IBM Storage Copy Data Management 2.2.22

REST API Guide

Note:

Before you use this information and the product it supports, read the information in “Notices” on page 67.

This edition applies to version 2, release 2, modification 22 of IBM® Storage Copy Data Management (product numbers 5737-B34, 5641-CD4, 5641-CD5, 5641-CD6) and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Chapter 1. RESTful API Overview....1

Chapter 2. RESTful API Conventions....3

Chapter 3. Account Management....5
Role....5
User....5
Session....6

Chapter 4. Alert Management....7
Notification....7
Alert....8
Firetime....8

Chapter 5. Analytics....11
Report....11
Report Instance....12

Chapter 6. Catalog Management....15
Catalog....15
VMware Catalog....16
NetApp ONTAP Catalog....17
Application Catalog....18

Chapter 7. Configuration Management....21
Policy....21

Chapter 8. Event Management....23
Log....23

Chapter 9. Job Management....25
Job....25
Jobsession....26
Trigger....27

Chapter 10. License Management....29
License....29

Chapter 11. Resource Providers....31
LDAP....31
NetApp ONTAP....32
vCloud....33
vSphere....35
SMTP....38

Chapter 12. Search Management....39
Search....39

Chapter 13. Examples.....41
VMware-NetApp Snapshot Policy.....41
Create a Catalog Job.....43
Create a Policy.....45
Execute a Search.....47
Getting a Session ID.....49
Monitor a Catalog Job.....50
Register a Resource Provider.....56
VMware-NetApp Recovery Policy.....60
Start a Catalog Job.....61

Notices.....67
Glossary.....71

Chapter 1. RESTful API Overview

The RESTful APIs that make up IBM Storage Copy Data Management are described below.

Account Management

A set of RESTful APIs used for account management processes. This group of APIs handles authorizing a user to perform certain actions based on the role they belong to and the permissions allowed by that role. It also is responsible for authenticating users. These users can reside in an LDAP system or be native users that are managed internally. The Session API provides a session key that is used by all other APIs.

- "Role" on page 5
- "User" on page 5
- "Session" on page 6

Alert Management

A set of RESTful APIs used to facilitate system alerts such as notifications, alert, and firetime.

- "Notification" on page 7
- "Alert" on page 8
- "Firetime" on page 8

Analytics

A set of RESTful APIs used to manage reports.

- "Report" on page 11
- "Report Instance" on page 12

Catalog Management

A set of RESTful APIs used to manage the storage, retrieval, and organization of objects and metadata. Also managed by these RESTful APIs are statistics used with in the dashboard and an aggregation framework used by our analytics engine.

- "Catalog" on page 15
- "NetApp ONTAP Catalog" on page 17
- "VMware Catalog" on page 16
- "Application Catalog" on page 18

Configuration Management

A set of RESTful APIs relative to jobs. Policies dictate what set of resources, managed by resource providers, participate in a cataloging operation. Policies also govern the execution of reports and script based jobs.

- "Policy" on page 21

Event Management

A set of RESTful APIs used to capture and report on system events. Log management falls into this category. Jobs produce events and those events are persisted and manifested as job log events.

- "Log" on page 23

Job Management

A set of RESTful APIs used to control and monitor jobs. Jobs are asynchronous, potentially long running activities that you can start, stop, schedule, monitor, and report on. Jobs entail cataloging or ingesting data and metadata via resource provides, running analytical processes with the Report Management RESTful APIs, or running script based jobs.

- “Job” on page 25
- “Jobsession” on page 26
- “Trigger” on page 27

License Management

A set of RESTful APIs used for license management processes such as the retrieval of license information.

- “License” on page 29

Resource Providers

A set of RESTful APIs that performs actions against managed objects. They allow integration with external resources: LDAP, NetApp ONTAP, vCloud, vSphere, SMTP.

- “LDAP” on page 31
- “NetApp ONTAP” on page 32
- “vCloud” on page 33
- “vSphere” on page 35
- “SMTP” on page 38

Search

A set of RESTful APIs used for search management processes such as performing search operations.

- “Search” on page 39

VMware and NetApp Snapshot Policy

A set of RESTful APIs used to programmatically create a Backup snapshot policy.

- “VMware-NetApp Snapshot Policy” on page 41

VMware and NetApp Recovery Policy

A set of RESTful APIs used to programmatically create a Recovery policy.

- “VMware-NetApp Recovery Policy” on page 60

Chapter 2. RESTful API Conventions

The following concepts and formatting details are used in the IBM Storage Copy Data Management REST API documentation.

JSON

RESTful API requests and responses are in JSON format.

HATEOS

Responses also support Hypermedia as the Engine of Application State. The main component of HATEOAS is the notion of discoverability. The client application must discover, via Hypermedia or response links, resources that are accessible within the response. This means the client does not require up front knowledge of methods of resource interaction.

HATEOAS is primarily driven by the response's link format. The examples below offer a sense of how the RESTful API is designed and what responses are expected.

Discover ability Links

All responses include a links field. The link field is a JSON object that allows links to be accessed iteratively as well as by name directly:

Predefined Named Links

- **self**

  A link to the current resource.
- **up**

  A navigation link; up one level in the hierarchy.
- **create**

  A link to create a resource.
- **edit**

  A link to edit a resource.
- **delete**

Headers

The following headers are required for every RESTful API operation:

- **x-endeavour-sessionid**: with a valid sessionid value.
- **Content-Type**: with the value set to *application/json*.
- **Accept**: with the value set to *application/json*.

Pagination

Pagination is supported in the REST API using GET.

Sorting

Sorting is supported in the REST API using GET.

Filtering

Filtering of results is supported. The following is an example of filtering schedules, without the line breaks:

```
GET
https://<ip>:<port>/api/endeavour/trigger?filterType=all&filter=[
  {
    "property":"name",
    "op":"=",
    "value":"Daily"
  },
  {
    "property":"creationDate",
    "op":"<",
    "value":"1234567890"
  }
]
```

Note: filterType can either be "all" or "any". All must match all criteria, any must match any criteria. Also, Operator is an SQL operator, such as "<", "<=", "=". "!=", ">=", ">". If "operator" is not specified, "=" is the default value.

Embedded Objects

You can embed a related link in the response. To do this, add the embed query parameter. Following is the parameter format:

```
GET
https://<ip>:<port>/api/endeavour/ api/endeavour/job?embed=(policy)
```

Tip: This eliminates roundtrips to the server when retrieving job resources that are tied to specific policies. An embedded policy object can be returned for each job within the response of a job list request.

Actions

RESTful API leverages HTTP verbs to perform resource-based operations. These verbs are typically mapped to CRUD operations; create, read, update, delete. Create maps to Post, Read maps to GET, Update maps to Put, and Delete maps to Delete. What is missing from the standard RESTful API verbs is one that maps to the semantics of an action. Endeavour leverages the POST verb to perform actions. The POST verb along with a JSON request body manages the execution of various actions. The action is specified as a query parameter called "action" on the URI. The following is an example of performing an action:

```
POST
https://<ip>:<port>/api/vsphere/{vsphereId}/vm/{vmid}?action=createSnapshot

REQUEST BODY
{
  "name":"snapshot.1"
}
```

Related concepts

“RESTful API Overview” on page 1

The RESTful APIs that make up IBM Storage Copy Data Management are described below.

Chapter 3. Account Management

A set of RESTful APIs used for account management processes. This group of APIs handles authorizing a user to perform certain actions based on the role they belong to and the permissions allowed by that role. It also is responsible for authenticating users. These users can reside in an LDAP system or be native users that are managed internally. The Session API provides a session key that is used by all other APIs.

Related reference

"Role" on page 5
You can get information about roles in IBM Storage Copy Data Management through the REST API.

"User" on page 5
You can get information about the users in IBM Storage Copy Data Management through the REST API.

"Session" on page 6
You can get information about the session in IBM Storage Copy Data Management through the REST API.

Role

You can get information about roles in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/role
```

Related Resources

User

Session

Methods

The following RESTful API methods and endpoints are used to view the configured roles and the user accounts assigned to them:

Table 1. Role API

API	Endpoint	Description
Get	`/api/endeavour/role`	Get a list of roles.
Get	`/api/endeavour/role/{roleId}`	Get information about a single role.

User

You can get information about the users in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/user
```

Related Resources

Role

Methods

The following RESTful API methods and endpoints are used to add, view, edit, and delete user accounts:

Table 2. User API

API	Endpoint	Description
Get	/api/endeavour/user	Get a list of Endeavour users including native users as well as provisioned LDAP users.
Get	/api/endeavour/user{*userId*}	Get information about a specific user with the specified user ID.
Get	/api/endeavour/user{*userId*}/role	Get information about roles assigned to a user with the specified user ID.
Post	/api/endeavour/user	Add a user.
Post	/api/endeavour/user{*userId*}	Change the password for a user with the specified user ID.
Post	/api/endeavour/user{*userId*}/role	Assign a role to a user with the specified user ID.
Put	/api/endeavour/user{*userId*}	Update a user with the specified user ID.
Delete	/api/endeavour/user{*userId*}	Delete a user with the specified user ID.
Delete	/api/endeavour/user{*userId*}/role/{*roleId*}	Delete the specified role with role ID from the specified user with the user ID.

Session

You can get information about the session in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/session
```

Methods

The following RESTful API methods and endpoints are used to login and logout a user session:

Table 3. Session API

API	Endpoint	Description
Post	/api/endeavour/session	Login to IBM Storage Copy Data Management.
Delete	/api/endeavour/session	Logout of IBM Storage Copy Data Management.

Chapter 4. Alert Management

A set of RESTful APIs used to facilitate system alerts such as notifications, alerts, and firetime.

Related reference

"Notification" on page 7
You can get information about notifications in IBM Storage Copy Data Management through the REST API.

"Alert" on page 8
You can get information about alerts in IBM Storage Copy Data Management through the REST API.

"Firetime" on page 8
You can get information about firetimes in IBM Storage Copy Data Management through the REST API.

Notification

You can get information about notifications in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/notification
```

Related Resources

Alert

Firetime

Methods

The following RESTful API methods and endpoints are used to view, add, update, and delete notifications such as emails:

Table 4. Notification API

API	Endpoint	Description
Get	/api/endeavour/notification	Get notifications in IBM Storage Copy Data Management.
Get	/api/endeavour/notification/*{notificationId}*	Get a specific notification by using the notification ID.
Post	/api/endeavour/notification/	Add a notification.
Post	/api/endeavour/notification/aggregate	Aggregate.
Put	/api/endeavour/notification/*{notificationId}*	Update a notification by using the notification ID.
Delete	/api/endeavour/notification/*{notificationId}*	Delete a notification by using the notification ID.

