



# Cost Management Service 1-latest

## Integrating Google Cloud data into cost management

Learn how to add and configure your Google Cloud integration



# Cost Management Service 1-latest Integrating Google Cloud data into cost management

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Learn how to add and configure your Google Cloud integration

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## Abstract

Learn how to add a Google 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 GOOGLE CLOUD DATA INTO COST MANAGEMENT

To add a Google Cloud account to cost management, you must configure your Google Cloud to provide metrics, then add your Google Cloud account as a integration from the [Red Hat Hybrid Cloud Console](#) user interface.



## NOTE

You must have a user with Cloud Administrator entitlements before you can add integrations to cost management.

Before you can add your Google Cloud account to cost management as a data integration, you must configure the following services on your Google Cloud account to allow cost management access to metrics:

- Cost management Google Cloud project.
- Billing service account member with the correct role to export your data to [Red Hat Hybrid Cloud Console](#).
- BigQuery dataset to contain the cost data.
- Billing export that sends the cost data to your BigQuery dataset.

As you will complete some of the following steps in the Google Cloud console, and some steps in the cost management user interface, keep both applications open in a web browser.

Add your Google Cloud integration to cost management from [the Integrations 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 [Google Cloud Platform documentation](#) for the most up-to-date and accurate information.

## 1.1. CREATING A GOOGLE CLOUD PROJECT

Create a Google Cloud project to gather and send your cost reports to cost management.

### Prerequisites

- Access to Google Cloud Console with **resourcemanager.projects.create** permission

### Procedure

1. In the [Google Cloud Console](#) click **IAM & Admin**→ **Create a Project**
2. Enter a **Project name** in the new page that appears and select your billing account.
3. Select the **Organization**.
4. Enter the parent organization in the **Location** box.

5. Click **Create**.

### Verification steps

1. Navigate to the Google Cloud Console Dashboard
2. Verify the project is in the menu bar.

### Additional resources

- For additional information about creating projects, see the Google Cloud documentation [Creating and managing projects](#).

## 1.2. CREATING A GOOGLE CLOUD IDENTITY AND ACCESS MANAGEMENT ROLE

A custom Identity and Access Management (IAM) role for cost management gives access to specific cost related resources required to enable a Google Cloud Platform integration and prohibits access to other resources.

### Prerequisites

- Access to Google Cloud Console with these permissions:
  - **resourcemanager.projects.get**
  - **resourcemanager.projects.getIamPolicy**
  - **resourcemanager.projects.setIamPolicy**
- Google Cloud [project](#)

### Procedure

1. In the [Google Cloud Console](#), click **IAM & Admin** → **Roles**.
2. Select the cost management project from the dropdown in the menu bar.
3. Click **+ Create role**.
4. Enter a **Title**, **Description** and **ID** for the role. In this example, use **customer-data-role**.
5. Click **+ ADD PERMISSIONS**.
6. Use the **Enter property name or value** field to search and select these four permissions for your custom role:
  - **bigquery.jobs.create**
  - **bigquery.tables.getData**
  - **bigquery.tables.get**
  - **bigquery.tables.list**
7. Click **ADD**.



8. Click **CREATE**.

#### Additional resources

- For additional information about roles and their usage, see the Google Cloud documentation [Understanding roles](#) and [Creating and managing custom roles](#).

## 1.3. ADDING A BILLING SERVICE ACCOUNT MEMBER TO YOUR GOOGLE CLOUD PROJECT

You must create a billing service account member that can export cost reports to [Red Hat Hybrid Cloud Console](#) in your project.

#### Prerequisites

- Access to Google Cloud Console with these permissions:
  - **resourcemanager.projects.get**
  - **resourcemanager.projects.getIamPolicy**
  - **resourcemanager.projects.setIamPolicy**
- Google Cloud [project](#)
- A cost management Identity and Access Management (IAM) [role](#)

#### Procedure

1. In the [Google Cloud Console](#), click **IAM & Admin** → **IAM**.
2. Select the cost management project from the dropdown in the menu bar.
3. Click **ADD**.
4. Paste the IAM role you created into the **New principals** field:

```
billing-export@red-hat-cost-management.iam.gserviceaccount.com
```

5. In the **Assign roles** section, assign the IAM role you created. In this example, use **customer-data-role**.
6. Click **SAVE**.

