HP Operations Orchestration

For Windows and Linux

HP OO Software Version 10.01.0001

Application Program Interface (API) Guide

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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).

Basic Concepts

See the Concepts Guide for more information on the basic concepts of HP Operations Orchestration version 10.00 version.

RESTful APIs

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

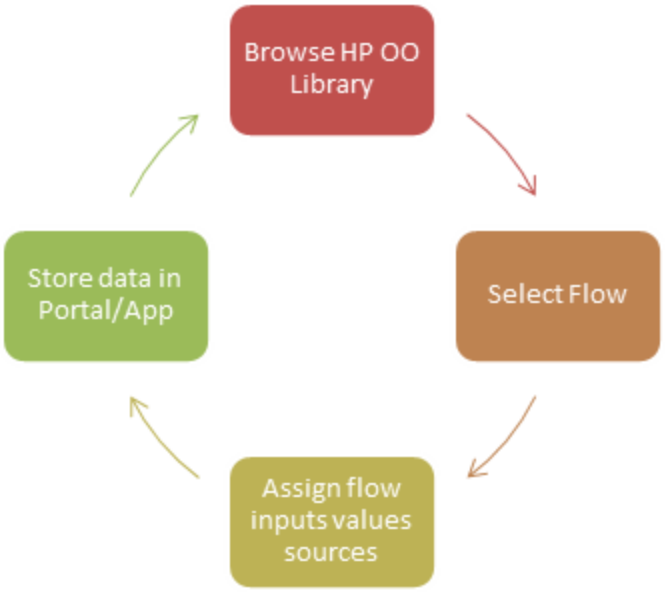
The integration includes two separate processes. These processes are described from the user perspective, but also describe the work to be done by the integration developer.

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:

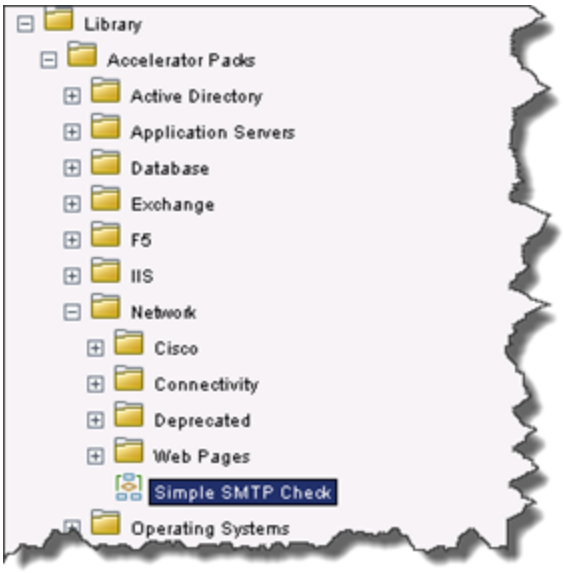


Process implementation

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 the 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): List the flows and folders on under a path. The root of the HP OO Content Library is Library/. If it was decided to implement a full library display (see above), the code requires this list each time the level the user is currently selected.

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.

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.

Step: Store data in Portal/App.

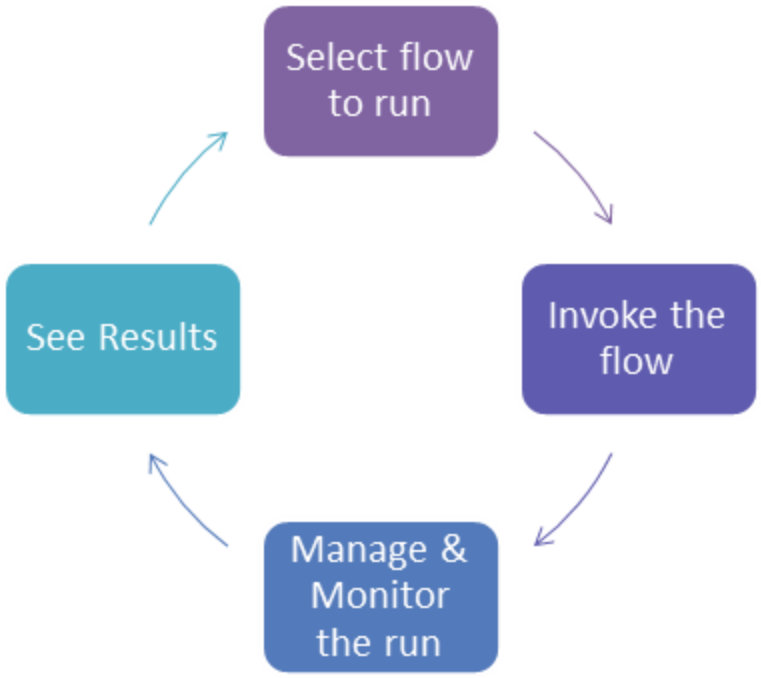
Admin Action: Store all the information in the Portal/Application.

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.

Refer to "Flow Execution" on page 52 for more technical 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 `logLevel` and `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`

Example:

Request:
`https://<HOST>:<PORT>/oo/rest/executions/`
Header:
```
Accept: application/json
Content-Type: application/json
```
Body:
```
{
"uuid":"434e6fa2-26bc-4e84-9e1f-0aa6946cf920",
"runName":"AppX:UserX:SystemA:displayMessageDemo",
"logLevel":"DEBUG", "inputs":{ "message":"I feel great",
"title":"Hello world"
}
}
```
Response:
```
{ "feedUrl":"https://16.60.185.5:8443/oo/rest/executions/9882428e-b2b2-4421-
a7c6-e3fbd31132bb",
"executionId": "9882428e-b2b2-4421-a7c6-e3fbd31132bb",
"errorCode": "NO_ERROR"
}
```

Step: Manage and Monitor the run.
This step covers tracking the status of the run and optionally perform some actions on it.

- **End User Action**: Run Status.
  The user see the status of the run in the portal/application

Integrator Actions (interaction with OO): There two options to do that:

1. The code will have a loop that continuously calls HP OO to get the status.
2. The code will need to implement RSS reader (using existing libraries available on the market) and use it to listen to the event feed from HP OO (will also include a loop).

The main difference between the two options is the included data. Option **2** contains the raw data of the execution under the `<content>` tag, which is in JSON format and can be consumed and formatted to display to the user, while option **1** includes only general data of the run status.

API to use:

1. Get Flow Execution Status `GET/executions/{executionId}/summary`
2. Retrieve Feed Events (RSS) `GET/executions/{executionId}`

Example:

1. **Request**:
   `GET https:// <HOST>:<PORT>/oo/rest/executions/9882428e-b2b2-4421-a7c6-e3fbd31132bb/summary`
   Response:
```
{
 "executionId": "9882428e-b2b2-4421-a7c6-e3fbd31132bb",
"branchId": null,
 "startTime": 1366893994000,
 "endTime": 1366893995000,
 "status": "PAUSED",
 "resultStatusType": null,
 "resultStatusName": null,
 "pauseReason": "DISPLAY",
 "cancellationType": null,
 "owner": null,
 "triggeredBy": null,
 "flowUuid": "434e6fa2-26bc-4e84-9e1f-0aa6946cf920",
 "flowName": "Display Message",
 "executionName": "displayMessageDemo"
 }
```
2. **Request**:
   `GET https://<HOST>:<PORT>/oo/rest/executions/9882428e-b2b2-4421-a7c6-e3fbd31132bb`
   Response:
```
<?xml version="1.0" encoding="UTF-8"?>
<feed xmlns="http://www.w3.org/2005/Atom"
xmlns:dc="http://purl.org/dc/elements/1.1/">
 <title>Flow Execution [9882428e-b2b2-4421-a7c6-e3fbd31132bb]</title>
```

```
 <link rel="self" href="https://16.60.185.5:8443/oo/rest/executions/9882428e-
b2b2-4421-a7c6-e3fbd31132bb/" />
 <subtitle>Flow execution events feed</subtitle>
<id>urn:uuid:9882428e-b2b2-4421-a7c6-e3fbd31132bb</id>
<updated>2013-04-26T04:56:09Z</updated>
 <dc:date>2013-04-26T04:56:09Z</dc:date>
<dc:language>en</dc:language>
 <entry>
 <title>Execution started</title>
 <link rel="alternate"
href="https://16.60.185.5:8443/oo/rest/executions/9882428e-b2b2-4421-a7c6-
e3fbd31132bb/" />
 <category term="START" />
 <author><name>admin</name></author>
 <id>mid:700227</id>
<updated>2013-04-25T12:46:34Z</updated>
 <published>2013-04-25T12:46:34Z</published>
 <content type="text">{"execution_name":"
AppX:UserX:SystemA:displayMessageDemo","trigger_type":"MANUAL","flow_
UUID":"434e6fa2-26bc-4e84-9e1f-0aa6946cf920","EXECUTION_EVENTS_LOG_
LEVEL":"DEBUG"}</content> … </feed>
```

