I flows",
      "leaf":false,
      "path":"Library/How Do I flows",
      "runnable":false,
      "children":null
   }
]
```

Get Flow Details

Request: `GET /flows/{uuid}`

Description: Returns flow properties by the uuid.

Request path variables:

Attribute	Description
`uuid`	The flow uuid

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested flow was found.
404	Not Found	The requested flow was not found or the user does not have permission to view it or the uuid was empty

Response entity body:

- **on success:** Returns a JSON object with the following format:

```
{
   "id":"1fe1be31-2c78-40dd-8326-b8ca527e5587",
   "name":"Recently Run",
   "path":"Library/Utility Operations/Date and Time/Recently Run.xml",
   "description":"flow desciption",
   "cpName":"HPOO-oo-base",
   "version":"version111"
   "logLevelInfo":{
         "logLevel":"EXTENDED",
         "logLevelSource":"SYSTEM"
    }
}
```

Get Flow Inputs

Request: `GET /flows/{uuid}/inputs`

Description: Retrieves a list of flow's inputs by its UUID.

Request path variables:

Attribute	Description
`uuid`	The flow uuid

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested flow's inputs were found
404	Not Found	The requested flow was not found or the user does not have permission to view it or the uuid was empty

Response entity body:

- **on success:** Returns a JSON object with the following format:

```
[
   {
      "uuid":"c4454566-6bb5-4be9-9824-2a08945f1574",
      "name":"message",
      "valueDelimiter":",",
      "description":"",
      "encrypted":false,
      "multiValue":false,
      "mandatory":true,
      "sources":null,
      "type":"String",
      "validationId":null,
      "defaultValue":null
   },
   {
      "uuid":"cdac00b3-f550-4cd5-a3eb-f15d2f80fd78",
      "name":"title",
      "valueDelimiter":",",
      "description":"",
      "encrypted":false,
      "multiValue":false,
      "mandatory":false,
      "sources":null,
      "type":"String",
      "validationId":null,
      "defaultValue":"Status message"
   }
]
```

Get Flow Outputs

Request: `GET /flows/{uuid}/outputs`

Description: Retrieves a list of all the outputs defined for the flow with the requested uuid. The list of outputs retrieved will contain only outputs defined in the flow properties.

Request path variables:

Attribute	Description
`uuid`	The requested flow's uuid.

Example:

```
GET /flows/22de91c4-f651-42fd-a404-1bf0ca921f36/outputs
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested flow's inputs were found.
404	Not Found	The requested flow was not found or the user does not have permission to view it or the uuid was empty.

Response entity body:

An array which contains all of the outputs that are defined for the flow. Each element in the array represents an output of the flow.

The returned array is not ordered.

Attribute	Type	Description	Comments
`name`	String	The name of the output.	

Example:

```
[
{
“name":"Result"
},
{
"name":"output2"
},
{
"name":"output1"
}
]
```

Get Flow Log Level

Request: `GET /flows/{uuid}/loglevel`

Description: Retrieves the log level (persistence level) of the given flow UUID.

Request path variables:

Attribute	Description	Required
`uuid`	The flow UUID	yes

Example:
`GET/flows/8aff6b34-15a2-11e5-b60b-1697f925ec7b/loglevel`

Response status codes:

Code	Meaning	Returned When
200	OK	The requested log level was returned.
404	Not Found	The flow does not exist or the user is not entitled to view it.

Response entity body:

- **on success:** Returns a JSON object of the flow log level.

Attribute	Type	Description
`logLevel`	Predefined Value	The log level of the flow. Possible values: `STANDARD`, `EXTENDED`
`logLevelSource`	Predefined Value	The log level source of the flow. Possible values: `SYSTEM`, `FLOW`

Example:

```
{

"logLevel":"STANDARD"

"logLevelSource": "SYSTEM"

}
```

Update Flow Log Level

Request: `PUT /flows/{uuid}/loglevel`

Description: Update the log level of the given flow UUID.

Request path variables:

Attribute	Description	Required
`uuid`	The flow UUID	yes

Example:
`PUT /flows/8aff6b34-15a2-11e5-b60b-1697f925ec7b/loglevel`

Request entity body:

The body of this request must include one of the predefined values:

`"STANDARD"`, `"EXTENDED"`, or `null` if the user wants to delete the flow log level.

Response status codes:

Code	Meaning	Returned When
204	No Content	The requested log level was updated successfully.
400	Bad Request	The given log level is not one of the allowed values (quoted and case sensitive) or null.
403	Forbidden	The user does not have the permission Manage Content Packs
404	Not Found	The flow does not exist or the user is not entitled to view it.

Scheduler

The scheduler API allows you to schedule flow executions. You can specify a schedule to run for a specific occasion. You can also setup recurring schedules for a flow for a repeated task. These APIs enable you to manage schedules, for example create new schedules.

Create New Flow-Schedule

Request: `POST /schedules`

Description: Add a new schedule for a flow execution.

Request entity body: The body of this request must include a JSON object with the following format:

JSON for a scheduled flow with a CRON triggering expression:

```
{
       "flowScheduleName":"Scheduled Flow Created By REST",
       "flowUuid":"c34de7d6-14cc-4a1c-b25e-85afbb064359",
       "triggerExpression":"0 10 10 ? * 6",
       "startDate":"1314079869000", "endDate":
       1491302669536,
       "runLogLevel": “STANDARD”,
       "username": "DavisJ",
       "username":"DavisJ",
       "inputPromptUseBlank": true,
       "timeZone": "Asia/Amman",


       "inputs":
               {
                   "input1":"value for input1",
                   .
                   .
                   .
                   "inputn":"value for inputn"
               }
}
```

JSON for a scheduled flow with a simple triggering expression:

```
{
    "flowScheduleName": "Scheduled Flow Created By REST",
    "flowUuid":"c34de7d6-14cc-4a1c-b25e-85afbb064359",
    "triggerExpression":"*/60000",
    "startDate": 1314079869000,
    "endDate": 1491302669536,
    "username": "DavisJ",
    "numOfOccurrences": 5,
    "runLogLevel": "STANDARD",
    "timeZone": "Asia/Amman",
    "inputPromptUseBlank": false,
    "inputs":{
        "input1": "value for input1",
        .
        .
        .
        "inputn": "value for inputn"
    }
}
```

- If **endDate** is not set, by default, it receives a value of 0.
- If **username** is not set, by default, it receives a value of null.
- The trigger expression should be either a valid `cron` expression or a simple expression according the pattern below.
- If you use the `cron` expression, you can validate it using an expression validity.
- If you want to use a simple trigger expression (every x minutes) you should use the syntax according to the following example:

  `*/6000 = run every 60000 milliseconds` (every minute)

Note: If you use a `cron` expression you cannot add the `numOfOccurences` attribute as it may conflict with the `cron`expression. In addition, if you use simple triggers and add both end time and number of occurrences, the triggering ends according to the number of occurrences.

Response status codes:

Code	Meaning	Returned When
201	Created	A schedule was created successfully.
400	Bad Request	The user does not have Manage Schedules permission.
403	Forbidden	

Response entity body:

- **on success:** Returns a JSON object of the created schedule with the following format:

```
{
    "id": "1347298851037",
    "flowScheduleName": "Scheduled Flow Created By REST",
    "flowUuid": "c34de7d6-14cc-4a1c-b25e-85afbb064359",
    "triggerExpression": "*/60000",
    "startDate": 1314079869000,
    "endDate": 1491302669536",
    "username": "DavisJ",
    "numOfOccurrences": 5,
    "runLogLevel": "STANDARD",
    "timeZone": "Asia/Amman",
    "nextFireTime": null,
    "prevFireTime": null,
    "enabled": false,
    "inputPromptUseBlank": false,
    "inputs":{
        "input1": "value for input1",
        .
        .
        .
        "inputn": "value for inputn"
    }
}
```

In addition, a location header containing a URI to retrieve the created schedule for example: `/schedules/1347298851037`

```
{
    "flowScheduleName": "Scheduled Flow Created By REST",
    "flowUuid": "c34de7d6-14cc-4a1c-b25e-85afbb064359",
    "triggerExpression": "*/60000",
    "startDate": 1314079869000,
    "endDate": 1491302669536,
    "username": "DavisJ",
    "numOfOccurrences": 5,
    "runLogLevel": "STANDARD",
    "timeZone": "Asia/Amman",
    "inputPromptUseBlank": true,
    "inputs":{
         "input1": "value for input1",
         .
         .
         .
         "inputn": "value for inputn"
    }
}
```

Enable or Disable Flow-Schedule

Request: `PUT /schedules/{ids}/enabled`

Description: Enable or disable existing flow-schedules.

Request path variables:

Attribute	Description
`ids`	The identifiers of the flow-schedules to enable or disable.

Response status codes:

Code	Meaning	Returned When
204	Successful (No Content)	The flow-schedules were updated successfully.
400	Bad Request	
403	Forbidden	The user does not have Manage Schedules permissions.

Request entity body: The body of this request needs to include a JSON value of either `true` to enable the schedules or `false` to disable them.

Delete Flow-Schedule

Request: `DELETE /schedules/{ids}`

Description: Deletes flow-schedules according to the specified IDs.

Request path variables:

Attribute	Description
ids	The identifiers of the flow-schedules to delete.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	All specified flow-schedules were either deleted successfully, or did not exist to begin with.
400	Bad Request	
403	Forbidden	The user does not have Manage Schedules permissions.

Response entity body:

- **on success:** Returns a JSON array of the deleted schedule IDs.

Get Flow-Schedules

Request: `GET /schedules`

Description: Returns all existing flow-schedules headers.

Response status codes:

Code	Meaning	Returned When
200	OK	The requested flow-schedules were found.
403	Forbidden	The user does not have View Schedules or Manage Schedules permission.

Request parameters:

Attribute	Type	Description	Is required?	Default value
`start`	Integer	The page number to return (starting with 1 for the first page of results).	No	1
`pageSize`	Integer	The number of results in each page.	No	50
`direction`	Predefined Value	The direction in which to sort the results: `ASC` for ascending or `DESC` for descending.	No	ASC
`orderBy`	Predefined Value	The schedule property by which to sort the results: `scheduleName`, `flowName`, `nextFireTime`, `prevFireTime`, `scheduleState` or `username`.	No	`scheduleName`
`filter`	String	String to filter by.	No	No filter

Example:

```
GET /schedules?start=3&pageSize=20&direction=DESC&orderBy=nextFireTime&filter=my-schedule
```

Response entity body:

- **on success:** Returns a JSON array, containing all existing flow-schedules headers, with the following format:

```
[
	{
		"id":"123",
		"enabled":true,
		"flowUuid":"78bec456-db6a-4c05-99ad-0675b230bfeb",
		"nextFireTime":0, "prevFireTime":0,
		"flowScheduleName":"schedule 1",
		"flowName":"flow1",
		"flowPath":"path0",
		"username":"admin"
		"triggerExpression":"0 10 10 ? * 6"
	},
	.
	.
	.
	{
		"id":"567",
		"enabled":true,
		"flowUuid":"3d32e475g-ab54-fe21-df32-4743346ebebd",
		"nextFireTime":0,
		"prevFireTime":0,
		"flowScheduleName":"schedule n",
		"flowName":"flow3",
		"flowPath":"path2",
		"username":"admin"
		"triggerExpression":null
	}
]
```

Get Flow-Schedule Details

Request: `GET /schedules/{id}`

Description: Returns details about a flow-schedule specified by ID.

Request path variables:

Attribute	Description
`id`	The identifier of the flow-schedule to retrieve.

Response status codes:

Code	Meaning	Returned When
200	OK	The requested flow-schedule was found.
403	Forbidden	The user does not have View Schedules or Manage Schedules permission.
404	Not Found	The requested flow-schedule was not found.

