Cost Management Service 1-latest

Integrating Oracle Cloud data into cost management

Learn how to add and configure your Oracle Cloud integration
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Learn how to add and configure your Oracle Cloud integration
Abstract

This guide describes how to add an Oracle Cloud integration to cost management. Cost management is part of the Red Hat Insights portfolio of services. The Red Hat Insights suite of advanced analytical tools helps you to identify and prioritize impacts on your operations, security, and business.
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CHAPTER 1. INTEGRATING ORACLE CLOUD DATA INTO COST MANAGEMENT

To add an Oracle Cloud account to cost management, you must add your Oracle Cloud account as an integration from the Red Hat Hybrid Cloud Console user interface and configure Oracle Cloud to provide metrics. After you add your Oracle Cloud account to cost management as a data integration, you must configure a function script to copy the cost and usage reports to a bucket that cost management can access.

Prerequisites

- Red Hat account user with Integrations Administrator entitlements
- Access to Oracle Cloud Console with access to the compartment you want to add to cost management
- A service on Oracle Cloud generating service usage

As you will complete some of the following steps in Oracle Cloud, and some steps in the Red Hat Hybrid Cloud Console, log in to both applications and keep them open in a web browser. To begin, add your Oracle Cloud integration to cost management from the Integrations page using the Add a cloud source dialog.

1.1. ADDING AN ORACLE CLOUD INFRASTRUCTURE ACCOUNT AND NAMING YOUR INTEGRATION

Add your Oracle Cloud account as a integration. After adding an Oracle Cloud integration, the cost management application processes the cost and usage data from your Oracle Cloud account and makes it viewable.

Procedure

1. From Red Hat Hybrid Cloud Console, click Settings Menu > (Settings).
2. On the Settings page, click Integrations.
3. Click Add source in the Cloud tab.
4. In the Add a cloud source wizard, select Oracle Cloud Infrastructure as the integration type. Click Next.
5. Enter a name for your integration and click Next.
6. In the Select application step, select cost management. Click Next.

Next step

Continue working through the Add a cloud integration dialog by collecting and storing your global compartment-id so cost management can find your Oracle Cloud compartment.

1.2. COLLECTING AND STORING YOUR GLOBAL COMPARTMENT-ID

Continue in the Add a cloud source wizard by collecting your global compartment-id so cost management can find your Oracle Cloud compartment.
Procedure

1. In the **Add a cloud source** wizard, on the **Global compartment-id** step, copy the command in step one `oci iam compartment list`.

2. In a new tab, log in to your Oracle Cloud account.

3. In the menu bar, click **Developer tools > Cloud Shell**.

4. Paste the command in the **Cloud Shell** window.

5. In the response, copy the value pair for the **compartment-id** key. In the following example, copy `global-compartment-id`.

   **Example response**

   ```json
   {  
     "data": [  
       {  
         "compartment-id": "global-compartment-id",  
         "defined-tags": {  
           "Oracle-Tags": {  
             ...  
           },  
           ...  
         }  
       }  
     ]
   }
   ```

6. Return to the **Global compartment-id** step in cost management, and paste your `global-compartment-id` in the **Global compartment-id** field.

7. Click **Next**.

**Next step**

Continue working through the **Add a cloud source** wizard by creating a custom policy and compartment for Oracle Cloud to create and store cost and usage reports.

### 1.3. CREATING A POLICY TO CREATE COST AND USAGE REPORTS

Continue in the **Add a cloud source** wizard by creating a custom policy and compartment for Oracle Cloud to create and store cost and usage reports.

**Procedure**

1. In the **Add a cloud source** wizard, on the **Create new policy and compartment** page, copy the `oci iam policy create` command.

   a. Paste the command you copied into the Cloud Shell in your Oracle Cloud tab to create a cost and usage reports policy.

   b. Return to the **Create new policy and compartment** step in cost management and copy the `oci iam compartment create` command.
c. Paste the command you copied into the Cloud Shell in your Oracle Cloud tab to create a cost management compartment.

d. In the response, copy the value for the `id` key. In the following example, copy `cost-management-compartment-id`.

Example response

```
{
  "data": [
    {
      "compartment-id": "global-compartment-id",
      "defined-tags": {
        "Oracle-Tags": {
          ...
        }
      },
      "description": "Cost management compartment for cost and usage data",
      "freeform-tags": {},
      "id": "cost-management-compartment-id",
      ...
    }
  ]
}
```

e. Return to the Create new policy and compartment step in cost management and paste the `id` value you copied from the response in the last step into the `New compartment-id` field.

f. Click Next.