Alert

You can get information about alerts in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/alert
```

Related Resources

Notification

Firetime

Methods

The following RESTful API methods and endpoints are used to get, add, and delete alerts:

Table 5. Alert API

API	Endpoint	Description
Get	/api/endeavour/alert	Returns a list of alerts.
Get	/api/endeavour/alert{*alertId*}	Returns information about a specific alert.
Post	/api/endeavour/alert	Add an alert.
Post	/api/endeavour/alert/aggregate	Aggregate.
Put	/api/endeavour/alert/{*alertId*}	Update a specific alert.
Delete	/api/endeavour/alert/{*alertId*}	Delete a specific alert.

Firetime

You can get information about firetimes in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/firetime
```

Related Resources

“Notification” on page 7

Alert

Methods

The following RESTful API methods and endpoints are used to get firetimes:

Table 6. Firetime API		
API	**Endpoint**	**Description**
Get	`/api/endeavour/firetime`	Get firetimes in IBM Storage Copy Data Management.
Get	`/api/endeavour/{firetimeId}`	Get a specific firetime by using the firetime ID.

Chapter 5. Analytics

A set of RESTful APIs used to manage reports.

Related reference

"Report" on page 11
You can get information about reports in IBM Storage Copy Data Management through the REST API.

"Report Instance" on page 12
You can get information about report instances in IBM Storage Copy Data Management through the REST API.

Report

You can get information about reports in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/report
```

Related Resources

Report Instance

Methods

The following RESTful API methods and endpoints are used to add, view, edit, and delete reports:

Table 7. Report API

API	Endpoint	Description
Get	/api/endeavour/report	Get all reports in IBM Storage Copy Data Management.
Get	/api/endeavour/report/categories	Get all report categories.
Get	/api/endeavour/report/categories*{categoryStr}*	Get a report category by using the category string.
Get	/api/endeavour/report/download/sample*{parentName}*	Download sample report.
Get	/api/endeavour/report/engine	Get the report engine.
Get	/api/endeavour/report/*{reportIdStr}*	Get a report by using the report ID string.
Get	/api/endeavour/report/*{reportIdStr}*/parameter	Get report parameters.
Get	/api/endeavour/report/*{reportIdStr}*/parameter/*{parameterStr}*	Get report parameters by using the specified parameter string.

Table 7. Report API (continued)		
API	**Endpoint**	**Description**
Get	/api/endeavour/report/*{reportIdStr}*/parameter/*{parameterStr}*/values	Get the parameter values of a report by using the report ID string and parameter string.
Get	/api/endeavour/report/*{reportIdStr}*/schema	Get the report schema.
Post	/api/endeavour/report	Create a report.
Post	/api/endeavour/report/*{reportIdStr}*	Create a report action by using the report ID string.
Put	/api/endeavour/report/*{reportIdStr}*	Update a report by using the report ID string.
Delete	/api/endeavour/report/*{reportIdStr}*	Delete a report by using the report ID string.

Report Instance

You can get information about report instances in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/reportInstance
```

Related Resources

"Report" on page 11

Methods

The following RESTful API methods and endpoints are used to add, view, edit, and delete report instances:

Table 8. Report Instance API		
API	**Endpoint**	**Description**
Get	/api/endeavour/reportInstance	Get all report instances in IBM Storage Copy Data Management.
Get	/api/endeavour/reportInstance/schema	Get the report instance schema.
Get	/api/endeavour/reportInstance/*{reportInstanceIdStr}*	Get the report instance by using the report instance ID string.
Get	/api/endeavour/reportInstance/*{reportInstanceIdStr}*/download/*{formatType}*	Download the report by using the report instance ID string and format type.

Table 8. Report Instance API (continued)

API	Endpoint	Description
Get	`/api/endeavour/reportInstance/{reportInstanceIdStr}/view/{formatType}`	View the report in HTML type by using the report instance ID string and format type.
Get	`/api/endeavour/reportInstance/download/image/{directory}/{fileName}`	Download the report by specifying the directory and filename.
Post	`/api/endeavour/reportInstance`	Create a report instance.
Post	`/api/endeavour/reportInstance/{reportInstanceIDStr}/download`	Download the report by using the report instance ID string.
Delete	`/api/endeavour/reportInstance/{reportInstanceStr}`	Delete the report instance by using the report instance ID string..

Chapter 6. Catalog Management

A set of RESTful APIs used to manage the storage, retrieval, and organization of objects and metadata. Also managed by these RESTful APIs are statistics used with in the dashboard and an aggregation framework used by our analytics engine.

Related reference

"Catalog" on page 15
You can get information about the catalog in IBM Storage Copy Data Management through the REST API.

"VMware Catalog" on page 16
You can get information about the VMware catalog in IBM Storage Copy Data Management through the REST API.

"NetApp ONTAP Catalog" on page 17
You can get information about the NetApp ONTAP catalog in IBM Storage Copy Data Management through the REST API.

"Application Catalog" on page 18
You can get information about the application catalog in IBM Storage Copy Data Management through the REST API.

Catalog

You can get information about the catalog in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/catalog
```

Related Resources

"VMware Catalog" on page 16

"NetApp ONTAP Catalog" on page 17

"Application Catalog" on page 18

Methods

The following RESTful API methods and endpoints are used to view, update, and delete supported catalog objects:

Table 9. Catalog API

API	Endpoint	Description
Get	`/api/endeavour/catalog`	Get all supported catalogs in IBM Storage Copy Data Management.
Get	`/api/endeavour/catalog{supportedCatalogName}`	Get the supported catalog by using the catalog name.
Get	`/api/endeavour/catalog{supportedCatalogName}/{supportedObjectName}`	Get the supported catalog object by using the catalog name.

Table 9. Catalog API (continued)		
API	**Endpoint**	**Description**
Get	/api/endeavour/catalog*{supportedCatalogName}*/*{supportedObjectName}*/*{objectId}*	Get the supported catalog object by using the object ID.
Post	/api/endeavour/catalog	Add the supported catalog.
Post	/api/endeavour/catalog*{supportedCatalogName}*	Add the supported catalog object by using the catalog name.
Post	/api/endeavour/catalog*{supportedCatalogName}*/*{supportedObjectName}*	Add a supported object by name using the supported catalog name.
Put	/api/endeavour/catalog*{supportedCatalogName}*/*{supportedObjectName}*/*{objectId}*	Update the object by using the object ID of the supported object name by using the supported catalog name.
Delete	/api/endeavour/catalog*{supportedCatalogName}*	Delete the catalog by using the catalog name.
Delete	/api/endeavour/catalog*{supportedCatalogName}*/*{supportedObjectName}*	Delete the supported object name by using the catalog name.
Delete	/api/endeavour/catalog*{supportedCatalogName}*/*{supportedObjectName}*/*{objectId}*	Delete the object using the object ID of the supported object name by using the supported catalog name.

VMware Catalog

You can get information about the VMware catalog in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/catalog/vmware
```

Related Resources

“Catalog” on page 15

“NetApp ONTAP Catalog” on page 17

“Application Catalog” on page 18

Methods

The following RESTful API methods and endpoints are used to add, view, edit, and delete VMware objects:

Table 10. VMware Catalog API

API	Endpoint	Description
Get	/api/endeavour/catalog/vmware	Get a list of supported objects in the VMware catalog in IBM Storage Copy Data Management.
Get	/api/endeavour/catalog/vmware*{supportedObjectName}*	Get a list of objects of type by using the supported object name.
Get	/api/endeavour/catalog/vmware/*{supportedObjectName}*/*{objectId}*	Get the properties of a supported object by using the object ID.
Get	/api/endeavour/catalog/vmware/*{supportedObjectName}*/pk.*{objectPk}*	Get the object by using the Pk object.
Get	/api/endeavour/catalog/vmware/*{supportedObjectName}*/pk.*{objectPk}*/recoverypoint	Get the object by the Pk object recovery point.
Post	/api/endeavour/catalog/vmware/*{supportedObjectName}*	Create an action on the catalog by using the supported object name.
Put	/api/endeavour/catalog/vmware/*{supportedObjectName}*/*{objectId}*	Update the properties of a supported object by using the object ID.
Delete	/api/endeavour/catalog/vmware/*{supportedObjectName}*/*{objectId}*	Delete a supported object by using the object ID..

NetApp ONTAP Catalog

You can get information about the NetApp ONTAP catalog in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/catalog/netapp
```

Related Resources

"Catalog" on page 15

"VMware Catalog" on page 16

"Application Catalog" on page 18

Methods

The following RESTful API methods and endpoints are used to view, update, and delete supported NetApp ONTAP Catalog objects:

Table 11. NetApp Catalog API

API	Endpoint	Description
Get	/api/endeavour/catalog/netapp	Get a list of supported objects in the NetApp ONTAP catalog in IBM Storage Copy Data Management.
Get	/api/endeavour/catalog/netapp*{supportedObjectName}*	Get a list of objects of type by using the supported object name.
Get	/api/endeavour/catalog/netapp*{supportedObjectName}*/*{objectId}*	Get the properties of a supported object by using the object ID.
Post	/api/endeavour/catalog/netapp/*{supportedObjectName}*	Create an action on the catalog by using the supported object name.
Put	/api/endeavour/catalog/netapp/*{supportedObjectName}*/*{objectId}*	Update the properties of a supported object by using the object ID.
Delete	/api/endeavour/catalog/netapp/*{supportedObjectName}*/*{objectId}*	Delete a supported object by using the object ID..

Application Catalog

You can get information about the application catalog in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/catalog/application
```

Related Resources

Catalog

VMware Catalog

NetApp ONTAP Catalog

Methods

The following RESTful API methods and endpoints are used to add, view, edit, and delete supported Application Catalog objects:

Table 12. Application Catalog API		
API	**Endpoint**	**Description**
Get	`/api/endeavour/catalog/application`	Get a list of application objects.
Get	`/api/endeavour/catalog/application/{supportedObjectName}`	Get an application object by name.
Get	`/api/endeavour/catalog/application/{supportedObjectName}/{objectId}`	Get an application object using an object ID.
Post	`endeavour/catalog/application/{supportedObjectName}`	Perform action on an application object by name.
Put	`/api/endeavour/catalog/application/{supportedObjectName}/{objectId}`	Update an application object using an object ID.
Delete	`/api/endeavour/catalog/application/{supportedObjectName}/{objectId}`	Delete an application object using an object ID.