Response entity body:

- **on success:** Returns a JSON object of the flow-schedule details with the following format:

```
{
   "id": "1399455773960",
   "flowScheduleName": "Scheduled Flow Created By REST",
   "flowUuid": "c34de7d6-14cc-4a1c-b25e-85afbb064359",
   "triggerExpression": "0 10 10 ? * 6",
   "startDate": 1399455780000,
   "endDate": 1491302669536,
   "numOfOccurrences": null,
   "timeZone": "Asia/Amman",
   "username": "admin",
   "runLogLevel": "STANDARD",
   "nextFireTime": 1399619400000,
   "prevFireTime": -1,
   "enabled": true,
   "inputPromptUseBlank": false,
   "inputs":{
       "input1": "value for input1",
       "input2": "value for input2"
   }
}
```

Update Flow-Schedule

Request: `PUT /schedules/{id}`

Description: Updates an existing flow-schedule. Includes a list of values that can be updated.

Request path variables:

Attribute	Description
`id`	The identifier of the flow-schedule to update.

Request entity body: The body of this request needs to include a JSON object with the following format:

```
{
    "flowScheduleName": "Scheduled Flow Created By REST",
    "flowUuid": "c34de7d6-14cc-4a1c-b25e-85afbb064359",
    "triggerExpression": "0 10 10 ? * 6",
    "startDate": 1376072040000,
    "endDate": 1377334800000,
    "runLogLevel": "STANDARD",
    "timeZone": "Asia/Amman",
    "inputPromptUseBlank": false,
    "inputs":{
          "input1": "value for input1",
          .
          .
          .
          "inputn": "value for inputn"
   }
}
```

Response status codes:

Code	Meaning	Returned When
200	OK	Returned when update schedule successfully
400	Bad Request	
403	Forbidden	The user does not have Manage Schedules permission.

Response entity body:

- **on success:** Returns a JSON value: `true`

Dashboard

The Dashboard workspace reflects the system's ROI, and analyzed flow aggregation. It provides statistical information about the system (popular flows, result distribution, execution time, and so on) and financial information about the return on investment. This API allows you to get the statistic information in order to generate the reports for analyzing information.

Get Statistics

Request: `GET /executions/statistics`

Description: Returns a flows statistic info (list of `FlowStatisticsDataVO`): ROI, number of executions, average execution time and result distribution.

Request parameters:

Attribute	Description	Type	Required
`measurements`	Which statistics to display. If nothing is set then the four statistics are displayed. The following options are available: `roi`, `numOfExecutions`, `avgExecutionTime`,	Predefined Value	No
`sortBy`	The following options are available: `roi`, `numOfExecutions`, `avgExecutionTime` If nothing is set then: • If the measurements list is empty, then the sort is set to `numOfExecutions`. • If the Measurements are not empty, then nothing is sorted. If `sortBy` is set, then it should be contained in measurement (if supplied).	Predefined Value	No
`sortDescending`	Default is descending.	Boolean	No
`endedBefore`	Default is now.	Long	No
`endedAfter`	Default is one week ago.	Long	No

Example:

```
GET /executions/statistics?sortBy=avgExecutionTime&endedBefore=1415176455471
&endedAfter=0
```

Response status codes:

Code	Meaning	Returned When
200	OK	Operation was successful

Code	Meaning	Returned When
400	Bad Request	• Wrong `measurements` value. • Wrong `sortByvalue`. It must be included in the measurements, unless it's empty. • `Ended after` > `Ended Before`
403	Forbidden	The user does not have dashboard read permission.

Response entity body:

List<FlowStatisticsDataVO>:

```
[
  {
   "flowUuid" : 7f2f68-ef48-4a-4a91-bb11-5fadf44bebee",
   "flowPath" : "Library/Repo9x/Dev/ROI/ROI - Basic.xml"
   "flowRoi" : 30.0,
   "numberOfExecutions" : 3
   "averageExecutionTime" : 11000,
   "resultsDistribution" : [
     {
      "type" : "RESOLVED",
      "amount" : 3
     }
    ]
  },
  {
    "flowUuid" : "0b6d9c00-2a34-4c63-8534-4a364d64272",
    "flowPath" : "Library/Repo9x/Dev/ROI/ROI - subflow.xml",
    "flowRoi" : 1830.0,
    "numberOfExecution" : 3,
    "averageExecutionTime" : 1000,
    "resultsDistribution" : [
      {
       "type" : "SYSTEM_FAILURE",
       "amount" : 2
      },
      {
       "type" : "RESOLVED",
       "amount" : 3
      }
     ]
   }
]
```

Deployment

Deploy Content Packs

Request: `PUT /content-packs/{name}`

Description: Deploys a content pack. The file extension should not be provided in the name.

Example: `PUT /content-packs/base-cp`

Request path variables:

Attribute	Description
name	The name of the content pack to be deployed.

Note:

- The request must include the HTTP header "`Content-Type: application/octet-stream`" (in addition to the usual "`Accept: application/json`").
- The request body should be the contents of the content pack file to be deployed.

Response status codes:

Code	Meaning	Returned When
201	Created	Deployment succeed
403	Forbidden	The user does not have Manage Content Packs permission
417	Expectation Failed	Deployment failed

Response entity body:

- **on success:** Returns a JSON value: true

```
{ "aggregatedSeverity":"Info",
"contentPackResponses":{"content pack file name.jar":
   {"contentPackName":" "content pack file" name.jar","message":"
   content pack file name.jar (author: ,
   date:)","responses":[{"contentPackName":" content pack file
name.jar","responseCategory":"Success","level":"Info","message":
   "Successfully deployed content pack file name.jar"}]}}
}
```

The `aggregatedSeverity` and `level` attribute receives one of the following values: `Info`, `Warning`, and `Error`.

The `responseCategory` attribute receives one of the following values:

- `Success`: The content pack was deployed successfully.
- `ContentPackFile`: The content pack file was invalid.
- `FlowDependency`: Cannot deploy the content pack because of missing flow dependency.
- `OperationDependency`: Cannot deploy the content pack because of missing operation dependency.
- `Overwrite`: Cannot deploy the content pack because it can't overwrite the existed one because of flow/operation dependencies issues.
- `ScheduledFlow`: A list of scheduled flows that will be affected/deleted if the deployment will be carried out (since the deployment is trying to delete a flow that is scheduled to run).
- `Exception`: Cannot deploy the content pack because of an unexpected exception.

on error: Returns a JSON value:

```
"aggregatedSeverity" : "Error",
"contentPackResponses"  :{
    "cp.jar" : { "contentPackName":"cp.jar",
       "message":"cp.jar (author: , date: )",
        "responses":[
     {
      "contentPackName":"cp.jar",
      "responseCategory":"FlowDependency",
      "level":"Error",
      "message":"Missing 'operation'/'flow' with UUID d1bbf441-824a-450e-afae-
2ddec0e0f35e, which is required by the 'flow': 'Library/tesdt/flowwww.xml'."
      }
   ]}}
```

How can I deploy content packs with progress?

1. Create Deployments – returns `deploymentProcessId`
2. Upload the Deployment Process File – to the given `deploymentProcessId`
3. Run a Specific Deployment Process – to the given `deploymentProcessId`
4. The next step is to request **Get the Deployment Process Object**. There are two kinds of responses:
    a. "status":"RUNNING" – with data about the progress
    b. "status":"FINISHED" – with data about the result

Upload the Deployment Process File

Request: `POST /deployments/{deploymentProcessId}/files`

Description: Upload the deployment file and save it into DB for specific deployment process.

> **Note**: The request body should be the contents of the content pack file to be deployed.

Response status codes:

Code	Meaning	Returned When
200	OK	File was uploaded and saved into DB for specific deployment process object.
403	Forbidden	The user does not have Manage Content Packs permission.
404	Not Found	The deployment process object with the specific id does not exist.

JSON response example:

This maps the event of the delete to the URL in case you want to remove the content pack after it has uploaded.

```
{
	"files":
	[
		{
			"name":"oo10-business-applications-cp-1.0.117.jar",
			"size":11718432,
			"fileUploadId":101700001,
			"deleteUrl":"/deployments/100900001/files/101700001",
			"deleteType":"DELETE"
		}
	]
}
```

Retrieve Details for Deployed Content Packs

Request: `GET /content-packs`

Description: Retrieves details for all deployed content packs.

Response status codes:

Code	Meaning	Returned When
200	OK	All deployed content packs metadata returned.
403	Forbidden	The user does not have the **cpRead** permission.

Response entity body:

An array which contains all current deployed content packs. Each element in the array represents a single content pack.

The returned array is not ordered and appears empty if no content packs exist.

Attribute	Type	Description
`name`	String	The name of the content pack, as it shown in the cp.properties
`version`	String	The version of the content pack, as it shown in the cp.properties

Example:

```
{
    "name": "HP Solutions",
    "version": "1.0.134",
    "id": "2d6e4083-23c8-4737-ae15-79da71a5ac5c",
    "publisher": "Hewlett-Packard",
    "description": "HP OO HP Solutions Content Pack",
    "deploymentDate": 1396782968694,
    "deployedBy": "anonymousUser"
}
```

Roll Back Last Deployment

Request: `DELETE /content-packs/last`

Description: Roll back the last content pack deployment.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The last deployed content pack had been removed
403	Forbidden	The user does not have Manage Content Packs permission.

Response entity body:

- **on success:** : Returns a Boolean value with that indicates whether the last content deployment was removed or not. False indicates that the last content pack was already removed in the past. Removing more than once in a row is not legal.

Create Deployments

Request: `POST /deployments`

Description: Create a deployment process object and return the id to the client. You can also use this process for deleting content packs.

Response status codes:

Code	Meaning	Returned When
201	Created	Deployment progress object is created.
403	Forbidden	The user does not have Manage Content Packs permission.

JSON response example:

```
{
	“deploymentProcessId”:123
}
```

Run a Specific Deployment Process / Delete Process

Request: `PUT /deployments/{deploymentProcessId}`

Description: Run the specific deployment process. Make sure that no other process is running.

Request path variables:

Attribute	Description
`deploymentProcessId`	The requested deployment process id. The id is returned when creating a new deployment process.

Request parameters:

Attribute	Type	Description	Is required?	Default value
`force`	Boolean	Deploy/delete even when there are warnings (for example, scheduled runs for a flow being deleted).	No	false

Examples:

```
PUT /deployments/12345?force=true
PUT /deployments/12345
```

Response status codes:

Code	Meaning	Returned When
204	No Content	The requested content packs were added to the deployment process.
403	Forbidden	The user who executed this command does not have permission to manage content packs.
404	Not Found	The requested deployment process is not found.
409	Conflict	Another deployment is in process.
500	Bad Request	The deployment process status is not PENDING or there are no content packs for deployment and no content packs for deleting, or there are both content packs for deployment and content packs for delete. In addition: • When this process is already running or finished. • There are no content pack files for deleting. • Both content pack files for deployment and content files for

Get the Deployment Process Object

Request: `GET /deployments/{deploymentProcessId}`

Description: Get the deployment process object. This can also be used for deleting a content pack.

Response status codes:

Code	Meaning	Returned When
200	OK	The specific deployment process was found.
403	Forbidden	The user does not have Read Content Packs or Manage Content Packs permission.
404	Not Found	The deployment process object with the specific id does not exist.

There are two kinds of responses:

- `status:RUNNING` – with data about the progress.
- `status:FINISHED` – with data about the result.
- `status:PENDING` – when the deployment was created and files are being uploaded, and before it has started running.

```
{
        "deploymentProcessId": 137100008,
        "status": "PENDING",
        "currentStep": "Downloading files ",
        "currentStepIndex": 0,
        "numOfSteps": 11,
        "numOfSubSteps": 0,
        "currentSubStep": 0,
        "deploymentResultVO": null
}
```

If your deployment process is still running, the JSON response appears as follows:

```
{
       "deploymentProcessId": 137100005,
       "status": "RUNNING",
       "currentStep": "Deploying artifacts",
       "currentStepIndex": 12,
       "numOfSteps": 16,
       "numOfSubSteps": 470,
       "currentSubStep": 409,
       "deploymentResultVO": null
}
```

If your deployment process has finished or failed, the JSON appears as follows:


```
{
"deploymentProcessId": 137100005,
"status": "FINISHED",
"currentStep": "Committing data",
"currentStepIndex": 16,
"numOfSteps": 16,
"numOfSubSteps": 1,
"currentSubStep": 0,
"deploymentResultVO": {
       "aggregatedSeverity": "Info",
       "contentPackResponses": {
              "fv11n-test-content-pack-10.10.182.jar": {
                     "contentPackName": "fv11n-test-content-pack-10.10.182.jar",
                     "message": "fv11n-test-content-pack-10.10.182.jar (author: , date: )",
                     "responses": [{
                        "contentPackName": "fv11n-test-content-pack-10.10.182.jar",
                        "responseCategory": "Success",
                        "level": "Info",
                        "message": "Successfully deployed fv11n-test-content-pack-10.10.182.jar"
                     }]
              }
       }
}
}
```

Delete Content Pack from Deployment Process

Request: `DELETE /deployments/{deploymentProcessId}/files/{fileId}`

Description: Delete a specific content pack from a deployment process.

