

Cost Center

User Guide

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Contents

1 About Cost Center.....	1
1.1 Functions.....	1
1.2 Data Scope.....	2
1.3 Cost Type.....	3
1.4 Data Precision.....	3
2 Enabling Cost Center for Free.....	4
3 Overview.....	6
4 Cost Analysis.....	8
4.1 Viewing Cost Analyses.....	8
4.2 Contributory Factors.....	16
4.3 Cost Amortization Rules.....	17
5 Cost and Usage Forecasting.....	23
5.1 Forecasting.....	23
5.2 When to Use Cost Forecasting.....	24
6 Budgets.....	29
6.1 Baseline Time Range.....	29
6.2 Creating a Budget.....	31
6.3 Viewing Your Budgets.....	38
6.4 Editing a Budget.....	38
6.5 Copying a Budget.....	38
6.6 Deleting a Budget.....	38
7 Cost Anomaly Detection.....	40
7.1 Overview.....	40
7.2 Creating a Cost Monitor.....	41
7.3 Analyzing Cost Anomalies.....	42
7.4 Configuring Alert Notifications.....	44
8 Cost Optimization.....	47
8.1 Cost Optimization Overview.....	47
8.2 Changing Pay-per-Use to Yearly/Monthly.....	50
9 Savings Plans (in OBT).....	54

9.1 What Are Savings Plans?	54
9.2 Savings Plans Overview	55
9.2.1 Savings Plans Types	56
9.2.2 Notes and Constraints	56
9.2.3 Contributory Factors of Discounts	56
9.2.4 Savings Plans Billing	57
9.2.5 Comparison Between Savings Plans and Reserved Instances	58
9.3 Purchasing Savings Plans	59
9.3.1 Following Cost Optimization Recommendations	59
9.3.2 Purchasing a Savings Plan on the Console	62
9.4 Viewing Purchased Savings Plans	63
9.5 Viewing How Savings Plans Are Applied	66
9.5.1 Viewing the Billing Information of Savings Plans	66
9.5.2 Analyzing the Cost of Savings Plans	67
9.5.3 Viewing the Usage of Savings Plans	68
9.6 FAQ	74
10 Cost Allocation	75
10.1 Cost Tags	75
10.1.1 Overview of a Cost Tag	75
10.1.2 Activating Cost Tags	76
10.2 Cost Categories	77
10.2.1 Overview of a Cost Category	77
10.2.2 Application Scenarios	78
10.2.3 Managing Cost Categories	82
10.2.4 Viewing Cost Category Details	87
10.2.5 Application of Cost Categories	89
11 Reports	91
11.1 Analysis Reports	91
11.2 Budget Reports	93
12 Exporting Cost Details	95
12.1 Exporting Cost Details to Local Directories	95
12.2 Export to Local Directory - Fields for Amortized Costs	96
12.3 Export to Local Directory - Fields for Original Costs	100
13 Export History	105
14 Cost Management for Enterprises	106
15 Permissions	108
15.1 Introduction	108
15.2 Creating a User Group and Assigning Permissions	113
15.3 Creating a Custom Policy	115
16 Quotas and Restrictions	116

17 Auditing.....	118
17.1 Supported Cost Center Operations.....	118
17.2 Viewing Audit Logs.....	120

1 About Cost Center

1.1 Functions

Cost Center is a free financial management service provided by Huawei Cloud. It offers a suite of tools to help you track, analyze, and explore your Huawei Cloud costs and usage. It also helps you detect cost anomalies to reduce unexpected expenditure spikes and find cost-saving opportunities.

Currently, the following tools are available:

Category	Tool	Function	When to Use
Cost planning	Cost and usage forecasting	Forecasts your future costs and usage based on your historical costs and usage on Huawei Cloud.	Forecasting
	Budgets	Allows you to configure budgets and stay informed of how your costs and usage progress.	Creating a Budget
	Budget reports	Tracks your budgeting on a regular basis if you create budget reports on the Reports > Budget Reports page.	Budget Reports
Cost management and control	Identity and Access Management (IAM)	Implements refined permission management to isolate permissions of different employees.	Permissions
	Bill	Presents the overview or details of your Huawei Cloud expenditures. It records your expenditure history and can be used for reconciliation.	Bills
	Budget alerts	Sends you an alert by email or SMS when your actual cost or usage reaches the configured alert threshold.	Creating a Budget

Category	Tool	Function	When to Use
	Cost anomaly detection	Monitors the costs of your pay-per-use resources to detect cost anomalies and reduce unnecessary expenditures.	Cost Anomaly Detection
Cost optimization	Changing pay-per-use to yearly/monthly	Analyzes the usage of your pay-per-use ECS, EVS, RDS, ELB, and SFS Turbo resources. Cost Center provides optimization options based on these analyses, identifying places where you can save money by changing the billing mode from pay-per-use to yearly/monthly.	Changing Pay-per-Use to Yearly/Monthly

1.2 Data Scope

NOTE

The cost and usage data in Cost Center is only for your reference during the cost analysis and budget management.

Cost Center prepares your cost and usage data for the last 18 months.

- If you are using an individual account, Cost Center provides you with Huawei Cloud cost and usage data.
- If you are using an enterprise master account and have not enabled unified accounting management, you can access the following data in Cost Center:
 - Your own cost and usage data
 - Cost and usage data of your member accounts during the payment association period
 - Cost and usage data of your member accounts who have authorized you to view their expenditure data
- If you are using an enterprise master account and have enabled unified accounting management, you can access the following data in Cost Center:
 - Your own cost and usage data
 - Cost and usage data of your member accounts associated for unified accounting
- If you are using a member account associated with the master account for unified accounting, Cost Center provides you only with the cost and usage data generated during the association period. If you are no longer associated with the master account and are using an individual account, the cost and usage data generated during the association period will no longer be available to you. You will only be able to access the data generated during the disassociation period.
- If you are using a member account (non-unified accounting management), you can view your cost and usage data in the same manner as you are using an individual account.

- If you are using a reseller account, Cost Center provides you with Huawei Cloud cost and usage data. During the period you are associated with your partner, your cost analyses are made based on the Huawei Cloud list price and are for your reference only.

Currently, Cost Center cannot be used to manage the costs of solution partners (including PSP resellers).

1.3 Cost Type

The Cost Center provides you with two types of costs.

- **Original cost:** reflects the original usage and purchase. The cost is calculated based on the list price with discounts (not cash coupons) applied. To view the expenditures after both discounts and cash coupons are applied, see the net original cost.
- **Amortized cost:** reflects the amounts prepaid for yearly/monthly subscriptions, which are amortized on a daily basis. For example, if you purchase a one-year cloud service at \$365 USD, the amortized cost per day is \$1 USD. For detailed rules, see [Rules for Amortized Costs](#). Cash coupons are not considered when the cost is amortized. To learn about the amortized cost after cash coupons are applied, see the net amortized cost.

1.4 Data Precision

- Original costs and billed amounts are calculated with the same precision.
- Amortized costs are rounded off, with a slight precision difference:
 - The amounts displayed on the Cost Center pages are rounded off to the 2nd decimal place.
 - The amounts included in exported cost details are calculated to the 8th decimal place.
- The costs for the following orders need to be amortized:
 - Yearly/monthly subscriptions
 - Monthly-settled CDN services (if enabled)

2 Enabling Cost Center for Free

You need to enable Cost Center before using it.

Important Notes

After Cost Center is enabled, Huawei Cloud will prepare your cost data from the last 18 months. The data is available for viewing in about 24 hours.

IAM users do not have any permission for Cost Center by default. For details about how to obtain the required permissions, see [Permissions](#).

If you are using a reseller account, you need to contact your partner for authorization before enabling Cost Center.

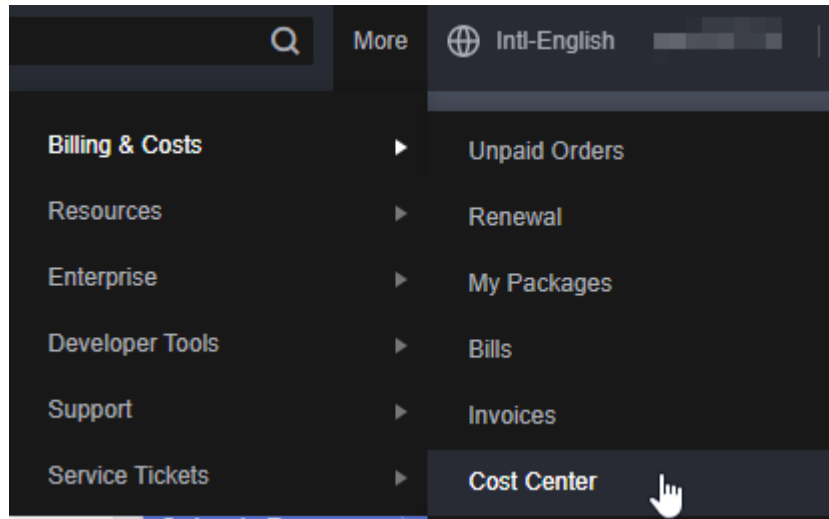
Cost Center is enabled by default for the master account and for any member accounts associated for unified accounting management. If a previously associated account is disassociated but still wants to access Cost Center, they need to enable Cost Center.

Cost and usage forecasting is enabled by default. For details, see [Cost and Usage Forecasting](#).

Procedure

Step 1 Log in to Huawei Cloud.

Step 2 Choose **Billing & Costs > Cost Center** in the upper right corner.



Step 3 Click **Start for Free** on the displayed **Enable Cost Center** page.

----End

3 Overview

Cost Summary

The line chart displays current month costs in the following dimensions:

- **Month-to-Date Costs:** original costs already generated for the current month
- **Month-End Forecast Costs:** original costs that may be generated for the current month, which are forecasted based on the last month costs
- **Last Month Costs:** original costs generated for the last month

Top 5 Costs By MoM Growth (\$)

This area displays the top 5 costs by MoM growth (\$). The data can be displayed by service type, enterprise project, cost tag, cost category, or linked account.

- **MoM Growth (\$):** MoM growth = Month-to-date costs – Last month same-period costs
- **MoM Growth (%):** The MoM growth (%) is calculated as follows:

$$\text{MoM growth (\%)} = \frac{\text{Month-to-date costs} - \text{Last month same-period costs}}{|\text{Last month same-period costs}|} \times 100\%$$

- **Month-to-Date Cost:** original costs generated from the beginning of the month to the current date of the month
- **Last Month Same-Period Cost:** original costs generated in the same period of the last month

You can toggle the provided switches on or off to show or hide specified dimensions, and drag and drop them change the order they are displayed in. In addition, you can give default values for cost tags and cost categories.

Change Displayed Dimensions

You can toggle these on or off to show or hide the dimensions, or **drag and drop** them to change the order they are displayed in.

⋮ Service Type	<input checked="" type="checkbox"/>
⋮ Enterprise Project	<input checked="" type="checkbox"/>
⋮ Linked Account	<input checked="" type="checkbox"/>
⋮ Cost Tags <input style="width: 100px;" type="text"/>	<input checked="" type="checkbox"/>
⋮ Cost Categories <input style="width: 100px;" type="text"/>	<input checked="" type="checkbox"/>

Latest News

This area displays the latest information about function release in Cost Center. You can click **Learn More** to view the list of all function updates in Cost Center.

Cost Optimization Recommendations

This area presents the cost-saving opportunities and estimated savings, which are calculated based on the usage of pay-per-use resources and savings plans.

Cost Anomalies (Last 30 Days)

This area displays the number of cost anomalies in the last 30 days. You can click **Enable Alerting** to specify the recipients who will receive alerts if needed.

Budget Management

This area displays the top 3 percentages of actual cost divided by the budgeted amount.