- **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:

1. Pause: `GET /executions/{executionId}/pause`
2. Resume: `PUT /executions/{executionId}`
3. Cancel

Example:

1. **Pause Request**:
   PUT https://<HOST>:<PORT>/oo/rest/executions/9882428e-b2b2-4421-a7c6-

e3fbd31132bb/status
Header:
Content-Type: application/json
Body:
{
"action": "PAUSE",
"data" : null
}

2. **Resume Request**:
PUT https://<HOST>:<PORT>/oo/rest/executions/9882428e-b2b2-4421-a7c6-e3fbd31132bb/status
Header:
Content-Type: application/json
Body:
{
"action": "RESUME",
"data" : null
}

3. **Cancel Request**:
PUT https://<HOST>:<PORT>/oo/rest/executions/9882428e-b2b2-4421-a7c6-e3fbd31132bb/status
Header:
Content-Type: application/json
Body:
{
"action": "CANCEL",
"data" : null
}

Step: Get Results.

End User Action: Expose to the user the final result for the flow and maybe even include the raw data returned from it.

Integrator Actions (interaction with OO): Here the code made before for tracking the status using RSS feed can be reused. The result of the flow get be retrieved from the last event:
`<title>Flow execution finished</title>`
And use the `<content>` tag.

API to use: Retrieve Feed Events (RSS): `GET/executions/{executionId}`

Example:

Request:
`GET https://<HOST>:<PORT>/oo/rest/executions/9882428e-b2b2-4421-a7c6-e3fbd31132bb`
Response:
`<?xml version="1.0" encoding="UTF-8"?>`

```
<feed xmlns="http://www.w3.org/2005/Atom"
xmlns:dc="http://purl.org/dc/elements/1.1/">
<title>Flow Execution [9882428e-b2b2-4421-a7c6-e3fbd31132bb]</title>
 …
<entry>
 <title>Flow execution finished</title>
<link rel="alternate"
href="https://16.60.185.5:8443/oo/rest/executions/9882428e-b2b2-4421-a7c6-
e3fbd31132bb/" />
 <category term="FINISH" />
 <author>
 <name>admin</name>
 </author>
 <id>mid:700297</id>
 <updated>2013-04-26T05:17:06Z</updated>
 <published>2013-04-26T05:17:06Z</published>
 <content type="text">{"context":"434e6fa2-26bc-4e84-9e1f-0aa6946cf920\r\nStep
Context:\r\nCURRENT_STEP_NAME=Resolved: success\r\nCURRENT_STEP_UUID=d016bbfc-
82ef-4473-ba90-395218c5c496\r\nCURRENT_STEP_UUID_WITH_DEPTH=d016bbfc-82ef-4473-
ba90-395218c5c496_0\r\nFlow Context:\r\nINTERNAL_OPERATION_PRIMARY_
OUTPUT=${field1}\r\nmessage=I feel great\r\ntitle=Hello world\r\nFlowOutput
Context:\r\nINTERNAL_OPERATION_PRIMARY_OUTPUT=\r\nResult=\r\nGlobal
Context:\r\nSystem Context:\r\nINTERNAL_FLOW_RESPONSE_NAME=success\r\nINTERNAL_
FLOW_RESPONSE_TYPE=RESOLVED\r\nINTERNAL_FLOW_PRIMARY_OUTPUT=null\r\nEXECUTION_
STEP_ERROR_KEY=null\r\n","execution_status":"COMPLETED"}</content>
 <summary type="text">Flow execution finished with status COMPLETED</summary>
<dc:creator>admin</dc:creator>
 <dc:date>2013-04-26T05:17:06Z</dc:date>
 </entry>
```

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.

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. That is, 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. That is, https:// <OO Central Server Name / IP>:<PORT>/PAS/services/rest.

SOAP Technology

Below 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 supported.	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/tree GET/flows/tree/sub 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 PUT/executions/{executionId}/status
	cancelrun	Supported	PUT/executions/{executionId}/status
	runFlow	Supported	POST/executions
	runFlowEx	Supported	POST/executions
	getRunStatus	Supported	GET/executions/{id} GET/executions/{executionIds}/summary
	getRunStatusEx	Supported	GET/executions/{id} 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 Technology

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

REST APIs

This section includes the RESTful APIs used in version HP Operations Orchestration 10.00.

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 if 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.

Create a New LDAP Configuration

Request: `POST/authns/ldap-config`

Description: Add a new LDAP configuration.

Request entity body:

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

JSON for an LDAP configuration with both optional and mandatory fields:

```
{
"hosts" : ["16.55.244.71"],
"ports" : ["636"],
"securedChannel" : "true",
"groupsSearchRecursive" : "true",
"groupsFilter" : "(uniqueMember={0})",
"groupsDns" : ["ou=groups,dc=devlab,dc=ad"],
"groupNameAttribute" : "cn",
“userCommonNameAttribute” : “cn”,
"usersFilter" : "(&(objectclass=person)(uid={0}))",
"usersDns" : ["ou=people,dc=devlab,dc=ad"],
"userIdAttribute" : "uid",
"usersSearchRecursive" : "true",
"privilegedUserDn" : "uid=eroth,ou=people,dc=devlab,dc=ad",
"privilegedUserPassword"  : "eroth"
}
```

Note: It is recommended to perform a test for both groups and user configurations before enabling the authentication mode.

`securedChannel`, `groupsSearchRecursive`, `usersSearchRecursive` are all optional. The default value is false.

If `privilegedUserDn`, `privilegedUserPassword` are not provided, an anonymous connection attempt occurs. `userCommonNameAttribute` is optional.

Response status codes:

Code	Meaning	Returned When
201	Successful (Created)	An LDAP configuration was created successfully.
400	Bad Request	
403	Forbidden	

Response entity body:

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

```
{
"hosts":["16.55.244.71"],
"ports":["636"],
"groupsDns":["ou=groups,dc=devlab,dc=ad"],
"groupsSearchRecursive":"true",
"groupsFilter":"(uniqueMember={0})",
"groupNameAttribute":"cn",
"usersDns":["ou=people,dc=devlab,dc=ad"],
"usersSearchRecursive":"true",
"usersFilter":"(&(objectclass=person)(uid={0}))",
"userIdAttribute":"uid",
"userCommonNameAttribute":cn,
"userEmailAttribute":"null",
"securedChannel":"true",
"privilegedUserDn":"uid=eroth,ou=people,dc=devlab,dc=ad",
"privilegedUserPassword":"********",
"ldapId":"aabf2d25-6b67-4976-8514-3c3f2c3279a8"}
```

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

```
/authns/ldap-config/aabf2d25-6b67-4976-8514-3c3f2c3279a8
```

Update an Existing LDAP Configuration

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

Description: Update an existing LDAP configuration

Request path variables:

Attribute	Description	Required
id	The identifier of the LDAP configuration to update.	Yes

Request entity body:

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

JSON for an LDAP configuration with both optional and mandatory fields:

```
{
"hosts" : ["16.55.244.71"],
"ports" : ["636"],
"securedChannel" : "true",
"groupsSearchRecursive" : "true",
"groupsFilter" : "(uniqueMember={0})",
"groupsDns" : ["ou=groups,dc=devlab,dc=ad"],
"groupNameAttribute" : "cn",
“userCommonNameAttribute” : “cn”,
"usersFilter" : "(&(objectclass=person)(uid={0}))",
"usersDns" : ["ou=people,dc=devlab,dc=ad"],
"userIdAttribute" : "uid",
"usersSearchRecursive" : "true",
"privilegedUserDn" : "uid=eroth,ou=people,dc=devlab,dc=ad",
"privilegedUserPassword"  : "eroth"
}
```

Note: It is recommended to perform a test for both groups and user configurations before enabling the authentication mode.