Chapter 7. Configuration Management

A set of RESTful APIs relative to configuration. Policies specify what storage vendor and type of protection is used.

Related reference

"Policy" on page 21

You can get information about policies in IBM Storage Copy Data Management through the REST API.

Policy

You can get information about policies in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/policy
```

Related Resources

Methods

The following RESTful API methods and endpoints are used to view, add, edit, and delete catalog policies:

Table 13. NetApp Catalog API

API	Endpoint	Description
Get	`/api/endeavour/policy`	Get a list of all policies in IBM Storage Copy Data Management.
Get	`/api/endeavour/policy/{policyId}`	Get a specific policy by using the policy ID.
Post	`/api/endeavour/policy`	Add a policy.
Put	`/api/endeavour/policy/{policyId}`	Edit a specific policy by using the specific policy ID.
Delete	`/api/endeavour/policy/{policyId}`	Delete a specific policy by using the specific policy ID.

Chapter 8. Event Management

A set of RESTful APIs used to capture and report on system events. Log management falls into this category. Jobs produce events and those events are persisted and manifested as job log events.

Related reference

"Log" on page 23

You can get information about logs in IBM Storage Copy Data Management through the REST API.

Log

You can get information about logs in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/log
```

Related Resources

Methods

The following RESTful API methods and endpoints are used to retrieve job logs:

Table 14. Log API

API	Endpoint	Description
Get	`/api/endeavour/log`	Get a list of all logs in IBM Storage Copy Data Management.
Get	`/api/endeavour/log/{logId}`	Get a specific log by using the log ID.
Get	`/api/endeavour/log/job/{logId}`	Get a specific job log by using the log ID.
Get	`/api/endeavour/log/job/`	Get a list of all job logs.
Get	`/api/endeavour/log/job/download/json`	Download job logs in JSON format.
Post	`/api/endeavour/log`	Add a log.
Put	`/api/endeavour/log/job`	Add a job log.
Delete	`/api/endeavour/log/{logId}`	Delete a specific log by using the specific log ID.
Delete	`/api/endeavour/log/job/jobsession/{jobsessionId}`	Delete job logs of a particular job session by using the specific job session ID.

Chapter 9. Job Management

A set of RESTful APIs used to control and monitor jobs. Jobs are asynchronous, potentially long running activities that you can start, stop, schedule, monitor, and report on. Jobs entail cataloging or ingesting data and metadata via resource provides, running analytical processes with the Report Management RESTful APIs, or running script based jobs.

Related reference

"Job" on page 25
You can get information about jobs in IBM Storage Copy Data Management through the REST API.

"Jobsession" on page 26
You can get information about job sessions in IBM Storage Copy Data Management through the REST API.

"Trigger" on page 27
You can get information about triggers in IBM Storage Copy Data Management through the REST API.

Job

You can get information about jobs in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/job
```

Related Resources

"Jobsession" on page 26

"Trigger" on page 27

Methods

The following RESTful API methods and endpoints are used to list, add, edit, and delete jobs:

Table 15. Job API

API	Endpoint	Description
Get	`/api/endeavour/job`	Get a job list.
Get	`/api/endeavour/job/{jobId}`	Get a specific job.
Get	`/api/endeavour/job/{jobId}/trigger`	Get a list of triggers.
Post	`/api/endeavour/job`	Create a job.
Post	`/api/endeavour/job/{jobId}?action=start`	Start a job.
Put	`/api/endeavour/job/{jobId}`	Edit the job.
Put	`/api/endeavour/job/{jobId}/{triggerId}`	Associate the trigger to a job.

Table 15. Job API (continued)		
API	**Endpoint**	**Description**
Delete	/api/endeavour/job/*{jobId}*	Delete a specific job.
Delete	/api/endeavour/job/*{jobId}*/trigger/*{triggerId}*	Delete a trigger associated with a job.

Jobsession

You can get information about job sessions in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/jobsession
```

Related Resources

"Jobsession" on page 26

"Trigger" on page 27

Methods

The following RESTful API methods and endpoints are used to retrieve information on job sessions and stop a running job:

Table 16. Jobsession API		
API	**Endpoint**	**Description**
Get	/api/endeavour/jobsession	Get a list of all jobsessionId (instances) that have run or are running.
Get	/api/endeavour/jobsession/stats	Get statistics of jobsessions run during the default past number of days.
Get	/api/endeavour/jobsession/stats/*{days}*	Get statistics of a jobsession run as specified in the past number of days.
Get	/api/endeavour/jobsession/stats/jobid/*{jobId}*	Get statistics of a jobsessionId by using the job ID.
Get	/api/endeavour/jobsession/trends	Get completion trends of all jobs in the past default days.
Get	/api/endeavour/jobsession/trends/*{days}*	Get completion trends of all jobs as specified in the past number of days.
Get	/api/endeavour/jobsession/*{sessionId}*	Get a specific job session by using the session ID.

Table 16. Jobsession API (continued)		
API	**Endpoint**	**Description**
Get	`/api/endeavour/jobsession/{sessionId}/task`	Get a list of tasks of a specific job by using the session ID.
Get	`/api/endeavour/jobsession/{sessionId}/task/{taskId}`	Get a task of a specific job session using session ID and the associated task using the task ID.
Post	`/api/endeavour/jobsession/aggregate`	Aggregate.
Post	`/api/endeavour/jobsession/{sessionId}`	Start a job session by using the session ID.

Trigger

You can get information about triggers in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/trigger
```

Related Resources

"Job" on page 25

"Jobsession" on page 26

Methods

The following RESTful API methods and endpoints are used to add, view, edit, and delete triggers:

Table 17. Trigger API		
API	**Endpoint**	**Description**
Get	`/api/endeavour/trigger`	Get a list of all triggers in IBM Storage Copy Data Management.
Get	`/api/endeavour/trigger/{triggerId}`	Get the trigger as specified by using the trigger ID.
Post	`/api/endeavour/trigger`	Create a trigger.
Put	`/api/endeavour/trigger/{triggerId}`	Edit the specified trigger by using the trigger ID.
Delete	`/api/endeavour/trigger/{triggerId}`	Delete the specified trigger by using the trigger ID.

Chapter 10. License Management

A set of RESTful APIs used for license management processes such as the retrieval of license information.

Related reference
“License” on page 29
You can get information about licenses in IBM Storage Copy Data Management through the REST API.

License

You can get information about licenses in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/license
```

Methods

The following RESTful API methods and endpoints are used to retrieve license information:

Table 18. License API

API	Endpoint	Description
Get	/api/endeavour/license	Get a list of all licenses in IBM Storage Copy Data Management.
Get	/api/endeavour/license/{*licenseName*}	Get the license by using the specified license name.
Get	/api/endeavour/license/{*licenseName*}/schema	Get the license schema by using the specified license name.

Chapter 11. Resource Providers

A set of RESTful APIs that performs actions against managed objects. They allow integration with external resources: LDAP, NetApp ONTAP, vCloud, vSphere, SMTP.

IBM Storage Copy Data Management wraps these SDKs and exposes their capabilities through what are called resource providers.

Related reference

"LDAP" on page 31
You can get information about LDAP resource providers in IBM Storage Copy Data Management through the REST API.

"vCloud" on page 33
You can get information about vCloud providers in IBM Storage Copy Data Management through the REST API.

"vSphere" on page 35
You can get information about VMware vSphere providers in IBM Storage Copy Data Management through the REST API.

"SMTP" on page 38
You can get information about SMTP providers in IBM Storage Copy Data Management through the REST API.

LDAP

You can get information about LDAP resource providers in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/ldap
```

Related Resources

"NetApp ONTAP" on page 32

"vCloud" on page 33

"vSphere" on page 35

"SMTP" on page 38

Methods

The following RESTful API methods and endpoints are used to add, view, edit, and delete LDAP providers:

Table 19. LDAP API

API	Endpoint	Description
Get	`/api/ldap`	Returns a list of configured LDAP providers.
Get	`/api/ldap/{ldapId}`	Returns information about a single LDAP provider.
Get	`/api/ldap/{ldapId}/user`	Get a list of LDAP users.

Table 19. LDAP API (continued)		
API	**Endpoint**	**Description**
Get	/api/ldap/*{ldapId}*/user/*{userId}*	Create an LDAP user.
Post	/api/ldap	Register an LDAP provider.
Put	/api/ldap/*{ldapId}*	Update an LDAP provider.
Delete	/api/ldap/*{ldapId}*	Deregister an LDAP provider.

NetApp ONTAP

You can get information about NetApp ONTAP storage in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/netapp
```

Related Resources

"LDAP" on page 31

"vCloud" on page 33

"vSphere" on page 35

"SMTP" on page 38

Methods

The following RESTful API methods and endpoints are used to query, register, update, and delete NetApp ONTAP providers:

Table 20. NetApp API		
API	**Endpoint**	**Description**
Get	/api/netapp	Get a list of all registered NetApp On Taps in IBM Storage Copy Data Management.
Get	/api/netapp/*{id}*	Get a registered NetApp ONTAP by using the specified ID.
Get	/api/netapp/*{netappId}*/volume	Get a list of volumes on the NetApp ONTAP as specified by the NetApp ID.
Get	/api/netapp/*{netappId}*/volume/*{volName}*	Get a node volume as specified by the volume name on the NetApp ONTAP as specified by the NetApp ID.
Get	/api/netapp/{netappId}/volume/{volName}/qtree	Get a list of QTREES on the volume as specified for volume name on the NetApp ONTAP as specified by the NetApp ID.