#### Verification steps

1. Navigate to **IAM & Admin** → **IAM**.
2. Verify the new member is present with the correct role.

#### Additional resources

- For additional information about roles and their usage, see the Google Cloud documentation [Understanding roles](#) and [Creating and managing custom roles](#).

## 1.4. CREATING A GOOGLE CLOUD BIGQUERY DATASET

Create a BigQuery dataset to collect and store the billing data for cost management.

### Prerequisites

- Access to Google Cloud Console with **bigquery.datasets.create** permission
- Google Cloud [project](#)

### Procedure

1. In [Google Cloud Console](#), click **Big Data** → **BigQuery**.
2. Select the cost management project in the **Explorer** panel.
3. Click **CREATE DATASET**.
4. Enter a name for your dataset in the **Dataset ID** field. In this example, use **CustomerData**.
5. Click **CREATE DATASET**.

## 1.5. EXPORTING GOOGLE CLOUD BILLING DATA TO BIGQUERY

Enabling a billing export to BigQuery sends your Google Cloud billing data (such as usage, cost estimates, and pricing data) automatically to the cost management BigQuery dataset.

### Prerequisites

- Access to Google Cloud Console with the **Billing Account Administrator** role
- Google Cloud [project](#)
- [Billing service member](#) with the cost management Identity and Access Management (IAM) [role](#)
- [BigQuery dataset](#)

### Procedure

1. In the [Google Cloud Console](#), click **Billing** → **Billing export**.
2. Click the **Billing export** tab.
3. Click **EDIT SETTINGS** in the **Detailed usage cost** section.
4. Select the cost management **Project** and **Billing export dataset** you created in the dropdown menus.
5. Click **SAVE**.

### Verification steps

1. Verify a checkmark with **Enabled** in the **Detailed usage cost** section, with correct **Project name** and **Dataset name**.

### 1.5.1. Viewing billing tables in BigQuery

You may want to review the metrics collected and sent to cost management. This can also assist with troubleshooting incorrect or missing data in cost management.



#### NOTE

Google may take several hours to export billing data to your BigQuery dataset.

#### Prerequisites

- Access to Google Cloud console with **bigquery.dataViewer** role

#### Procedure

1. Navigate to **Big Data** → **BigQuery** in [Google Cloud Console](#).
2. Select the cost management project in the **Explorer** panel.
3. Click **gcp\_billing\_export\_v1\_XXXXXX\_XXXXXX\_XXXXXX** table under the cost management dataset.
4. Click the **Preview** tab to view the metrics.


## 1.6. ADDING YOUR GOOGLE CLOUD ACCOUNT AS AN INTEGRATION

Using the information from the previous steps, you can now add your Google Cloud account as an integration. After adding a Google Cloud integration, the cost management application processes the cost and usage data from your Google Cloud account and makes it viewable.

#### Prerequisites

- Red Hat account user with Cloud Administrator entitlements
- Google Cloud [project](#)
- [Billing service member](#) with the cost management Identity and Access Management (IAM) [role](#)
- [Billing export](#) to [BigQuery dataset](#)

#### Procedure

1. From [Red Hat Hybrid Cloud Console](#), click **Settings** .
2. Click **Integrations**.
3. Click **Add integration** in the **Cloud** tab.
4. Enter a name for the integration and click **Next**
5. In the dialog, select **Google Cloud** as the integration type and **cost management** as the application.
6. Click **Next**.

7. Enter your **Project ID** and click **Next**.
8. Click **Next** to verify you have created an **Identity and Access Management (IAM) role**
9. Click **Next** to verify you have created a new **billing service account user** and assigned the correct role.
10. Enter your **BigQuery Dataset ID** and click **Next**.
11. Click **Next** to verify you have enabled your **BigQuery billing export**
12. Review the details and click **Add**.

**Verification steps**

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



**IMPORTANT**

Google may take several hours to gather and export billing data to cost management. In the meantime, you will receive a **configuration in progress** message, and your integration status will display as **Unknown** in the **Integrations** page.