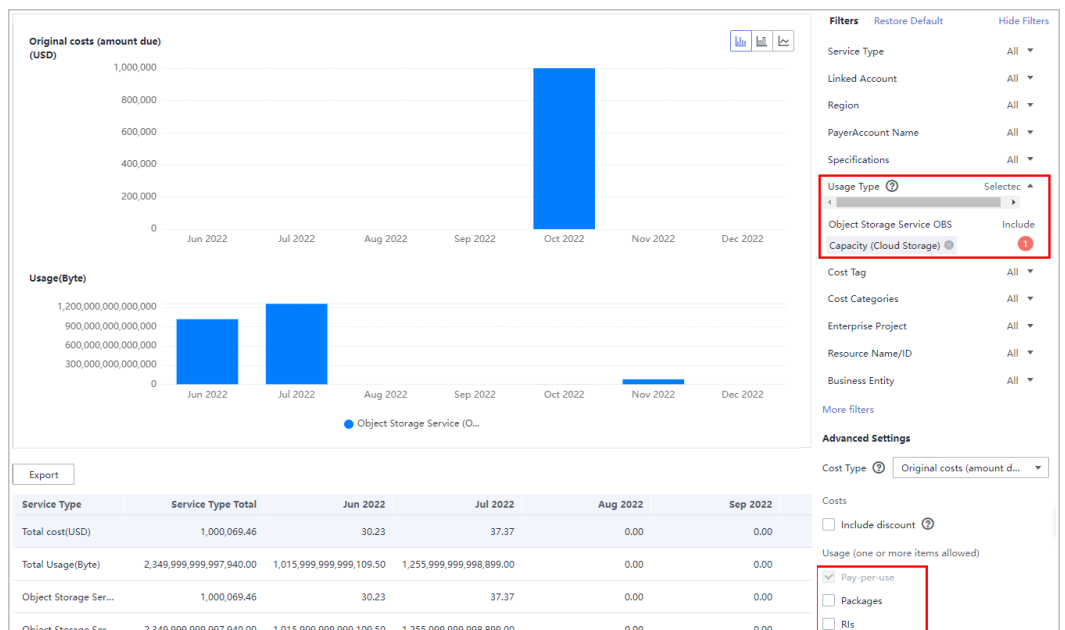
4 Cost Analysis

4.1 Viewing Cost Analyses

On the **Cost Analysis** page, you can view the analyses of original costs and amortized costs, and also view the cost distribution by the day or month within a given time range. In addition, you can select different dimensions or filters to dig deeper into cost data. For the scope of data you can analyze, see [Data Scope](#).

Important Notes

- If you filter the cost data generated before June 2021 by **Usage Type**, you can only view the cost data for pay-per-use usage.



- If you want to view cost data generated before June 2021, you can select the following dimensions and filters:
 - Service Type

- Region
- Billing Mode
- Linked Account
- Business Entity
- Specifications
- Usage Type
- Bill Type
- Cost Tag

Specifying a Time Range

You can view your cost data by day or month within a given time range.

Granularity

- Daily: View cost data by the day.
- Monthly: View cost data by the month.

Period

- **7D**: the cost data for the last 7 days (excluding the current day)
- **14D**: the cost data for the last 14 days (excluding the current day)
- **30D**: the cost data for the last 30 days (excluding the current day)
- **MTD**: the month-to-date cost data
- **3M**: the cost data for the last 3 months (excluding the current month)
- **6M**: the cost data for the last 6 months (excluding the current month)
- **12M**: the cost data for the last 12 months (excluding the current month)
- **YTD**: the year-to-date cost data
- **Current Month**: If there is sufficient historical cost data, the cost data generated in the past days of the month and the forecast cost data in the coming days of the month will be displayed.
- **+1M**: If there is sufficient historical data, the forecast cost data of the next month will be displayed.
- **+3M**: If there is sufficient historical data, the forecast cost data of the next 3 months will be displayed.
- **+6M**: If there is sufficient historical data, the forecast cost data of the next 6 months will be displayed.
- **+12M**: If there is sufficient historical data, the forecast cost data of the next 12 months will be displayed.
- Custom: You can select a specific time range for data query.

—

◀ ◀ Nov 2021Dec 2021 ▶ ▶

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1	2	3	4	5	6	28	29	30	1	2	3	4
7	8	9	10	11	12	13	5	6	7	8	9	10	11
14	15	16	17	18	19	20	12	13	14	15	16	17	18
21	22	23	24	25	26	27	19	20	21	22	23	24	25
28	29	30	1	2	3	4	26	27	28	29	30	31	1
5	6	7	8	9	10	11	2	3	4	5	6	7	8

7D 14D 30D Current Month 3M MTD+1M +3M

Selecting Dimensions/Filters

You can use different dimensions to identify the resource types, regions, or linked accounts that have incurred highest costs. You can also select any combination of filters to control which datasets are displayed.

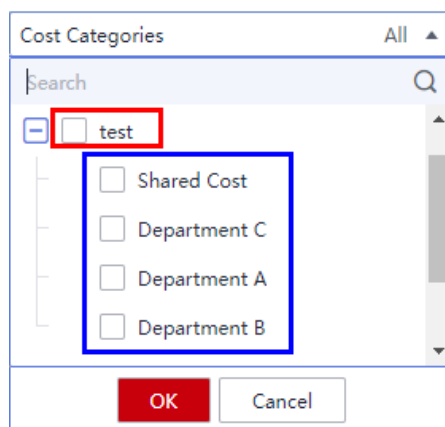
If you select multiple filters, only results meeting all filtering criteria will be displayed. However, if you select multiple items for any given filter, results meeting any of the items selected will be displayed.

Example 1	Example 2
<p>When you filter data based on the filter criteria below, the cost data meeting all these requirements will be displayed.</p> <ol style="list-style-type: none"> 1. The service type is Elastic Cloud Server (ECS). 2. The value of the tag key Env is master or gamma. 3. The value of the tag key Group is blueBob. 	<p>When you filter data based on the filter criteria below, the cost data meeting all these requirements will be displayed.</p> <ol style="list-style-type: none"> 1. The service type is Elastic Cloud Server (ECS). 2. The value of the tag key Env is master or gamma. 3. The tag key Group has any value except for blueBob.

NOTE

You can select up to 50 items for each filter. Under the **Cost Category** or **Cost Tag** filter, you can select up to 20 items for a level-1 option and up to 50 items for a level-2 option at a time.

As shown in the following figure, the option marked with the red box is considered a level-1 option, and the options marked with the blue box are considered level-2 options.



You can use the following dimensions and filters for cost analysis:

Dimension	Description
Service Type	Type of a cloud service. Example: Elastic Cloud Servers
Resource Type	Type of the resources of a cloud service. Example: Cloud servers
Linked Account	Huawei Cloud account which cloud resources belong to. If you are using a master account, you can select your associated member accounts to view their cost data.
Region	Cloud service region that provides public cloud service resources independently and serves a large geographical area.
AZ	A physically isolated zone where resources have their own independent power supply and internal networks. One region can have multiple AZs, and if one AZ becomes faulty, the other AZs in the same region can still provide services. AZs in the same region can access each other as they are on the same intranet.
Enterprise Project	The enterprise project selected when you purchase a cloud service. If no enterprise project is selected, default is displayed as the value for this field. If the enterprise project management is not supported for the cloud service, Not categorized is presented.
Specifications	Specifications of cloud services.
Billing Mode	Billing modes include yearly/monthly, pay-per-use, and reserved instance.
Usage Type	The way a pay-per-use cloud service is billed.
Bill Type	Type of a billing item. Example: expenditure-purchase and expenditure-hourly billing
Business Entity	Business entity that a cloud service belongs to. Example: Huawei Cloud
PayerAccount Name	Account used to pay for Huawei Cloud resources. <ul style="list-style-type: none"> • Generally, resources are under this account. • For a member account that is associated with a master account for unified accounting management, PayerAccount Name is the enterprise master account. The master account can switch the value of PayerAccount Name to view the cost data of the member accounts that are not associated for unified accounting management.

Dimension	Description
Cost Tag	Used to track costs of enterprise resources. For more information, see Activating Cost Tags . If you are using a member account associated for unified accounting, you can only use the cost tags activated by the master account.
Resource Name/ID	Name or unique ID of a cloud service resource.

Advanced Settings

By default, Cost Center provides you with the analysis of original costs. You can configure advanced settings to view analyses of other costs if needed.

Cost Type

- Original costs: costs of cloud services purchased at the list price with available discounts applied.
- Net original costs: original costs after cash coupons are applied. Before the billing date, this is the estimated amount without any cash coupons applied.
- Amortized costs: prepaid amounts amortized on a daily basis. For details about amortization rules, see [Cost Amortization Rules](#).
- Net amortized costs: amortized costs after cash coupons are applied. Before the billing date, this is the estimated amount without any cash coupons applied.

Costs

When **Cost Type** is set to **Original costs**, you can select or deselect **Include discount**. If you select this option, discounts will be included, and the cost is equal to the list price.

Show last period cost/PoP growth

- Last period cost = Total cost of the current period – Total cost of the previous period
- PoP growth for total cost

$$\text{PoP growth for total cost} = \frac{\text{Total cost of the current period} - \text{Total cost of the previous period}}{|\text{Total cost of the previous period}|}$$

You can select **Show last period cost/PoP growth** to see the desired information.

Show list price

The list price is the sale price of a product without any discounts applied. If you select this option, the list price will be displayed only for analysis of original costs in stacked charts.

Charts

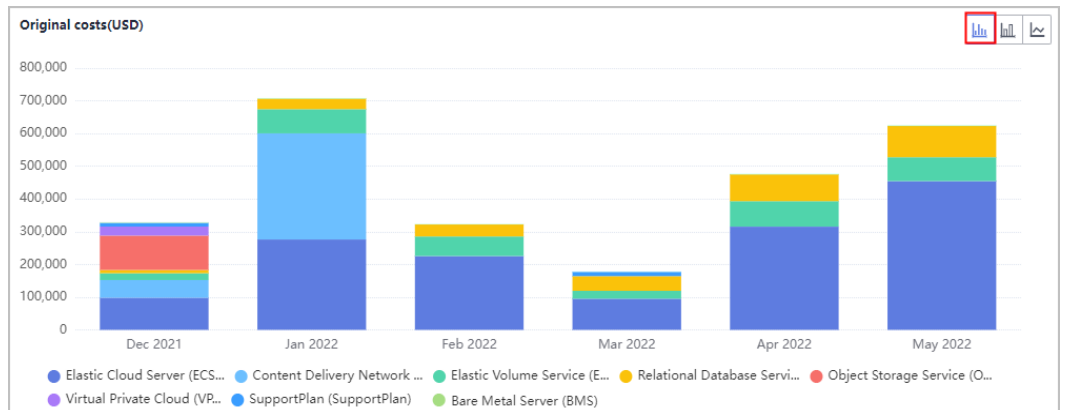
In Cost Center, you can display cost data in stacked charts, bar charts, and line charts.

NOTE

A maximum of 11 data records can be displayed in a chart. If you select 11 or more data records, the top 10 data records and **Other** are displayed by default. **Other** indicates the total number of the remaining data records.