`securedChannel`, `groupsSearchRecursive`, `usersSearchRecursive` are all optional. The default value is false.

If `privilegedUserDn`, `privilegedUserPassword` are not provided, an anonymous connection attempt occurs. `userCommonNameAttribute` is optional.

Response status codes:

Code	Meaning	Returned When
201	Successful (Created)	An LDAP configuration was created successfully.
400	Bad Request	
403	Forbidden	

Response entity body:

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

```
{
"hosts":["16.55.244.71"],
"ports":["636"],
"groupsDns":["ou=groups,dc=devlab,dc=ad"],
"groupsSearchRecursive":true,
"groupsFilter":"(uniqueMember={0})",
```

```
"groupNameAttribute":"cn",
"usersDns":["ou=people,dc=devlab,dc=ad"],
"usersSearchRecursive":true,
"usersFilter":"(&(objectclass=person)(uid={0}))",
"userIdAttribute":"uid",
"userCommonNameAttribute":"cn",
"userEmailAttribute":"null",
"securedChannel":true,
"privilegedUserDn":"uid=eroth,ou=people,dc=devlab,dc=ad",
"privilegedUserPassword":"********",
"ldapId":"aabf2d25-6b67-4976-8514-3c3f2c3279a8"}
```

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

```
/authns/ldap-config/aabf2d25-6b67-4976-8514-3c3f2c3279a8
```

Delete an LDAP Configuration

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

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

Request path variables:

Attribute	Description	Required
ids	The identifiers of the LDAP configuration to delete.	Yes

Response status codes:

Code	Meaning	Returned When
204	Successful (no-content)	The configuration was deleted successfully.
403	Forbidden	
404	Not found	

Get LDAP Configurations

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

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

Request path variables:

Attribute	Description	Required
ldapId	The id of the required LDAP configurations.	Yes

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested LDAP configurations were found.
404	Not found	The requested LDAP configurations were not found.

Response entity body:

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

```
{
"hosts":["16.55.244.71"],
"ports":[636],
"groupsDns":["ou=groups,dc=devlab,dc=ad"],
"groupsSearchRecursive":true,
"groupsFilter":"(uniqueMember={0})",
"groupNameAttribute":"cn",
"usersDns":["ou=people,dc=devlab,dc=ad"],
"usersSearchRecursive":true,
"usersFilter":"(&(objectclass=person)(uid={0}))",
"userIdAttribute":"uid",
"userCommonNameAttribute":"cn",
"userEmailAttribute":null,
"securedChannel":true,
"privilegedUserDn":"uid=eroth,ou=people,dc=devlab,dc=ad",
"privilegedUserPassword":"********",
"ldapId":"d0c76e23-9a89-471c-b8d3-0441ede87595"}
}
```

The `privilegedUserPassword` is returned with asterisks if a password exists.

Test User Attributes

Request: `POST/authns/ldap-users`

Description: Retrieves the request user's LDAP attributes with the given LDAP configurations.

Request entity body:

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

JSON for an LDAP user test with both optional and mandatory fields:

```
{
"groupNameAttribute": "cn",
"groupsDns": ["ou=groups,dc=devlab,dc=ad"],
"groupsFilter": "(uniqueMember={0})",
"groupsSearchRecursive": true,
"hosts": ["16.55.244.71"],
"ports": ["636"],
```

```
"privilegedUserDn": "uid=eroth,ou=people,dc=devlab,dc=ad",
"privilegedUserPassword": "eroth",
"securedChannel": "true",
"userId": "eroth",
"userIdAttribute": "uid",
"usersDns": ["ou=people,dc=devlab,dc=ad"],
"usersFilter": "(&(objectclass=person)(uid={0}))"
}
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Succeeded in retrieving user attributes from the LDAP.
400	Bad Request	
403	Forbidden	

Response entity body:

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

```
{
"userId":"eroth",
"commonName":"eroth",
"emails":"null",
"attributes":[{"name":"objectClass","value":"person"},{"name":"givenName","value
":"Eyal"},{"name":"uid","value":"eroth"},{"name":"cn","value":"eroth"},{"name":"
sn","value":"Roth"},{"name":"userPassword","value":"{SSHA}Hj9tpIqw1UziuDViCdQaFz
K/+ccKTbmlQbelDQ=="},{"name":"mail","value":"roth.eyal@hp.com"}]}
```

The attribute contains all the retrieve LDAP attributes, and may vary.

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

```
{
"message":"The entry ou=people,dc=devlab,dc=a specified as the search base doe
s not exist in the Directory Server"
}
```

Test User Groups

Request: `POST/authns/ldap-groups`

Description: Retrieves the request user's groups names with the given LDAP configurations.

Request entity body:

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

JSON for an LDAP user groups test with both optional and mandatory fields:

```
{
"groupNameAttribute": "cn",
"hosts": ["16.55.244.71"],
"ports": [636],
"privilegedUserDn": "uid=eroth,ou=people,dc=devlab,dc=ad",
"privilegedUserPassword": "eroth",
"securedChannel": true,
"userCommonNameAttribute": "cn",
"userId": "eroth",
"userIdAttribute": "uid",
"usersDns": ["ou=people,dc=devlab,dc=ad"],
"usersFilter": "(&(objectclass=person)(uid={0}))",
"usersSearchRecursive": true
}
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Succeeded in retrieving user groups names from the LDAP.
400	Bad Request	
403	Forbidden	

Response entity body:

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

  ```
  [{"groupName":"oo"},{"groupName":"oo2"}]
  ```

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

  ```
  {
  "message":"The entry ou=groups,dc=devlab,dc=a specified as the search base doe
  s not exist in the Directory Server"
  }
  ```

Test User Attributes with Existing LDAP Password

Request: `POST/authns/ldap-users/{ldapId}`

Description: Retrieves the request user's LDAP attributes with the given LDAP configurations.The password saved for this ldapId can be used.

Request path variables:

Attribute	Description	Required
ldapId	The id of the LDAP with a saved privileged user password.	Yes

Request entity body:

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

JSON for an LDAP user test with both optional and mandatory fields:

```
{
"groupNameAttribute": "cn",
"hosts": ["16.55.244.71"],
"ports": ["636"],
"privilegedUserDn": "uid=eroth,ou=people,dc=devlab,dc=ad",
"privilegedUserPassword": "********",
"securedChannel": true,
"userCommonNameAttribute": "cn",
"userId": "eroth",
"userIdAttribute": "uid",
"usersDns": ["ou=people,dc=devlab,dc=ad"],
"usersFilter": "(&(objectclass=person)(uid={0}))",
"usersSearchRecursive": true
}
```

If the `privilegedUserPassword` is provided with asterisks, the server will use the existing password. This would be the main motivation behind this request.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Succeeded in retrieving user attributes from the LDAP.
400	Bad Request	
403	Forbidden	

Response entity body:

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

```
{
"userId":"eroth",
"commonName":"eroth",
"emails":"null",
"attributes":[{"name":"objectClass","value":"person"},{"name":"givenName","value
":"Eyal"},{"name":"uid","value":"eroth"},{"name":"cn","value":"eroth"},{"name":"
sn","value":"Roth"},{"name":"userPassword","value":"{SSHA}Hj9tpIqw1UziuDViCdQaFz
K/+ccKTbmlQbelDQ=="},{"name":"mail","value":"roth.eyal@hp.com"}]}
```

The attribute contains all the retrieve LDAP attribute, and may vary.