**Table 1.1. Troubleshooting**

Issue	Cause	Remediation steps
Incorrect IAM permissions for project <i>yourprojectID</i> .	The billing service account member does not have the correct role or permissions for cost management.	Verify the billing service account has the <a href="#">cost management role</a> with the correct permissions.
Unable to find dataset: <i>yourdatasetID</i> in project: <i>yourprojectID</i> .	The BigQuery dataset ID was entered incorrectly or does not exist.	Verify the <a href="#">BigQuery dataset ID</a> matches the one created for cost management.
Integration status " <i>Unknown</i> " longer than 24 hours.	Cost management cannot find cost data in the BigQuery dataset provided.	Verify your <a href="#">billing export</a> is configured and <a href="#">billing tables</a> exist in your BigQuery dataset.

## CHAPTER 2. INTEGRATING FILTERED GOOGLE CLOUD DATA INTO COST MANAGEMENT

To copy exports, object storage buckets, and filter your data to share only a subset of your billing information with Red Hat, you can configure a function script in Google Cloud.



### NOTE

You must have a Red Hat account with Cloud Administrator permissions before you can add data integrations to cost management.

To configure your Google Cloud account to be a cost management integration:

- Create a Google Cloud project for your cost management data.
- Create a bucket for filtered reports.
- Have a billing service account member with the correct role to export your data to cost management.
- Create a BigQuery dataset to contain the cost data.
- Create a billing export that sends the cost management data to your BigQuery dataset.

Because you will complete some of the following steps in the Google Cloud Console, and some steps in the cost management user interface, keep both applications open in a web browser.



### NOTE

Because third-party products and documentation that are not part of Red Hat 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 [Google Cloud Platform documentation](#) for the most up-to-date and accurate information.

Add your Google Cloud integration to cost management from [the Integrations page](#).

### 2.1. ADDING YOUR GOOGLE CLOUD ACCOUNT AS AN INTEGRATION

You can add your Google Cloud account as an integration. After adding a Google Cloud integration, the cost management application processes the cost and usage data from your Google Cloud account and makes it viewable. .Prerequisites

- You must have a Red Hat account with Cloud Administrator permissions before you can add data integrations to cost management.

#### Procedure

1. From [Red Hat Hybrid Cloud Console](#), click **Settings Menu** > (**Settings**).
2. On the **Settings** page, click **Integrations**.
3. In the **Cloud** tab, click **Add integration**.

4. In the **Add a cloud integration** wizard, select **Google Cloud** as the cloud provider type and click **Next**.
5. Enter a name for your integration. Click **Next**.
6. In the **Select application** step, select **cost management** and click **Next**.

## 2.2. CREATING A GOOGLE CLOUD PROJECT

Create a Google Cloud project to gather and send your cost reports to cost management.

### Prerequisites

- Access to Google Cloud Console with **resourcemanager.projects.create** permission

### Procedure

1. In the [Google Cloud Console](#) click **IAM & Admin** → **Create a Project**
2. Enter a **Project name** in the new page that appears and select your billing account.
3. Select the **Organization**.
4. Enter the parent organization in the **Location** box.
5. Click **Create**.
6. In the cost management **Add a cloud integration** wizard, on the **Project** page, enter your **Project ID**.
7. To configure Google Cloud to filter your data before it sends the data to Red Hat, select **I wish to manually customize the data set sent to cost management**, click **Next**.

### Verification steps

1. Navigate to the Google Cloud Console Dashboard
2. Verify the project is in the menu bar.

### Additional resources

- For additional information about creating projects, see the Google Cloud documentation [Creating and managing projects](#).

## 2.3. CREATING A GOOGLE CLOUD BUCKET

Create a bucket for filtered reports that you will create later. Buckets are containers that store data.

### Procedure

1. In the [Google Cloud Console](#), click **Buckets**.
2. Click **Create bucket**.
3. Enter your bucket information. Name your bucket. In this example, use **customer-data**.

4. Click **Create**, then click **Confirm** in the confirmation dialog.
5. In the cost management **Add a cloud integration** wizard, on the **Create cloud storage bucket** page, enter your **Cloud storage bucket name**.

#### Additional resources

- For additional information about creating buckets, see the Google Cloud documentation on [Creating buckets](#).

## 2.4. CREATING A GOOGLE CLOUD IDENTITY AND ACCESS MANAGEMENT ROLE

A custom Identity and Access Management (IAM) role for cost management gives access to specific cost related resources required to enable a Google Cloud Platform integration and prohibits access to other resources.