Next step

The cost and usage reports CSV files are stored in an object storage bucket that is not accessible to cost management. Continue working through the Add a cloud source wizard by creating a bucket that cost management can access.

1.4. CREATING A BUCKET FOR ACCESSIBLE COST AND USAGE REPORTS

Continue in the Add a cloud source wizard by creating a bucket to store cost and usage reports that are accessible to cost management.

Procedure

1. In the Create bucket step, create a bucket to store cost and usage data so that it is accessible to cost management.

2. Copy the command in step 1 and paste into the Cloud Shell in your Oracle Cloud tab to create a bucket. Refer to the example response for the next steps.

Example response

```
{
```

```
3. Copy the value pair for the name key. In the previous example, copy cost-management.

4. Return to the Create bucket step in cost management. Paste the value you copied in the last step in the New data bucket name field.

5. Return to your Cloud Shell and copy the value for the namespace key. In the previous example, copy cost-management-namespace.

6. Return to the Create bucket step in cost management. Paste the value you copied in the last step in the New data bucket namespace field.

7. Return to your Cloud Shell and check your shell prompt for your region. For example, your shell prompt may be user@cloudshell:~ (uk-london-1)$ In this example, uk-london-1 is your region. Copy it and return to the Create bucket step in cost management.

8. In the Create bucket step in cost management, paste your region in the New bucket region field.

9. Click Next.

Next step
Continue working through the Add a cloud source wizard by creating an Oracle Cloud function script to replicate your cost and usage reports to the bucket you created.

1.5. REPLICATING REPORTS TO A BUCKET

Schedule a task to regularly move the cost information to the bucket you created by creating a function and then a virtual machine to trigger it. In the Populate bucket step, visit the link to the script you can use to create a function that must be paired with a virtual machine or CronJob to run daily. The Oracle Cloud documentation provides the following example of how to schedule a recurring job to run the cost transfer script.

**NOTE**

As non-Red Hat products and documentation can change, instructions for configuring the third-party processes provided in this guide are general and correct at the time of publishing. Contact Oracle Cloud for support.

Procedure

1. In the Oracle Cloud console, open the Navigation menu and click Developer Services > Functions.

2. Use the following Python script to create a function application:

```python
"data": {
...
"name": "cost-management",
"namespace": "cost-management-namespace",
...
}
```
# Script to collect cost/usage reports from OCI and replicate them to another bucket
#
# Pre-req's you must have a service account or other for this script to gain access to oci
#
# NOTE! You must update the vars below for this script to work correctly
#
# user: ocid of user that has correct permissions for bucket objects
# key_file: Location of auth file for defined user
# fingerprint: Users fingerprint
# tenancy: Tenancy for collecting/copying cost/usage reports
# region: Home Region of your tenancy
# bucket: Name of Bucket reports will be replicated to
# namespace: Object Storage Namespace
# filename: Name of json file to store last report downloaded default here is fine

import datetime
import io
import json
import logging
import oci
from fdk import response

def connect_oci_storage_client(config):
    # Connect to OCI SDK
    try:
        object_storage = oci.object_storage.ObjectStorageClient(config)
        return object_storage
    except (Exception, ValueError) as ex:
        logging.getLogger().info("Error connecting to OCI SDK CLIENT please check credentials: " + str(ex))

def fetch_reports_file(object_storage, namespace, bucket, filename):
    # Fetch last download report file from bucket
    last_reports_file = None
    try:
        last_reports_file = object_storage.get_object(namespace, bucket, filename)
    except (Exception, ValueError) as ex:
        logging.getLogger().info("Object file does not exist, will attempt to create it: " + str(ex))
    if last_reports_file:
        json_acceptable_string = last_reports_file.data.text.replace("'", '"')
        try:
            last_reports = json.loads(json_acceptable_string)
        except (Exception, ValueError) as ex:
            logging.getLogger().info("Json string file not formatted correctly and cannot be parsed, creating fresh file. " + str(ex))
```python
def get_report_list(object_storage, reporting_namespace, reporting_bucket, prefix, last_file):
    # Create a list of cost reports
    report_list = object_storage.list_objects(
        reporting_namespace, reporting_bucket, prefix=prefix, start_after=last_file,
        fields="timeCreated"
    )
    logging.getLogger().info("Fetching list of cost csv files")
    return report_list