Response status codes:

Code	Meaning	Returned When
204	No Content	The specific file was deleted from deployment process.
403	Forbidden	The user does not have Manage Content Packs permission.
404	Not Found	The deployment process object with the specific id does not exist.

Deleting Content Packs

To delete a content pack(s), you need to perform the following:

1. Create Deployments, returns the `deploymentProcessId`

   Example: `POST /deployments`

   JSON response example:

   ```
   {
   “deploymentProcessId”:12345
   }
   ```

2. Enter the id of the content pack file that you want to delete, to the given `deploymentProcessId`. See Adding Content Pack Files for Deleting.

   Example: `POST /deployments/12345/cpsForDelete`

3. Run a Specific Deployment Process to the given `deploymentProcessId`.

   Example: `PUT /deployments/12345`

4. The next step is to request Get the Deployment Process Object.

Adding Content Pack Files for Deleting

Request: `POST /deployments/{deploymentProcessId}/cpsForDelete`

Description: Add content pack files to the deployment process that you want deleted during the process.

Request path variables:

Attribute	Description
`deploymentProcessId`	The requested deployment process id. The id is returned when creating a new deployment process.

Example:

```
POST /deployments/12345/cpsForDelete
```

Response status codes:

Code	Meaning	Returned When
204	No Content	The requested content packs were added to the deployment process.
403	Forbidden	The user who executed this command does not have permission to manage content packs.
404	Not Found	The requested deployment process is not found.
500	Bad Request	The requested content pack is not deployed or the deployment process status is not PENDING.

Request entity body:

A string array which contains all of the ids of content packs that should be deleted. To acquire the content pack ID see Get Content Packs.

Example:

```
["39d15573-aad6-44b3-a571-39c98c9bd508","a2c87d2a-2192-4087-8387-763d38246d26"]
```

Content Packs

A content pack is a collection of flows, operations, configuration items (selection lists, system accounts, group aliases, and so on), as well as the binaries required to run actions. A content pack can be created in Studio by an author, or it can be provided by HP or a third party

The following table list the metadata for a content pack.

Attribute	Type	Description	Comments
`id`	String	The id of the content pack.	
`name`	String	The name of the content pack.	
`version`	String	The version of the content pack.	
`publisher`	String	The name of the publisher that created the content pack.	Can be null.
`description`	String	The description of the content pack.	Can be null.
`deploymentDate`	Long	Time-stamp in milliseconds when the deployment of the content pack started	Can be null

Get Content Packs

Request: `GET /content-packs`

Description: Retrieves a list of all the deployed content packs and with the related details.

Request parameters:

Attribute	Type	Description	Is required?	Default value
`active`	Boolean	Whether to return only active content packs (that contain at least one deployed entity) or all content packs.	No	true
`deployedBy`	String	The user that deployed the content pack		

Example:

```
GET /content-packs
GET /content-packs?active=false
```

Response status codes:

Code	Meaning	Returned When
200	OK	The requested content pack was returned.
403	Forbidden	The user who executed this command does not have permission to view content packs.

Response entity body:

An array which contains all of the content packs which are deployed in the central.

Each element in the array represents a content pack. See the content pack meta-data table.

The returned array is ordered by descending deployment times, in other words, the content pack that was deployed last will be first.

Example:

```
[
{
“id”:”b137e165-f4f7-4201-b262-2265c8085d27”,
“name”:”my-cp”,
“version”:”1.0.0”,
“publisher”:”John Smith”,
“description”:”My first OO CP”,
“deploymentDate”:1387218013103,
“deployedBy”:”myUser”
},
```

```
{
“id”:”b32b3a3d-0d7a-4780-85a1-5438987803ef”,
“name”:”Base”,
“version”:”1.0.142”, “publisher”:”John
Smith”, “description”:”HP OO Base
Content Pack”, “deploymentDate”:
1371106274153, “deployedBy”:”myUser”
},
{
“id”:”aa600104-239c-4570-9d67-50c346e312d3”,
“name”:”Cloud”,
“version”:” 1.0.133”, “publisher”:”John
Smith”, “description”:”HP OO Cloud
Content Pack”, “deploymentDate”:
1371106274153, “deployedBy”:”myUser”
}
]
```

Get Single Content Pack Details

Request: `GET /content-packs/{id}`

Description: Retrieves details of the specified deployed content pack.

Request path variables:

Attribute	Description
`id`	The requested content pack's id. The id may be acquired by retrieving the list of all content packs and extracting the id of element of the required content pack by its name.

Example:

```
GET /content-packs/b137e165-f4f7-4201-b262-2265c8085d27
```

Response status codes:

Code	Meaning	Returned When
200	OK	The requested content pack was returned.
403	Forbidden	The user who executed this command does not have permission to view content packs.
404	Not Found	The requested content pack wasn't found.

Response entity body:

A content pack element which represent the details of requested Content Pack. See the content pack meta-data table.

Example

```
{
“id”:”b137e165-f4f7-4201-b262-2265c8085d27”,
“name”:”my-cp”,
“version”:”2.0.0”,
“publisher”:”John Smith”,
“description”:”My first OO CP – New major version”,
“deploymentDate”:1387341256715,
“deployedBy”:”myUser”
}
```

Get Content Pack Contents Tree

Request: `GET /content-packs/{id}/content-tree`

Description: Returns a flat list that of the contents of the content pack in tree-nodes format.

Request path variables:

Attribute	Description
`id`	The requested content pack's id. The id may be acquired by retrieving the list of all content packs and extracting the id of element of the required content pack by its name.

Example:

```
GET /content-packs/b137e165-f4f7-4201-b262-2265c8085d27/content-tree
```

Response status codes:

Code	Meaning	Returned When
200	OK	The requested content pack's contents were returned.
403	Forbidden	The user who executed this command does not have permission to view content packs.
404	Not Found	The requested content pack was not found.

Response entity body:

An array of elements which represents one or two trees that contain all of the entities contained in the content pack.

Each element in the array represents a tree node which is either a folder (which isn't a leaf and has children) or a content element (which is a leaf and doesn't not have children).

The returned array is ordered in the following way: first the tree whose root is the "Library" folder, then the tree whose root is the "Configuration" folder. Each tree is ordered alphabetically by the path attribute.

Attribute	Type	Description	Comments
id	String	The id of node.	For a non-leaf (folder) node, the id is the same as the path. For a leaf node (deployed entity), the id is the entity's id.
name	String	The name of the node.	Folder name or deployed entity name.
parentId	String	The id of the parent node.	Null if this is a root node.
leaf	Boolean	Whether the node is a leaf or not.	
path	String	The path of the node.	
type	Predefined Value	The type of node. Possible values: FOLDER, FLOW, OPERATION, CATEGORY, DOMAIN_TERM, GROUP_ALIAS, ROLE_ALIAS, SCRIPTLET, SELECTION_LIST, SYSTEM_ACCOUNT, SYSTEM_EVALUATOR, SYSTEM_FILTER, SYSTEM_PROPERTY	

Example


```
[
{ "id":"Library",
"name":"Library",
"parentId":null,
"leaf":false,
"path":"Library",
"type":"FOLDER"
},
{ "id":"Library/MyFlows",
"name":"MyFlows",
"parentId":"Library",
"leaf":false,
"path":"Library/MyFlows",
"type":"FOLDER"
},
{
"id":"a3e6572a-8268-4124-9ccb-b3d7e46e5051",
```

```
"name":"my-flow1",
"parentId":"Library/MyFlows",
"leaf":true,
"path":"Library/MyFlows/my-flow1.xml",
"type":"FLOW"
},
{
"id":"ddee425f-f259-4012-b799-51e0fa40151a",
"name":"my-flow2",
"parentId":"Library/MyFlows",
"leaf":true,
"path":"Library/MyFlows/my-flow2.xml",
"type":"FLOW"
},
{ "id":"Library/MyOperations",
"name":"MyOperations",
"parentId":"Library",
"leaf":false,
"path":"Library/MyOperations",
"type":"FOLDER"
},
{
"id":"17c8bb11-bbd8-4b1b-bfaa-5c3f1ef90051",
"name":"operation1",
"parentId":"Library/MyOperations",
"leaf":true,
"path":"Library/MyOperations/my-operation.xml",
"type":"OPERATION"
},
{ "id":"Configuration",
"name":"Configuration",
"parentId":null,
"leaf":false,
"path":"Configuration",
"type":"FOLDER"
},
{ "id":"Configuration/Categories",
"name":"Categories",
"parentId":"Configuration",
"leaf":false,
"path":"Configuration/Categories",
"type":"FOLDER"
},
{
"id":"6a3a17c4-2c84-46c9-bef6-e043433878d6",
"name":"my-category",
```

```
"parentId":"Configuration/Categories",
"leaf":true,
"path":"Configuration/Categories/my-category.xml",
"type":"CATEGORY"
},
{
"id":"Configuration/Domain Terms",
"name":"Domain Terms",
"parentId":"Configuration",
"leaf":false,
"path":"Configuration/Domain Terms",
"type":"FOLDER"
},
{
"id":"2bc8c8e3-b742-43e5-8038-7c060dc8df77",
"name":"my-domain-term",
"parentId":"Configuration/Domain Terms",
"leaf":true,
"path":"Configuration/Domain Terms/my-domain-term.xml",
"type":"DOMAIN_TERM"
}
]
```

Get Content Pack Changes

Request: `GET /content-packs/{id}/changes`

Description: Retrieves all deployed entities changes from the last deployment of this content pack.

Request path variables:

Attribute	Description
`id`	The requested content pack's id. The id may be acquired by retrieving the list of all content packs and extracting the `id` of element of the required content pack by its name.

Example:

```
GET /content-packs/b32b3a3d-0d7a-4780-85a1-5438987803ef/changes
```

Response status codes:

Code	Meaning	Returned When
200	OK	The requested content pack's changes were returned.
403	Forbidden	The user who executed this command does not have permission to view content packs.
404	Not Found	The requested content pack was not found.

Response entity body:

An array which contains all of the deployed entities changes from the last deployment of this content pack.

Each element in the array represents a change to a deployed

entity. The returned array is not ordered.

Attribute	Type	Description	Comments
`id`	String	The id of the deployed entity.	

Attribute	Type	Description	Comments
changeType	Predefined Value	The type of change that occurred. Possible values: ADD: The deployed entity was added. DEL: The deployed entity was deleted. MOD: The deployed entity was modified (name changed, moved, xml changed, value changed)	
oldCpName	String	The name of the content pack that the entity belonged to before the last deployment.	Null if the content pack name hasn't changed.
oldPath	String	The path of the entity in the old content pack.	Null if the path has not changed.
currentPath	String	The current path of the entity.	
entityType	Predefined Value	The type of entity that changed. Possible values: FLOW, OPERATION, CATEGORY, DOMAIN_TERM, GROUP_ALIAS, ROLE_ALIAS, SCRIPTLET, SELECTION_LIST, SYSTEM_ACCOUNT, SYSTEM_ EVALUATOR, SYSTEM_FILTER, SYSTEM_ PROPERTY	
xmlChanged	Boolean	Whether the entity's xml was changed or not.	