#### Prerequisites

- Access to Google Cloud Console with these permissions:
  - **resourcemanager.projects.get**
  - **resourcemanager.projects.getIamPolicy**
  - **resourcemanager.projects.setIamPolicy**
- Google Cloud [project](#)

#### Procedure

1. In the [Google Cloud Console](#), click **IAM & Admin** → **Roles**.
2. Select the cost management project from the dropdown in the menu bar.
3. Click **+ Create role**.
4. Enter a **Title**, **Description** and **ID** for the role. In this example, use **customer-data-role**.
5. Click **+ ADD PERMISSIONS**.
6. Use the **Enter property name or value** field to search and select these four permissions for your custom role:
  - **storage.objects.get**
  - **storage.objects.list**
  - **storage.buckets.get**
7. Click **ADD**.
8. Click **CREATE**.

#### Additional resources

- For additional information about roles and their usage, see the Google Cloud documentation [Understanding roles](#) and [Creating and managing custom roles](#).

## 2.5. ADDING A BILLING SERVICE ACCOUNT MEMBER TO YOUR GOOGLE CLOUD PROJECT

You must create a billing service account member that can export cost reports to [Red Hat Hybrid Cloud Console](#) in your project.

### Prerequisites

- Access to Google Cloud Console with these permissions:
  - `resourcemanager.projects.get`
  - `resourcemanager.projects.getIamPolicy`
  - `resourcemanager.projects.setIamPolicy`
- Google Cloud [project](#)
- A cost management Identity and Access Management (IAM) [role](#)

### Procedure

1. In the [Google Cloud Console](#), click **IAM & Admin** → **IAM**.
2. Select the cost management project from the dropdown in the menu bar.
3. Click **ADD**.
4. Paste the IAM role you created into the **New principals** field:

```
billing-export@red-hat-cost-management.iam.gserviceaccount.com
```

5. In the **Assign roles** section, assign the IAM role you created. In this example, use **customer-data-role**.
6. Click **SAVE**.

### Verification steps

1. Navigate to **IAM & Admin** → **IAM**.
2. Verify the new member is present with the correct role.

### Additional resources

- For additional information about roles and their usage, see the Google Cloud documentation [Understanding roles](#) and [Creating and managing custom roles](#).

## 2.6. CREATING A GOOGLE CLOUD BIGQUERY DATASET

Create a BigQuery dataset to collect and store the billing data for cost management.



### Prerequisites

- Access to Google Cloud Console with **bigquery.datasets.create** permission
- Google Cloud [project](#)

### Procedure

1. In [Google Cloud Console](#), click **Big Data** → **BigQuery**.
2. Select the cost management project in the **Explorer** panel.
3. Click **CREATE DATASET**.
4. Enter a name for your dataset in the **Dataset ID** field. In this example, use **CustomerFilteredData**.
5. Click **CREATE DATASET**.

## 2.7. EXPORTING GOOGLE CLOUD BILLING DATA TO BIGQUERY

Enabling a billing export to BigQuery sends your Google Cloud billing data (such as usage, cost estimates, and pricing data) automatically to the cost management BigQuery dataset.

### Prerequisites

- Access to Google Cloud Console with the **Billing Account Administrator** role
- Google Cloud [project](#)
- [Billing service member](#) with the cost management Identity and Access Management (IAM) [role](#)
- [BigQuery dataset](#)

### Procedure

1. In the [Google Cloud Console](#), click **Billing** → **Billing export**.
2. Click the **Billing export** tab.
3. Click **EDIT SETTINGS** in the **Detailed usage cost** section.
4. Select the cost management **Project** and **Billing export dataset** you created in the dropdown menus.
5. Click **SAVE**.

### Verification steps

1. Verify a checkmark with **Enabled** in the **Detailed usage cost** section, with correct **Project name** and **Dataset name**.

## 2.8. CREATING A FUNCTION TO POST FILTERED DATA TO YOUR STORAGE BUCKET

Create a function that filters your data and adds it to the storage account that you created to share with Red Hat. You can use the example Python script to gather the cost data from your cost exports related to your Red Hat expenses and add it to the storage account. This script filters the cost data you created with BigQuery, removes non-Red Hat information, then creates **.csv** files, stores them in the bucket you created, and sends the data to Red Hat.