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

```
{
"message":"The entry ou=people,dc=devlab,dc=a specified as the search base doe
s not exist in the Directory Server"
}
```

Test User Groups with Existing LDAP Password

Request: `POST/authns/ldap-groups/{ldapId}`

Description: Retrieves the request user's groups names with the given LDAP configurations.

The password saved for this ldapId can be used.

Request path variables:

Attribute	Description	Required
ldapId	The id of the LDAP with a saved privileged user password.	Yes

Request entity body:

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

JSON for an LDAP user groups test with both optional and mandatory fields:

```
{
"groupNameAttribute": "cn",
"groupsDns": ["ou=groups,dc=devlab,dc=ad"],
"groupsFilter": "(uniqueMember={0})",
"groupsSearchRecursive": true,
"hosts": ["16.55.244.71"],
"ports": ["636"],
"privilegedUserDn": "uid=eroth,ou=people,dc=devlab,dc=ad",
"privilegedUserPassword": "********",
"securedChannel": true,
"userId": "eroth",
"userIdAttribute": "uid",
"usersDns": ["ou=people,dc=devlab,dc=ad"],
"usersFilter": "(&(objectclass=person)(uid={0}))"
}
```

If the `privilegedUserPassword` is provided with asterisks, the server will use the existing password. This is the initial reason for this request.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Succeeded in retrieving user attributes from the LDAP.
400	Bad Request	
403	Forbidden	

Response entity body:

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

```
[{"groupName":"oo"},{"groupName":"oo2"}]
```

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

```
{
"message":"The entry ou=groups,dc=devlab,dc=a specified as the search base doe
s not exist in the Directory Server"
}
```

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": "1234",
"roles": [{"name":"PROMOTER"}, {"name":"SYSTEM_ADMIN"}, {"name":"END_USER"}]
}
```

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	
403	Forbidden	

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}
```

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

```
/users/mranderson
```

Update Existing Internal User

Request: `PUT/users/{username}`

Description: Update an existing internal user

Request path variables:

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

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": "mranderso"
}
```

Note: The variable `{id}` refers to which user to update, while the user name field refers to the new user name.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the LDAP configurations successfully.
400	Bad Request	
403	Forbidden	

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	Required
userIds	The identifiers of the internal users to delete.	Yes

Response status codes:

Code	Meaning	Returned When
204	Successful (no-content)	The internal users no longer exist in the system.
403	Forbidden	

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	

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","sec
urityConfigManage","securityConfigRead","systemSettingsRead","systemSettingsMana
ge","scheduleManage","scheduleRead","configurationItemManage","configurationItem
Read","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 session's user was returned.
403	Forbidden	

Response entity body:

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

```
{
"enabled":true,
"initString":"CENTRAL_PASSPHRASE",
"domain":"mydomain1.com",
"protectedDomains":["mydomain1.com","mydomain2.com"]
}
```

Update LW SSO configuration

Request: `PUT/authns/lwsso-config`

Description: Updates the lightweight SSO configuration.

Request path variables:

Attribute	Description	Required
id	The identifier of the internal user to update.	Yes

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":"CENTRAL_PASSPHRASE_NEW",
"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	

Response entity body:

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

```
{
"enabled":false,
"initString":"CENTRAL_PASSPHRASE_NEW",
"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
403	Forbidden	

Response entity body:

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

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

Update Authentication configurations

Request: `PUT/authns`

Description: Updates the authentication configurations.

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:

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

Response status codes:

Code	Meaning	Returned When
204	Successful (no-content)	The authentication configuration were updated.
403	Forbidden	

Response entity body:

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

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

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	Required
roleName	The name of the required role.	Yes

Response status codes:

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

Response entity body:

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

```
{
"name":"ADMIN",
"description":"Administration Role",
"permissions":
["topologyManage","configurationItemManage","systemSettingsManage","securityConf
igRead","flowPermissionManage","scheduleManage","systemSettingsRead","scheduleRe
ad","othersRunsManage","configurationItemRead","topologyRead","cpManage","securi
tyConfigManage","cpRead"],
"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	

Response entity body:

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

```
[
{
"name":"ADMIN",
"permissions":["securityConfigRead","cpRead","topologyManage","securityConfigMan
age","configurationItemRead","scheduleManage","topologyRead","othersRunsManage",
```

```
"configurationItemManage","systemSettingsManage","flowPermissionManage","cpManag
e","scheduleRead","systemSettingsRead"],"groupsNames":[],"description":"Administ
ration Role"
},
{
"name":"EVERYONE",
"permissions":[],"groupsNames":[],"description":"Everyone Role"},
{
"name":"PROMOTER",
"permissions":["configurationItemManage","cpRead","configurationItemRead","flowP
ermissionManage","cpManage"],"groupsNames":[],"description":"Promoter Role"
},
{
"name":"SYSTEM_ADMIN",
"permissions":["securityConfigRead","topologyRead","systemSettingsManage","topol
ogyManage","securityConfigManage","systemSettingsRead"],"groupsNames":[], ,"desc
ription":"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":"Super Power",
"description":"An all permissions role!"
"permissions":["cpRead","topologyManage","systemSettingsManage","securityConfigM
anage","topologyRead","configurationItemManage","systemSettingsRead","securityCo
nfigRead","scheduleRead","othersRunsManage","flowPermissionManage","cpManage","c
onfigurationItemRead","scheduleManage"],
"groupsNames":["Super Group"]
}
```


`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	
403	Forbidden	

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":["cpRead","topologyManage","systemSettingsManage","securityConfigM
anage","topologyRead","configurationItemManage","systemSettingsRead","securityCo
nfigRead","scheduleRead","othersRunsManage","flowPermissionManage","cpManage","c
onfigurationItemRead","scheduleManage"],
"groupsNames":["Super Group"]
}
```

Update an Existing Internal User

Request: `PUT/roles/{roleName}`

Description: Update an existing role

Request path variables:

Attribute	Description	Required
roleName	The name of the role to update.	Yes

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", "securityConfigRea
d", "securityConfigManage"]
}
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the role successfully.
400	Bad Request	
403	Forbidden	

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", "securityConfigRea
d", "securityConfigManage"]
}
```

Delete a Role

Request: `DELETE/roles/{roleName}`

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

Request path variables:

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

Response status codes:

Code	Meaning	Returned When
204	Successful (no-content)	The role was deleted successfully.
403	Forbidden	
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	

Response entity body:

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

```
{"defaultRole":"EVERYONE"}
```

`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:

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

JSON for a default role update with both optional and mandatory fields:

```
{defaultRole:PROMOTER}
```

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the default role successfully.
403	Forbidden	

Response entity body:

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

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

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	

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},
{"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}
]
```

Get Entitlements Per Path and Roles

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

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

Example:

```
roles/ADMIN%2CEVERYONE%2CPROMOTER%2CSYSTEM_ADMIN%2CEND_USER/entitlements/Library
/cp-parallel
```

Note: `%2C` is encoded comma.

Request path variables:

Attribute	Description	Required
rolesNames	The roles for which the entitlements are requested. **Note**: The entitlement path.	Yes

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested entitlements was found.
400	Bad request	
403	Forbidden	
404	Not Found	The requested role was not found.

Response entity body:

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

```
{
"ADMIN":["RUN","VIEW"],
"EVERYONE":[],
"END_USER":[],
"SYSTEM_ADMIN":[],
"PROMOTER":["RUN","VIEW"]
}
```

Update Path Entitlement Per Role

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

Description: Update specific entitlement path per role.

Example:

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

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 is Recursive is false.

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the role successfully.

Code	Meaning	Returned When
400	Bad Request	
403	Forbidden	

Response entity body:

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

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

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.