Example


```
[
{
"id":"c8100970-8044-4d70-abbe-72f1a4ace903",
"changeType":"ADD",
"oldCpName":null,
"oldPath":null,
"currentPath":"Library/cp-filters/Set of filters/ops/op - set of filters TC3
validation.xml",
"entityType":"OPERATION",
"xmlChanged":false},
{
"id":"e3aac28a-b430-47e9-b285-342fa7e2310f",
"changeType":"DEL",
"oldCpName":null,
```

```
"oldPath":”Library/my-flows/delete-this-flow.xml”,
"currentPath":null,
"entityType":"FLOW",
"xmlChanged":false
},
{
"id":"1465b8aa-1ce6-4b2a-a3d3-d6214bd7b025",
"changeType":"MOD",
"oldCpName":”old-cp”,
"oldPath":”Library/my-flows/subflows.xml”,
"currentPath":"Library/events/Flow with subflows.xml",
"entityType":"FLOW",
"xmlChanged":false
}
]
```

Configuration Items

Get a Configuration Item (content)

Request: `GET /config-items/{type}/{path}`

Description: Returns a Configuration Item, such as a System Account.

Request path variables:

Attribute	Description
`type`	The type of the Configuration Item to return. Supported types: `domain-terms, group-aliases, selection-lists, system-accounts, system-properties`
`path`	The relative path of the Configuration Item. For example, if the item is stored at `Configuration/System Accounts/folder/sa.xml`, the relative path is `folder/sa`. **Note**: Paths are case-sensitive in Central.

Example:

```
GET /config-items/system-accounts/folder1/folder2/sa1
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Successful
403	Forbidden	The user is not allowed to view Configuration Items
404	Not Found	The Configuration Item does not exist, or the given type is not supported. For System Accounts, this can also mean the user does not have privileges to access this particular item.

Response body:

On success, returns a JSON object with the following properties:

Attribute	Description	Type
`type`	The Configuration Item type, in the same format as given in the request URI (see above).	Predefined Value
`path`	The item's relative path, as given in the request URI (see above)	String
`name`	The item's name	String
`value`	The item's actual value, as will be used in flow execution. This will be the same as `customValue` if set, otherwise it will be the same as `defaultValue`. • For Domain Terms and Selection Lists, the value is a pipe- delimited collection of values. For example: `"First Value|Second Value|Third Value"`. • For System Accounts, the value is formatted as a JSON object with properties username and password (see example below). Note that the server never sends passwords; they are masked as asterisks.	String
`defaultValue`	The item's default (deployed) value	String
`customValue`	The item's custom (override) value, which can be set in Central or through REST	String
`fullPath`	The item's full path in the Content Pack, including the .xml suffix	String
`uuid`	The item's UUID – will be null if this item is not deployed (or if it is a duplicate)	String

Example:

```
{
  "type":"system-accounts",
  "path":"folder1/folder2/sa1",
  "name":"sa1",
  "value":"{\"username\":\"admin\",\"password\":\"************\"}",
  "defaultValue":"{\"username\":\"admin\",\"password\":\"************\"}",
  "customValue":null,
  "fullPath":"Configuration/System Accounts/sa1.xml",
  "uuid":"4f32bcb8-969c-470f-9803-f823b72a9436"
}
```

Get Configuration Items by type (content)

Request: `GET /config-items/{type}`

Description: Returns all Configuration Items of the specified type.

Request path variables:

Attribute	Description
`type`	The type of the Configuration Item to return. For details, see Get a Configuration Item (content)

Example:

GET /config-items/system-accounts

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Successful
403	Forbidden	The user is not allowed to view Configuration Items
404	Not Found	The given type is not supported

Response body:

On success, returns a JSON array of Configuration Items. The array will be empty if there are no items of the requested type.

For the format of each item, see Get a Configuration Item (content).

Get All Configuration Items (content)

Request: `GET /config-items`

Description: Returns all Configuration Items of the supported types (see Get a Configuration Item (content) for a list of these types).

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Successful
403	Forbidden	The user is not allowed to view Configuration Items.

Response body:

Returns a JSON array of Configuration Items (will be empty if there are none). For the format of each item, see Get a Configuration Item (content).

Set a Configuration Item's value (content)

Request: `PUT /config-items/{type}/{path}`

Description: Sets (or clears) the custom value of an existing Configuration Item, such as a System Account. If the item has a default (deployed) value, the custom value will override it.

Request path variables:

Attribute	Description
`type`	The type of the Configuration Item to return. For details, see Get a Configuration Item (content)
`path`	The relative path of the Configuration Item. For details, see Get a Configuration Item (content)

Example:

```
PUT /config-items/system-accounts/folder1/folder2/sa1
```

Request body:

The body must include the new value as a JSON string. To clear the value, put null in the body.

Examples:

- `"some value"`
- `"some value with \"quotes\" in it"`
- `null`

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Successful
400	Bad Request	The given value is not valid JSON (must be either a string or null), or it is not formatted correctly for this Configuration Item's type
403	Forbidden	The user is not allowed to manage Configuration Items
404	Not Found	The Configuration Item does not exist, or the given type is not supported For System Accounts, this can also mean the user does not have privileges to access this particular item.

Note: Some Configuration Item types expect a particular value format. For details, see the response body section in Get a Configuration Item (content).

Response body:

On success, returns the updated Configuration Item. See Get a Configuration Item (content) for details on the object format.

Delete a Configuration Item (content)

Request: `DELETE /config-items/{type}/{path}`

Description: Deletes a Configuration Item, such as a System Account. Note that this will fail if the item to delete is currently marked as deployed (in other words, its uuid property is not null).

- To delete a deployed Configuration Item, remove it from the Content Pack and redeploy.
- If you want to clear the override value, see Set a Configuration Item's value (content).

Request path variables:

Attribute	Description
`type`	The type of the Configuration Item to return. For details, see Get a Configuration Item (content)
`path`	The relative path of the Configuration Item. For details, see Get a Configuration Item (content)

Example:

```
DELETE /config-items/system-accounts/folder1/folder2/sa1
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Successful
403	Forbidden	The Configuration Item is currently deployed (its uuid property is not null), or the user is not allowed to manage Configuration Items
404	Not Found	The Configuration Item does not exist, or the given type is not supported. For System Accounts, this can also mean the user does not have privileges to access this particular item.

Response body:

On success, returns the deleted Configuration Item. See Get a Configuration Item (content) for details on the object format.

Get Content Configuration tree

Request: `GET /config-items/tree`

Description: Returns the content configuration tree.

Example:

```
GET /config-items/tree
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Successful. If there are no results, the result will be empty.

Response entity body:

```
[
                {
                id: "Configuration",
                parentId: null,
                leaf: false,
                path:  "Configuration",
                name:  "Configuration",
                type: "FOLDER"
                },
                {
                id: "Configuration/Group Aliases",
                parentId: "Configuration",
                leaf: false,
                path: "Configuration/Group Aliases",
                name: "Group Aliases",
                type: "FOLDER"
                }
]
```

Get Configuration Item Details

Request: `GET /config-items/{type}/{path}?details=true`

Description: Returns the deployed entity data of a configuration

item **Example**:

```
GET /config-items/system-accounts/folder1/folder2/sa1?details=true
```

Request path variables:

Attribute	Description
`type`	The type of the Configuration Item to return. For details, see Get a Configuration Item (content).
`path`	The relative path of the Configuration Item. For details, see Get a Configuration Item (content).

Request parameters:

This API requires the parameter "`details=true`", otherwise it will be treated as Get a Configuration Item (content). There are no other parameters.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested path was found.
403	Forbidden	The user is not allowed to view Configuration Items
404	Not Found	The Configuration Item does not exist, or the given type is not supported. For System Accounts, this can also mean the user does not have privileges to access this particular item

Response entity body:

- on success: Returns a JSON object with the following format:

```
{
   "id": "2283acc2-95f0-4cc4-8f45-e5053ace7aaf",
   "name": "some-prop",
   "path": "Configuration/System Properties/some-prop.xml",
   "description": "This is just some property",
   "cpName": "cp-props",
   "version": "10.20.01 "
}
```

Audit

HP OO now gives you the option to audit events, so that you can track security breaches. Auditing lets you track actions that took place on Central, such as logins, triggering flows, creating schedules, editing configurations, and so on.

Get Audit Configuration

Request: `GET /audit/config`

Description: Gets the audit configuration.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested contents were returned.
403	Forbidden	The user attempting to execute this command does not have the View Security Configuration or the Manage Security Configuration permissions

Response entity body:

Attribute	Type	Description	Comment
`enabled`	Boolean	True when auditing is enabled. False when auditing is disabled.	

Example:

```
{"enabled":true}
```

Update Audit Configuration

Request: `PUT /audit/config`

Description: Updates the audit configuration.

Request entity body:

Attribute	Type	Description	Required	Default
`enabled`	Boolean	True to enable auditing. False to disable auditing.	Yes	

Example:

```
{"enabled":true}
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The audit configuration was updated successfully.
400	Bad Request	The data in the request body is invalid.
403	Forbidden	The user attempting to execute this command does not have the Manage Security Configuration permission.

Response entity body:

Returns the updated audit configuration object.

Example:

```
{"enabled":true}
```

Get Audit Records

Request: `GET /audit/records`

Description: Returns a page of the audit records that were recorded in reverse chronological order.

Request parameters:

Attribute	Type	Description	Required	Default
`sortDescending`	Boolean	Whether to sort by descending order. If false – sort by ascending order.	No	true
`pageNum`	Integer	The number of the returned page. This must be a positive (>0) number.	No	1
`pageSize`	Integer	The number of records in the returned page. This must be a positive (>0) number.	No	50

Example:

```
GET /audit/records?sortDescending=false&pageNum=2&pageSize=10
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested contents were returned.
400	Bad Request	If any of the arguments are invalid.
403	Forbidden	The user attempting to execute this command does not have the View Audit permission.

Response entity body:

An array which contains all of the events which were audited and meet the filtering

criteria. Each element in the array represents an audited event.

Attribute	Type	Description	Comment
`time`	Long	The audit time	
`type`	Predefined Type	The type of operation being audited. Possible values: See the Audit Types/Groups table.	

Attribute	Type	Description	Comment
`group`	Predefined Type	The group to which the operation being audited belongs. Possible values: See the Audit Types/Groups table.	
`subject`	String	The user that performed the operation being audited.	
`outcome`	Predefined Type	The outcome of the operation being audited. Possible values: `Success`, `Failure` and `System Error`	
`data`	String	The extra audit data specific to the type of operation being audited.	In JSON key/value format

Example:

```
[
  {
     “time”:1412312016740,
     “type”:”AuditConfigurationChange”,
     “group”:”AuditManagement”,
     “subject”:” mydomain\myuser2”,
     “outcome”:”Success”,
     “data”:”{"enabled":false}”
  },
  {
     “time”:1412312016722,
     “type”:”InternalUserDelete”,
     “group”:”Authentication-Authorization”,
     “subject”:”mydomain\myuser2”,
     “outcome”:”Success”,
     “data”:{"usersNames":["admin"]}"
  }
]
```

Delete Audit Records

Request: `DELETE /audit/records`

Description: Delete the audit records according to the request parameters. Returns the number of records that were actually deleted.

Request parameters:

Attribute	Type	Description	Required	Default
`timeBefore`	Long	Records of operations that were audited before this time will be purged. In UTC time format.	Yes	
`maxAmount`	Integer	The maximum amount of records to delete. **Note**: In some cases the number of records deleted might be slightly larger than the `maxAmount` that was passed.	No	1000

Example:

```
DELETE /audit/records?timeBefore=1387218013000&maxAmount=3000
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested contents were deleted.
400	Bad Request	If any of the arguments are invalid.
403	Forbidden	The user attempting to execute this command does not have the Manage Data Cleanup permission

Response entity body:

- **on success**: Returns the number of audit records that have been deleted.

> **Note:** This number might be higher than the `maxAmount` parameter that was passed.