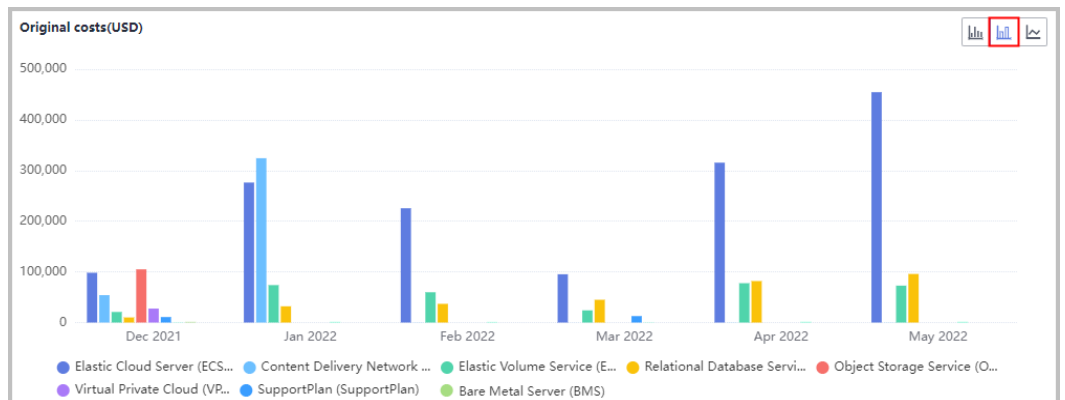
- Stacked chart

Figure 4-1 Stacked chart



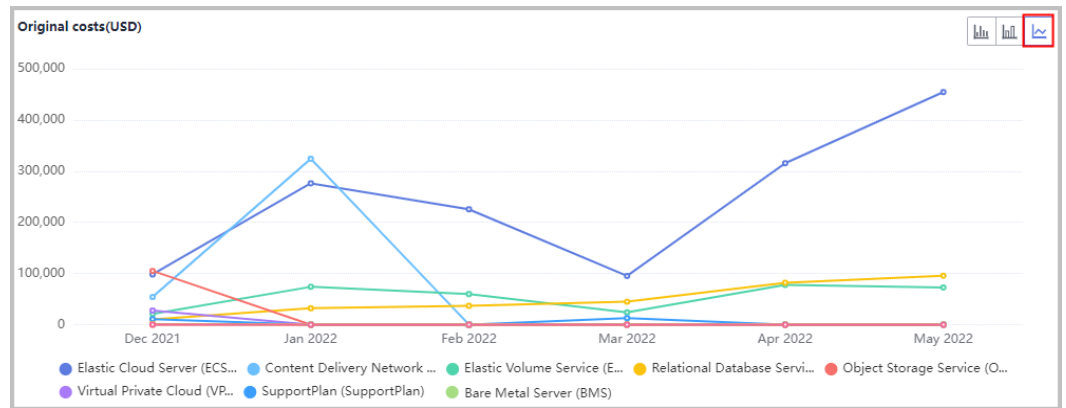
- Bar chart

Figure 4-2 Bar chart



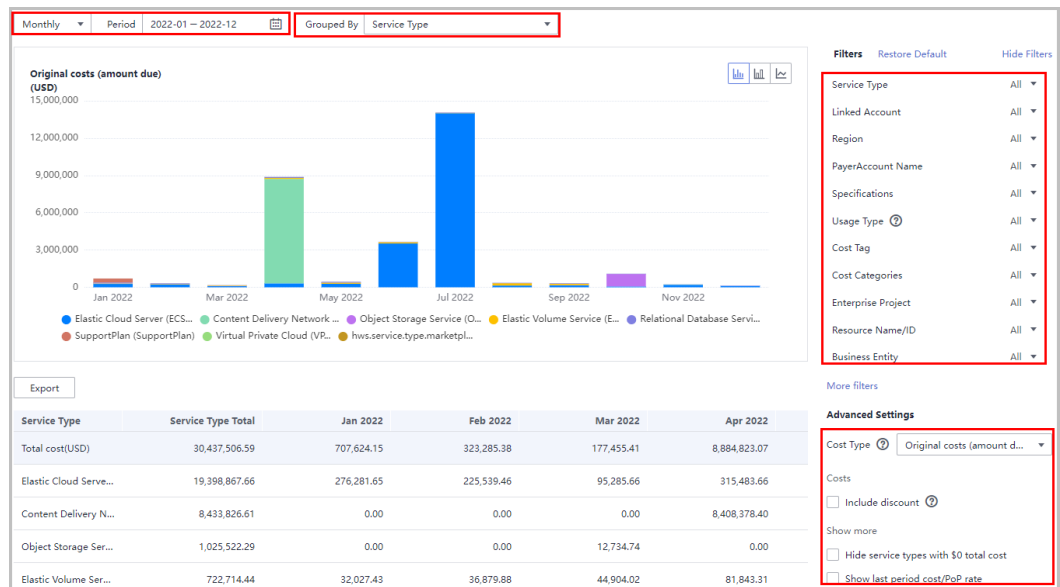
- Line chart

Figure 4-3 Line chart



Viewing Cost Analyses

- Step 1 Log in to Cost Center.
- Step 2 Choose **Cost Analysis**.
- Step 3 Set search criteria to view desired cost data.



- When the cost type is **Original costs** or **Net original costs**, the data displayed on the page is nearly real-time.
- When the cost type is **Amortized costs** or **Net amortized costs**, the most recent data may take 24 to 48 hours to display.
- You can click **Export** to access the **Export History** page and download the **Cost Analysis - Overview** file.

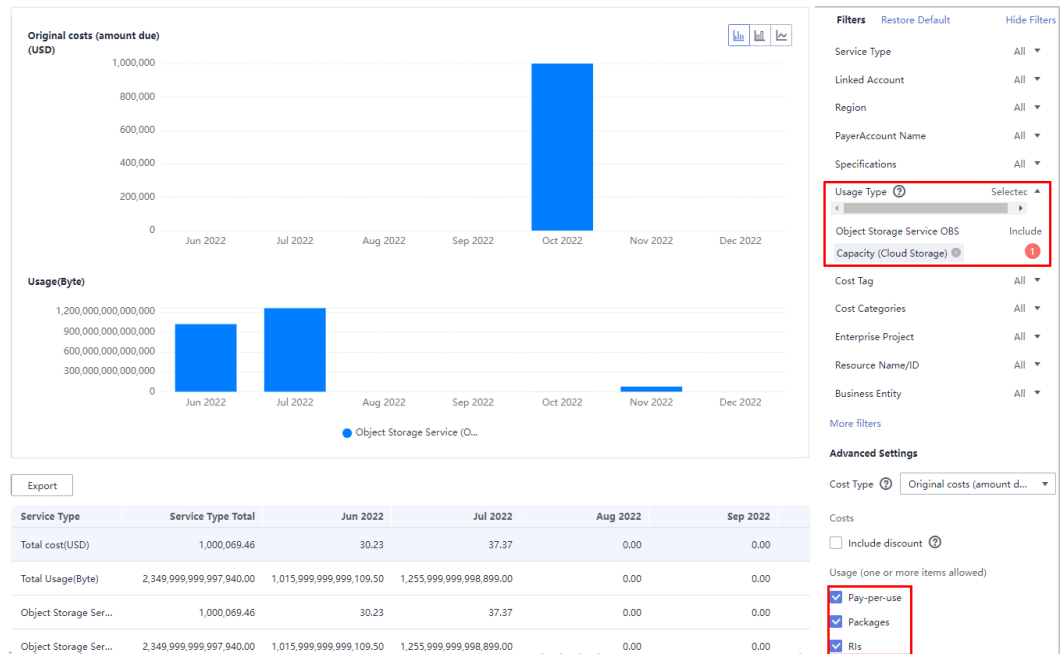
----End

Viewing Usage Analyses

- Step 1 Log in to Cost Center.

Step 2 Choose **Cost Analysis**.

Step 3 Select **Usage Type** under **Filters**. The cost data meeting the settings of **Period** and **Grouped By** is displayed.



----End

4.2 Contributory Factors

- The original costs for the current month are only estimates. To view the exact amounts, see the final bill that will be generated on the 3rd day of the following month. The cost data is available for viewing and export at 12:00 noon on the 4th day of the following month.
- The amounts displayed are rounded off. To view the exact amounts, export the cost details on the **Cost Details Export** page. Amortized costs may have slight discrepancies in precision due to amortization calculation.
- Amortized costs are updated once every 24 hours. The current month costs of monthly-settlement cloud services, such as CDN and VPC, are available for viewing or export after 12:00 noon on the 4th day of the following month.
- ****Daily/monthly forecasts on the Cost Analysis page are only estimates.** Forecasts are produced based on the historical data you specified. Daily forecasts currently do not take into account periodicity and differ from the actual data in the forecast period covered. They are for reference only.
- Forecasted costs are estimated based on your historical expenditures over at least the last three months. If there is not enough historical data, forecasts cannot be produced.

4.3 Cost Amortization Rules

Amortized costs and net amortized costs reflect the amortization of original costs on a daily basis. The following rules apply to cost amortization:

Bill Amount and Amortized Amount

For details, see [Bill Amount and Amortized Amount](#)

Pay-per-Use Resources

are amortized based on their usage.

- If the time when a pay-per-use resource started being used (the first time expenditures were incurred) and the transaction time (when the amount due was paid) are in the same billing cycle, the amortized cost is recorded for the day when it started being used.

Example: Suppose you used a pay-per-use resource from June 10, 2021 23:00:00 to June 10, 2021 23:59:59, the transaction time was June 11, 2021 00:53:30, and the amount due was \$2 USD.

Cost amortization: As the time when expenditures were incurred (June 10, 2021 23:00:00) and the transaction time (June 11, 2021 00:53:30) were in the same billing cycle, the amount due (\$2 USD) was recorded as the amortized cost for June 10, 2021.

- If the time when a pay-per-use resource started being used (the first time expenditures were incurred) and the transaction time (when the amount due was paid) are not in the same billing cycle, the amortized cost is recorded for the transaction day.

Example: Suppose you used a pay-per-use resource from June 30, 2021 23:00:00 to June 30, 2021 23:59:59, the transaction time was July 1, 2021 00:53:30, and the amount due was \$2 USD.

Cost amortization: As the time when expenditures were incurred (June 30, 2021 23:00:00) and the transaction time (July 1, 2021 00:53:30) were not in the same billing cycle, the amount due (\$2 USD) was recorded as the amortized cost for July 1, 2021.

Notes:

- The cost amortization of pay-per-use resources involving account adjustments will change the historical data.
- The costs of monthly-settled CDN (billed by traffic) can be amortized by domain name.
- For pay-per-use resources settled on a monthly basis (for example, CDN billed by 95th percentile bandwidth), the amortized cost is recorded when the bills are settled. This explains why there may be a peak in the middle of a month.

Yearly/Monthly Subscriptions

Starting from August 1, 2020 00:00:00, the following cost amortization rules apply to new expenditures:

Expenditures

Expenditures involve the following bill types: **Expenditure-purchase**, **Expenditure-renewal**, and **Expenditure-change**.

- Daily amortized cost = Order amount/Number of days from the effective time to the expiration time
- If the resources in an order are not enabled, their costs will not be amortized. Amortized costs do not include the cost of order subscription and the cost of the orders that were automatically unsubscribed from when resources could not be enabled.
- If the order takes effect and expires on the same day, its costs will not be amortized. Instead, they will be recorded for that day.
- If a subscription is renewed but the order effective time has elapsed, the historical costs will still be amortized over the period the order was effective.

Refunds

NOTE

The following cost amortization rules only apply to refunds generated since February 1, 2023. For orders unsubscribed from before February 1, 2023 and their associated historical orders, the unallocated expenditures were recorded as amortized costs for February 1, 2023.

For refunds generated before February 1, 2023, if the effective time has passed, the cost incurred during the elapsed days is recorded as amortized cost for the unsubscription day, and the unallocated expenditures will be amortized on a daily basis in the remaining days.

Refunds involve unsubscription from resources, unsubscription from renewal periods, and specification downgrade.

- Unsubscription from resources: After a resource is unsubscribed from, refunds and unallocated expenditures for all historical orders are recorded as amortized costs for the unsubscription day.

Example: Suppose you purchase a 1-month subscription (from the 1st day to the 30th day) at the price of \$60 USD, and you request a refund of \$56 USD on the 3rd day of the subscription month.

Cost amortization: As the cost amortized over the first two days was \$2 USD each day, the cost for the third day is \$-56 USD, and no amount will be amortized for the remaining days from the 4th to the 30th.

Order Line	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	...	30th Day
Amortized cost for subscription	2	2	56	-	-	-	...	-

Order Line	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	...	30th Day
Amortized cost for unsubscription	-	-	-56	-	-	-	...	-

- Unsubscription from renewal periods: Refund and unallocated expenditures for associated renewal orders are recorded as amortized costs for the unsubscription day.

Example: Suppose you purchased a 1-month subscription (from January 1 to January 30) at \$60 USD, renewed it for one month at \$60 USD on January 5, and unsubscribed from the renewal period for \$-60 USD on January 28.

Cost amortization example:

Order Line	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	...	28th Day	29th Day	30th Day
Amortized cost for subscription	2	2	2	2	2	2	...	2	2	2
Amortized cost for renewal	-	-	-	-	-	-	-	60	-	-

Order Line	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	...	28th Day	29th Day	30th Day
Amortized cost for unscription from renewal period	-	-	-	-	-	-	-	-60	-	-

- Specification downgrade: The expenditure generated before specification downgrade is recorded as amortized cost for the specification downgrade day, and the unallocated expenditures will be amortized for each day in the remaining days. Daily amortized cost = Refund of the specification downgrade order line/Number of days from the effective time to the expiration time

Example: Suppose you purchase a 1-month subscription (from January 1 to January 30) at the price of \$60 USD. On the 3rd day, \$30 USD needs to be refunded for specification downgrade.

Cost amortization example:

Order Line	January 1	January 2	January 3	January 4	January 5	January 6	...	January 28	January 29	January 30
Amortized cost for subscription	2	2	2	2	2	2	...	2	2	2

Order Line	January 1	January 2	January 3	January 4	January 5	January 6	...	January 28	January 29	January 30
Amortized cost for specification downgrade	-	-	-3	-1	-1	-1	...	-1	-1	-1

Account Adjustment

Any cost amortization that involves account adjustments will change the historical data.

Suppose you purchase a 1-month subscription (from the 1st day to the 30th day) at the price of \$60 USD. On the 3rd day, due to an error, Huawei Cloud needs to refund the order amount of \$60 USD and you need to pay \$66 USD.

In this case, as Huawei Cloud needs to return \$60 USD first, the daily amortized cost is \$2 USD; as you need to pay \$66 USD, the daily amortized cost is \$2.2 USD.

Order Line	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	...	30th Day
Amortized cost for subscription	2	2	2	2	2	2	...	2
Amortized cost for account adjustment (refund)	-2	-2	-2	-2	-2	-2	...	-2

Order Line	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	...	30th Day
Amortized cost for account adjustment (payment)	2.2	2.2	2.2	2.2	2.2	2.2	...	2.2

Enterprise Projects and Tags for Amortized Costs

Yearly/Monthly Subscriptions

- Enterprise project: By default, the enterprise project selected for the order is used for amortized costs of your yearly/monthly subscription.
- Tags: Starting from June 1, 2021, the resource tags used when the amortized costs are calculated are applied to the daily amortized costs of your yearly/monthly subscriptions. Tags for costs amortized before June 1, 2021 do not change even if the tags for their resources change.