def copy_reports_to_bucket(
    object_storage, report_type, report_list, bucket, namespace, region,
    reporting_namespace, reporting_bucket, last_reports,
):
    # Iterate through cost reports list and copy them to new bucket
    # Start from current month
    start_from = datetime.date.today().replace(day=1)
    if report_list.data.objects != []:
        for report in report_list.data.objects:
            if report.time_created.date() > start_from:
                try:
                    copy_object_details = oci.object_storage.models.CopyObjectDetails(
                        destination_bucket=bucket,
                        destination_namespace=namespace,
                        destination_object_name=report.name,
                        destination_region=region,
                        source_object_name=report.name,
                    )
                    object_storage.copy_object(
                        namespace_name=reporting_namespace,
                        bucket_name=reporting_bucket,
                        copy_object_details=copy_object_details,
                    )
                except (Exception, ValueError) as ex:
                    logging.getLogger().info(f"Failed to copy {report.name} to bucket: {bucket}. "+
                    str(ex))
                last_reports[report_type] = report.name
            else:
                logging.getLogger().info(f"No new {report_type} reports to copy to bucket: {bucket}.")
    return last_reports
```
```python
def handler(ctx, data: io.BytesIO = None):
    name = "OCI-cost-mgmt-report-replication-function"
    try:
        body = json.loads(data.getvalue())
        name = body.get("name")
    except (Exception, ValueError) as ex:
        logging.getLogger().info("Error parsing json payload: " + str(ex))

    logging.getLogger().info("Inside Python OCI reporting copy function")

    # PLEASE CHANGE THIS!!!! #
    user = "ocid1.user.oc1..aaaaaa"  # CHANGEME
    key_file = "auth_files/service-account.pem"  # CHANGEME
    fingerprint = "00.00.00"  # CHANGEME
    tenancy = "ocid1.tenancy.oc1..aaaaaaa"  # CHANGEME
    region = "region"  # CHANGEME
    bucket = "cost-mgmt-bucket"  # CHANGEME
    namespace = "namespace"  # CHANGEME
    filename = "last_reports.json"

    # Get the list of reports
    # https://docs.oracle.com/en-us/iaas/Content/API/SDKDocs/clienviromentvariables.htm!!!
    config = {
        "user": user,
        "key_file": key_file,
        "fingerprint": fingerprint,
        "tenancy": tenancy,
        "region": region,
    }
    # The Object Storage namespace used for OCI reports is bling; the bucket name is the
    # tenancy OCID.
    reporting_namespace = "bling"
    reporting_bucket = config["tenancy"]
    region = config["region"]

    # Connect to OCI
    object_storage = connect_oci_storage_client(config)

    # Grab reports json and set previously downloaded file values
    last_reports = fetch_reports_file(object_storage, namespace, bucket, filename)
    last_cost_file = last_reports.get("cost")
    last_usage_file = last_reports.get("usage")

    # Get list of cost/usage files
    cost_report_list = get_report_list(
        object_storage, reporting_namespace, reporting_bucket, "reports/cost-csv",
        last_cost_file
    )
    usage_report_list = get_report_list(
        object_storage, reporting_namespace, reporting_bucket, "reports/usage-csv",
        last_usage_file
    )