Audit Types/Groups

Type	Group
CentralStartup	CentralLifecycle
CentralShutdown	CentralLifecycle
AuditConfigurationChange	AuditManagement
AuthenticationFailure	Authentication-Authorization
AuthorizationFailure	Authentication-Authorization
LoginAttempt	Authentication-Authorization
Logout	Authentication-Authorization
AuthenticationConfigurationUpdate	Authentication-Authorization
RoleCreate	Authentication-Authorization
RoleUpdate	Authentication-Authorization
RolesDelete	Authentication-Authorization
RoleSetDefault	Authentication-Authorization
LDAPConfigurationCreate	Authentication-Authorization
LDAPConfigurationUpdate	Authentication-Authorization
LDAPConfigurationsDelete	Authentication-Authorization
InternalUserCreate	Authentication-Authorization
InternalUserUpdate	Authentication-Authorization
InternalUsersDelete	Authentication-Authorization
SAMLConfigurationCreate	Authentication-Authorization
SAMLConfigurationUpdate	Authentication-Authorization
SAMLConfigurationDelete	Authentication-Authorization
SSOConfigurationUpdate	Authentication-Authorization
PathEntitlementUpdate	Authentication-Authorization
RunTriggered	Runs
RunStatusChange	Runs

Type	Group
ScheduleCreate	Runs
ScheduleEdit	Runs
SchedulesEnable	Runs
SchedulesDisable	Runs
SchedulesDelete	Runs
DeploymentProcessCreate	ContentDeployment
ContentUploadToDeploymentProcess	ContentDeployment
ContentRemoveFromDeploymentProcess	ContentDeployment
ContentForDeleteAddToDeploymentProcess	ContentDeployment
DeploymentProcessStart	ContentDeployment
ContentDeployment	ContentDeployment
ContentRollback	ContentDeployment
ContentDelete	ContentDeployment
GroupAliasCreate	ContentConfiguration
GroupAliasUpdate	ContentConfiguration
GroupAliasesDelete	ContentConfiguration
SystemAccountCreate	ContentConfiguration
SystemAccountUpdate	ContentConfiguration
SystemAccountsDelete	ContentConfiguration
ContentConfigurationItemCreate	ContentConfiguration
ContentConfigurationItemUpdate	ContentConfiguration
ContentConfigurationItemDelete	ContentConfiguration
WorkerRegister	TopologyManagement
WorkersDelete	TopologyManagement
WorkerUpdate	TopologyManagement
WorkersUpdate	TopologyManagement
WorkersAssignToGroup	TopologyManagement

Type	Group
WorkersRemoveFromGroup	TopologyManagement
ExternalUrlCreateOrUpdate	TopologyManagement
ExternalUrlDelete	TopologyManagement
SystemConfigurationCreateOrUpdate	SystemConfiguration
SystemConfigurationUpdate	SystemConfiguration
SystemConfigurationDelete	SystemConfiguration

LDAP Configuration

The LDAP API allows you to configure you organization's LDAP.

This enables users to log in with their organizational credentials and for the administrator to map LDAP groups to OO Roles.

The LDAP API includes a test API to verify configurations are going to be set correctly before saving them.

Note: It is recommended to set LDAP configurations when you want to authenticate users and not rely on the internal users feature, which are less secure.

Although with the LDAP API the configurations are set, you should enable the system authentication for them to take place.

In the case both the LDAP configurations and internal users were set, the LDAP settings override the internal user settings, if there is a collision between user IDs.

API supported with multiple LDAPs

If your organization works with multiple LDAP servers, it is now possible to configure Central to work with all of them. This includes LDAPs with different schemes and from different vendors. For example, you might have an Active Directory (Microsoft LDAP) implementation for one part of the organization and a Sun One (Oracle LDAP) implementation for another part.

Get LDAP Configuration by ID

Request: `GET /authns/ldap-config/{id}`

Description: Retrieves an LDAP configuration according to the specified ID.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	LDAP was retrieved successful.
403	Forbidden	User does not have view/manage security configurations permissions.
404	Not found	The requested LDAP does not exist.

Response entity body:

Attribute	Type	Description
`id`	String	The ID for the returned LDAP.

Attribute	Type	Description
type	Predefined Value	The type of the LDAP. See the LDAP Appendix for more information.
domain	String	The domain of the LDAP.
addresses	An array of Address	The address of the LDAP and other addresses for the case of failover. See the LDAP Appendix for more information.
securedChannel	boolean	True if a secured channel is used (SSL).
enabled	boolean	Whether the returned LDAP is operational.
privilegedUser	String	The DN of a user with search capabilities on the provided User & Group DNs. In case the LDAP type is ACTIVE_DIRECTORY the exact user name will be returned (and not a DN).
privilegedUserPassword	String	Indicates whether a password for the privileged user was provided. "********" appears when a password was set.
groupsDns	String[]	The DNs on which to apply the groups filter for search.
groupsSearchRecursive	boolean	Whether groups search should be recursive.
groupsFilter	String	A search filter to apply on the groups DNs.
usersDns	String[]	The DNs on which to apply the users filter for search.
usersSearchRecursive	boolean	Whether users search should be recursive.
userCommonNameAttribute	String	The attribute of the user which should be used for display purposes.
userEmailAttribute	String	The attribute of the user which contains the mail address.
groupMembershipAttribute	String	In ACTIVE_DIRECTORY type, this represents the attribute of the user which contains the groups. In any other type, it is null.
groupNameAttribute	String	The attribute of the group which contains the group's name used for mapping Roles to Groups.
usersFilter	String	A search filter to apply on the users DNs.
customGroupsAttributesNames	String	Attribute names that will be used as groups. Separated by semicolon.

Example


```
{
"id":"72cdc1a7-1005-4800-a412-5e4a9b8f6bec",
"type":"OPEN_DJ",
"domain":"Indigo",
"addresses":[
       {"port":389,"host":"mysite.com"},
       {"port":389,"host":"mysite.com"},
       {"port":3021,"host":"mysite.com"}
],
"securedChannel":false,
"enabled":true,
"privilegedUser":"uid=user,ou=people,dc=hp,dc=com",
"privilegedUserPassword":"********",
"groupsDns":[
       "ou=products,dc=hp,dc=com"
], "groupsSearchRecursive":true,
"groupsFilter":"(uniqueMember={0})",
"groupNameAttribute":"cn",
"usersFilter":"(&(objectclass=person)(uid={0}))",
"usersDns":[
       "ou=people,dc=hp,dc=com"
], "usersSearchRecursive":true,
"userCommonNameAttribute":"cn",
"userEmailAttribute":"mail",
"groupMembershipAttribute":null
"customGroupsAttributesNames":null
}
```

Create a New LDAP Configuration

Request: `POST /authns/ldap-config`

Description: Creates an LDAP configuration.

Response status codes:

Code	Meaning	Returned When
201	Successful (Created)	LDAP was successfully created
400	Bad Request	Client didn't provide the mandatory field or provided some fields with wrong format.
403	Forbidden	User does not have manage security configuration permissions.
409	Conflict	The provided domain already exists.

Request body:

Attribute	Type	Description	Required?	Default value
`type`	Predefined Value	The type of LDAP. See the LDAP Appendix for more information.	No	`OTHER`
`domain`	String	The domain of the LDAP. For Active Directory this must be a real domain that can be bound on. In all other cases any name is suitable.	Yes	
`addresses`	An array of Address	The address of the LDAP and other addresses for the case of fail-over. See the LDAP Appendix for more information.	Yes	

Attribute	Type	Description	Required?	Default value
securedChannel	boolean	True if a secured channel should be used (SSL).	No	False
enabled	boolean	Whether the provided LDAP should be operational.	No	False
privilegedUser	String	The DN of a user with search capabilities on the provided User and Group DNs. In case the LDAP type is ACTIVE_ DIRECTORY the exact user name should be provided (and not a DN). If the LDAP allows anonymous search, this field is not	No	None
privilegedUserPassword	String	The password of the privileged user.	No	None
groupsDns	String[]	The DNs on which to apply the groups filter for search.	Required for types other than ACTIVE_ DIRECTORY and ALTERNATE_ GROUP	

Attribute	Type	Description	Required?	Default value
groupsSearchRecursive	boolean	Whether groups search should be recursive	No	False
groupsFilter	String	A search filter to apply on the groups DNs.	Required for types other than ACTIVE_DIRECTORY and ALTERNATE_GROUP	
usersDns	String[]	The DNs on which to apply the users filter for search.	Yes	
usersSearchRecursive	boolean	Whether users search should be recursive	No	False
userCommonNameAttribute	String	The attribute of the user which should be used for display purposes	Yes	
userEmailAttribute	String	The attribute of the user which contains the mail address	No	None
groupMembershipAttribute	String	In ACTIVE_DIRECTORY type, this represents the attribute of the user which contains the groups. In any other type, it is null.	Required only for ACTIVE_DIRECTORY type.	Mandatory for ACTIVE_DIRETORY

Attribute	Type	Description	Required?	Default value
groupNameAttribute	String	The attribute of the group which contains the group's name used for mapping Roles to Groups.	Required for all types other than ALTERNATE_GROUP.	
usersFilter	String	A search filter to apply on the users DNs.	Yes	
customGroupsAttributesNames	String	Attribute names that will be used as groups. Separated by semicolon.	Required only for ALTERNATE_GROUP type	

Example:

```
{ "type":"OPEN_DJ",
"domain":"MyDomain",
"addresses":[{"host":"mysite.com","port":389}]
"securedChannel":false,
"enabled":true,
"privilegedUser":"uid=user,ou=people,dc=hp,dc=com",
"privilegedUserPassword":"1234",
"groupsDns":[
"ou=products,dc=hp,dc=com"
], "groupsSearchRecursive":true,
"groupsFilter":"(uniqueMember={0})",
"groupNameAttribute":"cn",
"usersFilter":"(&(objectclass=person)(uid={0}))",
"usersDns":["ou=people,dc=hp,dc=com"],
"usersSearchRecursive":true,
"userCommonNameAttribute":"cn",
}
```

Response entity body:

- `LdapConfig` for successful request. See the response entity table in Get LDAP Configurations.
- `RestError` for unsuccessful response. See the RestError table in the Appendix.

Get All LDAP Configurations

Request: `GET /authns/ldap-config`

Description: Retrieves all the configured LDAPs.

Response status codes:

Code	Meaning	Returned When
200	OK	LDAPs were retrieved successfully.
403	Forbidden	User does not have view/manage security configurations permissions

Response entity body:

An array of LDAP configurations. An empty array if non exists.

Attribute	Type	Description
`id`	String	The ID for the returned LDAP.
`type`	Predefined Value	The type of the LDAP. See the LDAP Appendix for more information.
`domain`	String	The domain of the LDAP.
`addresses`	An array of Address	The address of the LDAP and other addresses for the case of failover. See the LDAP Appendix for more information.
`securedChannel`	boolean	True if a secured channel is used (SSL).
`enabled`	boolean	Whether the returned LDAP is operational.
`privilegedUser`	String	The DN of a user with search capabilities on the provided User & Group DNs. In case the LDAP type is `ACTIVE_DIRECTORY` the exact user name will be returned (and not a DN).
`privilegedUserPassword`	String	Indicates whether a password for the privileged user was provided. "********" is displayed when a password is set.
`groupsDns`	String[]	The DNs on which to apply the groups filter for search.
`groupsSearchRecursive`	boolean	Whether groups search should be recursive.
`groupsFilter`	String	A search filter to apply on the groups DNs.

Attribute	Type	Description
usersDns	String[]	The DNs on which to apply the users filter for search.
usersSearchRecursive	boolean	Whether users search should be recursive.
userCommonNameAttribute	String	The attribute of the user which should be used for display purposes.
userEmailAttribute	String	The attribute of the user which contains the mail address.
groupMembershipAttribute	String	In ACTIVE_DIRECTORY type, this represents the attribute of the user which contains the groups. In any other type, it is null.
usersFilter	String	A search filter to apply on the users DNs.
groupNameAttribute	String	The attribute of the group which contains the group's name used for mapping Roles to Groups.
customGroupsAttributesNames	String	Attribute names that will be used as groups. Separated by semicolon.

Get Default LDAP

Request: `GET /authns/ldap-config/default`

Description: Retrieve the default LDAP.

Response status codes:

Code	Meaning	Returned When
200	OK	LDAPs were retrieved successfully.
403	Forbidden	User does not have read/manage security configuration permissions.
404	Not Found	A default LDAP does not exist.