Pay-per-Use Resources

The enterprise project and cost tags used when pay-per-use resources are settled are used for your amortized costs.

Example

If you purchased a yearly/monthly subscription (valid from January 1, 2021 to February 1, 2021) at the price of \$3.5 USD, and then unsubscribed from it on January 13, 2021 and paid a handling fee of \$0.35 USD, the total cost would be \$3.5 USD, the validity period would be 32 days, and the daily amortized cost would be \$0.109375 USD ($3.5/32 = 0.109375$).

You will see two amortized cost records for January 2021.

- One for the total cost of \$3.390625 USD to be amortized over the period from January 1, 2021 to January 31, 2021.
- The other for the cost to be amortized for the remaining days after unsubscription (\$-1.7385 USD). The total cost from January 1, 2021 to January 13, 2021 (the unsubscription day) is \$1.32 USD, the handling fee is \$0.35 USD, and the actual refund amount is \$1.83 USD ($3.5 - 1.32 - 0.35 = 1.83$). The amortized cost for the remaining days after unsubscription in January is \$1.7385 USD ($1.83/20 \times 19 = 1.7385$).

5 Cost and Usage Forecasting

5.1 Forecasting

Forecasting Accuracy

Forecasting is based on your historical costs and usage on Huawei Cloud. To monitor your budgets, you can enable forecasting to estimate your future costs and usage, and then configure budget alerts based on the forecasts produced. As forecasts are only a best guess estimate of future costs, the forecasted billing amounts may differ from your actual expenditures for each billing cycle.

Forecasts can vary in accuracy. Different ranges of accuracy have different prediction intervals. Huawei Cloud Cost Center provides a prediction interval of 80% for forecasts, indicating that 80% of your actual costs should fall within the prediction interval. The prediction interval depends on the volatility or fluctuation of your historical expenditures. The more consistent and predictable the historical expenditures, the narrower the prediction interval.

Forecasting Method

Cost Center uses an AI algorithm for cost forecasting based on the historical expenditures. If there is not enough historical data, forecasts cannot be produced.

- To view the forecast data by the day, the cost data of at least the last 30 days must be available.
- To view the forecast data by the month, the cost data of at least the last three months must be available.

Cost forecasting for an enterprise master account does not take into account any future changes that may be caused by the association or disassociation of member accounts.

Constraints

Forecasts do not take into account any future changes due to refunds, account adjustments, or disassociation of member accounts from an enterprise master account.

If there are historical pay-per-use expenditures for less than the last three months, forecasts cannot be produced for these expenditures.

If yearly/monthly subscriptions expire, forecasts cannot be produced for these subscriptions.

Forecasts grouped by given dimensions can only be viewed in stacked charts.

Forecasts are produced based on the historical data you specified. Daily forecasts currently do not take into account periodicity (such as renewals) and may be different from the actual data in the forecast period covered. They are for reference only.

5.2 When to Use Cost Forecasting

When cost forecasting is enabled, you can view forecasted costs and usage in the cost analyses, and configure budget alerts based on the forecasts produced.

Viewing Forecasts

Step 1 Log in to Cost Center.

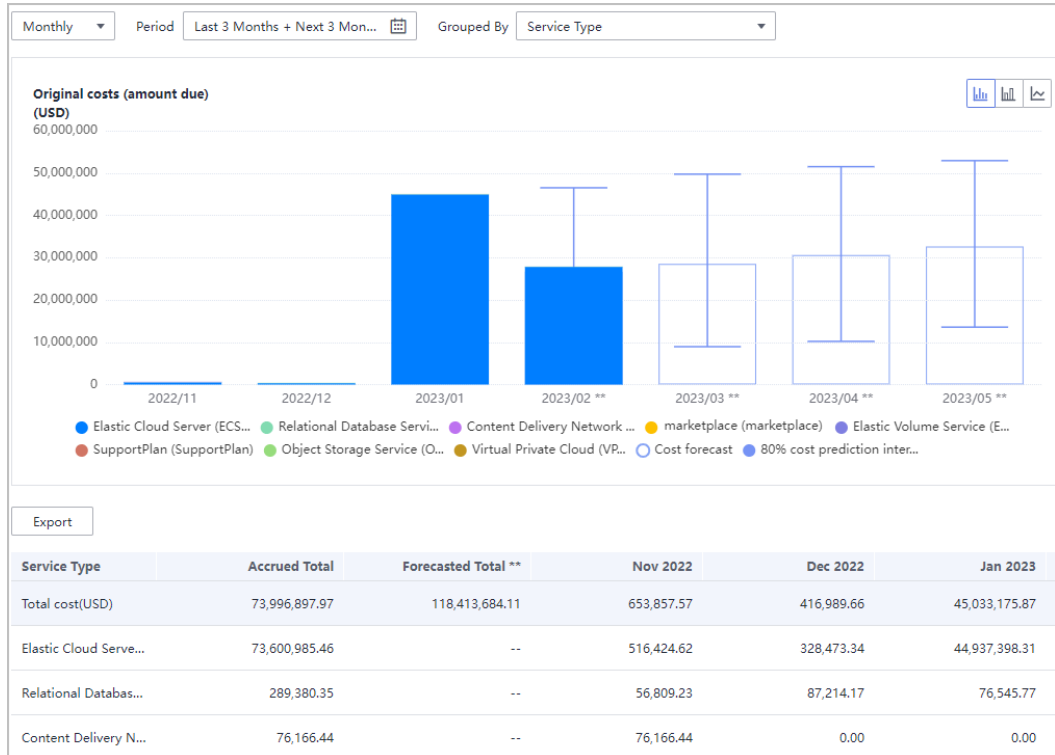
Step 2 Choose **Cost Analysis**.

Step 3 Specify the period.

- If you want to view the forecasts by the month, the following periods are available: **Current Month**, **+3M**, **+6M**, and **+12M**.
- If you want to view the forecasts by the day, the following periods are available: **Current Month**, **+1M**, and **+3M**.

In this example, suppose you have chosen to view the cost and usage data over the last three months and the forecast for the next three months.

Step 4 Click **OK**. The following page is displayed:



- The blue bars represent the cost data generated in the past few months (including the current month).

- The white bars represent the forecasted cost data for the next few months (including the current month).

Table 5-1 The descriptions of the parameters in the command are as follows:

Parameter	Description
Cost forecast	Cost data forecasted by the month or the day
80% cost prediction interval	80% of your actual costs should fall within the prediction interval.
Accrued Total	Total costs in the past and current months during the statistical period You can configure Grouped By to summarize the costs.
Forecast Total	Forecasted total costs in the current and future months during the statistical period Costs cannot be summarized by Grouped By .
Total Cost	Total cost in each day or month

----End

Creating a Forecasting-based Budget

- Step 1** Log in to Cost Center.
- Step 2** Choose **Budgets**.
- Step 3** Click **Create Budget**.
- Step 4** Select **Cost budget** or **Usage budget** as needed, and click **Next**.
- Step 5** Configure the budget details and define the budget scope, and click **Next**.

NOTE

If you select **Daily** for **Reset Period** when creating a budget, the following functions are not available:

- Periodic budgeting
- Forecast-based budget alerts
- Cost categories used as filters in **Budget Scope**

- Step 6** Configure alert thresholds, including **Thresholds** and **Recipients**, and click **Next**.

Set **Thresholds** to **Forecast >**.

In this example, suppose you have chosen to receive an alert when the forecasted amount is greater than 80% of the budgeted amount.

Configure Alert Thresholds

* Thresholds Forecas... (%) of budgeted amount Alerts are sent when the forecast cost is higher than 80%(\$80.00).

[Add threshold](#)

Specify Alert Recipients

* Recipients [Redacted] (Email)yan****34@huawei.com (SMS)+00852****6636

[Select From Contacts](#)

Step 7 Confirm your budget settings and click **Save**.

----End

Scope of Forecasting-based Analysis

You can set the cost type to original costs, net original costs, amortized costs, or net amortized costs.

Advanced Settings

Cost Type Original costs (amount d...

- Original costs (amount due)
- Net original costs (actual pay...
- Amortized costs (amortized a...
- Net amortized costs (amortiz...

Costs

Include disc

[Show more](#)

You can select pay-per-use usage, usage from packages.

Usage (one or more items allowed)

- Pay-per-use
- Packages
- RIs

You can set the data period to either daily or monthly.

Monthly Period Last 3 Months + Next 6 Months

- Daily
- Monthly

Scope of Forecasting-based Budgets

You can set the budget type to cost budget or usage budget.

You can set the reset period to monthly, quarterly, or yearly.

You can set the cost type to original costs, net original costs, amortized costs, or net amortized costs.

You can select pay-per-use usage, usage from packages, or usage from RIs.

6 Budgets

6.1 Baseline Time Range

You can select **Dynamic** for **Budgeted Amount Plan** only when **Reset Period** is **Monthly** or **Quarterly**. Because your dynamic budget depends on your cost or usage data generated based on the configured budget plan, your upcoming budget amounts can fluctuate as your costs change. We will notify all alert recipients when we adjust your budget amount on the 5th day of each month or quarter.

 **NOTE**

The dynamic budgeting plan is only supported for cost budget and usage budget.

Baseline Time Ranges for Monthly Budget

Baseline Time Range	Description
Last month actual	The actual cost of the previous month is directly used as the budgeted amount. Example: If the actual cost of the previous month is \$100 USD, the budgeted amount of the current month is \$100 USD.
Current month forecast	The forecasted cost of the current month is used to calculate your budgeted amount. For details about the forecasting function, see Forecasting Usage and Constraints . Example: If the forecasted cost of the current month is \$100 USD, the budgeted amount of the current month is \$100 USD. NOTE Ensure that the historical data is sufficient before using this baseline time range to calculate your budgeted amount.

Baseline Time Range	Description
Last several months average	<p>The average value of actual costs in last several months is used to calculate your budgeted amount. The average value of the actual costs in last 1 to 12 months can be used.</p> <p>Example: Select Last several months average > Last 3 months for Baseline Time Range. The actual costs for last three months are \$90 USD, \$120 USD, and \$150 USD, respectively.</p> <p>Last three months average = $(90 + 120 + 150)/3 = 120$. The budgeted amount for the current month is \$120 USD.</p>
Last several months compound growth rate	<p>The compound growth rate of the last several months is used to calculate the budgeted amount. The average value of the actual costs in last 2 to 12 months can be used.</p> <p>The formulas are as follows:</p> <ul style="list-style-type: none"> Compound growth rate = $\sqrt[n-1]{ v_n/v_1 } - 1$ Budgeted amount = $v_n \times (1 + \text{Compound growth rate})$ v_n is the actual cost of the final month in the last n months, and v_1 is the actual cost of the first month in the last n months. <p>Example: Select Last several months compound growth rate > Last 3 months for Baseline Time Range. The actual costs for the last three months are \$100 USD, \$120 USD, and \$200 USD, respectively.</p> <p style="text-align: right;"> $\sqrt{\frac{200}{100}} - 1 = 0.41.$ </p> <p>Last three months compound growth rate = $\sqrt{\frac{200}{100}} - 1 = 0.41$. Budgeted amount for the current month = $200 * (1 + 0.41) = \\$282$ USD</p>

Baseline Time Ranges for Quarterly Budgets

Baseline Time Range	Description
Last quarter actual	<p>The actual cost of the previous quarter is directly used as the budgeted amount.</p> <p>Example: If the actual cost of the previous quarter is \$100 USD, the budgeted amount of the current quarter is \$100 USD.</p>

Baseline Time Range	Description
Current quarter forecast	<p>The forecasted cost of the current quarter is used to calculate your budgeted amount. For details about the forecasting function, see Forecasting Usage and Constraints.</p> <p>Example: If the forecasted cost of the current quarter is \$100 USD, the budgeted amount of the current quarter is \$100 USD.</p> <p>NOTE Ensure that the historical data is sufficient before using this baseline time range to calculate your budgeted amount.</p>
Last several quarters average	<p>The average value of actual costs in last several quarters is used to calculate your budgeted amount. The average value of the actual costs in last 1 to 4 quarters can be used.</p> <p>Example: Select Last several quarters average > Last 2 quarters for Baseline Time Range. The actual costs for last two quarters are \$90 USD and \$120 USD, respectively.</p> <p>Last two quarters average = $(90 + 120)/2 = 105$. The budgeted amount for the current quarter is \$105 USD.</p>
Last several quarters compound growth rate	<p>The compound growth rate of the last several quarters is used to calculate the budgeted amount. The average value of the actual costs in last 2 to 4 quarters can be used.</p> <p>The formulas are as follows:</p> <ul style="list-style-type: none"> Compound growth rate = $\sqrt[n]{ v_n / v_1 } - 1$ Budgeted amount = $v_n \times (1 + \text{Compound growth rate})$ v_n is the actual cost of the final quarter in the last n quarters, and v_1 is the actual cost of the first quarter in the last n quarters. <p>Example: Select Last several quarters compound growth rate > Last 3 quarters. The actual costs for the last three quarters are \$100 USD, \$120 USD, and \$200 USD, respectively.</p> <p style="text-align: right;"> $\sqrt{\frac{200}{100}}$ </p> <p>Last three quarters compound growth rate = $\sqrt{\frac{200}{100}} - 1 = 0.41$. Budgeted amount for the current quarter = $200 \times (1 + 0.41) = \\282 USD</p>

6.2 Creating a Budget

You can set budget thresholds and configure alerts to track your daily, monthly, quarterly, and yearly costs or your resource usage. If your actual costs or usage exceeds the alert threshold configured for your budget, you will receive an alert.