Table 20. NetApp API (continued)		
API	**Endpoint**	**Description**
Get	/api/netapp/{netappId}/volume/{volName}/qtree/{qtreeName}	Get a QTREE as specified by the QTREE name on the volume as specified by the volume name on the NetApp ONTAP as specified by the NetApp ID.
Get	/api/netapp/{netappId}/volume/{volName}/snapshot	Get a list of snapshots on the volume as specified by the volume name on the NetApp ONTAP as specified by the NetApp ID.
Get	/api/netapp/{netappId}/volume/{volName}/snapshot/{snapName}	Get a snapshot by using a snapshot name on the volume specified by the volume name on the NetApp ONTAP as specified by the NetApp ID.
Post	/api/netapp	Register a NetApp ONTAP as a storage provider.
Post	/api/netapp/*{netappId}*/volume/*{volName}*	
Post	/api/netapp/*{netappId}*/volume/*{volName}*/snapshot	Create a snapshot on the specified volume by using the volume name on the specified NetApp ONTAP as specified by the NetApp ID.
Put	/api/netapp/*{id}*	Edit a registered NetApp ONTAP as specified by the ID.
Delete	/api/netapp/*{id}*	Unregister the NetApp ONTAP as specified by the ID.
Delete	/api/netapp/*{netappId}*/volume/*{volName}*/snapshot/*{snapName}*	Delete a snapshot by using the snapshot name on the volume using volume name on the NetApp ONTAP by using the NetApp ID.

vCloud

You can get information about vCloud providers in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/vcloud
```

Related Resources

"LDAP" on page 31

"NetApp ONTAP" on page 32

“vSphere” on page 35

“SMTP” on page 38

Methods

The following RESTful API methods and endpoints are used to add, view, edit, and delete vCloud providers:

Table 21. vCloud API

API	Endpoint	Description
Get	/api/vcloud	Get a list of all registered vCloud providers in IBM Storage Copy Data Management.
Get	/api/vcloud/*{vcloudid}*	Get information about a registered vCloud using the vCloud ID.
Get	/api/vcloud/*{vcloudid}*/org	Get a list of organizations of a vCloud using the vCloud ID.
Get	/api/vcloud/*{vcloudid}*/org/*{ordId}*	Get information about a specific organization of a vCloud using the vCloud ID and org ID.
Get	/api/vcloud/*{vcloudid}*/org/*{ordId}*/vdc	Get a list of vDCs in an organization of a vCloud using the vCloud ID and the org ID.
Get	/api/vcloud/*{vcloudid}*/vapp/*{vappId}*	Get information about a specific vApp by using the vCloud ID and the vApp ID.
Get	/api/vcloud/*{vcloudid}*/vapp/*{vappId}*/vm	Get a list of VMs of a vApp by using the vCloud ID and the vApp ID.
Get	/api/vcloud/*{vcloudid}*/vdc/*{vdcId}*	Get information about a vDC of a vCloud by using the vCloud ID and vDC ID.
Get	/api/vcloud/*{vcloudid}*/vdc/*{vdcId}*/vapp	Get a list of vApps in a vDC of a vCloud by using the vCloud ID and the vDC ID.
Get	/api/vcloud/*{vcloudid}*/vm/*{vmId}*	Get information about a VM of a vCloud using the vCloud ID and the VM ID.
Get	/api/vcloud/*{vcloudid}*/vm/*{vmId}*/disk	Get a list of disks for a VM of a vCloud by using the vCloud ID and the VM ID.
Get	/api/vcloud/*{vcloudid}*/vm/*{vmId}*/disk/*{diskId}*	Get information about a disk for a VM of a vCloud by using the vCloud ID, the VM ID, and the disk ID.
Post	/api/vcloud	Register a vCloud.
Put	/api/vcloud/*{vcloudId}*	Update a vCloud.

Table 21. vCloud API (continued)		
API	**Endpoint**	**Description**
Delete	/api/vcloud/*{vcloudId}*	Unregister a vCloud.
Delete	/api/vcloud/*{vcloudId}*/vm/*{vmId}*	Remove a specific VM from the vCloud by using the vCloud ID and the VM ID.

vSphere

You can get information about VMware vSphere providers in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/vsphere
```

Related Resources

"LDAP" on page 31

"NetApp ONTAP" on page 32

"vCloud" on page 33

"SMTP" on page 38

Methods

The following RESTful API methods and endpoints are used to query, register, update, and delete VMware vSphere providers:

Table 22. VMware vSphere API		
API	**Endpoint**	**Description**
Get	/api/vsphere	Get a list of registered VMware vSphere providers registered in IBM Storage Copy Data Management.
Get	/api/vsphere/*{vsphereId}*	Get a registered VMware vSphere provider by using the vSphere ID.
Get	/api/vsphere/*{vsphereId}*/datacenter	Get datacenter by using the VMware vSphere ID.
Get	/api/vsphere/*{vsphereId}*/datacenter/*{datacenterId}*	Get the datacenter by using the VMware vSphere ID and the datacenter ID.
Get	/api/vsphere/*{vsphereId}*/datacenter/*{datacenterId}*/content	Get folders on a datacenter by using the VMware vSphere ID and using the datacenter ID.
Get	/api/vsphere/*{vsphereId}*/datacenter/*{datacenterId}*/datastore	Get the datastores on a datacenter by using the VMware vSphere ID and using the datacenter ID.

Table 22. VMware vSphere API (continued)		
API	**Endpoint**	**Description**
Get	/api/vsphere/*{vsphereId}*/datacenter/*{datacenterId}*/vm	Get VMs on a datacenter by using the VMware vSphere ID and using the datacenter ID
Get	/api/vsphere/*{vsphereId}*/datastore	Get the datastores on a VMware vSphere by using the vSphere ID.
Get	/api/vsphere/*{vsphereId}*/datastore/*{datastoreId}*	Get a specific datastore on a VMware vSphere by using the vSphere ID and the datastore ID.
Get	/api/vsphere/*{vsphereId}*/datastore/*{datastoreId}*/host	Get datastore hosts on a VMware vSphere by using the vSphere ID and datastore ID.
Get	/api/vsphere/*{vsphereId}*/datacenter/*{datacenterId}*/host	Get datacenter hosts on a VMware vSphere by using the vSphere ID and the datacenter ID.
Get	/api/vsphere/*{vsphereId}*/datastore/*{datastoreId}*/vm	Get datastore VMs on a VMware vSphere by using the vSphere ID and the datastore ID.
Get	/api/vsphere/*{vsphereId}*/folder/*{folderId}*	Get a specific folder on a VMware vSphere by using the vSphere ID and the folder ID.
Get	/api/vsphere/*{vsphereId}*/folder/*{folderId}*/content	Get the contents of a specific folder on a VMware vSphere by using the vSphere ID and the folder ID.
Get	/api/vsphere/*{vsphereId}*/folder/*{folderId}*/datastore	Get the folder datastores on a VMware vSphere by using the vSphere ID and the folder ID.
Get	/api/vsphere/*{vsphereId}*/folder/*{folderId}*/vm	Get the folder VMs on a VMware vSphere by using the vSphere ID and the folder ID.
Get	/api/vsphere/*{vsphereId}*/host	Get a list of hosts on a VMware vSphere by using the vSphere ID.
Get	/api/vsphere/*{vsphereId}*/host/*{hostId}*	Get information on a specific host on a VMware vSphere by using the vSphere ID and the host ID.
Get	/api/vsphere/*{vsphereId}*/host/*{hostId}*/vm	Get a list of VMs for a specific host on a VMware vSphere by using the vSphere ID and the host ID.
Get	/api/vsphere/*{vsphereId}*/resourcepool/*{resourcepoolId}*/content	Get a specific resource pool's on a VMware vSphere by using the vSphere ID and the resource pool ID.

Table 22. VMware vSphere API (continued)

API	Endpoint	Description
Get	/api/vsphere/*{vsphereId}*/snapshot	Get a list of snapshots on a VMware vSphere by using the vSphere ID.
Get	/api/vsphere/*{vsphereId}*/snapshot/*{snapshotId}*	Get information on a specific snapshot on a VMware vSphere by using the vSphere ID and the snapshot ID.
Get	/api/vsphere/*{vsphereId}*/vapp	Get a list of vApps on a VMware vSphere by using the vSphere ID.
Get	/api/vsphere/*{vsphereId}*/vapp/*{vappId}*	Get information on a specific vApp on a VMware vSphere by using the vSphere ID and the vApp ID.
Get	/api/vsphere/*{vsphereId}*/vapp/*{vappId}*/datastore	Get a list of VMware datastores by using the vSphere ID and the vApp ID.
Get	/api/vsphere/*{vsphereId}*/vapp/*{vappId}*/vm	Get a list of VMware VMs by using the vSphere ID and the vApp ID.
Get	/api/vsphere/*{vsphereId}*/vapp/*{vappId}*/vapp	Get a list of VMware vApps by using the vSphere ID and the vApp ID.
Get	/api/vsphere/*{vsphereId}*/vm	Get a list of VMs by using the vSphere ID.
Get	/api/vsphere/*{vsphereId}*/vm/*{vmId}*	Get information about a specific VMware VM by using the vSphere ID and VM ID.
Get	/api/vsphere/*{vsphereId}*/vm/*{vmId}*/snapshot	Get a list of VM snapshots by using the vSphere ID and VM ID.
Get	/api/vsphere/*{vsphereId}*/vm/*{vmId}*/datastore	Get a list of VM datastores by using the vSphere ID and VM ID.
Post	/api/vsphere	Register a VMware vSphere provider.
Post	/api/vsphere/*{vsphereId}*/vm/*{vmId}*	Create a snapshot of a VM using the VM ID on a specific vSphere using the vSphere ID.
Put	/api/vsphere/*{vsphereId}*	Edit a specific registered VMware vSphere by using a vSphere ID.
Delete	/api/vsphere/*{vsphereId}*	Unregister a VMware vSphere provider.