Response entity body:

Attribute	Type	Description
`id`	String	The ID for the returned LDAP.
`type`	Predefined Value	The type of the LDAP. See the LDAP Appendix for more information.
`domain`	String	The domain of the LDAP.
`addresses`	An array of Address	The address of the LDAP and other addresses for the case of failover. See the LDAP Appendix for more information.
`securedChannel`	boolean	True if a secured channel is used (SSL).
`enabled`	boolean	Whether the returned LDAP is operational.
`privilegedUser`	String	The DN of a user with search capabilities on the provided User & Group DNs. In case the LDAP type is `ACTIVE_DIRECTORY` the exact user name will be returned (and not a DN).
`privilegedUserPassword`	String	Indicates whether a password for the privileged user was provided. "********" is displayed when a password is set.
`groupsDns`	String[]	The DNs on which to apply the groups filter for search.
`groupsSearchRecursive`	boolean	Whether groups search should be recursive.
`groupsFilter`	String	A search filter to apply on the groups DNs.

Attribute	Type	Description
usersDns	String[]	The DNs on which to apply the users filter for search.
usersSearchRecursive	boolean	Whether users search should be recursive.
userCommonNameAttribute	String	The attribute of the user which should be used for display purposes.
userEmailAttribute	String	The attribute of the user which contains the mail address.
groupMembershipAttribute	String	In ACTIVE_DIRECTORY type, this represents the attribute of the user which contains the groups. In any other type, it is null.
customGroupsAttributesNames	String	Attribute names that will be used as groups. Separated by semicolon.
groupNameAttribute	String	The attribute of the group which contains the group's name used for mapping Roles to Groups.
usersFilter	String	A search filter to apply on the users DNs.

Delete Default LDAP Marking

Request: `DELETE /authns/ldap-config/default`

Description: Deletes the default LDAP marking.

> **Note:** The LDAP is not deleted.

Response status codes:

Code	Meaning	Returned When
204	No Content	No default LDAP marking exists anymore
403	Forbidden	User does not have manage security configuration permissions

Create or Update a Default LDAP Marking

Request: `POST /authns/ldap-config/default` or `PUT /authns/ldap-config/default`

Description: Creates or updates default LDAP marking.

Request body:

Attribute	Type	Description	Required?	Default value
`id`	String	The ID that represents the LDAP to be marked as default	Yes	

Example:

```
{
	"id":"72cdc1a7-1005-4800-a412-5e4a9b8f6bec"
}
```

Response status codes:

Code	Meaning	Returned When
200	OK	The default LDAP was set accordingly. There was a default LDAP before.
201	Created	The default LDAP was set accordingly. There was no default LDAP before.
400	Bad Request	The user did not provide a mandatory attribute, or provided an invalid value, for example, the given ID does not correspond with an existing LDAP configuration.
403	Forbidden	User does not have manage security configuration permissions.

Response entity body:

Attribute	Type	Description
`id`	String	The ID for the returned LDAP.
`type`	Predefined Value	The type of the LDAP. See the LDAP Appendix for more information.
`domain`	String	The domain of the LDAP.
`addresses`	An array of Address	The address of the LDAP and other addresses for the case of failover. See the LDAP Appendix for more information.

Attribute	Type	Description
securedChannel	boolean	True if a secured channel is used (SSL).
enabled	boolean	Whether the returned LDAP is operational.
privilegedUser	String	The DN of a user with search capabilities on the provided User & Group DNs. In case the LDAP type is ACTIVE_DIRECTORY the exact user name will be returned (and not a DN).
privilegedUserPassword	String	Indicates whether a password for the privileged user was provided. Is displayed “********”when a password is set.
groupsDns	String[]	The DNs on which to apply the groups filter for search.
groupsSearchRecursive	boolean	Whether groups search should be recursive.
groupsFilter	String	A search filter to apply on the groups DNs.
usersDns	String[]	The DNs on which to apply the users filter for search.
usersSearchRecursive	boolean	Whether users search should be recursive.
userCommonNameAttribute	String	The attribute of the user which should be used for display purposes.
userEmailAttribute	String	The attribute of the user which contains the mail address.
groupMembershipAttribute	String	In ACTIVE_DIRECTORY type, this represents the attribute of the user which contains the groups. In any other type, it is null.
groupNameAttribute	String	The attribute of the group which contains the group's name used for mapping Roles to Groups.
customGroupsAttributesNames	String	Attribute names that will be used as groups. Separated by semicolon.
usersFilter	String	A search filter to apply on the users DNs.

Testing LDAP Configurations

Request: `POST /authns/ldap-config/{id}/test`

Description: Test an existing LDAP configuration.

Request: `POST /authns/ldap-config/test`

Description: Test an ad hoc LDAP configuration.

Request body:

Attribute	Type	Description	Required?	Default value
`userName`	String	The user to test the provided configurations with.	Yes	
`userPassword`	String	The password of the user. In case the password is not provided, there will be no authentication attempt.	No	None
`type`	Predefined Value	The type of the LDAP. See the LDAP Appendix for more information.	No	`OTHER`
`domain`	String	The domain of the LDAP. In case of Active Directory this must be a real domain that can be bind on, in all other cases any name would fit.	Yes	

Attribute	Type	Description	Required?	Default value
addresses	An array of Address	The address of the LDAP and other addresses for the case of fail-over.	Yes	See the LDAP Appendix for more information
securedChannel	boolean	True if a secured channel should be used (SSL)	No	False
privilegedUser	String	The DN of a user with search capabilities on the provided User & Group DNs. In case the LDAP type is ACTIVE_ DIRECTORY the exact user name should be provided (and not a DN). If the LDAP allows anonymous search, this field is not required.	No	None

Attribute	Type	Description	Required?	Default value
privilegedUserPassword	String	The password of the privileged user. If the password of the existing LDAP should be used, displayed with asterisk (“********”). **Note**: If you decided to provide the password itself, the /authns/ldap- config/test is more suitable. See Ad-hoc Flow Execution.	No	None
groupsDns	String[]	The DNs on which to apply the groups filter for search.	Yes	
groupsSearchRecursive	boolean	Whether groups search should be recursive	No	False
groupsFilter	String	A search filter to apply on the groups DNs	Yes	
usersDns	String[]	The DNs on which to apply the users filter for search.	Yes	
usersSearchRecursive	boolean	Whether users search should be recursive	No	False

Attribute	Type	Description	Required?	Default value
`userCommonNameAttribute`	String	The attribute of the user which should be used for display purposes.	Yes	
`userEmailAttribute`	String	The attribute of the user which contains the mail address	No	None
`groupMembershipAttribute`	String	In `ACTIVE_DIRECTORY` type, this represents the attribute of the user which contains the groups. In any other type, it is null.	No	Mandatory for `ACTIVE_DIRETORY`
`groupNameAttribute`	String	The attribute of the group which contains the group's name used for mapping Roles to Groups.	Required for all types other than `ALTERNATE_GROUP`	
`usersFilter`	String	A search filter to apply on the users DNs	Yes	
`enabled`	boolean	Whether the returned LDAP is operational	No	False

Attribute	Type	Description	Required?	Default value
customGroupsAttributesNames	String	Attribute names that will be used as groups. Separated by semicolon.	Required only for ALTERNATE_GROUP type	

Response status codes:

Code	Meaning	Returned When
200	OK	The provided LDAP configurations were legal and a test was performed.
400	Bad Request	The provided configurations were bad or server encountered some error while performing the test.
403	Forbidden	User does not have read/manage security configuration permissions.
404	Not found	The provided LDAP id does not exist.

Response body:

Attribute	Type	Description	Comments
authenticated	boolean	Whether or not the user was	
groupsNames	String[]	An array with the names of the groups the user belongs to.	
userAttributes	Attribute[]	An array with the attributes of the user.	See the LDAP Appendix for more information.

- **RestError for Bad Request** (400 code). See the RestError table for more information.

Get LDAP root Details

Request: `POST /authns/ldap-root` or `PUT /authns/ldap-root`

Description: Retrieves LDAP root details.

Request body:

Attribute	Type	Description	Required?	Default value
`addresses`	Address []	An array of addresses. See the LDAP Appendix for more information.	Yes	
`securedChannel`	boolean	Whether to establish a secured connection (SSL)	No	False

Example:

```
{"addresses":[
{"host":"mydwbld0006g.isr.hp.com","port":389},
{"host":"mydwbld0126g.isr.hp.com","port":3089}
],
"securedChannel":false
}
```

Response status codes:

Code	Meaning	Returned When
200	OK	LDAPs were retrieved successfully
400	Bad Request	Client provided illegal/incorrect parameters

Successful response body:

Attribute	Type	Description	Comments
`rootDns`	String[]	An array of DNs which represents the LDAP roots.	
`serverAddress`	Address	The address to which OO successfully connected. See the LDAP Appendix for more information.	
`vendorName`	String	The name of the vendor of this LDAP	Not all LDAPs support this functionality

Attribute	Type	Description	Comments
vendorVersion	String	The version of this LDAP	Not all LDAPs support this functionality

Example:

```
{ "rootDns":[
"dc=mercury,dc=com",
"dc=indigo,dc=com"
],
"serverAddress":
{"port":389,"host":"mysite.com"},
"vendorName":"ForgeRock AS.",
"vendorVersion":"OpenDJ 2.6.0"
}
```

- **Bad Request** (400 Code) response. See the RestError table for more information.

Update an Existing LDAP Configuration

Request: `PUT /authns/ldap-config/{ldapId}`

Description: Update an existing LDAP

configuration **Request body:**

Attribute	Type	Description	Required?	Default value
`type`	Predefined Value	The type of LDAP. See the LDAP Appendix for more information.	Yes	
`domain`	String	The domain of the LDAP. For Active Directory this must be a real domain that can be bound on. In all other cases any name is suitable.	Yes	
`addresses`	An array of Address	The address of the LDAP and other addresses for the case of fail-over. See the LDAP Appendix for more information.	Yes	
`securedChannel`	boolean	True if a secured channel should be used (SSL).	No	False
`enabled`	boolean	Whether the provided LDAP should be operational	No	False

Attribute	Type	Description	Required?	Default value
privilegedUser	String	The DN of a user with search capabilities on the provided User and Group DNs. In case the LDAP type is ACTIVE_DIRECTORY the exact user name should be provided (and not a DN). If the LDAP allows anonymous search, this field is not required.	No	None
privilegedUserPassword	String	The password of the privileged user.	No	None
groupsDns	String[]	The DNs on which to apply the groups filter for search.	Yes	
groupsSearchRecursive	boolean	Whether groups search should be recursive	No	False
groupsFilter	String	A search filter to apply on the groups DNs.	Yes	
usersDns	String[]	The DNs on which to apply the users filter for search.	Yes	
usersSearchRecursive	boolean	Whether users search should be recursive	No	False
userCommonNameAttribute	String	The attribute of the user which should be used for display purposes.	Yes	
userEmailAttribute	String	The attribute of the user which contains the mail address	No	None

Attribute	Type	Description	Required?	Default value
groupMembershipAttribute	String	In ACTIVE_DIRECTORY type, this represents the attribute of the user which contains the groups. In any other type, it is null.	No	Mandatory for ACTIVE_DIRETORY

Response status codes:

Code	Meaning	Returned When
200	Successful	The LDAP configuration was updated successfully.
400	Bad Request	Client didn't provide the mandatory field or provided some fields with wrong format.
403	Forbidden	User does not have manage security configuration permissions.
409	Conflict	The provided domain already exists.

Example:

```
{
"type":"SUN_ONE",
"domain":"MyDomain",
"addresses":[{"host":"mysite.com","port":389}],
"securedChannel":false,
"enabled":true,
"privilegedUser":"uid=user,ou=people,dc=hp,dc=com",
"privilegedUserPassword":"1234",
"groupsDns":["ou=products,dc=hp,dc=com"],
"groupsSearchRecursive":true,
"groupsFilter":"(uniqueMember={0})",
"groupNameAttribute":"cn",
"usersFilter":"(&(objectclass=person)(uid={0}))",
"usersDns":["ou=people,dc=hp,dc=com"],
"usersSearchRecursive":true,
"userCommonNameAttribute":"cn"
}
```

Workers

Many deployments can benefit from having more than a single Worker in a specific environment. For example, this could be helpful if you are managing a remote data center in which you need Workers to be able to withstand the action execution load, or simply for high availability of the Workers in that data center. In previous versions, a load balancer would have been required to balance the load between two Workers, which Central would know as a single logical Worker. See the Concepts Guide for more information.

Update a Specific Worker

Request: `PUT /workers/{workerId}`

Description: Update an existing worker.