Important Notes

Alerts are not supported for the current month for certain monthly-settled cloud services, such as CDN billed by 95th percentile bandwidth, because their usages for the current month will not be billed until the following month.

You can create up to 1,000 budgets.

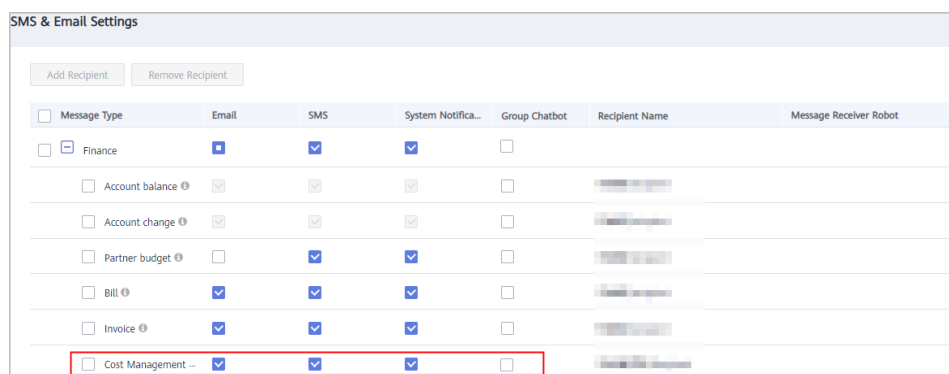
Each recipient can receive a maximum of 100 alerts a day.

The budget is monitored every hour, so your actual costs or usage may have already exceeded the budget when you receive an alert.

If you are using a master account but have not enabled unified accounting management, you are not allowed to set budgets for your member accounts.

Prerequisites

Before you enable alerting, configure the notification method for **Cost Management** in Message Center.



Creating a Cost Budget

You can use the following procedure to create a cost budget and specify an alert threshold:

- Step 1** Log in to Cost Center.
- Step 2** Choose **Budgets**.
- Step 3** Click **Create Budget**.
- Step 4** Select **Cost budget**, and click **Next**.
- Step 5** Configure the budget details and define the budget scope, and click **Next**.

Table 6-1 Parameters for creating a cost budget (1)

Parameters	Description
Budget Name	A unique budget name.

Parameters	Description
Reset Period	<p>The reset period for a budget, which can be:</p> <ul style="list-style-type: none"> ● Daily: Budget evaluation begins at 00:00 GMT+08:00 on the start date and will be reset to zero at 00:00 GMT+08:00 on each day moving forward. ● Monthly: Budget evaluation begins at 00:00 GMT+08:00 on the 1st day of the start month and will be reset to zero at 00:00 GMT+08:00 on the 1st day of each month moving forward. ● Quarterly: Budget evaluation begins at 00:00 GMT+08:00 on the 1st day of the start quarter and will be reset to zero at 00:00 GMT+08:00 on the 1st day of each quarter moving forward. ● Yearly: Budget evaluation begins at 00:00 GMT+08:00 on the start date and will be reset to zero at 00:00 GMT+08:00 on January 1 each year moving forward.
Budget Duration	<p>Recurring: You set a start date on which the recurring budgets will begin renewing.</p> <p>Expiring: You set a time range, outside which expiring budgets will not renew.</p>
Budgeted Amount Plan	<p>Fixed: The budgeted amount is fixed for each reset period.</p> <p>Monthly/Quarterly: The amount is budgeted on a monthly or quarterly basis.</p> <p>Dynamic: The amount is automatically budgeted based on the configured baseline time range.</p>
Baseline Time Range	<p>There are four options. See Baseline Time Range for details.</p> <ul style="list-style-type: none"> ● Last quarter actual ● Current quarter forecast ● Last several quarters average ● Last several quarters compound growth rate
Budgeted Amount	<ul style="list-style-type: none"> ● If Budgeted Amount Plan is Fixed, you just set a fixed value. ● If Reset Period is Daily or Yearly, you just set a fixed value. ● If Budgeted Amount Plan is Monthly or Quarterly, set budgeted amounts one by one. If the budgeted amount is not set for a period, the amount most recently entered will be applied. For example, if the budgeted amount is not set for May 2021, the budgeted amount of April 2021 will be used for May 2021. ● If Budgeted Amount Plan is Dynamic, you do not need to manually set budgeted amount. Because your dynamic budget depends on your cost data, your upcoming budget amounts can fluctuate as your costs change. We will notify all alert recipients when we adjust your budget amount on the 5th day of each month or quarter.

Parameters	Description
Budget Scope (optional)	<p>You can define a budget scope as required. Specifically, you can set filters such as Service Type, Enterprise Project, and Region on the left, and the cost data from the last 12 months will be displayed on the right.</p> <p>NOTE If you are using a master account and want to create a budget for your member accounts, select these member accounts from Linked Account.</p> <p>In the Advanced Settings area, you can configure Cost Type to summarize cost data based on the cost type. If you set Cost Type to Original costs, you can choose to select Include discount. Both discount and truncated amount will be included if you select this option. List price = Original cost + Discount + Truncated amount</p>

Step 6 Configure alert thresholds, including **Thresholds** and **Recipients**, and click **Next**.

Table 6-2 Parameters for creating a cost budget (2)

Parameters	Description
Thresholds	<p>A maximum of five thresholds can be set for each budget. The following alerting conditions are supported:</p> <ul style="list-style-type: none"> • Actual cost >: If the actual cost reaches a certain amount or a certain percentage of a budgeted amount, an alert will be reported. • Forecasted >: If the forecasted cost reaches a certain amount or a certain percentage of a budgeted amount, an alert will be reported. For details about how to create a forecast-based budget, see Creating a Forecasting-based Budget. <p>The threshold value can be a certain amount or a certain percentage of a budgeted amount.</p> <ul style="list-style-type: none"> • Amount (USD): If the actual cost reaches a certain amount, an alert will be reported. • (%) of budgeted amount: If the actual cost reaches a certain percentage of a budgeted amount, an alert will be reported.
Recipients	<p>Information of contacts who will receive alerts.</p> <p>If you want to add or modify recipient information, go to the Recipient Management page in the Message Center. Up to 10 recipients can be added for each budget.</p>

Step 7 Confirm your budget settings and click **Save**.

----End

Creating a Usage Budget

You can use the following procedure to create a usage budget:

- Step 1** Log in to Cost Center.
- Step 2** Choose **Budgets**.
- Step 3** Click **Create Budget**.
- Step 4** Select **Usage budget** and click **Next**.
- Step 5** Configure the budget details and define the budget scope, and click **Next**.

Table 6-3 Parameters for creating a usage budget (1)

Parameters	Description
Budget Name	A unique budget name.
Usage Type	The way a pay-per-use cloud service is billed. Choose the specific service usage measurements that you want the budget to monitor.
Reset Period	The reset period for a budget, which can be: <ul style="list-style-type: none"> • Daily: Budget evaluation begins at 00:00 GMT+08:00 on the start date and will be reset to zero at 00:00 GMT+08:00 on each day moving forward. • Monthly: Budget evaluation begins at 00:00 GMT+08:00 on the 1st day of the start month and will be reset to zero at 00:00 GMT+08:00 on the 1st day of each month moving forward. • Quarterly: Budget evaluation begins at 00:00 GMT+08:00 on the 1st day of the start quarter and will be reset to zero at 00:00 GMT+08:00 on the 1st day of each quarter moving forward. • Yearly: Budget evaluation begins at 00:00 GMT+08:00 on the start date and will be reset to zero at 00:00 GMT+08:00 on January 1 each year moving forward.
Budget Duration	Recurring: You set a start date on which the recurring budgets will begin renewing. Expiring: You set a time range, outside which expiring budgets will not renew.
Budgeted Amount Plan	Fixed: The budgeted amount is fixed for each reset period. Monthly/Quarterly: The amount is budgeted on a monthly or quarterly basis. Dynamic: The amount is automatically budgeted based on the configured baseline time range.

Parameters	Description
Baseline Time Range	<p>There are four options. See Baseline Time Range for details.</p> <ul style="list-style-type: none"> • Last quarter actual • Current quarter forecast • Last several quarters average • Last several quarters compound growth rate
Budgeted Usage	<ul style="list-style-type: none"> • If Budgeted Amount Plan is Fixed, you just set a fixed value. • If Reset Period is Daily or Yearly, you just set a fixed value. • If Budgeted Amount Plan is Monthly or Quarterly, set budgeted amounts one by one. If the budgeted amount is not set for a period, the amount most recently entered will be applied. For example, if the budgeted amount is not set for May 2021, the budgeted amount of April 2021 will be used for May 2021. • If Budgeted Amount Plan is Dynamic, you do not need to manually set budgeted amount. Because your dynamic budget depends on your cost data, your upcoming budget amounts can fluctuate as your costs change. We will notify all alert recipients when we adjust your budget amount on the 5th day of each month or quarter.
Usage Scope (optional)	<p>You can define a budget scope as required. Specifically, you can set filters such as Linked Account, Region, and Specifications on the left, and the usage data from the last 12 months will be displayed on the right.</p> <p>NOTE If you are using a master account and want to create a budget for your member accounts, select these member accounts from Linked Account.</p>

Step 6 Configure alert thresholds, including **Thresholds** and **Recipients**, and click **Next**.

Table 6-4 Parameters for creating a usage budget (2)

Parameters	Description
Thresholds	<p>A maximum of five thresholds can be set for each budget. The following alerting conditions are supported:</p> <ul style="list-style-type: none"> • Actual cost >: If the actual cost reaches a certain amount or a certain percentage of a budgeted amount, an alert will be reported. • Forecasted >: If the forecasted cost reaches a certain amount or a certain percentage of a budgeted amount, an alert will be reported. For details about how to create a forecast-based budget, see Creating a Forecasting-based Budget. <p>The threshold value can be a certain amount or a certain percentage of a budgeted amount.</p> <ul style="list-style-type: none"> • Amount (USD): If the actual cost reaches a certain amount, an alert will be reported. • (%) of budgeted amount: If the actual cost reaches a certain percentage of a budgeted amount, an alert will be reported.
Recipients	<p>Information of contacts who will receive alerts.</p> <p>If you want to add or modify recipient information, go to the Recipient Management page in the Message Center. Up to 10 recipients can be added for each budget.</p>

Step 7 Confirm your budget settings and click **Save**.

----End

Alerts

- When the actual cost, usage, utilization, or coverage reaches the configured alert threshold, the system will notify the recipients by email or SMS.
- The recipients will receive the alerts within one hour. Each recipient can receive a maximum of 100 budget alerts a day. Plan your budget appropriately.
- Within a budget monitoring period, the alert is sent only once even if more than one configured thresholds are reached.

Assume that you set the budgeted amount to \$100 USD, and alert thresholds to 60%, 70%, and 80%. If the actual cost is \$85 USD (85% of the budgeted amount), Huawei Cloud will send only an alert, informing recipients that the current cost exceeds 80% of the budgeted amount.
- An alert is sent only once for each threshold in a reset period.

Assume that you set the reset period to **Monthly**, budgeted amount to \$100 USD, and threshold to 80%. If the actual cost of the current month reaches \$80 USD (80% of the budgeted amount), Huawei Cloud will report an alert. If the threshold of the current month is changed to 90%, the system will check costs based on the new threshold. If the actual cost of the current month reaches \$90 USD (90% of the budgeted amount), the system will send an alert again.

6.3 Viewing Your Budgets

Step 1 Log in to Cost Center.

Step 2 Choose **Budgets**.

Step 3 View the list of your budgets.

Actual vs Budgeted: Displays the percentage of your actual costs or usage to the total budgeted amount within the selected period.

Forecasted vs Budgeted: Displays the percentage of your forecasted costs to the total budgeted amount within the selected period.

Step 4 Click a budget name to view the budget details.