Deploy Content Packs

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

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

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

Request path variables:

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

The body of the request should contain the contents of the content pack file to be deployed.

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","resp
onseCategory":"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: false

Roll Back Content Packs

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	

Response entity body:

- **on success:** : Returns a Boolean value with that indicates whether the last content pack 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.

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 path variables:

Attribute	Description	Required
`top`	The top flows to return. Default = 10. If you want all flows you need to set it = -1	No
`measurements`	Which statistics to display. If nothing is set then the four statistics are displayed. The following options are available: `roi`, `numOfExecutions`, `avgExecutionTime`, `resultDistribution`.	No
`sortBy`	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).	No
`sortDescending`	Default is descending.	No
`endedBefore`	Default is now.	No
`endedAfter`	Default is one week ago.	No

Response status codes:

Code	Meaning	Returned When
200	OK	Operation was successful

Code	Meaning	Returned When
400	Bad Request	• Wrong `sortBy` value. It must be included in the measurements, unless it's empty. • Ended after > Ended Before
403	Forbidden	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
      }
     ]
   }
]
```

Flow Execution

These APIs enable you to execute flows.

Update a Specific Worker

Request: `PUT/workers/{workerId}`

Description: Update an existing worker.

Request path variables:

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

Request entity body:

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

JSON for an LDAP configuration with both optional and mandatory field

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

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the default role successfully.
403	Forbidden	
404	Not found	

Get Execution Log

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

Description: Retrieves the details of a specific execution.

Request path variables:

Attribute	Description	Required
executionId	The id of the execution	Yes

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:


```
{
"executionSummary":
{"executionId":"348246628680024354",
"branchId":null,
"startTime":1371366300297,
"endTime":null,
"status":"PAUSED",
"resultStatusType":"RESOLVED",
"resultStatusName":"HAHA",
"pauseReason":"USER_PAUSED",
"owner":"anonymous",
"triggeredBy":"anonymous",
"flowUuid":"a8e8fc10-b584-4d39-921f-987b29c9dd19",
"flowPath":null,
"executionName":"mock flow",
"branchesCount":0,
"roi":null},
"executionLogLevel":"INFO",
"flowInputs":
{"flowInput4":"flowInput4Value",
"flowInput2":"flowInput2Value",
"flowInput3":"flowInput3Value",
"flowInput0":"flowInput0Value",
"flowInput1":"flowInput1Value"},
"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"
}
}
```

Change the Status of an Execution

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

Description: Update an existing execution status. The possible statuses are: CANCEL, RESUME, PAUSE, REASSIGN

Request path variables:

Attribute	Description	Required
executionId	The ID of the execution to update.	Yes

Request entity body:

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

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

For Resume:

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

For Resume (with inputs):

```
{
"action": "RESUME"
"data": {
"branchId": "branchId"
```

```
"input_binding":
“{"Input 1":"VALUE2","Input 2":["VALUE1","VALUE2","VALUE3"],
"Input 3":null,"Input 4":"434"}”
}
}
```

For Pause:

```
{
"action": "PAUSE"
"data": null
}
```

For Cancel:

```
{
"action": "CANCEL"
"data": null
}
```

For Reassign:

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

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	Updated the status successfully.
403	Forbidden	
409	Conflict	In case the status was already in the same state.

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”: “DEBUG”
       "inputs":
               {
                   "input1":"value for input1",
```

```
                    .
                    .
                    .
                    "inputn":"value for inputn"
                },
}
```

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

`logLevel` is also optional, the default log level is INFO.

The logLevel attribute receives one of these values: `DEBUG`, `INFO`, and `ERROR`.

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 with the following format:

```
{
       “feedUrl”: “http://localhost:8080/executions/78bec456-db6a-4c05-99ad-0675b230b
feb”
       “executionId”: “78bec456-db6a-4c05-99ad-0675b230bfeb”,
       "errorCode": "value",

}
```

The `feedUrl` is the link to the execution’s status feed. 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`

Ad-hoc Flow Execute

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.

Request entity body:

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

```
{
       "aflContent":"AFL Flow",
       “runName”: “run1”,
```

```
        “logLevel”: “DEBUG”
        "inputs":
                {
                     "input1":"value for input1",
                     .
                     .
                     .
                     "inputn":"value for inputn"
                },
}
```

The `aflContent` must include a JSON encoded AFL flow.

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

`logLevel` is also optional, the default log level is `INFO`.

The `logLevel` attribute receives one of these values: `DEBUG`, `INFO`, and `ERROR`.

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 with the following format:

```
{
        "errorCode": "value",
        “executionId”: “78bec456-db6a-4c05-99ad-0675b230bfeb”,
        “feedUrl”: “http://localhost:8080/executions/78bec456-db6a-4c05-99ad-0675b230bf
eb”
}
```

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
```

Retrieve Feed Events

Request: `GET/executions/{id}`

Description: Get the flow execution events feed for the given execution ID (the result of the flow execution request).

Request path variables:

Attribute	Description	Required
id	The execution id of the executed flow	Yes

Request header:

The `content-type` is: `application/json`

The `accept` should be set according to the desired web feed format: `application/rss+xml` or `application/atom+xml`

Response status codes:

Code	Meaning	Returned When
200	OK	
404	Not Found	The requested execution id can't be found

Response entity body:

- **on success:**

  Returns a syndication feed in the required format, RSS or ATOM format. The return feed contains the execution events ordered by the flow execution sequence.

  Each entry (ATOM format) in the feed or item (RSS format) is an event.

  RSS supports version 2.0.

  ATOM supports version 1.0

  ATOM feed example:

```
<feed xmlns="http://www.w3.org/2005/Atom"xmlns:dc="http://purl.org/dc/elements/1.1/">
     <title>Flow Execution [0dbc2384-c97f-4eee-8e1d-1b4f43fdb47e]</title>
     <link rel="self" href="http://localhost:8080/oo/rest/executions/0dbc2384-c97f-4eee-8e1d-1b4f43fdb47e" />
     <subtitle>Flow execution events feed</subtitle>
     <id>urn:uuid:0dbc2384-c97f-4eee-8e1d-1b4f43fdb47e</id>
     <updated>2012-08-15T12:53:10Z</updated>
     <dc:date>2012-08-15T12:53:10Z</dc:date>
```

Following are the different events that the feed contains, sorted by the flow execution process:

State in Flow	Event Type	Title	Description	Content	Comment
Flow triggered	START	Execution started	Flow [UUID] execution running started	{ "flow_UUID": [flow_UUID], “trigger_type”: [trigger_type], ”execution_name”: [execution_name] }	trigger type: manual or scheduled
Flow triggered	FLOW_INPUT	Flow input	[param_name]= [param_value]	{ "param_name": [param_name], “param_value”: [param_value] }	One for each flow input
Start flow execution	DEBUG LOG	Initialize Flow variables	Initialize Flow variables	flow_variables : [{ flow_variable: flow_value }*]*	
Enter step	INFO LOG	Start Step	Step ID and name	{ "step_id": [step_id], “step_name”: [step_name] }	Step name may not exist
Before operation execution	INFO LOG	Step inputs	Step inputs after evaluation	step_inputs : [{ step_input : step_value }*]*	

State in Flow	Event Type	Title	Description	Content	Comment
Before operation execution	INFO LOG	Operation group	Operation group name	`{ "operation_group": [operation_group] }`	
during step execution	ERROR LOG	Execute step: operation error	Error occurred during operation execution	`{ "error_message": [error_message] }`	Exception during step execution
during step execution	ERROR LOG	Step execution: navigation error	Error occurred during navigation execution	`{ "error_message": [error_message] }`	Exception during step navigation
Before step ended	DEBUG LOG	Execute step: operation outputs	Operation additional outputs after Operation execution	`opertion_outputs : [ { operation_output : operation_value }* ]*`	During binding of the step result
Before step ended	DEBUG LOG	Execute step: raw outputs	Operation action raw results after Operation execution	`opertion_results: [ { operation_result: operation_value }* ]*`	
Before step ended	DEBUG LOG	Execute step: primary output	Operation primary output	`{ "primary_output": [primary_output] }`	

State in Flow	Event Type	Title	Description	Content	Comment
Before step ended	DEBUG LOG	Execute step: response	Operation response	`{ "response_name": [response_name ], "response_type": [response_type] }`	
Before step ended	INFO LOG	Execute step: results	Step results after step execution	`step_results : [ { step_result : step_value }* ]*`	Contains only the parameters that where added or updated during this step execution
Before step ended	DEBUG LOG	Execute step: transition	Step transition info	`{ "transition_name": [transition_name], "transition_desc": [transition_desc], "response_name": [response_name] }`	
Before step ended	INFO LOG	Execute step: primary result	Step primary result	`{ "primary_result": [primary_result] }`	

State in Flow	Event Type	Title	Description	Content	Comment
Before sub flow started	DEBUG LOG	Start sub flow	Start sub flow		
Before sub flow ended	DEBUG LOG	End sub flow	End sub flow		
Before start branch	INFO LOG	Execute step: multi instance step start	Multi instance number of {instance_num} instances started now	`{ "instance_num": [instance_num] }`	Split point - for multi steps
Before start branch	INFO LOG	Execute step: parallel step start	Parallel step number of { instance_num} instances started now	`{ "instance_num": [instance_num] }`	Split point - for parallel
Before start branch	DEBUG LOG	Start Branch	Branch has started	`{ "branch_id": [branch_id] }`	
Before branch ended	DEBUG LOG	End Branch	Branch has ended	`{ "branch_id": [branch_id] }`	
Before branch ended	INFO LOG	Execute step: multi instance step end	Multi instance step merged all the instances		For multi steps - merge point
Before branch ended	INFO LOG	Execute step: parallel step end	Parallel step merged all the branches		For parallel steps – merge point

State in Flow	Event Type	Title	Description	Content	Comment
End flow execution	INFO LOG	Flow execution: outputs	Flow outputs	`flow_outputs : [ { flow_output : flow_value }* ]*`	
End flow execution	FLOW_RESULTS	Flow execution: results	Flow execution running finished with result type [result type] and result name [result name]	`{ "result_name": [result _name ], "result_type": [result_type] }`	Result type is one of: resolved, error, no action taken or diagnosed
End flow execution	FINISH_SUCCESS	Flow execution finished	Flow execution finished with status COMPLETED	`{ "execution_status": [execution_status] }`	Execution status is one of: completed, canceled or failure
End flow execution	FINISH_FAILURE	Flow execution finished	Flow execution finished with status FAILURE	`{ "execution_status: [execution_status], "error_message": [error_message] }`	In case the execution ended with failure
End flow execution	FINISH_CANCELED	Flow execution canceled	Flow execution finished with status CANCELLED	`{ "execution_status": [execution_status] }`	The execution was canceled by the user

Get Execution

Request: `GET/executions`

Description: Returns a list of executions according to the given start date, page number and size of the page.

Request parameters:

Attribute	Description	Required
`date long`	Time stamp of the execution date	yes
`pageNum int`	Number of page to display	yes
`pageSize int`	The number of rows in the page	yes
`flowPath`		Optional
`owner`		Optional
`status`		Optional
`resultStatusType`		Optional
`pauseReason`		Optional

Response status codes:

Code	Meaning	Returned When
200	OK	The requested Flow Execution was found.
400	Bad Request	Invalid values assigned to `date`, `pageNum`, `pageSize`, status or `pauseReason`.

Response entity body:

- **on success:** Returns JSON object of the list of executions.

```
[
{
"executionId":"100749",
"branchId":null,
"startTime":1371106274153,
"endTime":1371106277160,
"status":"COMPLETED",
"resultStatusType":"RESOLVED",
"resultStatusName":"success",
"pauseReason":null,
"owner":"anonymousUser",
```

```
"triggeredBy":"anonymousUser",
"flowUuid":"06fe8531-868b-4e79-aa7a-13a5e30a66ec",
"flowPath":"Library/Utility Operations/Samples/Generate/Number.xml",
"executionName":"Generate Random Number",
"branchesCount":0,
"roi":null
},
{
"executionId":"100267",
"branchId":null,
"startTime":1371104522563,
"endTime":1371104576253,
"status":"COMPLETED",
"resultStatusType":"ERROR",
"resultStatusName":"failure",
"pauseReason":null,
"owner":"anonymousUser",
"triggeredBy":"anonymousUser",
"flowUuid":"1901edde-3cac-4da6-915c-fd254e23169c",
"flowPath":"Library/Multihost Connectivity Diagnostic.xml",
"executionName":"Multihost Connectivity Diagnostic",
"branchesCount":0,
"roi":null
}
]
```


Get Execution Summary

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

Description: Retrieves the details of a specific execution.

Example:

`/executions/3332190961082830376, 679861347442169334/summary`

Request path variables:

Attribute	Description	Required
executionIds	The ids of the executions	Yes

Request entity body:

Add body info

```
{
insert
}
```

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","triggeredBy":"anonymous
","flowUuid":"a8e8fc10-b584-4d39-921f-987b29c9dd19","flowPath":null,"executionNa
me":"mock flow","branchesCount":0,"roi":null},
{"executionId":"679861347442169334","branchId":null,"startTime":1371475041169,"e
ndTime":null,"status":"PAUSED","resultStatusType":"RESOLVED","resultStatusName":
"HAHA","pauseReason":"USER_PAUSED","owner":"anonymous","triggeredBy":"anonymous"
,"flowUuid":"a8e8fc10-b584-4d39-921f-987b29c9dd19","flowPath":null,"executionNam
e":"mock flow","branchesCount":0,"roi":null}
]
```


Flow Library

APIs relating to the Flow Library

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 path variables:

Attribute	Description	Required
path	The path that you want to get all tree items under it. Not required. Default value is “”.	Yes

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 Partial Tree

Request: `Get/flows/tree/sub`

Description: Returns a sub tree starting from path and ending in nodePath

Request path variables:

Attribute	Description	Required
startPath	The library path which you want to start to search from.	Yes
nodePath	The library end path which you want to search to.	

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested tree was found

Response entity body:

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

```
{
"id":"Library",
"name":"Library",
"leaf":false,
"path":"Library",
```

```
"runnable":false,
"children":
[
{"id":"library/Accelerator Packs",
"name":"Accelerator Packs",
"leaf":false,
"path":"Library/Accelerator Packs",
"runnable":false,
"children":null
},
{"id":"library/Templates",
"name":"Templates",
"leaf":false,
"path":"Library/Templates",
"runnable":false,
"children":
[{"id":"library/templates/Deprecated",
"name":"Deprecated",
"leaf":false,
"path":"Library/Templates/Deprecated",
"runnable":false,
"children":null},
{"id":"77a0d53c-c9c0-4f72-922f-d121659d595b",
"name":"Check for Windows Event",
"leaf":true,
"path":"Library/Templates/Check for Windows Event.xml",
"runnable":true,
"children":null}
]
]
}
```


Find Tree Item By Path

Request: `GET/flows/tree`

Description: Return all tree Items that their name contains search text

Request path variables:

Attribute	Description	Required
startPath	The library path which you want to start to search from.	Yes
nodePath	The library end path which you want to search to.	Yes
pageSize	The page size. Default value is 150.	Yes
pageNum	The page number. Default value is 0.	

Response status codes:

Code	Meaning	Returned When
200	OK	The requested items were found

Response entity body:

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

```
[
{
"id":"422b8799-c083-4e14-8c92-ab221941ab56",
"name":"Ping",
"leaf":true,
"path":"Library/Operations/Operating Systems/Solaris/Network Operations/Ping.xm
l",
"runnable":false,
"children":null
},
{
"id":"3d1bb4f9-feaf-42aa-85a6-365b502c0a2d",
"name":"Ping",
"leaf":true,
"path":"Library/Operations/Operating Systems/Linux/SUSE Linux/Network Operations
/Ping.xml",
"runnable":false,
"children":null
}
]
```

Note: The maximum page size is 150. This will change in future versions.