    # Copy cost/usage files to new bucket
```
last_reports = copy_reports_to_bucket(
    object_storage,
    "cost",
    cost_report_list,
    bucket,
    namespace,
    region,
    reporting_namespace,
    reporting_bucket,
    last_reports,
)
last_reports = copy_reports_to_bucket(
    object_storage,
    "usage",
    usage_report_list,
    bucket,
    namespace,
    region,
    reporting_namespace,
    reporting_bucket,
    last_reports,
)

# Save updated filenames to bucket object as string
object_storage.put_object(namespace, bucket, filename, str(last_reports))

return response.Response(
    ctx,
    response_data=json.dumps(
        {
            "message": "Last reports saved from {}, Cost: {}, Usage: {}".format(
                name, last_reports["cost"], last_reports["usage"]
            ),
        },
        headers={"Content-Type": "application/json"},
    )
)

3. Change the values marked # CHANGEME to the values for your environment.

user = "ocid1.user.oc1..aaaaaa" # CHANGEME
key_file = "auth_files/service-account.pem" # CHANGEME
fingerprint = "00.00.00" # CHANGEME
tenancy = "ocid1.tenancy.oc1..aaaaaa" # CHANGEME
region = "region" # CHANGEME
bucket = "cost-mgmt-bucket" # CHANGEME
namespace = "namespace" # CHANGEME
filename = "last_reports.json"

4. Create a virtual machine or a Kubernetes CronJob to trigger your function daily.

Next step

Continue working through the Add a cloud source wizard by creating a read policy for your bucket so cost management can access the data in it.
1.6. CREATING A BUCKET POLICY TO GRANT READ ACCESS AND FINAL STEPS

Continue in the Add a cloud integration wizard by running a command that gives cost management read access to the bucket populated with your Oracle Cloud cost and usage reports.

Procedure

1. In the Populate bucket step, copy the `oci iam policy create` command and paste into the Cloud Shell in your Oracle Cloud tab to create a read policy.

2. Click Next.

3. Review the details of the information you have provided. Click Add.

Verification step

- Verify your integration is listed with Available status on the Integrations page.

**IMPORTANT**

Oracle may take several hours to gather and export billing data to cost management. In the meantime, you will receive an In progress message, and your source status will display as Unknown in the Sources page.

**NOTE**

As non-Red Hat products and documentation can change without notice, instructions for configuring the third-party integrations provided in this guide are general and correct at the time of publishing. See the Oracle Cloud documentation for the most up-to-date and accurate information.
CHAPTER 2. NEXT STEPS FOR MANAGING YOUR COSTS

After adding your OpenShift Container Platform and Oracle Cloud integrations, in addition to showing cost data by integration, cost management will automatically show Oracle Cloud cost and usage related to running your OpenShift Container Platform clusters on their platform.

On the cost management Overview page, your cost data will be sorted into OpenShift and Infrastructure tabs. From here, you can use Perspective to select different views of your cost data.

You can also use the left navigation menu to view the additional details of your costs by service.

Additional resources

- Adding an OpenShift Container Platform integration to cost management
- Adding a Google Cloud integration to cost management
- Adding a Microsoft Azure integration to cost management

2.1. LIMITING ACCESS TO COST MANAGEMENT RESOURCES

After you add and configure integrations in cost management, you can limit access to cost data and resources.

You might not want users to have access to all of your cost data. Instead, you can grant users access only to data that is specific to their projects or organizations. With role-based access control, you can limit the visibility of resources in cost management reports. For example, you can restrict a user’s view to only AWS integrations, rather than the entire environment.

To learn how to limit access, see the more in-depth guide Limiting access to cost management resources.

2.2. CONFIGURING TAGGING FOR YOUR INTEGRATIONS

The cost management application tracks cloud and infrastructure costs with tags. Tags are also known as labels in OpenShift.

You can refine tags in cost management to filter and attribute resources, organize your resources by cost, and allocate costs to different parts of your cloud infrastructure.

**IMPORTANT**

You can only configure tags and labels directly on an integration. You can choose the tags that you activate in cost management, however, you cannot edit tags and labels in the cost management application.

To learn more about the following topics, see Managing cost data using tagging:

- Planning your tagging strategy to organize your view of cost data
- Understanding how cost management associates tags
- Configuring tags and labels on your integrations

2.3. CONFIGURING COST MODELS TO ACCURATELY REPORT COSTS
Now that you configured your integrations to collect cost and usage data in cost management, you can configure cost models to associate prices to metrics and usage.

A cost model is a framework that uses raw costs and metrics to define calculations for the costs in cost management. You can record, categorize, and distribute the costs that the cost model generates to specific customers, business units, or projects.

In Cost Models, you can complete the following tasks:

- Classifying your costs as infrastructure or supplementary costs
- Capturing monthly costs for OpenShift nodes and clusters
- Applying a markup to account for additional support costs

To learn how to configure a cost model, see Using cost models.

2.4. USE THE COST EXPLORER TO VISUALIZE YOUR COSTS

The cost management Cost Explorer allows you to create custom graphs of time-scaled cost and usage information to better visualize and interpret your costs.

See Visualizing your costs using Cost Explorer to learn more about:

- Using Cost Explorer to identify abnormal events.
- Understanding how your cost data changes over time.
- Creating custom bar charts of your cost and usage data.
- Exporting custom cost data tables.
PROVIDING FEEDBACK ON RED HAT DOCUMENTATION

If you found an error or have a suggestion on how to improve these guidelines, open an issue in the cost management Jira board and add the Documentation label.

We appreciate your feedback!