----End

6.4 Editing a Budget

If you want to edit the information of a created budget, such as the budget duration and time range, perform the following operations:

Step 1 Log in to Cost Center.

Step 2 Choose **Budgets**.

Step 3 Select a budget and click **Edit** in the **Operation** column to edit the budget.

----End

6.5 Copying a Budget

If you want to quickly create a budget, perform the following operations:

Step 1 Log in to Cost Center.

Step 2 Choose **Budgets**.

Step 3 Select a budget and click **Copy** in the **Operation** column.

Step 4 Modify the copied budget.

Step 5 Click **Save**.

----End

6.6 Deleting a Budget

Step 1 Log in to the Cost Center.

Step 2 Choose **Budgets**.

- Step 3** Select a budget and click **Delete** in the **Operation** column to delete the budget.
----End

7 Cost Anomaly Detection

7.1 Overview

What Is Cost Anomaly Detection?

Cost Anomaly Detection uses machine learning to analyze your historical pay-per-use and yearly/monthly expenditures, establish a specific expenditure model for you, and identify root causes for cost surprises based on forecasted amounts. With simple steps, Cost Anomaly Detection helps you quickly take action based on detected cost anomalies to maintain your planned expenditures.

You can create monitors for all services, for just linked accounts, or based on cost tags. Only one monitor type is recommended for an account. Otherwise, duplicate anomalies may be recorded.

- All services: This type of monitor tracks the expenditure anomalies for all your services. It is recommended if you do not need to group costs within your enterprise. Only one monitor of this type can be created under an account.
- Linked accounts: This type of monitor tracks the pay-per-use expenditure anomalies for an individual linked account. It can be useful if you are using a master account and want to group costs by linked accounts. The master account can create only one monitor of this type for each linked account.
- Cost tags: This type of monitor tracks the expenditure anomalies for an individual cost tag key-value pair. It is recommended if you want to group costs by cost tags. Only one monitor of this type can be created for each cost tag value.
- Enterprise projects: This type of monitor tracks pay-per-use and yearly/monthly expenditure anomalies for the specified enterprise project. It is recommended if you want to group costs by enterprise project.

Detection Rules

Cost Anomaly Detection helps you monitor the actual payments of both pay-per-use and yearly/monthly resources.

- Pay-per-use expenditures: AI algorithms are used to intelligently identify unexpected expenditure spikes based on machine learning.

- **Yearly/Monthly expenditures:** A cost anomaly is identified if the month-to-date (MTD) expenditures have increased by a certain percent over the previous billing cycle.
For example, if you set the percent to 20%, then a cost anomaly will be identified if the actual growth rate is higher than 20%. $\text{Actual growth rate} = (\text{Actual cost for the current month} - \text{Cost for the previous month}) / \text{Cost for the previous month}$

7.2 Creating a Cost Monitor

Procedure

Step 1 Log in to Cost Center.

Step 2 Choose **Cost Anomaly Detection**.

Step 3 Click **Create Monitor**.

Step 4 Choose a monitor type and click **Next**.

- **All services:** This type of monitor tracks the expenditure anomalies for all your services. It is recommended if you do not need to group costs within your enterprise. Each account can only create one monitor of this type.
- **Linked accounts:** This type of monitor tracks the pay-per-use expenditure anomalies for an individual linked account. It can be useful if you are using a master account and want to group costs by linked accounts. The master account can create only one monitor of this type for each linked account.
- **Cost tags:** This type of monitor tracks the expenditure anomalies for an individual cost tag key-value pair. It is recommended if you want to group costs by cost tags. Only one monitor of this type can be created for each cost tag value.
- **Enterprise projects:** This type of monitor tracks pay-per-use and yearly/monthly expenditure anomalies for the specified enterprise project. It is recommended if you want to group costs by enterprise project.

Step 5 Configure monitor details and click **Create Monitor**.

In this example, the **Cost tags** option is selected as the monitor type.

Name Your Monitor

* Monitor Name

Monitored Objects

This monitor will track up to 10 tag values of a tag key at the same time.

* Tag Key

* Tag Value

Detection Rules

Pay-per-use expenditures: AI algorithms are used to intelligently identify unexpected expenditure spikes based on machine learning.

Yearly/monthly expenditures: Expenditures are identified as anomalies if they have increased by % over the previous billing cycle.

[View detailed rules](#)

----End

7.3 Analyzing Cost Anomalies

Viewing Anomaly History

- Step 1** Log in to Cost Center.
- Step 2** Choose **Cost Anomaly Detection**.
- Step 3** View the cost anomalies of the last 30 days in the **Cost Anomaly Detection Summary** area.

Cost Anomaly Detection Summary		
Anomalies Pending Feedback (Last 30 Days)	Cost Anomalies from the Last 30 Days	Cost Impact from the Last 30 Days
5	8	\$3,663,787.08 USD

- **Anomalies Pending Feedback (Last 30 Days):** number of cost anomalies waiting for you to give feedback on in the last 30 days
- **Cost Anomalies from the Last 30 Days:** number of cost anomalies reported in the last 30 days
- **Cost Impact from the Last 30 Days:** cost of the anomalies reported in the last 30 days

- Step 4** Click the **Cost Monitors** tab.

Anomaly History							
<input type="button" value="Delete"/>		<input type="button" value="Add filter"/>					
<input type="checkbox"/>	Monitor Name	Monitor Type	Monitored Objects	Status	MTD Anomalies	Last Detected	Operation
<input type="checkbox"/>	██████████	Cost Tags	2 tag values	Ongoing	0	--	<input type="button" value="View Anomaly History"/> <input type="button" value="Delete"/>

- Step 5** Click **View Anomaly History** in the **Operation** column of the monitor.

All cost anomalies reported in the last 90 days are displayed.

Detection Date	Billing Mode	Severity	Impacted Cost(USD...)	Duration	Monitor	Service Type	Account Name	Feedback
Oct 20, 2022	Yearly/Monthly	High	191,529.16	1day	[Monitor Name]	Elastic Cloud Server ...	[Account Name]	No. Give Feedback

Table 7-1 Fields for anomaly history

Field	Description
Detection Date	Date when a cost anomaly is detected.
Billing Mode	How the resources with a cost anomaly are billed.
Severity	Degree of an anomaly. Low indicates a small gap between the maximum forecasted cost and the actual cost when the anomaly is detected, and High indicates a large gap.
Cost Impact	The amount that a maximum forecasted cost was exceeded by for a given statistical period. Cost impact = Actual cost - Maximum forecasted cost For example, a cost impact of \$20 USD means that the actual cost is \$20 USD higher than the maximum forecasted cost over the anomaly duration.
Duration	The length of time a cost anomaly persists for. The anomaly might not be only temporary.
Monitor	Name of the monitor that detects a cost anomaly.
Service Type	Name of the service where a cost anomaly is detected.
Account Name	Account that generates abnormal costs.
Feedback	Feedback provided in Providing Feedback . <ul style="list-style-type: none"> ● Not provided: No feedback is provided. ● Unforeseen anomaly: The detection result is accurate, and the anomaly is unforeseen. ● False positive: It is not an anomaly. ● Foreseen anomaly: The detection result is accurate, and the anomaly is foreseen.

Step 6 Click the value of **Detection Date**. You can view the details about that anomaly.

----End

Analyzing Root Causes

Step 1 Log in to Cost Center.

Step 2 Choose **Cost Anomaly Detection**.

- Step 3** Click the **Anomaly History** tab.
- Step 4** View all anomalies detected by a specified monitor.
- Step 5** Click a particular detection date to view the possible causes of the anomaly.

Detection Summary [View Cost Analysis](#)

Severity **High** Billing Mode Yearly/Monthly Impacted Cost \$191,529.16 Detection Date Oct 20, 2022 Duration 1day Monitor

Possible Causes

Cause	Account	Service Type	Product	Region	Current Configu...	Usage Type	Bill Type	Operation
No.1Cause		Elastic Cloud Serv...	Cloud Host	CN South-Guang...	c3.2xlarge4.linux	--	--	View Cost Analysis
No.2Cause		Relational Databa...	RDS Instance	CN South-Guang...	rds.mssql.se.c6.lar...	--	--	View Cost Analysis
No.3Cause		Relational Databa...	RDS DB Instance ...	CN South-Guang...	rds.mssql.se.c6.lar...	--	--	View Cost Analysis
No.4Cause		Elastic Volume Se...	Elastic Volume Se...	Global	SSD	--	--	View Cost Analysis
No.5Cause		Virtual Private Clo...	Fixed Bandwidtha...	Global	19_bgp	--	--	View Cost Analysis

- Step 6** Click **View Cost Analysis** to view the analyses so as to identify the root causes more accurately.

----End

Providing Feedback

You can provide feedback on the accuracy of detected cost anomalies.

- Step 1** Log in to Cost Center.
- Step 2** Choose **Cost Anomaly Detection**.
- Step 3** Click the **Anomaly History** tab.
- Step 4** Click **Give Feedback** in the **Operation** column.
- Step 5** Provide your feedback on the anomaly detection result.

Feedback

Detection Assessment I was not aware of this anomaly It was a false positive I already knew about this anomaly

Reasons Unforeseen usage Resource packages expired Resource package usage exceeded Commercial discounts changed Other reasons

[Submit](#)

----End

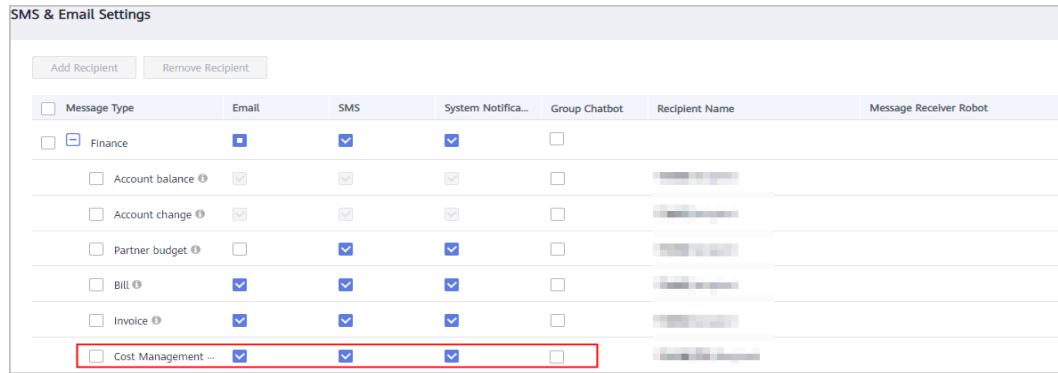
7.4 Configuring Alert Notifications

Background

With alert notifications enabled, if the impact of an anomaly on your costs exceeds the specified threshold, the designated recipients will be notified.

Prerequisites

Before you enable alerting, configure the notification method for **Cost Management** in Message Center.



Enabling Alert Notifications

- Step 1** Log in to Cost Center.
- Step 2** Choose **Cost Anomaly Detection**.
- Step 3** Click **Create Alert Notification** in the upper right corner of the page.
- Step 4** Configure notification details and specify recipients.

Cost Anomaly Detection monitors your costs and usage to detect unexpected expenditure spikes. If the impact of an anomaly on your costs reaches the specified threshold, the recipients will be notified at the configured notification frequency. The anomalies that you have confirmed will not be included in the notification.

Field	Description
Notification Name	Name of an alert notification.
Associated Monitors	There are two options: <ul style="list-style-type: none"> ● All: Include anomalies detected by all monitors, including those you will create later. Each account can create only one such notification. ● Selected: Include anomalies detected by the monitors you selected.
Cost Anomalies	Select the cost type to be covered by anomalies involved in an alert notification. You can select either pay-per-use or yearly/monthly cost anomalies, or both.
Notification Threshold	Under associated monitors, if the cost impact of an anomaly reaches or exceeds this threshold, specified recipients will be notified.

Field	Description
Notification Frequency	<p>There are two notification frequency options you can choose from:</p> <ul style="list-style-type: none">• Daily: Specified recipients will be notified of cost anomalies from the previous day at 2:00 a.m. every day.• Weekly: Specified recipients will be notified of cost anomalies from the previous week at 2:00 a.m. every Tuesday.

----End

8 Cost Optimization

8.1 Cost Optimization Overview

Cost Center provides you with a set of tools to optimize the usage of certain cloud resources to help you reduce costs.

Viewing Cost Optimization Summary

You can view all cost optimization recommendations and follow them as needed.

Step 1 Log in to Cost Center.

Step 2 Choose **Cost Optimization**.

Step 3 View the summary of all cost optimization recommendations.