## Procedure

1. In the [Google Cloud Console](#), search for **secret** and select the **Secret manager** result to set up a secret to authenticate your function with Red Hat without storing your credentials in your function.
  - a. On the Secret Manager page, click **Create Secret**
  - b. Name your secret, add your Red Hat username, and click **Create Secret**
  - c. Repeat this process to save a secret for your Red Hat password.
2. In the Google Cloud Console search bar, search for **functions** and select the **Cloud Functions** result.
3. On the **Cloud Functions** page, click **Create function**.
4. Name the function. In this example, use **customer-data-function**.
5. In the **Trigger** section, click **Save** to accept the HTTP Trigger type.
6. In the **Runtime, build, connections and security settings**, click the Security and image repository, reference the secrets you created, click **Done**, and click **Next**.
7. On the **Cloud Functions** Code page, set the runtime to **Python 3.9**.
8. Open the **requirements.txt** file. Paste the following lines to the end of the file.

```
requests
google-cloud-bigquery
google-cloud-storage
```

9. Open the **main.py** file.
  - a. Set the **Entry Point** to **get\_filtered\_data**.
  - b. Paste the following python script. Change the values in the section marked **# Required vars to update** to the values for your environment.

```
import csv
import datetime
import uuid
import os
import requests
from google.cloud import bigquery
from google.cloud import storage
from itertools import islice
from dateutil.relativedelta import relativedelta

query_range = 5
```

```

now = datetime.datetime.now()
delta = now - relativedelta(days=query_range)
year = now.strftime("%Y")
month = now.strftime("%m")
day = now.strftime("%d")
report_prefix="{year}/{month}/{day}/{uuid.uuid4()}"

# Required vars to update
USER = os.getenv('username')      # Cost management username
PASS = os.getenv('password')      # Cost management password
INTEGRATION_ID = "<integration_id>" # Cost management integration_id
BUCKET = "<bucket>"              # Filtered data GCP Bucket
PROJECT_ID = "<project_id>"       # Your project ID
DATASET = "<dataset>"           # Your dataset name
TABLE_ID = "<table_id>"         # Your table ID

gcp_big_query_columns = [
    "billing_account_id",
    "service.id",
    "service.description",
    "sku.id",
    "sku.description",
    "usage_start_time",
    "usage_end_time",
    "project.id",
    "project.name",
    "project.labels",
    "project.ancestry_numbers",
    "labels",
    "system_labels",
    "location.location",
    "location.country",
    "location.region",
    "location.zone",
    "export_time",
    "cost",
    "currency",
    "currency_conversion_rate",
    "usage.amount",
    "usage.unit",
    "usage.amount_in_pricing_units",
    "usage.pricing_unit",
    "credits",
    "invoice.month",
    "cost_type",
    "resource.name",
    "resource.global_name",
]
table_name = ".".join([PROJECT_ID, DATASET, TABLE_ID])

BATCH_SIZE = 200000

def batch(iterable, n):
    """Yields successive n-sized chunks from iterable"""
    it = iter(iterable)
    while chunk := tuple(islice(it, n)):

```

```

        yield chunk

def build_query_select_statement():
    """Helper to build query select statement."""
    columns_list = gcp_big_query_columns.copy()
    columns_list = [
        f"TO_JSON_STRING({col})" if col in ("labels", "system_labels", "project.labels") else
col
        for col in columns_list
    ]
    columns_list.append("DATE(_PARTITIONTIME) as partition_date")
    return ", ".join(columns_list)

def create_reports(query_date):
    query = f"SELECT {build_query_select_statement()} FROM {table_name} WHERE
DATE(_PARTITIONTIME) = {query_date} AND sku.description LIKE '%RedHat%' OR
sku.description LIKE '%Red Hat%' OR service.description LIKE '%Red Hat%' ORDER
BY usage_start_time"
    client = bigquery.Client()
    query_job = client.query(query).result()
    column_list = gcp_big_query_columns.copy()
    column_list.append("partition_date")
    daily_files = []
    storage_client = storage.Client()
    bucket = storage_client.bucket(BUCKET)
    for i, rows in enumerate(batch(query_job, BATCH_SIZE)):
        csv_file = f"{report_prefix}/{query_date}_part_{str(i)}.csv"
        daily_files.append(csv_file)
        blob = bucket.blob(csv_file)
        with blob.open(mode='w') as f:
            writer = csv.writer(f)
            writer.writerow(column_list)
            writer.writerows(rows)
    return daily_files

def post_data(files_list):
    # Post CSV's to console.redhat.com API
    url = "https://console.redhat.com/api/cost-management/v1/ingress/reports/"
    json_data = {"source": INTEGRATION_ID, "reports_list": files_list, "bill_year": year,
"bill_month": month}
    resp = requests.post(url, json=json_data, auth=(USER, PASS))
    return resp

def get_filtered_data(request):
    files_list = []
    query_dates = [delta + datetime.timedelta(days=x) for x in range(query_range)]
    for query_date in query_dates:
        files_list += create_reports(query_date.date())
    resp = post_data(files_list)
    return f'Files posted! {resp}'