SMTP

You can get information about SMTP providers in IBM Storage Copy Data Management through the REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/smtp
```

Related Resources

"LDAP" on page 31

"vCloud" on page 33

"vSphere" on page 35

Methods

The following RESTful API methods and endpoints are used to add, view, edit, and delete SMTP providers:

Table 23. SMTP API

API	Endpoint	Description
Get	/api/smtp	Get a list of all registered SMTP providers.
Get	/api/smtp/{*smtpId*}	Get a specific SMTP provider by using the SMTP ID.
Post	/api/smtp	Register an SMTP provider.
Put	/api/smtp/{*smtpId*}	Update a specific SMTP provider by using the SMTP ID.
Delete	/api/smtp/{*smtpId*}	Unregister an SMTP provider by using the SMTP ID.

Chapter 12. Search Management

A set of RESTful APIs used for search management processes such as performing search operations.

Related reference
“Search” on page 39
You can get information about run searches by using the IBM Storage Copy Data Management REST API.

Search

You can get information about run searches by using the IBM Storage Copy Data Management REST API.

Resource Base URL

```
http://<ipaddress>:<port>/api/endeavour/search
```

Methods

The following RESTful API methods and endpoints are used to perform searches, retrieve document schema, and delete indexes:

Table 24. Search API

API	Endpoint	Description
Get	`/api/endeavour/search`	Search catalogs in IBM Storage Copy Data Management.
Get	`/api/endeavour/search/download/json`	Download in JSON format.
Get	`/api/endeavour/search/schema/all`	Get schema for all searchable document types.
Get	`/api/endeavour/search/schema/all/documentType/values`	Get schema for the specific document type.
Post	`/api/endeavour/search`	Index the catalog.
Delete	`/api/endeavour/search`	Delete the catalog.

Chapter 13. Examples

The examples provide instructions to implement various operations including getting a session ID; executing a search; registering a resource provider; creating a policy; creating, starting, and monitoring a catalog job; and creating Snapshot and recovery policies.

Related reference

"Getting a Session ID" on page 49
This example demonstrates how to obtain a session ID. This example assumes that users are configured within the system. By default, there is a user predefined. Consult the documentation for user credential specifics.

"Execute a Search" on page 47
This example demonstrates how to programmatically execute a search.

"Register a Resource Provider" on page 56
This example demonstrates how to programmatically configure in preparation for performing various operations such as search, reporting, cataloging, etc. Configuration starts with the registration of resource providers.

"Create a Policy" on page 45
This example demonstrates how to programmatically configure in preparation for performing cataloging of metadata that is managed by the resource provider.

"Create a Catalog Job" on page 43
This example demonstrates how to programmatically create jobs.

"Start a Catalog Job" on page 61
This example demonstrates how to programmatically start jobs.

"Monitor a Catalog Job" on page 50
This example demonstrates how to programmatically monitor jobs.

"VMware-NetApp Snapshot Policy" on page 41
This example demonstrates how to programmatically create a VMware-NetApp Snapshot policy.

"VMware-NetApp Recovery Policy" on page 60
This example demonstrates how to programmatically create a VMware-NetApp Recovery policy.

VMware-NetApp Snapshot Policy

This example demonstrates how to programmatically create a VMware-NetApp Snapshot policy.

The RESTful APIs in this scenario are:

Snapshot Endpoint

Table 25. Backup Endpoint

API	Endpoint	Description
Post	/api/endeavour/policy	Create a policy.

Snapshot Parameters

Table 26. Backup Parameters

Name	Description	Value
name	Name of the policy.	string, max 128, non-empty
type	SNAPSHOT	string, max 256

Table 26. Backup Parameters (continued)		
Name	**Description**	**Value**
subType	VMWARE-NETAPP	string, max 256
description	Description of the policy.	string, max 64
spec	This is an object.	string, max 32
href	URL for the source selection.	string
resourceType	Source type. For example: vm, folder, app, datacenter, and vsphere.	string
name	Name of the source.	string

Snapshot Request

```
{
        "name" : "SnapshotPolicy1",
        "type" : "SNAPSHOT",
        "subType" : "VMWARE-NETAPP",
        "description" : "",
        "spec" : {
                "source" : [
                        {
                                "href" : "http://localhost:8082/api/vsphere/1001/vm/42172c8a-6404-14d6-d092-ec511ffb3553",
                                "resourceType" : "vm",
                                "name" : "11 SnapTestVM-GXC",
                                "metadata" : {
                                        "path" : "vsphere:1001/datacenter:datacenter-31960",
                                        "registration" : "http://localhost:8082/api/vsphere/1001",
                                        "id" : "42172c8a-6404-14d6-d092-ec511ffb3553"
                                }
                        },
                        {
                                "href" : "http://localhost:8082/api/vsphere/1001/vm/4217b62c-fb76-c08d-7a70-4a90c467ab24",
                                "resourceType" : "vm",
                                "name" : "12 SnapTestVM2-GXC",
                                "metadata" : {
                                        "path" : "vsphere:1001/datacenter:datacenter-31960",
                                        "registration" : "http://localhost:8082/api/vsphere/1001",
                                        "id" : "4217b62c-fb76-c08d-7a70-4a90c467ab24"
                                }
                        }
                ],
                "option" : {
                        "proxyName" : "",
                        "proxyPort" : "",
                        "retention" : "1",
                        "excludeControllers" : [ ]
                },
                "notification" : [ ]
        }
}
```

Snapshot Response

```
{
  "links": {
    "self": {
      "rel": "self",
      "href": "http://71.100.15.107:8082/api/endeavour/policy/1003"
    },
    "up": {
      "rel": "up",
      "href": "http://71.100.15.107:8082/api/endeavour/policy"
    },
    "edit": {
      "rel": "update",
      "href": "http://71.100.15.107:8082/api/endeavour/policy/1003"
    },
    "delete": {
      "rel": "delete",
      "href": "http://71.100.15.107:8082/api/endeavour/policy/1003"
    },
    "jobs": {
      "rel": "related",
      "href": "http://71.100.15.107:8082/api/endeavour/job?filter=[{\"property\":\"policyId\",\"value\":\"1003\"}]"
    }
  },
  "name": "SnapshotPolicy1",
  "type": "SNAPSHOT",
  "subType": "VMWARE-NETAPP",
  "description": "",
  "version": null,
  "spec": {
    "source": [
      {
        "href": "http://localhost:8082/api/vsphere/1001/vm/42172c8a-6404-14d6-d092-ec511ffb3553",
        "resourceType": "vm",
        "name": "11 SnapTestVM-GXC",
        "metadata": {
          "path": "vsphere:1001/datacenter:datacenter-31960",
          "registration": "http://localhost:8082/api/vsphere/1001",
          "id": "42172c8a-6404-14d6-d092-ec511ffb3553"
        }
      },
      {
        "href": "http://localhost:8082/api/vsphere/1001/vm/4217b62c-fb76-c08d-7a70-4a90c467ab24",
        "resourceType": "vm",
        "name": "12 SnapTestVM2-GXC",
        "metadata": {
          "path": "vsphere:1001/datacenter:datacenter-31960",
          "registration": "http://localhost:8082/api/vsphere/1001",
          "id": "4217b62c-fb76-c08d-7a70-4a90c467ab24"
        }
      }
    ],
    "option": {
      "proxyName": "",
      "proxyPort": "",
      "retention": "1",
      "excludeControllers": []
    },
    "notification": []
  },
  "id": "1003"
}
```


The following is an example of the RESTful API parameters and the steps you can take to traverse the vSphere folder structure to determine the link to a VM resource to backup. The vSphere folder structures looks like `vCenter> Datacenter > folder1 > folder2 > vm1`:

```
# list of registered vCenters
"/api/vsphere"

# get datacenters in vCenter
"/api/vsphere/1003/folder/group-d1/content"

# get folders in particular datacenter
"/api/vsphere/1003/folder/group-v3/content"

# get folders within folder1
"/api/vsphere/1003/folder/group-v66556/content"

# get the list of VMs in folder2
"/api/vsphere/1003/folder/group-v73435/content"
```

Create a Catalog Job

This example demonstrates how to programmatically create jobs.

The RESTful APIs in this scenario are:

Job Create Endpoint

Table 27. Job Create Endpoint		
API	**Endpoint**	**Description**
Post	/api/endeavour/job	Create a job.

Job Create Parameters

Table 28. Job Create Parameters		
Name	**Description**	**Value**
name	Name of the job.	string, max 128, non-empty
triggerIds	Array of existing valid trigger ID strings.	string array
policyId	Existing, valid policy ID string.	string, max 256, non-empty
description	Description of the job.	string, max 64

Snapshot Request

```
POST
URL: https://<ipaddress>:port/api/endeavour/job
Request Body:
{
  "name":"test policy",
  "description":"test description",
  "policyId":"1009",
   "triggerIds":[
  ]
}
```

Snapshot Response

```
{
  "links":{
    "self":{
      "rel":"self",
      "href":"https://<ip>:<port>/api/endeavour/job/1009"
    },
    "up":{
      "rel":"up",
      "href":"https://<ip>:<port>/api/endeavour/job"
    },
    "edit":{
      "rel":"update",
      "href":"https://<ip>:<port>/api/endeavour/job/1009"
    },
    "delete":{
      "rel":"delete",
      "href":"https://<ip>:<port>/api/endeavour/job/1009"
    },
    "policy":{
      "rel":"related",
      "href":"https://<ip>:<port>/api/endeavour/policy/1009"
    },
    "triggers":{
      "rel":"related",
      "href":"https://<ip>:<port>/api/endeavour/job/1009/trigger"
    },
    "jobsessions":{
      "rel":"related",

"href":"https://<ip>:<port>/api/endeavour/jobsession?filter=[{\"property\":\"jobId\",\"value\":\"1009\"}]"
    },
    "stats":{
      "rel":"related",
      "href":"https://<ip>:<port>/api/endeavour/jobsession/stats/jobid/1009"
    },
    "firetimes":{
      "rel":"related",

"href":"https://<ip>:<port>/api/endeavour/firetime?filter=[{\"property\":\"jobId\",\"value\":\"1009\"}]"
    },
    "start":{
      "rel":"action",
      "href":"https://<ip>:<port>/api/endeavour/job/1009?action=start"
    }
  },
  "name":"JayTestPolicy2",
  "description":"test description",
  "policyId":"1009",
  "policyName":"test policy",
  "type":"CATALOG",
  "subType":"NETAPP",
  "triggerIds":[

  ],
  "lastRunTime":null,
  "nextFireTime":null,
  "id":"1009"
}
```


Notice that the job ID that is created is the same value as the policy ID. Now that this job is created, you can perform actions on it such as start; as the start named link in the response suggest.

Create a Policy

This example demonstrates how to programmatically configure in preparation for performing cataloging of metadata that is managed by the resource provider.

The RESTful APIs in this scenario are:

Policy Endpoint

Table 29. Policy Endpoint		
API	**Endpoint**	**Description**
Post	/api/endeavour/policy	Create a policy.

Policy Parameters

Table 30. Policy Parameters		
Name	**Description**	**Value**
name	Name of the policy.	string, max 128, non-empty
type	Catalog, report, etc.	string, max 256
subType	NetApp ONTAP, etc.	string, max 256
description	Description of the policy.	string, max 64
spec	This is an object.	string, max 32

Policy Creation Request

This example request reveals a policy is being created for a NetApp ONTAP type cataloging operation. The spec section indicates the particular resource provider and its associated resources that are expected to be cataloged. Other objects that can be defined within the spec section include option and notification. Once the Post is executed, the response includes an ID to the new policy resource.