Parameters	Description
Data Scope	You can filter cost optimization recommendations by enterprise project or linked account.
Cost optimization opportunities	<p>You can view the total number of opportunities, including those for resource rightsizing and billing mode changes.</p> <ul style="list-style-type: none"> • Resource rightsizing . • Billing mode changes include: <ul style="list-style-type: none"> - Changing ECS billing from pay-per-use to yearly/monthly - Changing RDS billing from pay-per-use to yearly/monthly - Changing EVS billing from pay-per-use to yearly/monthly - Changing SFS Turbo billing from pay-per-use to yearly/monthly - Changing ELB billing from pay-per-use to yearly/monthly
Applicable resources	You can view the total number of resources available for cost optimization.

Parameters	Description
Estimated monthly savings	You can view the money that can be saved if all optimization recommendations are adopted.

Step 4 View the details about cost optimization in a graph or list.

You can click **View Details** in the **Operation** column to view the details about resources identified in a specific cost optimization opportunity.

Opportunity	Operation
Change the ECS billing from pay-per-use to yearly/monthly	see Changing Pay-per-Use to Yearly/Monthly .
change the RDS billing from pay-per-use to yearly/monthly	see Changing Pay-per-Use to Yearly/Monthly .
change the EVS billing from pay-per-use to yearly/monthly	see Changing Pay-per-Use to Yearly/Monthly .
change the SFS Turbo billing from pay-per-use to yearly/monthly	see Changing Pay-per-Use to Yearly/Monthly .
change the ELB billing from pay-per-use to yearly/monthly	see Changing Pay-per-Use to Yearly/Monthly .

----End

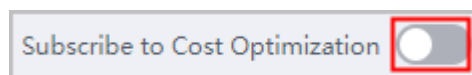
Subscribing to Cost Optimization

When you toggle on **Subscribe to Cost Optimization**, Cost Center will send you a summary of cost optimization recommendations based on a schedule you configure.

Step 1 Log in to Cost Center.

Step 2 Choose **Cost Optimization**.

Step 3 Turn on the toggle **Subscribe to Cost Optimization** in the upper right corner of the displayed page.



Step 4 Set the subscription frequency and date, and specify recipients.

Step 5 Receive a summary of cost optimization recommendations from Cost Center on the date you scheduled.

Dear [redacted],

As of Aug 27, 2023 13:53:40 GMT+08:00, you have 2 cost optimization opportunities, and the monthly estimated savings are \$101937.42 USD. The details are as follows:

Cost Optimization Opportunities	Service Type	Recommendation Type	Applicable Resources	Estimated Monthly Savings (USD)
Change SFS Turbo billing from pay-per-use to yearly/monthly	Scalable File Service (SFS)	Changing billing mode	2	389.13
Purchase ECS Savings Plans	Elastic Cloud Server (ECS)	Changing billing mode	--	101548.29

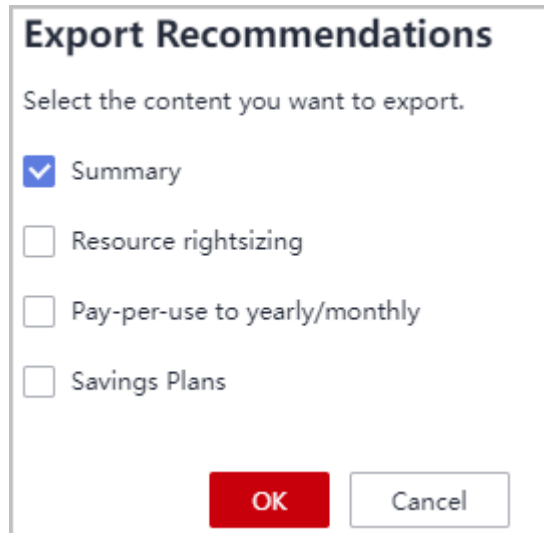
You can also access [Cost Optimization in Cost Center](#) to find detailed recommendations.
For more information, access Cost Center at www.huaweicloud.com/intl/zh-cn.
Thank you for using HUAWEI CLOUD.

----End

Exporting Cost Optimization Recommendations

You can export all cost optimization recommendations and determine whether to adopt the recommendations based on your site requirements.

- Step 1** Log in to Cost Center.
- Step 2** Choose **Cost Optimization**.
- Step 3** Click **Export Recommendations** in the upper right corner of the list.
- Step 4** Select the optimization recommendations to export and click **OK**.



Step 5 Go to the **Export History** page to download the exported file.

----End

8.2 Changing Pay-per-Use to Yearly/Monthly

You can analyze the usage of your pay-per-use ECS, EVS, RDS, ELB, and SFS Turbo resources in Cost Center. Cost Center provides optimization options based on these analyses, identifying places where you can save money by changing the billing mode from pay-per-use to yearly/monthly.

Optimization Options

Cost Center evaluates optimization options based on the usage of your resource usage within the last 7, 30, or 60 days. Cost Center:

1. Collects the costs and usage of your pay-per-use resources within a period you specify.
2. Estimates monthly usage and expenditures.
3. Searches for any yearly/monthly subscriptions that can be applied to these pay-per-use resources, and calculates their monthly amortized costs.
4. Identifies situations where the monthly amortized costs are less than the monthly expenditures, and offers you an opportunity to optimize your costs.

Important Notes

Currently, only ECS, EVS, RDS, ELB, and SFS Turbo costs can be optimized by changing the billing mode from pay-per-use to yearly/monthly.

The cost optimization results are based on the list price, with no commercial discounts applied.

If you are using a master account and have enabled unified accounting management, Cost Center will also analyze the costs and usage of your member accounts during the association period and offer you the optimization evaluation records for your member accounts.

Cost Center provides evaluations based on the assumption that your historical costs and usage will be similar in the future. It does not forecast your usage while estimating your monthly usage and does not consider any forecasted data when making the evaluation.

Optimization options are evaluated and updated daily after 17:00 (GMT+08:00).

Changing Pay-per-Use to Yearly/Monthly

- Step 1** Log in to Cost Center.
- Step 2** Choose **Preferences**.
- Step 3** Turn on the toggle for **Pay-per-Use to Yearly/Monthly**.

 **NOTE**

This function is enabled by default. You can disable it at will but only by an enterprise master account that has enabled unified accounting management.

----End

Viewing Cost Optimizations

- Step 1** Log in to Cost Center.
- Step 2** Choose **Cost Optimization**. In the **Cost Optimization Opportunities** area, locate the opportunity of changing pay-per-use to yearly/monthly and click **View Details** in the **Operation** column.
- Step 3** Set **Data From** and **Subscription Term** to view optimization options for the period you select.

Data From Last 30 days Subscription Term 1-month Service Type All

Monthly Savings Pay-per-use to yearly/monthly for all applicable resources

\$6,852.68	=	Estimated monthly expenditures before optimization \$12,380.18	-	Monthly amortized costs after optimization \$5,527.50
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Applicable Resources The following resources are for your reference only. Consider your own needs before changing the billing mode from pay-per-use to yearly/monthly.

Add filter Q [] []

Linked Account	Service Type	Specifications	Resource Name/ID	Enterpri...	Usage	Estimated Monthly Expenditure (...)	Subscrip...	Operation
Cost_HK_EMSub01	Elastic Cloud Server (E...	High Performa...	Cost_HK_EMPPrimary01.v... 0c257dc33000d2ce270c0...	default	2,448,000.0...	1,570.31	1 month	Pay-per-Use to Yearly/M...

Parameter	Description
Estimated monthly expenditure before optimization	<p>The estimated monthly original cost of pay-per-use resources within the specified scope before an optimization.</p> <p>For example, if Data Source is set to Within the last 60 days, the calculation would be as follows: Estimated monthly expenditures before optimization = (Original costs of pay-per-use resources within the last 60 days)/60/24 x 730</p> <p>NOTE 730 is used as the default number of hours per month.</p>

Parameter	Description
Monthly amortized cost after optimization	<p>The monthly amortized cost that is calculated based on the specified subscription term after the optimization.</p> <ul style="list-style-type: none"> For a monthly subscription, the monthly amortized cost is equivalent to the price of the monthly subscription. For a 1-year subscription, the monthly amortized cost is equivalent to the price of the 1-year subscription divided by 12.
Linked Account	Account that uses the pay-per-use resource.
Service Type	Service type of the pay-per-use resource.
Specifications	Specifications of the pay-per-use resources.
Resource Name/ID	Name or ID of the pay-per-use resource.
Enterprise Project	Enterprise Project selected when you purchase the pay-per-use service.
Usage	Usage of pay-per-use resources in a specified historical period.
Estimated Monthly Expenditure	Estimated monthly pay-per-use expenditures for resources in the specified historical period.
Subscription Term	Term of a yearly/monthly subscription as the optimization option recommended for pay-per-use resources.
Monthly Amortized Cost	Estimated monthly amortized cost calculated after the billing mode of a pay-per-use resource is changed to yearly/monthly.
Estimated Monthly Savings	<p>Estimated amount that can be saved after the billing mode of a pay-per-use resource is changed to yearly/monthly.</p> <p>Estimated monthly savings = Estimated monthly expenditure - Monthly amortized cost</p>
Break-Even Time	<p>For a monthly subscription, the calculation would be as follows: Break-even time (days) = Price of the recommended monthly subscription / (Estimated monthly expenditure / 730 x 24)</p> <p>For a yearly subscription, the calculation would be as follows: Break-even time (months) = Price of the recommended yearly subscription / Estimated monthly expenditure</p>

Parameter	Description
Operation	<p>If you click Pay-per-Use to Yearly/Monthly, you will be switched to the specific service management console, where you can change the billing mode.</p> <p>NOTE Before changing the billing mode from pay-per-use to yearly/monthly, you are advised to confirm the application scenario with your business team. If you are using a master account and have enabled unified accounting management, you can download the optimization evaluation report and give it to your member accounts for reference, but cannot directly change the pay-per-use billing mode to yearly/monthly for your member accounts.</p>

----End

9 Savings Plans (in OBT)

9.1 What Are Savings Plans?

Introduction

Savings Plans are a flexible billing option that provides significant savings on your Huawei Cloud usage. You can get lower prices compared to pay-per-use pricing in exchange for a commitment to use a specified amount of resources (measured in USD/hour) for a one- or three-year term. If your hourly resource usage is fully covered by the hourly commitment, you will be billed only for the hourly commitment at the discounted rate. Any resource usage beyond the hourly commitment will be billed at standard pay-per-use rates.

Savings plans need to be used for your pay-per-use resources. They give you pricing discounts but do not affect the provisioning of your resources.

Application Scenarios

If you have relatively stable pay-per-use resource demands, buying a savings plan lets you reduce Huawei Cloud costs.

Table 9-1 Application scenarios for savings plans

Scenario	Savings Plan
Services need to be adjusted, and instance types need to be able to change and adapt.	No savings plans limit instance sizes.
Budgeting needs to be simplified.	When you make a budget with a savings plan, you just need an estimate of your total expected needs. You do not need to budget for other dimensions, such as instance types and sizes. This allows you to easily select the resources you desire.


Benefits

- **Low prices**
Savings plans provide significant savings compared to pay-per-use pricing. For example, if you purchase a 3-year, all upfront savings plan, you will get savings up to 73% off pay-per-use pricing.
- **Flexible use**
Savings plans offer low prices, like yearly/monthly subscriptions, but with added flexibility. When you have an active savings plan, the savings plan benefit is applied automatically to all pay-per-use resources that match the savings plan scope, and the resources are billed at the discount offered by the savings plan. You do not have to worry about when the resources expire. You can enable and release the resources at any time without incurring any extra expenditures from operations, such as unsubscriptions or specification changes.
- **Multiple payment options**
Savings plans give you the flexibility to use no upfront or all upfront payments. The more you pay up front, the better discounts you will get.

Lifecycle

- **Validation or Expiration**
Savings plans become active immediately after purchase and take effect at the top of the hour you purchased them. Both the validation time and the expiration time of a savings plan starts at the beginning of the current hour, regardless of the exact time.

For example, if you purchased a 1-year savings plan at 13:45:20, December 6, 2022, then the validation time of the savings plan is 13:00:00, December 6, 2022, and its expiration time will be 12:59:59, December 6, 2023. If you have pay-per-use resources that match the savings plan, the hourly usage of those resources will be paid for using the savings plan from 13:00 to 14:00 on December 6, 2022.

 **NOTE**

If your savings plan expires, the usage of pay-per-use resources will be billed at standard rates, and you need to ensure that your account balance is sufficient.
- **Grace Period**
If you have purchased a partial upfront or no upfront savings plan, and your usage has exceeded the expenditure quota, then your savings plan will enter a grace period, during which your pay-per-use resource usage can still be paid for using the savings plan. If the grace period ends but your expenditure quota is still exceeded, the savings plan will be unsubscribed. There are no handling fees for the unsubscription.

9.2 Savings Plans Overview

9.2.1 Savings Plans Types

Table 9-2 describes the savings plans currently available on Huawei Cloud.