```

10. Click **Deploy**.

## 2.9. TRIGGER YOUR FUNCTION TO POST FILTERED DATA TO YOUR STORAGE BUCKET

Create a scheduler job to run the function you created to send filtered data to Red Hat on a schedule.

### Procedure

1. Copy the **Trigger URL** for the function you created to post the cost reports. You will need to add it to the Google Cloud Scheduler.
  - a. In the [Google Cloud Console](#), search for **functions** and select the **Cloud Functions** result.
  - b. On the **Cloud Functions** page, select your function, and click the Trigger tab.
  - c. In the HTTP section, click **Copy to clipboard**
2. Create the scheduler job. In the [Google Cloud Console](#), search for **cloud scheduler** and select the **Cloud Scheduler** result.
3. Click **Create job**.
  - a. Name your scheduler job. In this example, use **CustomerFilteredDataSchedule**.
  - b. In the **Frequency** field, set the cron expression for when you want the function to run. In this example, use **09\*\*\*** to run the function daily at 9 AM.
  - c. Set the timezone and click **Continue**.
4. Configure the execution on the next page.
  - a. In the **Target type** field, select **HTTP**.
  - b. In the URL field, paste the Trigger URL you copied.
  - c. In the body field, paste the following code that passes into the function to trigger it.

```
["name": "Scheduler"]
```
  - d. In the Auth header field, select **Add OIDC token**.
  - e. Click the **Service account** field and click **Create** to create a service account and role for the scheduler job.
5. In the **Service account details** step, name your service account. In this example, use **scheduler-service-account**. Accept the default **Service account ID** and click **Create and Continue**
  - a. In the Grant this service account access to project, select two roles for your account.
  - b. Click **ADD ANOTHER ROLE** then search for and select **Cloud Scheduler Job Runner** and **Cloud Functions Invoker**.
  - c. Click **Continue**.
  - d. Click **Done** to finish creating the service account.
6. On the Service accounts for your project page, select the scheduler job that you were working on. In this example, the name is **scheduler-service-account**.
7. In the **Configure the execution** page, select the **Service account** field and select the **scheduler-service-account** you just created.

8. Click **Continue** and then click **Create**.

## CHAPTER 3. NEXT STEPS FOR MANAGING YOUR COSTS

After adding your OpenShift Container Platform and Google Cloud integration, on the [cost management Overview](#) page, your cost data is sorted into **OpenShift** and **Infrastructure** tabs. Select **Perspective** to toggle through different views of your cost data.

You can also use the global navigation menu to view additional details about your costs by cloud provider.

### Additional Resources

- [Integrating OpenShift Container Platform data into cost management](#)
- [Integrating Amazon Web Services \(AWS\) data into cost management](#)
- [Integrating Microsoft Azure data into cost management](#)
- [Integrating Oracle Cloud data into cost management](#)

### 3.1. LIMITING ACCESS TO COST MANAGEMENT RESOURCES

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

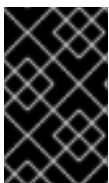
You might not want users to have access to all of your cost data. Instead, you can grant users access only to data that is specific to their projects or organizations. With role-based access control, you can limit the visibility of resources in cost management reports. For example, you can restrict a 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](#).

### 3.2. 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

### 3.3. 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](#).

### 3.4. VISUALIZING YOUR COSTS WITH COST EXPLORER

Use cost management [Cost Explorer](#) to create custom graphs of time-scaled cost and usage information and ultimately better visualize and interpret your costs.

To learn more about the following topics, see [Visualizing your costs using Cost Explorer](#):

- 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!