```
POST
URL: https://<ipaddress>:port/api/endeavour/policy

Request Body:
{
  "name":"test policy",
  "type":"CATALOG",
  "subType":"NETAPP",
  "description":"test description",
  "spec":{
    "source":[
      {
        "href":"https://<ip>:<port>/api/netapp/1002",
        "resourceType":"netapp",
        "name":"<ip>",
        "id":"1002",
        "tags":{

        }

      }

    ],
    "option":{
      "timeout":"300",
      "retention":"3"
    },
    "notification":[

    ]

  }
}
```

Policy Creation Response

```
{
  "links":{
    "self":{
      "rel":"self",
      "href":"https://<ip>:<port>/api/endeavour/policy/1009"
    },
    "up":{
      "rel":"up",
      "href":"https://<ip>:<port>/api/endeavour/policy"
    },
    "edit":{
      "rel":"update",
      "href":"https://<ip>:<port>/api/endeavour/policy/1009"
    },
    "delete":{
      "rel":"delete",
      "href":"https://<ip>:<port>/api/endeavour/policy/1009"
    },
    "jobs":{
      "rel":"related",
      "href":"https://<ip>:<port>/api/endeavour/job?filter=[{\"property\":\"policyId\",\"value\":\"1009\"}]"
    }

  },
  "name":"test policy",
  "type":"CATALOG",
  "subType":"NETAPP",
  "description":"test description",
  "version":null,
  "spec":{
    "source":[
      {
        "href":"https://<ip>:<port>/api/netapp/1002",
        "resourceType":"netapp",
        "name":"<ip>",
        "id":"1002",
        "tags":{

        }

      }

    ],
    "option":{
      "timeout":"300",
      "retention":"3"
    },
    "notification":[

    ]

  },
  "id":"1009"
}
```


The policy ID within this response can then be used by the job API to launch a catalog operation.

Execute a Search

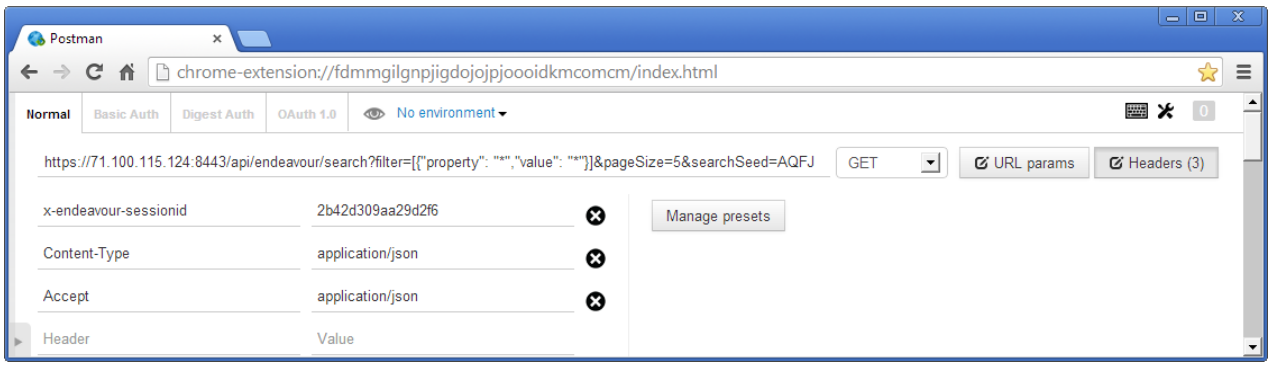
This example demonstrates how to programmatically execute a search.

API Headers

Prior to calling search, set the following headers:

- X-Endeavour-Sessionid with a valid jobsessionId value.
- Content-Type with the value set to application/json.
- Accept with the value set to application/json.

The following example shows how this value is set within Google's Postman REST API client.



Search Endpoint

Table 31. Search Endpoint		
API	**Endpoint**	**Description**
Get	/api/endeavour/search?filter=[{"property":"*","op":"=","value":"*abc*"},{...}]	Execute a search using a filter.

Search Filter Parameters

Search relies on a filter parameter against its endpoint to carry out search operations. Following are the parameters and values to submit to the search filter:

Table 32. Search Filter Parameters		
Name	**Description**	**Value**
property	The property parameter is used to indicate which indexed field of the collection of fields to apply the criteria to. An asterisk (*) for the value of the property parameter enables all fields to be searched.	catalogTime, location, documentType, providerName, *
value	This constitutes the search pattern.	Wildcard is supported, such as "?abc", "abc?", "*abc", "abc*". Wildcard characters such as the question mark (?) is for one character, and the asterisk (*) is for zero or more characters. Multiple filters can be combined with the AND operator.

With the session id set as the value of the x-endeavour-sessionid header the following request can be submitted as a GET operation against the search endpoint as follows:

Search Request

```
GET
URL and Request:
https://<ipaddress>:port/api/endeavour/search?filter=[{
  "property":"*",
  "value":"*JWFndmp"
  }
]
&pageSize=5&searchSeed=AQFJ
```

Search Response


```
{
  "links":{
    "self":{
      "rel":"self",
      "href":"https://<ip>:<port>/api/endeavour/search"
    },
    "firstPage":{
      "rel":"first",
      "href":"https://<ip>:<port>/api/endeavour/search?pageSize=5&filter=[{\"property\": \"*\",\"value\": \"*\"}]"
    },
    "nextPage":{
      "rel":"next",
      "href":"https://<ip>:<port>/api/endeavour/search?pageSize=5&searchSeed=AgFJAU4&filter=[{\"property\":
\"*\",\"value\": \"*\"}]"
    },
    "prevPage":{
      "rel":"prev",
      "href":"https://<ip>:<port>/api/endeavour/search?pageSize=5&searchSeed=AA&filter=[{\"property\":
\"*\",\"value\": \"*\"}]"
    },
    "csv":{
      "rel":"download",
      "href":"https://<ip>:<port>/api/endeavour/search/download/csv?pageSize=5&filter=[{\"property\":
\"*\",\"value\": \"*\"}]&esessionid=2b42d309aa29d2f6"
    }
  },
  "indexSize":9380247,
  "hits":9380247,
  "searchTime":3254,
  "page":2,
  "results":[
    {
      "links":{
        "self":{
          "rel":"self",
          "href":"https://<ip>:<port>/api/endeavour/catalog/netapp/File/52654066e4b0d1d42fc36ce1_1382367131084"
        }
      },
      "score":1,
      "summary":{
        "createTime":1377891916,
        "catalogTime":1382367131084,
        "documentType":"File",
        "accessTime":1382367168,
        "location":"f2240clst/vs_data_01/",
        "name":"/",
        "catalogProvider":"netapp",
        "modifyTime":1351876116,
        "size":11744
      }
    }
  }
```


Getting a Session ID

This example demonstrates how to obtain a session ID. This example assumes that users are configured within the system. By default, there is a user predefined. Consult the documentation for user credential specifics.

The RESTful APIs in this scenario are:

Session Endpoint

Table 33. Session Endpoint

API	Endpoint	Description
Post	/api/endeavour/session	Create a session.

Endeavour uses HTTP's basic authentication mechanism where the user name and password are sent in the Authorization header. The user name and password must be Base64 encoded. When a

POST operation to the endpoint above is performed, which includes a valid Authorization header, the corresponding response contains a session id, which can then be used for subsequent RESTful API calls.

Session Request

The following example provides the steps for establishing the session id using Google Chrome Postman REST client.

1. In the Basic Auth tab, enter the username and password.
2. Click the Refresh headers button. A base encoded string is produced.
3. With the Authorization header set, you can now send, which executes a Post operation against the `https://{hostname|ipv4}/endeavour/session` endpoint. The following response, which includes the session ID value, is returned.

Session Response

The response contains the session ID as well as the information for the logged in user. This information is the same as that returned by a GET call against the following URI `/api/endeavour/user/{userID}`.

All further requests must include the session ID in the custom header `x-endeavor-session-id`.

Monitor a Catalog Job

This example demonstrates how to programmatically monitor jobs.

The RESTful APIs in this scenario are:

Job Monitor Endpoints

Table 34. Job Monitor Endpoints

API	Endpoint	Description
Get	/api/endeavour/job	Get the jobsession. Every job embeds the last run time, next fire time, and a snapshot of the last run session.
Get	/api/endeavour/jobsession/ {jobsessionId}?embed=(tasks)	Get jobsessions. Lists a specific job session with options to list all tasks.

Job Monitor Parameters

Table 35. Job Monitor Parameters

Name	Description	Value
sessionId	String ID of the job session (instance).	string

Job Monitor Request via Job Endpoint

`https://{hostname|IPv4}/api/endeavour/job`

Job Monitor Response


```
{
  "links":{
    "self":{
      "rel":"self",
      "href":"http://<ip>:<port>/api/endeavour/job"
    },
    "create":{
      "rel":"create",
      "href":"http://<ip>:<port>/api/endeavour/job"
    }
  },
  "jobs":[
    {
      "links":{
        "self":{
          "rel":"self",
          "href":"http://<ip>:<port>/api/endeavour/job/1002"
        },
        "up":{
          "rel":"up",
          "href":"http://<ip>:<port>/api/endeavour/job"
        },
        "edit":{
          "rel":"update",
          "href":"http://<ip>:<port>/api/endeavour/job/1002"
        },
        "delete":{
          "rel":"delete",
          "href":"http://<ip>:<port>/api/endeavour/job/1002"
        },
        "policy":{
          "rel":"related",
          "href":"http://<ip>:<port>/api/endeavour/policy/1002"
        },
        "triggers":{
          "rel":"related",
          "href":"http://<ip>:<port>/api/endeavour/job/1002/trigger"
        },
        "jobsessions":{
          "rel":"related",
```