Request path variables:

Attribute	Description
`workerId`	The ID of the worker to be updated.

Request entity body:

The body of this request must include a JSON object with the following format:

JSON for the worker

```
{
   "groups":[
      "worker_Operator_Path"
   ],
   "active":false
}
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the default role successfully.
403	Forbidden	The user doesn't have Manage Topology permission.
404	Not found	The requested worker is not found.

Get All Workers

Request: `GET /workers`

Description: Retrieves all the workers.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested workers were found.
403	Forbidden	The user doesn't have **View Topology** or **Manage Topology** permissions.

Response entity body:

- **on success:** Returns a JSON object with the following format:

```
[
   {
      "uuid":"a97e30da-179e-4f19-af93-453c33338f53",
      "installPath":"c:/jenkins/workspace/carmel-demo-deployment/oo/central",
      "os":"Windows Server 2008",
      "jvm":"1.7.0_13",
      "description":"a97e30da-179e-4f19-af93-453c33338f53",
      "dotNetVersion":"4.x",
      "hostName":"VMCNCDEV41.devlab.ad",
      "groups":[
         "worker_Operator_Path"
      ],
      "active":true
      "status":
      "RUNNING"
   },
   {
      "uuid":"4440c50e-79d1-45d2-a8dc-94bc42eb9b1f",
      "installPath":"c:\\jenkins\\workspace\\carmel-demo-deployment\\oo\\worker",
      "os":"Windows Server 2008",
      "jvm":"1.7.0_13",
      "description":"4440c50e-79d1-45d2-a8dc-94bc42eb9b1f",
      "dotNetVersion":"4.x",
      "hostName":"VMCNCDEV41.devlab.ad",
      "groups":[
         "Worker_Operator_Path"
      ],
      "active":false
      status:
      "RUNNING"
   }
]
```

Get All Workers Groups

Request: `GET /workers-groups`

Description: Return a list of Workers groups.

Response status code:

Code	Meaning	Returned When
200	OK	
403	Forbidden	The user does not have **View Topology** or **Manage Topology** permission.

Response entity body:

- **on success:** Returns a JSON array of the Workers Groups with the following format:

```
[
   "RAS_Group_1",
   "RAS_Group_2",
   "RAS_Group_3"
]
```

Assign Workers to a Workers Group

Request: `PUT /workers-groups/{name}/workers/{workersUuids}`

Description: Assign Workers to a group.

Request path variables:

Attribute	Description
`name`	The name of the Workers group to add
`WorkersUuids`	The `workersUuids` of the Worker(s) to be added to the group

Response status codes:

Code	Meaning	Returned When
204	No Content	
400	Bad Request	
403	Forbidden	The user doesn't have Manage Topology permission.
404	Not Found	The requested worker is not found.

Remove Workers from a Workers Group

Request: `DELETE /workers-groups/{name}/workers/{workersUuids}`

Description: Remove Workers from a Workers Group.

Request path variables:

Attribute	Description
`name`	The name of the Workers Group to remove from
`workersUuids`	The uuid of the Worker(s) to remove from the group

Response status codes:

Code	Meaning	Returned When
204	No Content	
400	Bad Request	
403	Forbidden	The user does not have Manage Topology permission.
404	Not Found	The requested worker is not found.

Delete a Worker

Request: `DELETE /workers/{workersUuid}`

Description: Delete workers.

Request path variables:

Attribute	Description
`workersUuid`	List of worker uuids

Response status codes:

Code	Meaning	Returned When
204	OK	No content, workers deleted successfully.
400	Bad Request	When you try to delete a worker that is still running.
403	Forbidden	The user does not have Manage Topology permission.
404	Not Found	The requested worker is not found.

Users

The Users API allows you to retrieve, update, create and delete users.

Create New Internal User

Request: `POST /users`

Description: Adds a new internal user.

Request entity body:

The body of this request must include a JSON object with the following format:

JSON for a user with a password and roles

```
{
   "username":"mranderson",
   "password":"12345",
   "roles":[
      {"name":"EVERYBODY"},
      {"name":"PROMOTER"}
   ]
}
```

If roles are provided with an empty array, the user is granted with the role that was set as the default.

> **Note:** Do not use the `me` user name as this is reserved.

Response status codes:

Code	Meaning	Returned When
201	Successful (Created)	An internal user was created successfully.
400	Bad Request	When the wrong parameters are entered.
403	Forbidden	The user who executed this command does not have the Manage Security Configuration permission.
409	Conflict	The given username already exists.

Response entity body:

- **on success:** Returns a JSON object of the created Internal User with the following format:

```
{
   "displayName":"mranderson",
   "userId":"mranderson",
   "emails":null,
   "hasPassword":true,
   "roles":[
      "END_USER",
      "PROMOTER",
      "SYSTEM_ADMIN"
   ],
   "permissions":null
}
```

Update Existing User

Request: `PUT /users/{username}`

Description: Update an existing internal user

Request path variables:

Attribute	Description
`username`	The name of the internal user to update.

Request entity body:

The body of this request must include a JSON object with the following format:

JSON for an Internal User update with both optional and mandatory fields:

```
{
   "password": "12345",
   "roles":[
      {"name":"EVERYONE"},
      {"name":"PROMOTER"}
   ],
   "username": "mranderson"
}
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the user successfully.
400	Bad Request	
403	Forbidden	The user who executed this command does not have the Manage Security Configuration permission.
404	Not Found	The user to update does not exist.
409	Conflict	Trying to rename a user to a name that already exists.

Response entity body:

- **on success:** Returns a JSON object of the updated internal user.

```
{
   "displayName":"mranderson",
   "userId":"mranderson",
   "emails":null,
   "hasPassword":true,
   "roles":[
      "END_USER",
      "PROMOTER",
      "SYSTEM_ADMIN"
   ],
   "permissions":null
}
```

Delete an Internal User

Request: `DELETE /users/{userIds}`

Description: Deletes users according to a specific list of user IDs.

Request path variables:

Attribute	Description
`userIds`	The identifiers of the internal users to delete (comma-delimited).

Response status codes:

Code	Meaning	Returned When
204	Successful (No	The internal users no longer exist in the system.
403	Forbidden	The user who executed this command does not have the Manage Security Configuration permission.

Note: A logged in user cannot delete their own internal user account.

Get Users

Request: `GET /users?origin=internal`

Description: Retrieves users

Request parameters:

Attribute	Description	Default Value	Required
`origin`	The location from which the user's provider should be retrieved. Internal stands for internal users.	No	Yes

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Returned the requested users list.
403	Forbidden	The user does not have View Security Configuration or Manage Security Configuration permission.

Response entity body:

- **on success:** Returns a JSON object with the following format:


```
[
   {
      "displayName":"admin",
      "userId":"admin",
      "emails":null,
      "hasPassword":true,
      "roles":[
         "ADMIN"
      ],
      "permissions":null
   },
   {
      "displayName":"mranderson",
      "userId":"mranderson",
      "emails":null,
      "hasPassword":true,
      "roles":[
         "END_USER"
      ],
      "permissions":null
   },

   {
      "displayName":"rothjohn",
      "userId":"rothjohn",
      "emails":null,
      "hasPassword":true,
      "roles":[
         "EVERYONE"
      ],
      "permissions":null
   }
]
```

Get Session's User

Request: `GET /users/me`

Description: Retrieves this session's user.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The session's user was returned.

Response entity body:

- **on success:** Returns a JSON object with the following format:

```
{
   "displayName":"admin",
   "userId":"admin",
   "emails":null,
   "hasPassword":false,
   "roles":[
      "ADMIN"
   ],
   "permissions":[
      "cpManage", "cpRead",
      "topologyManage",
      "flowPermissionManage",
      "topologyRead",
      "securityConfigManage",
      "securityConfigRead",
      "systemSettingsRead",
      "systemSettingsManage",
      "scheduleManage",
      "scheduleRead",
      "configurationItemManage",
      "configurationItemRead",
      "othersRunsManage"
   ]
}
```

LW SSO

The LW SSO API allows you to configure LW SSO.

Get LW SSO Configuration

Request: `GET /authns/lwsso-config`

Description: Retrieves the lightweight SSO configuration.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The LWSSO configuration was returned.
403	Forbidden	The user does not have View Security Configuration or Manage Security Configuration permission.

Response entity body:

- **on success:** Returns a JSON object with the following format:

```
{ "enabled":false,
   "initString":"************",
   "domain":"mydomainnew1.com",
   "protectedDomains":
          [
            "mydomainnew1.com",
            "mydomainnew2.com"
          ]
}
```

Update LW SSO configuration

Request: `PUT /authns/lwsso-config`

Description: Updates the lightweight SSO configuration.

Request entity body:

The body of this request must include a JSON object with the following format:

JSON for a LWSSO User update with both optional and mandatory fields:

```
{
   "enabled":false,
   "initString":"initString",
   "domain":"mydomainnew1.com",
   "protectedDomains":
   [
          "mydomainnew1.com",
          "mydomainnew2.com"
   ]
}
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the LW SSO configurations successfully.
400	Bad Request	
403	Forbidden	The user does not have Manage Security Configuration permission.

Response entity body:

- **on success:** Returns a JSON object of the saved configurations.

```
{
   "enabled":false,
   "initString":"************",
   "domain":"mydomainnew1.com",
   "protectedDomains":
   [
          "mydomainnew1.com",
          "mydomainnew2.com"
   ]
}
```

Authentication

The Authentication API allows to enable and disable user authentication.

Get Authentication Configurations

Request: `GET /authns`

Description: Retrieves the authentication status

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The authentication status we returned

Response entity body:

```
{
   "enable":true,
   "domains":[
       "Internal"
   ]
}
```

Update Authentication Configurations

Request: `PUT /authns`

Description: Updates the authentication configurations.

Request body:

```
{
"enable":true
}
```

Response status codes:

Code	Meaning	Returned When
204	Successful (no-content)	The authentication configuration were updated.
403	Forbidden	The user does not have Manage Security Configuration permission.
404	Not Found	The specified path was not found.

Roles

The Roles API allows you to configure roles.

Get Specified Role

Request: `GET /roles/{roleName}`

Description: Retrieves a role according to the specified role name.

Request path variables:

Attribute	Description
`roleName`	The name of the required role.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested role was found.
403	Forbidden	The user does not have **View Security Configuration** or **Manage Security Configuration** permission.
404	Not Found	The requested role was not found.

Response entity body:

- **on success:** Returns a JSON object with the following format:

```
{
   "name":"ADMINISTRATOR",
   "description":"Administration Role",
   "permissions":[
          "flowPermissionManage",
          "cpManage",
          "dashboardRead",
          "configurationItemRead",
          "cpRead",
          "configurationItemManage",
          "scheduleManage",
          "systemSettingsManage",
          "scheduleRead",
          "securityConfigRead",
          "topologyRead",
          "flowDebug",
          "securityConfigManage",
          "topologyManage",
          "systemSettingsRead",
          "othersRunsManage"
          ],
   "groupsNames":[
   ]
}
```

`groupsNames` attribute refers to the LDAP groups mapping. An empty array indicates that there is no mapping to any LDAP group.

Get All Roles

Request: `GET /roles`

Description: Retrieves all the existing roles.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested roles were found.
403	Forbidden	The user doesn't have View Security Configuration or Manage Security Configuration permission.

Response entity body:

- **on success:** Returns a JSON object with the following format:


```
[
   {
      "name":"ADMINISTRATOR",
      "permissions":[
         "securityConfigRead",
         "cpRead",
         "topologyManage",
         "securityConfigManage",
         "configurationItemRead",
         "scheduleManage",
         "topologyRead",
         "othersRunsManage",
         "configurationItemManage",
         "systemSettingsManage",
         "flowPermissionManage",
         "cpManage",
         "scheduleRead",
         "systemSettingsRead"
         ],
      "groupsNames":[],
      "description":"Administration Role"
   },
   {
      "name":"EVERYBODY",
      "permissions":[],
```