Get Flow Details By UUID

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

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

Request path variables:

Attribute	Description	Required
uuid	The flow uuid	Yes

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested flow's inputs were found
404	Not Found	The requested flow wasn't found.

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 By UUID

Request: `GET/flows/{uuid}`

Description: Returns flow properties by the uuid.

Request path variables:

Attribute	Description	Required
uuid	The flow uuid	Yes

Response status codes:

Code	Meaning	Returned When
200	Successful (OK)	The requested flow was found.
404	Not Found	The requested flow wasn't found or 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"
}
```

Scheduler

The scheduler API allows you to schedule flow executions. You can specify a schedule to run for a specific event. 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":" 1381302669536",
       runLogLevel: "DEBUG",
       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":"1328087559000",
       "username":"DavisJ",
       "numOfOccurrences":5,
       runLogLevel: "DEBUG",
       timeZone: "Asia/Amman",
       "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	
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":"1328087559000",
       "username":"DavisJ",
```

```
        "numOfOccurrences":5,
        runLogLevel: "DEBUG",
        timeZone: "Asia/Amman",
        "nextFireTime":null,
        "prevFireTime":null,
        "enabled":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`

```
{
"id":"1371112860766",
"flowScheduleName":"diagnosedDummyFlow",
"flowUuid":"45647d72-bab4-4e24-bfd8-8c9d00e9cf61",
"triggerExpression":"*/3600000",
"startDate":1371112800000,
"endDate":null,
"numOfOccurrences":10,
"timeZone":"Asia/Amman",
"username":null,
"runLogLevel":"DEBUG",
"nextFireTime":null,
"prevFireTime":null,
"enabled":false,
"inputs":{}
}
```

Enable Flow-Schedule

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

Description: Enable or disable existing flow-schedules.

Request path variables:

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

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.

Response status codes:

Code	Meaning	Returned When
200	OK	The flow-schedules were updated successfully.

Delete Flow-Schedule

Request: `DELETE/schedules/{ids}`

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

Request path variables:

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

Response status codes:

Code	Meaning	Returned When
200	OK	The flow-schedules were deleted successfully.
400	Bad Request	

Response entity body:

- **on success:** Returns a JSON string of the id of the schedule that was deleted

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.

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",
                "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",
                "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	Required
id	The identifier of the flow-schedule to retrieve.	Yes

Response status codes:

Code	Meaning	Returned When
200	OK	The requested flow-schedule was found.
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":"253536335",
        "flowScheduleName":"Scheduled Flow Created By REST",
```

```
        "flowUuid":"c34de7d6-14cc-4a1c-b25e-85afbb064359",
        "triggerExpression":"0 10 10 ? * 6",
        "startDate":1376072040000,
        "endDate":1377334800000,
        "inputs":
                {
                    "input1":"value for input1",
                    "input2":"value for input2",
                    .
                    .
                    .
                    "inputn":"value for inputn"
                }
}
```

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	Required
id	The identifier of the flow-schedule to update.	Yes

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

Response status codes:

Code	Meaning	Returned When
200	OK	The requested flow-schedule was updated successfully.
400	Bad Request	

Response entity body:

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

Configuration Items

These APIs enable you to manage the system configuration.

Create a Configuration Item

Request: `POST/config`

Description: Creates a configuration item.

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

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

Response status codes:

Code	Meaning	Returned When
201	Created	A configuration item was created successfully.

Response entity body:

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

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

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

Get All Configuration Items

Request: `GET/config`

Description: Retrieves all configuration items.

Response status codes:

Code	Meaning	Returned When
200	OK	All existing configuration items were retrieved.
404	Not Found	No configuration items were retrieved.

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 Configuration Item

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

Description: Retrieves a configuration item by key.

Request path variables:

Attribute	Description	Required
key	The key of the requested configuration item.	Yes

Response status codes:

Code	Meaning	Returned When
200	OK	The requested configuration item was retrieved successfully.
404	Not Found	No configuration was retrieved.

Response entity body:

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

Update Configuration Item

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

Description: Updates an existing configuration item.

Request path variables:

Attribute	Description	Required
key	The key of the configuration item to update.	Yes

Request entity body: The body of this request needs to include a JSON string with the new value of the configuration item.

Response status codes:

Code	Meaning	Returned When
202	Accepted	The configuration item was updated successfully.
404	Not Found	The requested configuration item was not found.

Response entity body:

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

Content Configurations

These APIs enable you to manage content configurations, such as create, delete, and update the content configuration.

Create Content Configuration

Request: `POST/content-config`

Description: Creates a content configuration according to the specified `key`, `type` and `value`.

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

```
{
   "value":"value1",
   "key":"mykey1",
   "type":"SYSTEM_PROPERTY"
}
```

Request path parameters:

Parameter	Description	Required
key	The name which identifies the content configuration.	Yes
type	The type of the content configuration. Valid values: `SELECTION_LIST, SYSTEM_PROPERTY, DOMAIN_TERM`	Yes
value	The value of the content configuration.	No

Response status codes:

Code	Meaning	Returned When
201	Created	A content configuration was created successfully.
409	Conflict	A content configuration with the specified `key` already exists.
400	Bad Request	The request body was null.

Response entity body:

- Returns a JSON object of the created content configuration with the following format:

```
{
   "id": "1212417",
   "key":"myKey1",
   "type":"SYSTEM_PROPERTY",
```

```
   "value":"value1"
}
```

- In addition, you get the location header containing the URI to retrieve the created content configuration. For example, `/content-config/myKey1`

Delete Content Configuration

Request: `DELETE/content-config/{name:.+}?type={type}`

Description: Deletes a content configuration according to the specified `key` and `type`.

Request path variables:

Attribute	Description	Required
name	The identifier of the content configuration to delete.	Yes

Request path parameters:

Parameter	Description	Required
type	The type of the content configuration. Valid values: `SELECTION_LIST, SYSTEM_PROPERTY, DOMAIN_TERM`	Yes

Response status codes:

Code	Meaning	Returned When
200	OK	The content configuration was deleted successfully.
404	Not Found	The requested content configuration was not found.

Get All Content Configurations

Request: `GET/content-config`

Description: Retrieves all the content configurations.

Response status codes:

Code	Meaning	Returned When
200	OK	The requested content configurations were found.
404	Not Found	The requested content configurations were not found.

Response entity body:

- Returns a JSON object with the following format:

```
{
   "contentConfigItemList":
   [
      {
         "id":123,
         "key":"my.key1",
         "type":"SYSTEM_PROPERTY",
         "value":"value1"
      },
      {
         "id":456,
         "key":"my.key2",
         "type":"SYSTEM_PROPERTY",
         "value":"value2"
      }
   ]
}
```

Get Content Configuration

Request: `GET/content-config/{name:.+}?type={type}`

Description: Retrieves the content configuration identified by the specified `key` name.

Request path variables:

Attribute	Description	Required
key	The name which identifies the requested content configuration.	Yes

Request path parameters:

Parameter	Description	Required
type	The type of the content configuration. Valid values: `SELECTION_LIST, SYSTEM_PROPERTY, DOMAIN_TERM`	No

Response status codes:

Code	Meaning	Returned When
200	OK	The requested content configuration was found.
404	Not Found	The requested content configuration was not found.

Response entity body:

- Returns a JSON object with the following format:

```
[{
   "id":123,
```

```
   "key":"my.key1",
   "type":"SYSTEM_PROPERTY",
   "value":"value1"
}]
```

Update Content Configuration

Request: `PUT/content-config/{name:.+}?type={type}`

Description: Updates the content configuration identified by the specified `key` name and `type`.