```
"href":"http://<ip>:<port>/api/endeavour/jobsession?filter=[{\"property\":\"jobId\",\"value\":\"1002\"}]"
        },
        "stats":{
          "rel":"related",
          "href":"http://<ip>:<port>/api/endeavour/jobsession/stats/jobid/1002"
        },
        "firetimes":{
          "rel":"related",
          "href":"http://<ip>:<port>/api/endeavour/firetime?filter=[{\"property\":\"jobId\",\"value\":\"1002\"}]"
        },
        "lastrun":{
          "rel":"related",
          "href":"http://<ip>:<port>/api/endeavour/jobsession/1381264793238"
        },
        "start":{
          "rel":"action",
          "href":"http://<ip>:<port>/api/endeavour/job/1002?action=start"
        }
      },
      "name":"vmjob",
      "description":"Auto-generated job for Policy vmjob",
      "policyId":"1002",
      "policyName":"vmjob",
      "type":"CATALOG",
      "subType":"VMWARE",
      "triggerIds":[

      ],
      "lastRunTime":1381264843226,
      "nextFireTime":null,
      "lastrun":{
        "sessionId":"1381264793238",
        "jobName":"vmjob",
        "type":"CATALOG",
        "subType":"VMWARE",
        "start":1381264843226,
        "end":1381264853767,
        "status":"STOPPED",
        "results":"Completed",
        "properties":null,
        "numTasks":2,
        "lastUpdate":1381264867422,
        "percent":null,
        "policySnapshot":{
```

```
        "id":"1002",
        "name":"vmjob",
        "type":"CATALOG",
        "subType":"JSON",
        "version":null,
        "spec":{
          "source":[
            {
              "href":"http://<ip>:<port>/api/vsphere/1001",
              "resourceType":"vsphere",
              "name":"vmcenter",
              "id":"1001",
              "tags":{

              }

            }

          ],
          "option":{
            "timeout":"300",
            "retention":"3"
          },
          "notification":[

          ]

        }

      }
    },
    "id":"1002"
  }

}
```


Job Monitor Request via Jobsession Endpoint

`https://{hostname|IPv4}/api/endeavour/jobsession/{sessionId}?embed=(tasks)`

Job Monitor Response via Jobsession Endpoint


```
{
  "links":{
    "self":{
      "rel":"self",
      "href":"http://<ip>:<port>/api/endeavour/jobsession/1381264793238"
    },
    "up":{
      "rel":"up",
      "href":"http://<ip>:<port>/api/endeavour/jobsession"
    },
    "job":{
      "rel":"related",
      "href":"http://<ip>:<port>/api/endeavour/job/1002"
    },
    "tasks":{
      "rel":"related",
      "href":"http://<ip>:<port>/api/endeavour/jobsession/1381264793238/task"
    },
    "log":{
      "rel":"related",
"href":"http://<ip>:<port>/api/endeavour/log/job?filter=[{\"property\":\"jobsessionId\",\"value\":\"1381264793238\"}]
"
    },
    "csv":{
      "rel":"related",
"href":"http://<ip>:<port>/api/endeavour/log/job/download/csv?filter=[{\"property\":\"jobsessionId\",\"value\":\"1381
264793238\"}]&esessionid=a695b7854783d5eb"
    }
  },
  "jobName":"vmjob",
  "type":"CATALOG",
  "subType":"VMWARE",
  "start":1381264843226,
  "end":1381264853767,
  "status":"STOPPED",
  "indexStatus":"COMPLETED",
  "results":"Completed",
  "properties":null,
  "numTasks":2,
  "lastUpdate":1381264867422,
  "percent":null,
```

```
  "policySnapshot":{
    "id":"1002",
    "name":"vmjob",
    "type":"CATALOG",
    "subType":"VMWARE",
    "version":null,
    "spec":{
      "source":[
        {
          "href":"http://<ip>:<port>/api/vsphere/1001",
          "resourceType":"vsphere",
          "name":"vmcenter",
          "id":"1001",
          "tags":{

          }
        }
      ],
"option":{
"timeout":"300",
"retention":"3"
      },
"notification":[

      ]
    }
  },
"tasks":[
    {
      "links":{
        "self":{
          "rel":"self",

"href":"http://<ip>:<port>/api/endeavour/jobsession/1381264793238/task/1?embed=(tasks)"
        },
        "up":{
          "rel":"up",
          "href":"http://<ip>:<port>/api/endeavour/jobsession/1381264793238"
        }
      },
```

```
      "sessionId":"1381264793238",
      "type":"Resolve",
      "status":"STOPPED",
      "start":1381264843319,
      "end":1381264844055,
      "message":"",
      "properties":null,
      "results":"Stopped",
      "lastUpdate":1381264844055,
      "percent":0,
      "id":"1"
    },
    {
      "links":{
        "self":{
          "rel":"self",

"href":"http://<ip>:<port>/api/endeavour/jobsession/1381264793238/task/2?embed=(tasks)"
        },
        "up":{
          "rel":"up",
          "href":"http://<ip>:<port>/api/endeavour/jobsession/1381264793238"
        }
      },
      "sessionId":"1381264793238",
      "type":"Catalog (VCenter)",
      "status":"STOPPED",
      "start":1381264845318,
      "end":1381264853632,
      "message":"",
      "properties":{
        "server":"vmcenter"
      },
      "results":"Stopped",
      "lastUpdate":1381264853632,
      "percent":0,
      "id":"2"
    }
  ],
  "id":"1381264793238"
}
```


Register a Resource Provider

This example demonstrates how to programmatically configure in preparation for performing various operations such as search, reporting, cataloging, etc. Configuration starts with the registration of resource providers.

The following describes the RESTful API usage for registration of NetApp ONTAP, SMTP, and vSphere resource providers:

Resource Provider Registration Endpoint

Table 36. Resource Provider Registration Endpoint

API	Endpoint	Description
Post	/api/netapp	Register NetApp ONTAP on IBM Storage Copy Data Management.
Post	/api/smtp	Register an SMTP in IBM Storage Copy Data Management.
Post	/api/vSphere	Register a vSphere in IBM Storage Copy Data Management.

Resource Provider Registration Parameters

Request parameters for registering NetApp ONTAP:

Table 37. Resource Provider Registration Parameters for NetApp ONTAP		
Name	**Description**	**Value**
name	Name of the registration.	string, max 128, non-empty
hostAddress	IP address or hostname.	string, max 256
comment	Comment, optional.	string, max 256
username	Username of NetApp ONTAP account.	string, max 64
password	Password of NetApp ONTAP account.	string, max 32
sslConnection	Use secure connection or do not use secure connection.	true or false
portNumber	Port number.	integer

Request parameters for registering SMTP:

Table 38. Resource Provider Registration Parameters for SMTP		
Name	**Description**	**Value**
name	Name of the registration.	string, max 128, non-empty
hostAddress	IP address or hostname.	string, max 256
comment	Comment, optional.	string, max 256
username	Username of SMTP account.	string, max 64
password	Password of SMTP account.	string, max 32
portNumber	Port number.	integer (default set to 26)
fromAddress	E-mail from address.	string, max 254
subjectPrefix	E-mail subject prefix.	string, max 78
Subject	E-mail subject.	string, max 256
timeout	Timeout in connecting to SMTP server.	integer in milliseconds

Note: Request parameters for registering SMTP. SMTP is used only for e-mail notifications.

Request parameters for registering vSphere:

Table 39. Resource Provider Registration Parameters for vSphere		
Name	**Description**	**Value**
name	Name of the registration.	string, max 128, non-empty
hostAddress	IP address or hostname.	string, max 256
comment	Comment, optional.	string, max 256
username	Username of vSphere account.	string, max 64
password	Password of vSphere account.	string, max 32
sslConnection	Use secure connection or do not use secure connection.	true or false

Table 39. Resource Provider Registration Parameters for vSphere (continued)		
Name	**Description**	**Value**
portNumber	Port number.	integer

Resource Provider Registration Request

```
POST
URL: https://<ipaddress>:port/api/netapp

Request Body:
{
  "name":"r200",
  "hostAddress":"<ip>",
  "comment":"",
  "username":"root",
  "password":"password",
  "sslConnection":true,
  "portNumber":443
}
```

Resource Provider Registration Response


```
{
  "links":{
    "self":{
      "rel":"self",
      "href":"http://<ip>:<port>/api/netapp/1001"
    },
    "up":{
      "rel":"up",
      "href":"http://<ip>:<port>/api/netapp"
    },
    "edit":{
      "rel":"update",
      "href":"http://<ip>:<port>/api/netapp/1001"
    },
    "delete":{
      "rel":"delete",
      "href":"http://<ip>:<port>/api/netapp/1001"
    },
    "volumes":{
      "rel":"related",
      "href":"http://<ip>:<port>/api/netapp/1001/volume"
    }
  },
  "name":"r200",
  "hostAddress":"<ip>",
  "type":"Storage Controller",
  "comment":"",
  "username":"root",
  "password":null,
  "sslConnection":false,
  "portNumber":80,
  "properties":{
    "sysinfoSerialno":{
      "key":"Serial No",
      "value":"1041727"
    },
    "sysinfoNumberofprocessors":{
      "key":"Number of Processors",
      "value":"2"
    },
    "sysinfoModel":{
      "key":"Model",
      "value":"R200"
    },
    "sysinfoOsversion":{
      "key":"OS Version",
      "value":"NetApp Release 7.3.7: Thu May  3 03:56:11 PDT 2012"
    },
    "sysinfoApiversion":{
      "key":"API Version",
      "value":"1.14"
    },
    "sysinfoSystemid":{
      "key":"System ID",
      "value":"0050405016"
    },
    "sysinfoMemory":{
      "key":"Memory",
      "value":"6442450944"
    }
  },
  "resourceType":"netapp",
  "id":"1001"
}
```


After a resource provider is registered, it can be added to a policy. For more information, see “Create a Policy” on page 45.

VMware-NetApp Recovery Policy

This example demonstrates how to programmatically create a VMware-NetApp Recovery policy.

The RESTful APIs in this scenario are:

Recovery Endpoint

Table 40. Restore Endpoint

API	Endpoint	Description
Post	/api/endeavour/policy	Create a policy.

Recovery Parameters

Table 41. Restore Parameters

Name	Description	Value
name	Name of the policy.	string, max 128, non-empty
type	RECOVERY	string, max 256
subType	VMWARE-NETAPP	string, max 256
description	Description of the policy.	string, max 64
spec	This is an object.	string, max 32
href	URL for the source selection.	string
recoveryPoint	URL for the recovery point.	string

Recovery Request