```
        "groupsNames":[],
        "description":"Everybody Role"
    },
    {
        "name":"PROMOTER",
        "permissions":[
            "configurationItemManage",
            "cpRead",
            "configurationItemRead",
            "flowPermissionManage",
            "cpManage"
            ],
         "groupsNames":[],
        "description":"Promoter Role"
    },
    {
        "name":"SYSTEM_ADMIN",
        "permissions":[
            "securityConfigRead",
            "topologyRead",
            "systemSettingsManage",
            "topologyManage",
            "securityConfigManage",
            "systemSettingsRead"
        ],
        "groupsNames":[],
        "description":"System Administrator Role"
    },
    {
        "name":"END_USER",
        "permissions":[],
        "groupsNames":[],
        "description":"End User Role"
    }
]
```

Create New Role

Request: `POST /roles`

Description: Adds a new

role **Request entity body:**

The body of this request must include a JSON object with the following format:

JSON for a role configuration with both optional and mandatory fields:

```
{ "name":"NEW_ROLE",
  "permissions":[
         "cpRead",
         "cpManage"
   ],
   "groupsNames":[],
   "description":"New Role"
}
```

`description` and `groupsNames` are optional.

The `groupsNames` refers to the LDAP groups that should be mapped to this role.

Response status codes:

Code	Meaning	Returned When
201	Successful (Created)	A new role was created.
400	Bad Request	The data in the body is incorrect.
403	Forbidden	The user does not have Manage Security Configuration permission
409	Conflict	When the user tries to add a role which is already exists.

Response entity body:

- **on success:** Returns a JSON object of the created role with the following format:

```
{
   "name":"Super Power",
   "description":"An all permissions role!",
    "permissions":[
       "flowPermissionManage",
       "cpManage",
       "dashboardRead",
       "configurationItemRead",
       "cpRead",
```

```
        "configurationItemManage",
        "scheduleManage",
        "systemSettingsManage",
        "scheduleRead",
        "securityConfigRead",
        "topologyRead",
        "flowDebug",
        "securityConfigManage",
        "topologyManage",
        "systemSettingsRead",
        "othersRunsManage"
                ],
    "groupsNames":[
       "Super Group"
    ]
}
```

Update an Existing Role

Request: `PUT /roles/{roleName}`

Description: Update an existing role

Request path variables:

Attribute	Description
`roleName`	The name of the role to update.

Request entity body:

The body of this request must include a JSON object with the following format:

JSON for a Role update with both optional and mandatory fields:

```
{
   "description":"Not super power anymore",
   "groupsNames":[
      "Not Super Group"
   ],
   "name":"Not Super Power",
   "permissions":[
      "othersRunsManage",
      "flowPermissionManage",
      "securityConfigRead",
      "securityConfigManage"
   ]
}
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the role successfully.
400	Bad Request	The JSON body is incorrect.
403	Forbidden	The user does not have Manage Security Configuration permission.
404	Not Found	When the role does not exist.

Response entity body:

- **on success:** Returns a JSON object of the updated internal user.

```
{
   "description":"Not super power anymore",
   "groupsNames":[
```

```
      "Not Super Group"
   ],
   "name":"Not Super Power",
   "permissions":[
      "othersRunsManage",
      "flowPermissionManage",
      "securityConfigRead",
      "securityConfigManage"
   ]
}
```

Delete a Role

Request: `DELETE /roles/{roleName}`

Description: Deletes a role according to the specified role name.

Request path variables:

Attribute	Description
`roleName`	The identifier of the role name to delete.

Response status codes:

Code	Meaning	Returned When
204	Successful (no-content)	The role was deleted successfully.
403	Forbidden	The user does not have Manage Security Configuration permission.
404	Not found	

Get the Default Role

Request: `GET /roles/default-name`

Description: Retrieves the default role.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The default role found.
403	Forbidden	The user does not have View Security Configuration or Manage Security Configuration permission.

Response entity body:

- **on success:** Returns a JSON object with the following format:

```
{"defaultRole":"EVERYBODY"}
```

`defaultRole` attribute maps between the default role and an existing one.

Update the Default Role

Request: `PUT /roles/default-name`

Description: Update an existing role.

Request entity body:

The body of this request must include a JSON object with the following format:

```
{"defaultRole":"PROMOTER"}
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the default role successfully.
400	Bad Request	No such role
403	Forbidden	The user doesn’t have Manage Security Configuration permission.

Response entity body:

- **on success:** Returns a JSON object of the updated default role.

```
{
   "defaultRole":"PROMOTER"
}
```

Get Entitlements Per Path and Roles

Request: `GET /roles/{rolesNames}/entitlements/{path}`

Description: Retrieves the entitlements for the requested roles and path.

Example:

`GET /roles/ADMINISTRATOR,EVERYBODY,PROMOTER/entitlements/Library/Flows/flow.xml`

Request path variables:

Attribute	Description
`rolesNames`	The roles for which the entitlements are requested.
`Path`	The full path of the resource, including .xml. Note: the "/" in the path must not be encoded.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested entitlements were found.
400	Bad request	
403	Forbidden	The user does not have **Manage Content Permissions** permission.
404	Not Found	The requested path was not found.

Response entity body:

- **on success:** Returns a JSON object with the following format:

```
{
   "ADMINISTRATOR":[
      "RUN",
      "VIEW"
   ],
   "EVERYBODY":[

   ],
   "END_USER":[

   ],
   "SYSTEM_ADMIN":[

   ],
   "PROMOTER":[
      "RUN",
      "VIEW"
   ]
}
```

Note: Existing entitlements are:

- RUN – run flow,
- VIEW – view flow,
- VIEW_EXECUTE – view and use system account

Update Path Entitlement Per Role

Request: `PUT /roles/{roleName}/entitlements/{path}`

Description: Update the entitlements of the requested role and path.

Example:

```
PUT /roles/SYSTEM_ADMIN/entitlements/Library/cp-parallel
```

Request path variables:

Attribute	Description
`roleName`	The role for which the entitlements are impact.
`Path`	The full path of the resource, including .xml. Note: the "/" in the path must not be encoded.

Request entity body:

The body of this request must include a JSON object with the following format:

JSON for an entitlement path update with both optional and mandatory fields:

```
{
   "privileges":[
      "VIEW",
      "RUN"
   ],
   "isRecursive":true
}
```

Note: The default value for `isRecursive` is false.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the role successfully.
400	Bad Request	
403	Forbidden	The user does not have **Manage Content Permissions** permision.
404	Not found	The specified path was not found.

Response entity body:

- **on success:** Returns a JSON object of the updated path entitlement on the role.

```
{
   "privileges":[
      "VIEW",
      "RUN"
   ],
   "isRecursive":true
}
```

System Information and Settings

Create a System Configuration Item

Request: `POST /config`

Description: Creates a system configuration item.

Request entity body: The body of this request needs to include a JSON object with the following format:

```
{
   "key":"my.test.key",
   "value":"value"
}
```

Response status codes:

Code	Meaning	Returned When
201	Created	A system configuration item was created successfully.
403	Forbidden	The user does not have **Manage System Settings** permission.

Response entity body:

- **on success:** Returns a JSON object of the created system configuration item with the following format:

  ```
  {
         "id": "1179648",
         "key":"myKey",
         "value":"value"
  }
  ```

  In addition, a location header containing a URI to retrieve the created system configuration item: `/config/myKey`

Get All System Configuration Items

Request: `GET /config`

Description: Retrieves all system configuration items.

Response status codes:

Code	Meaning	Returned When
200	OK	All existing system configuration items were retrieved.
403	Forbidden	The user does not have **View System Settings** or **Manage System Settings** permission.

Response entity body:

- **on success:** Returns a JSON object with the following format:

```
{
   "key 1":"value 1",
   "key 2":" value 2",
    ...
   "key n":" value n"
}
```

Get a System Configuration Item

Request: `GET /config/{key:.+}`

Description: Retrieves a system configuration item by key.

Request path variables:

Attribute	Description
`key`	The key of the requested system configuration item.

Response status codes:

Code	Meaning	Returned When
200	OK	The requested system configuration item was retrieved successfully.
403	Forbidden	The user does not have **View System Settings** or **Manage System Settings** permission.
404	Not Found	No system configuration was retrieved.

Response entity body:

- **on success:** Returns a JSON string with the value of the requested system configuration item.

Update System Configuration Item

Request: `PUT /config/{key:.+}`

Description: Updates an existing system configuration item.

Request path variables:

Attribute	Description
`key`	The key of the system configuration item to update.

Request entity body: The body of this request needs to include the new value of the system configuration item, as plain text (no JSON encoding).

Response status codes:

Code	Meaning	Returned When
202	Accepted	The system configuration item was updated successfully.
403	Forbidden	The user does not have Manage System Settings permission.
404	Not Found	The requested system configuration item was not found.

Response entity body:

- **on success:** Returns a JSON value of the updated configuration item's ID.

Get Database Usage Statistics

Request: `GET /db-statistics`

Description: Retrieves the HP OO database usage statistics (in MB) according to the given request parameters.

Request parameters:

Attribute	Type	Description	Required	Default
`months`	List of numbers	The months to retrieve the statistics for. An empty list means all months.	No	false
`years`	List of numbers	The years to retrieve the statistics for. An empty list means all years.	No	false

Example:

```
GET/db-statistics?months=1,2,3&years=2015
```

Response status codes:

Code	Meaning	Returned When
200	OK	The requested database usage statistics was returned.
403	Forbidden	The user who executed this command does not have permission for Manage cleanup data or to view or manage system settings.

Response entity body:

An object containing two fields: `lastUpdate`, which represents the last time the database size was checked, and `data`, which is a map containing all of the database statistics that match the request.

The first level of the map is the statistics years. Each year is mapped to the different months, and each month is mapped to the different days. Each day contains the statistics element. This statistics element contains the total usage of the database, the debugger usage, the execution usage and the audit usage for that time (in MB).

Example:

```
{
  "lastUpdate":1182139200000,
  "data":
    {
      "2014":{
        "12":{
          "31": {
            "totalUsage": 3,
            "executionUsage": 0,
            "debuggerUsage": 0,
            "auditUsage": 0
          }
        }
      },
      "2015":{
        "1":{
          "1": {
            "totalUsage": 1050,
            "executionUsage": 568,
            "debuggerUsage": 150,
            "auditUsage": 0
          },
          "2": {
            "totalUsage": 3,
            "executionUsage": 756,
            "debuggerUsage": 150,
            "auditUsage": 3
          }
        },
      }
    }
}
```

Get System Log Level

Request: `GET /loglevel`

Description: Retrieves the system default run log level (persistence level).

Example: `GET/loglevel`

Response status codes:

Code	Meaning	Returned When
200	OK	The requested log level was returned.
403	Forbidden	The user does not have the permission View System Settings or Manage System Settings

Response entity body:

On success: Returns a quoted JSON string of the system log level.

Possible values: `STANDARD`, `EXTENDED`

Example:

```
"STANDARD"
```

Update System Log Level

Request: `PUT /loglevel`

Description: Updates the system default run log level (persistence level).

Example: `PUT /loglevel`

Request entity body:

The body of this request must include one of the predefined values (quoted JSON string): `STANDARD`, `EXTENDED`.

Response status codes:

Code	Meaning	Returned When
204	No Content	The requested log level was updated successfully.
400	Bad Request	The provided log level does not match the predefined values (Case sensitive).
403	Forbidden	The user does not have the permission Manage System Settings

Get HP OO Version

Request: `GET /version`

Description: Retrieves information about the HP OO version.

Response entity body:

- **on success:** Returns a JSON object with the HP OO version information:

```
{
          version: "10.20",
          revision: "61583",
          build ID: "2014-11-02_15-03-32",
          build number: "8",
          build job name: "branch-product
}
```

Appendix

LDAP

Address:

Attribute	Type	Description	Comments
host	String	The IP or HOST name of the LDAP	
port	int	The port of the LDAP	

Attribute:

Attribute	Type	Description	Comments
name	String	The attribute name	
value	String	The attribute value	

LDAP Type:

Includes one of the following strings:

- ACTIVE_DIRECTORY
- SUN_ONE
- E_DIRECTORY
- OPEN_DJ
- OPEN_LDAP
- OTHER
- ALTERNATE_GROUP

General:

RestError

Attribute	Type	Description	Comments
message	String	A localized description of an error that occurred.	
Message can be presented to the end user.			