Request path variables:

Attribute	Description	Required
name	The name which identifies the content configuration to update.	Yes

Request entity body: The body of this request represents the new value of the content configuration. Write just the value, without wrapping it in JSON.

Request path parameters:

Parameter	Description	Required
type	The type of the content configuration. Valid values: `SELECTION_LIST, SYSTEM_PROPERTY, DOMAIN_TERM`	Yes

Response status codes:

Code	Meaning	Returned When
200	OK	The content configuration was updated successfully.
400	Bad Request	The content configuration was not found.

System Accounts

These APIs enable you to manage system accounts, for example, create and delete a system account.

Create System Account

Request: `POST/system-accounts`

Description: Creates a system account according to the user name, password, and description.

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

```
{
   "username":"User Name",
   "description":"Short Description",
   "name":"Account Name",
   "password":"Password"
}
```

Response status codes:

Code	Meaning	Returned When
201	Created	A system account was created successfully.
409	Conflict	A system account having the specified name already exists. No action occurred by the server and nothing has changed.

Response entity body:

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

```
{
       "id":1277952,
       "name":"Account Name",
       "description":"Short Description",
       "username":"User Name",
       "password":"{ENCRYPTED}PS3A3IMckQIVlEC7CHL5TA=="
}
```

In addition, the location header containing a URI to retrieve the created system account: `/system-accounts /Account%20Name`

Note: The password appears encrypted.

Delete System Account

Request: `DELETE/system-accounts/{name}`

Description: Deletes the system account having the specified name.

Request path variables:

Attribute	Description	Required
name	The name of the system account to delete.	Yes

Response status codes:

Code	Meaning	Returned When
200	OK	

Response entity body:

- **On success**: Returns a JSON value of 1 (the number of deleted system accounts).

Get System Account

Request: `GET/system-accounts/{name}`

Description: Retrieves the system account with the specified name.

Request path variables:

Attribute	Description	Required
name	The name of the system account to retrieve.	Yes

Response status codes:

Code	Meaning	Returned When
200	OK	The requested system account was found.
404	Not Found	The requested system account was not found.

Response entity body:

- **on success:** Returns a JSON object of the requested system account with the following format:

```
{
   "id":<id>
   "username":"Retrieved system account User Name",
   "description":"Retrieved system account Description",
   "name":"Retrieved system account Name",
```

```
   "password":"Retrieved system account Password"
}
```

Get All System Accounts

Request: `GET/system-accounts`

Description: Retrieves all system account names.

Response status codes:

Code	Meaning	Returned When
200	OK	The requested system accounts were found.

Response entity body:

- **on success:** Returns a JSON array containing the names of the existing system accounts.

```
[
{
"id":<id>
"username":"Retrieved system account User Name 1",
"description":"Retrieved system account Description 1",
"name":"Retrieved system account Name 1",
"password":"Retrieved system account Password 1"
} ,
{
"id":<id>
"username":"Retrieved system account User Name 2",
"description":"Retrieved system account Description 2",
"name":"Retrieved system account Name 2",
"password":"Retrieved system account Password 2"
}
]
```

Update System Account

Request: `PUT/system-accounts/{name}`

Description: Updates an existing system account according to the user name, password, and description.

Request path variables:

Attribute	Description	Required
name	The name of the system account to update.	Yes

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

```
{
   "username":"User Name",
   "description":"Short Description",
   "name":"Account Name",
   "password":"Password"
}
```

Response status codes:

Code	Meaning	Returned When
200	OK	The system account was updated successfully.
404	Not Found	The requested system account was not found.
501	Not implemented	The system account name update is not supported.

Response entity body:

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

Workers Groups

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.

Get All Workers Groups

Request: `GET/workers-groups`

Description: Return a list of Workers groups.

Response status code:

Code	Meaning	Returned When
200	OK	

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	Required
name	The name of the Workers group to add	Yes
WorkersUuids	The workersUuids of the Worker(s) to be added to the group	Yes

Response status codes:

Code	Meaning	Returned When
200	OK	
400	Bad Request	The name is missing or is negative.
404	Not Found	The requested group is not found.

Note: 404 is returned instead of 400, this is a known limitation.

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	Required
name	The name of the Workers Group to remove from	Yes
workersUuids	The uuid of the Worker(s) to remove from the group	Yes

Response status codes:

Code	Meaning	Returned When
200	OK	
400	Bad Request	The name is missing or is negative.
404	Not Found	The requested group is not found.

Note: 404 is returned instead of 400, this is a known limitation.

Group Aliases

In addition to Workers groups, there is a further flexibility option to separate the authoring time definition of the group from the runtime definition. In previous versions, the author of a flow was exposed to the runtime topology when a Worker was defined for a specific step in the flow. In this situation, the hostname of the runtime Worker could not change without changing it in all the flows that used it, or it had to be overridden at runtime. See the Concepts Guide for more information.

Create a Workers Group Alias

Request: `POST/group-aliases`

Description: Create a Group Alias for an existing Workers Group.

Request entity body:

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

```
{
"name":"alias name",
"groupName":"associated RASes Group name"
}
```

Where `"name"` is the new Group Alias name and "`groupName`" is the name of the associated Workers Group.

Response status codes:

Code	Meaning	Returned When
201	Created	A new Group Alias was created successfully.
400	Bad Request	The name attribute is missing.
404	Not Found	The associated Workers Group is not found.
409	Conflict	A Group Alias with the given name was already exist.

Response entity body:

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

  ```
  {
  "name":"alias name",
  "groupName":"associated RASes Group name"
  }
  ```

  In addition, a location header containing a URI to retrieve the created group alias: `/group-aliases/alias%20name`

Get All Groups Aliases

Request: `GET/group-aliases`

Description: Return a list of Group Aliases according to the given start page, page size, and sort direction ordered by name.

Request parameters:

Attribute	Description	Default Value	Required
start	Start page number	0	No

Response status codes:

Code	Meaning	Returned When
200	OK	

Response entity body:

- **on success:** Returns a JSON array of the Group Aliases with the following format:

```
[
{
"name":"alias1 name",
"groupName":"associated group name"
},
{
“name” : “alias 2 name”,
“groupName” : ”associated group2 name”
}
]
```

Where “`name`” is the Group Alias name and “`groupName`” is the name of the associated Workers Group.

Get Group Alias by Name

Request: `GET/group-aliases/{name}`

Description: Get the group alias with the given name.

Request path variables:

Attribute	Description	Required
name	The name of the Group Alias	Yes

Response status codes:

Code	Meaning	Returned When
200	OK	
400	Bad Request	The alias name is negative. If no name is provided, the request becomes `Get all group aliases`.
404	Not Found	The requested group alias is found

Response entity body:

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

```
{
"name":"alias1 name",
"groupName":"associated group name"
}
```

Delete Group Aliases

Request: `DELETE/group-aliases/{names}`

Description: Delete aliases according to the given alias name, return number of deleted aliases.

Request path variables:

Attribute	Description	Required
names	The names of the Group Aliases to be deleted	Yes

Response status codes:

Code	Meaning	Returned When
200	OK	

Response entity body:

- **on success:** Returns a JSON value of the number of Group Aliases which were successfully deleted.

Update a Group Alias

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

Description: Update an alias according to the given groupAlias and alias name.

Request path variables:

Attribute	Description	Required
name	The name of the Group Alias to be updated	Yes

Request entity body:

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

```
{
"name":"new alias name",
"groupName":"associated RASes Group name"
}
```

Response status codes:

Code	Meaning	Returned When
200	OK	The Group Alias update was successful.
400	Bad Request	The name is missing or is negative or the name is empty.
404	Not Found	The requested Group Alias or Workers Group not found.
409	Conflict	A Group Alias with the specified name already exists.

Note: 405 is returned instead of 400, this is a known limitation.

Response entity body:

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

```
{
"name":"alias1 name",
"groupName":"associated group name"
}
```

Miscellaneous

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": "1.1.1.1",
"revision": "1.1",
"build number": "123",
}
```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