```
{
        "name" : "RecoveryPolicy1",
        "type" : "RECOVERY",
        "subType" : "VMWARE-NETAPP",
        "description" : "",
        "spec" : {
                "source" : [
                        {
                                "href" : "http://localhost:8082/api/endeavour/catalog/recoveryvmware/vm/pk.864D814D-870F-47A0-ACAA-2699BBAAAE22-vm-71244",
                                "recoveryPoint" : "http://localhost:8082/api/endeavour/catalog/recoveryvmware/recoverypoint/pk.4c4b651b-ee77-48da-93f5-790308e03c99",
                                "metadata" : {
                                        "path" : "864D814D-870F-47A0-ACAA-2699BBAAAE22|vsphere|syncvcenter2/864D814D-870F-47A0-ACAA-2699BBAAAE22-datacenter-31960|datacenter|BEXTECH",
                                        "documentType" : "vm",
                                        "type" : "document"
                                }
                        },
                        {
                                "href" : "http://localhost:8082/api/endeavour/catalog/recoveryvmware/vm/pk.864D814D-870F-47A0-ACAA-2699BBAAAE22-vm-71260",
                                "recoveryPoint" : "http://localhost:8082/api/endeavour/catalog/recoveryvmware/recoverypoint/pk.4c4b651b-ee77-48da-93f5-790308e03c99",
                                "metadata" : {
                                        "path" : "864D814D-870F-47A0-ACAA-2699BBAAAE22|vsphere|syncvcenter2/864D814D-870F-47A0-ACAA-2699BBAAAE22-datacenter-31960|datacenter|BEXTECH",
                                        "documentType" : "vm",
                                        "type" : "document"
                                }
                        }
                ],
                "option" : {
                        "proxyName" : "",
                        "proxyPort" : ""
                },
                "notification" : [ ]
        }
}
```

Snapshot Response

```
{
  "links": {
    "self": {
      "rel": "self",
      "href": "http://71.100.15.107:8082/api/endeavour/policy/1004"
    },
    "up": {
      "rel": "up",
      "href": "http://71.100.15.107:8082/api/endeavour/policy"
    },
    "edit": {
      "rel": "update",
      "href": "http://71.100.15.107:8082/api/endeavour/policy/1004"
    },
    "delete": {
      "rel": "delete",
      "href": "http://71.100.15.107:8082/api/endeavour/policy/1004"
    },
    "jobs": {
      "rel": "related",
      "href": "http://71.100.15.107:8082/api/endeavour/job?filter=[{\"property\":\"policyId\",\"value\":\"1004\"}]"
    }
  },
  "name": "RecoveryPolicy1",
  "type": "RECOVERY",
  "subType": "VMWARE-NETAPP",
  "description": "",
  "version": null,
  "spec": {
    "source": [
      {
        "href": "http://localhost:8082/api/endeavour/catalog/recoveryvmware/vm/pk.864D814D-870F-47A0-ACAA-2699BBAAAE22-vm-71244",
        "recoveryPoint": "http://localhost:8082/api/endeavour/catalog/recoveryvmware/recoverypoint/pk.4c4b651b-ee77-48da-93f5-790308e03c99",
        "metadata": {
          "path": "864D814D-870F-47A0-ACAA-2699BBAAAE22|vsphere|syncvcenter2/864D814D-870F-47A0-ACAA-2699BBAAAE22-datacenter-31960|datacenter|BEXTECH",
          "documentType": "vm",
          "type": "document"
        }
      },
      {
        "href": "http://localhost:8082/api/endeavour/catalog/recoveryvmware/vm/pk.864D814D-870F-47A0-ACAA-2699BBAAAE22-vm-71260",
        "recoveryPoint": "http://localhost:8082/api/endeavour/catalog/recoveryvmware/recoverypoint/pk.4c4b651b-ee77-48da-93f5-790308e03c99",
        "metadata": {
          "path": "864D814D-870F-47A0-ACAA-2699BBAAAE22|vsphere|syncvcenter2/864D814D-870F-47A0-ACAA-2699BBAAAE22-datacenter-31960|datacenter|BEXTECH",
          "documentType": "vm",
          "type": "document"
        }
      }
    ],
    "option": {
      "proxyName": "",
      "proxyPort": ""
    },
    "notification": []
  },
  "id": "1004"
}
```


The following is an example of the RESTful API parameters to obtain the recovery point to create the Snapshot recovery policy:

```
# Get a list of VM's that can be recovered.
"/api/endeavour/catalog/recoveryvmware/vm?pageStartIndex=0&pageSize=100&embed=(children)"

# Get the URL for recovery points for a particular VM.
"/api/endeavour/catalog/recoveryvmware/vm/52e1c68dbab809d58cea0213"

# After you get the URL location of recovery points, run the query. Take the output of this as
input into your recovery policy
"/api/endeavour/catalog/recoveryvmware/vm/pk.864D814D-870F-47A0-ACAA-2699BBAAAE22-vm-73436/
recoverypoint"
```

Start a Catalog Job

This example demonstrates how to programmatically start jobs.

The RESTful APIs in this scenario are:

Job Start Endpoint

Table 42. Job Start Endpoint

API	Endpoint	Description
Post	/api/endeavour/job	Start a catalog job.

Job Start Parameters

Table 43. Job Start Parameters

Name	Description	Value
action	Query parameter used for performing various actions.	start

Job Start Request

```
POST
URL: https://<ipaddress>:port/api/endeavour/job?action=start"
Request Body:
{}
```

Job Start Response


```
{
  "links":{
    "self":{
      "rel":"self",
      "href":"https://<ip>:<port>/api/endeavour/job/1009"
    },
    "up":{
      "rel":"up",
      "href":"https://<ip>:<port>/api/endeavour/job"
    },
    "edit":{
      "rel":"update",
      "href":"https://<ip>:<port>/api/endeavour/job/1009"
    },
    "delete":{
      "rel":"delete",
      "href":"https://<ip>:<port>/api/endeavour/job/1009"
    },
    "policy":{
      "rel":"related",
      "href":"https://<ip>:<port>/api/endeavour/policy/1009"
    },
    "triggers":{
      "rel":"related",
      "href":"https://<ip>:<port>/api/endeavour/job/1009/trigger"
    },
    "jobsessions":{
      "rel":"related",

"href":"https://<ip>:<port>/api/endeavour/jobsession?filter=[{\"property\":\"jobId\",\"value\":\"1009\"}]"
    },
    "stats":{
      "rel":"related",
      "href":"https://<ip>:<port>/api/endeavour/jobsession/stats/jobid/1009"
    },
    "firetimes":{
      "rel":"related",

"href":"https://<ip>:<port>/api/endeavour/firetime?filter=[{\"property\":\"jobId\",\"value\":\"1009\"}]"
    },
    "lastrun":{
      "rel":"related",
      "href":"https://<ip>:<port>/api/endeavour/jobsession/1382994103022"
    },
    "start":{
      "rel":"action",
      "href":"https://<ip>:<port>/api/endeavour/job/1009?action=start"
    }
  },
```

```
  "name":"test policy",
  "description":"test policy",
  "policyId":"1009",
  "policyName":"test policy",
  "type":"CATALOG",
  "subType":"NETAPP",
  "triggerIds":[
  ],
"lastRunTime":1382994103900,
  "nextFireTime":null,
  "policy":{
    "links":{
      "self":{
        "rel":"self",
        "href":"http://<ip>:<port>/api/endeavour/policy/1009"
      },
      "up":{
        "rel":"up",
        "href":"http://<ip>:<port>/api/endeavour/policy"
      },
      "edit":{
        "rel":"update",
        "href":"http://<ip>:<port>/api/endeavour/policy/1009"
      },
      "delete":{
        "rel":"delete",
        "href":"http://<ip>:<port>/api/endeavour/policy/1009"
      },
      "jobs":{
        "rel":"related",

"href":"http://<ip>:<port>/api/endeavour/job?filter=[{\"property\":\"policyId\",\"value\":\"1009\"
}]"
      }
    },
    "name":"test policy",
    "type":"CATALOG",
    "subType":"NETAPP",
    "description":"",
    "version":null,
    "spec":{
      "source":[
```

```
      {
        "href":"https://<ip>:<port>/api/netapp/1002",
        "resourceType":"netapp",
        "name":"<ip>",
        "id":"1002",
        "tags":{

        }
      }
    ],
    "option":{
      "timeout":"300",
      "retention":"3"
    },
    "notification":[

    ]
  },
  "id":"1009"
},
"triggers":[
],
"lastrun":{
  "sessionId":"1382994103022",
  "jobName":"test policy",
  "type":"CATALOG",
  "subType":"NETAPP",
  "start":null,
  "end":null,
  "status":"WAITING",
  "results":null,
  "properties":null,
```

```
    "numTasks":1,
    "lastUpdate":1382994103900,
    "percent":null,
    "policySnapshot":{
      "id":"1009",
      "name":"test policy",
      "type":"CATALOG",
      "subType":"JSON",
      "version":null,
      "spec":{
        "source":[
          {
            "href":"https://<ip>:<port>/api/netapp/1002",
            "resourceType":"netapp",
            "name":"<ip>",
            "id":"1002",
            "tags":{

            }
          }
        ],
        "option":{
          "timeout":"300",
          "retention":"3"
        },
        "notification":[
        ]
      }
    }
  },
  "id":"1009"
}
```


The following is an example of the RESTful API parameters and the steps you can take to traverse the vSphere folder structure to determine the link to a VM resource to backup. The vSphere folder structures looks like `vCenter> Datacenter > folder1 > folder2 > vm1`:

```
# list of registered vCenters
"/api/vsphere"

# get datacenters in vCenter
"/api/vsphere/1003/folder/group-d1/content"

# get folders in particular datacenter
"/api/vsphere/1003/folder/group-v3/content"

# get folders within folder1
"/api/vsphere/1003/folder/group-v66556/content"

# get the list of VMs in folder2
"/api/vsphere/1003/folder/group-v73435/content"
```

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