Table 9-2 Savings plan types

Type	Cloud Service	Feature
ECS Savings Plans	Elastic Cloud Server (ECS) (Linux)	Only for a single instance type Only for a single region

9.2.2 Notes and Constraints

Purchase

Member accounts for cannot buy savings plans.

Savings plans currently can be used only for certain regions.

Payment Options

- When you purchase an all upfront savings plan, the upfront part can only be paid by using the credit card you added or via bank transfer.
- The recurring hourly fee of no upfront must be paid after the bill is generated.

Change

The commitment of a savings plan cannot be changed after purchase.

Renewal

Savings plans cannot be renewed. You can purchase another savings plan of the same type if needed.

Unsubscription

Savings plans cannot be unsubscribed from after purchase. If you want to unsubscribe from a savings plan, contact the account manager.

9.2.3 Contributory Factors of Discounts

Upfront Fee

You can choose no upfront or all upfront payment when purchasing a savings plan. The more upfront fee you pay, the lower prices you will get.

Commitment Term

You can choose one- or three-year savings plans. The longer the term is, the better your discount and the more pay-per-use expenditures will be paid for using the savings plans.

9.2.4 Savings Plans Billing

Billing Method

A savings plan is billed based on its hourly commitment. The total fee of a savings plan is as follows:

Total fee of a savings plan = Hourly commitment x Hours in a day (24) x Days in a year (365) x Commitment term

NOTE

If the commitment term covers a leap year, the formula is as follows:

Total fee of a savings plan = Hourly commitment x Hours in a day (24) x Days in a year (365) x Commitment term + Hourly commitment x Hours in a day (24)

Payment Options

You have three payment options when buying a savings plan:

- **All upfront:** You pay the entire price in a single upfront payment. During the commitment term you specified, you are not billed any additional fees for the savings plan.
- **No upfront:** You do not need to pay anything at the time of purchase. You are billed for the commitment by the hour.

The total price of a savings plan is calculated based on the hourly commitment and commitment term, not the payment option, but you do get the best discount with the all upfront option.

Example: If you purchased a 1-year savings plan with an hourly commitment of \$1 USD, the total price would be \$8,760 USD (1 x 24 x 365). The payments with different options are as follows:

- **Full upfront:** Pay the full \$8,760 USD at the time of purchase.
- **No upfront:** You do not make any upfront payment and will be, instead, billed at \$1 USD/hour throughout the commitment term.

Pricing Rules

- The sequence of applying discounts is as follows: Resource Packages > Reserved Instances > Savings Plans > Cash coupons
- If the discount for pay-per-use resources is better than that provided by the savings plan, the better discount is used first, and the money owed (after applying the discount) can be covered by the savings plan.

Example

Assume you have 30 ECS.C7.large.2 instances in LA-Sao Paulo1 at a \$0.428 USD/hour price. The hourly fee for these instances would be \$12.84 USD ($30 \times 0.428 = 12.84$).

Savings plan 1: Purchase a 1-year all upfront ECS.C7 savings plan with a \$6 USD/hour commitment in LA-Sao Paulo1. With the savings plan, the price of the C7.large. 2 instances would be 55.6% of the original pay-per-use price. It would be \$0.238 USD/hour ($0.428 \times 55.6\%$).

Savings plan 2: Purchase a 1-year all upfront ECS.C7 savings plan with a \$7.14 USD/hour commitment in LA-Sao Paulo1. With the savings plan, the price of the C7.large. 2 instances would be 55.6% of the original pay-per-use price. It would be \$0.238 USD/hour ($0.428 \times 55.6\%$).

Item	Savings Plan 1	Savings Plan 2
Price of the usage that the savings plan covers	$6/55.6\% = \$10.79$ USD	$7.14/55.6\% = \$12.84$ USD
Price of the remaining usage billed at pay-per-use price (Price for all usage charged at pay-per-use price – Price for the usage that the savings plan covers)	$12.84 - 10.79 = \$2.05$ USD	$12.84 - 12.84 = 0$
Actual price when the savings plan applies (Commitment of the savings plan + Price of the remaining usage charged at pay-per-use price)	$6 + 2.05 = \$8.05$ USD	$7.14 + 0 = \$7.14$ USD
Savings (Price for all usage charged at pay-per-use price – Actual price when the savings plan applies)/ Price for all usage charged at pay-per-use price	$(12.84 - 8.05)/12.84 = 37.3\%$	$(12.84 - 7.14)/12.84 = 44.4\%$

9.2.5 Comparison Between Savings Plans and Reserved Instances

Similarities

Both Reserved Instances (RIs) and Savings Plans can be used to save money on pay-per-use resources. You can choose one- or three-year, no upfront RIs or savings plans. The longer term you choose, the lower prices you will get.

Differences

With reserved instances, you get the discount only when the pay-per-use resources exactly match the reserved instances you purchase. Savings plans have fewer limitations and are more flexible. To get the discount with an ECS Savings Plan, for example, you only need to match the instance type and region.

Recommendations

- If your pay-per-use resources are consistent and stable without any changes to instance types or regions in the short term, you can choose RIs to save more.
- If the instance types of your pay-per-use resources change frequently or you have resources running in multiple regions, consider using Savings Plans, as they give you more flexibility.

9.3 Purchasing Savings Plans

9.3.1 Following Cost Optimization Recommendations

To help you save money, Cost Center provides you with customized savings plan recommendations based on your historical pay-per-use expenditures.

Important Notes

- Recommendations are currently available only for ECS Savings Plans.
- By default, your expenditures over the last 30 days are used as a reference for savings plans recommendations. If your pay-per-use expenditures fluctuate greatly or your identity (enterprise master or member account) has changed recently, take such factors into account when selecting a period for savings plans recommendations. When purchasing a savings plan, you can also adjust the upfront payment by adjusting your hourly commitment to avoid unnecessary waste caused by deviations from predicted use. (Currently, savings plans cannot be unsubscribed from.)
- The estimated monthly amortized costs (after recommended purchase) are calculated based on the monthly amortized costs of the upfront payment and the hourly list price, without taking commercial discounts into account. The estimated monthly savings may be different from your actual cost savings.

Understanding Your Recommendation Calculations

To generate savings plans recommendations, Cost Center:

1. Analyzes your hourly pay-per-use usage for the last 7, 30, or 60 days.
2. Generates a savings plan based on your commitment term and payment option.
3. Compares the cost of a savings plan with the actual pay-per-use cost over your selected period.
4. Recommends the hourly commitment value that should result in the best savings and displays the estimated monthly expenditure, the estimated monthly amortized cost after purchase, and the estimated monthly savings.

- If the hourly pay-per-use amortized cost is less than \$0.1 or the estimated monthly savings is less than \$0.1, no savings plan purchase recommendations are provided.
- , enterprise master accounts can view the following recommendations for purchasing savings plans:
 - Recommendations at the master account level based on its own historical pay-per-use expenditures
 - Recommendations at the member account level based on the historical expenditures of that member account
- If an account has shifted from the master to the member or vice versa, savings plan recommendations are provided only for the current account identity.

Viewing Savings Plan Recommendations

Step 1 Log in to Cost Center.

Step 2 Choose **Savings Plans > Recommendations**.

Step 3 Set the search criteria for savings plans.

- **Data From:** look-back period (7, 30, or 60 days). Pay-per-use expenditures from this period are used as reference to generate savings plan recommendations.
- **Subscription Term:** the term commitment, in years. It is either a 1-year or 3-year term.
- **Payment Option:** the way the savings plan is paid for. It can be all upfront, partial upfront, or no upfront.
- **Recommendation Level:** An enterprise master account can choose to view the savings plan recommendations by organization or account.
 - **Organization:** Recommendations are generated at the management account level. They consider pay-per-use expenditures across all member accounts in the organization.
 - **Account:** Recommendations are generated based on the pay-per-use expenditures of the individual account or at the member account level.

Step 4 View savings plan recommendations.

- **Estimated Monthly Savings:** The monthly amount that could be saved if you adopt all recommended savings plans under the current query criteria.

$$\text{Estimated Monthly Savings} = \text{Estimated Monthly Expenditure Before Purchase} - \text{Estimated Monthly Amortized Cost After Purchase}$$
- **Estimated Monthly Expenditure Before Purchase:** The monthly expenditures that may be generated for using pay-per-use resources under the current query criteria.

$$\text{Estimated Monthly Expenditure Before Purchase} = \text{Pay-per-use expenditures payable within selected days} / \text{Number of selected days} \times 730$$
- **Estimated Monthly Amortized Cost After Purchase:** The estimated monthly costs that could have been saved if you had purchased the recommended savings plans under the current query criteria.

$$\text{Estimated Monthly Amortized Cost After Purchase} = (\text{Hourly commitment} \times 730) + (\text{Pay-per-use}$$

expenditures beyond the savings plan commitment within selected days/
Number of selected days/24 x 730

 **NOTE**

When calculating savings plan recommendations, each month is treated as 730 hours long.

- (Optional) If you adopt the recommendations, click **Buy Savings Plan** in the **Operation** column of the specified savings plan. Then you will be redirected to the savings plan purchase page.


Step 5 Click  above the list of savings plan recommendations to export the recommendations.

Table 9-3 Field details

Field	Description
Linked Account	Used to filter savings plan recommendations by the enterprise master or member account associated with the current account
Service Type	Cloud services eligible for the savings plan
Site	Site that the savings plan is used for
Region	Region that the savings plan applies to
Specifications	Specifications eligible for the savings plan
Payment Option	Payment option of the savings plan, which can be all upfront, partial upfront, or no upfront
Subscription Term	Term of the savings plan, either one year or three years
Hourly Commitment	Hourly commitment recommended for the savings plan
Avg. Hourly Pay-per-Use Expenditure	Average hourly pay-per-use expenditure over the selected period
Min. Hourly Pay-per-Use Expenditure	Minimum hourly pay-per-use expenditure over the selected period
Max. Hourly Pay-per-Use Expenditure	Maximum hourly pay-per-use expenditure over the selected period
Estimated Average Utilization	Expected utilization percentage of the recommended savings plan over the selected period

Field	Description
Estimated Monthly Expenditure Before Recommended Purchase	Estimated monthly pay-per-use expenditure calculated based on the historical expenditure within the selected period Estimated Monthly Expenditure Before Recommended Purchase = Avg. Hourly Pay-per-Use Expenditure x 730 hours
Estimated Monthly Amortized Cost After Recommended Purchase	Estimated monthly amortized costs if you had purchased the recommended savings plan
Estimated Monthly Savings	Estimated monthly savings after you purchase the recommended savings plan Estimated Monthly Savings = Estimated Monthly Expenditure Before Recommended Purchase – Estimated Monthly Amortized Cost After Recommended Purchase
Operation	When you click Buy Savings Plan in the Operation column of the savings plan, you will be navigated to the savings plan purchase page.

----End

9.3.2 Purchasing a Savings Plan on the Console

Important Notes

Currently, you can buy ECS Savings Plans.

Purchasing Savings Plans

- Step 1** Log in to the cloud service console.
- Step 2** Under **Compute**, click **Elastic Cloud Server**.
- Step 3** Click **Savings Plans** in the navigation tree on the left.
- Step 4** Click **Buy Savings Plan** in the upper right corner of the displayed page.
- Step 5** Select and configure the savings plan you want to buy.
 1. Select a savings plan.
 - **Type:** Currently, only **ECS Saving Plans** is available.
 - **Region:** Specify the region to which the savings plan applies.
 - **Specifications:** Specify the specifications of the cloud service to which the savings plan applies.
 2. Configure the savings plan.

- **Hourly Commitment:** minimum hourly amount of the savings plan
- **Commitment Term:** duration during which you are committed to use the savings plan. You can select 1 year or 3 years.
- **Payment Option:** purchase option of the savings plan, which can be all upfront, partial upfront, or no upfront.
- **Starts:** You can choose to make the savings plan effective immediately or at a specified time after you buy it.

Step 6 Click **Buy Now**.

Step 7 Confirm the order information. Then, click **Pay** and complete the payment as prompted.

----End

9.4 Viewing Purchased Savings Plans

You can view the details of your purchased savings plans, including the basic information, purchase records, and usage summary.

Viewing Savings Summary

Step 1 Log in to Cost Center.

Step 2 Choose **Savings Plans > Summary**.

Step 3 View the savings summary of your savings plans.

- **MTD Savings:** total amount saved so far for the current month.

 **NOTE**

It may take up to one or two days to display the latest savings plan summary.

- **YTD Savings:** total amount saved in the current year after the expenditures of eligible pay-per-use resources are paid for using the savings plan.
- **Cost-Saving Opportunities:** number of recommended 1-year, all upfront ECS Savings Plans if you have adopted all the recommendations, which are generated based on the expenditures of the last 30 days.

----End

Viewing All Savings Plans

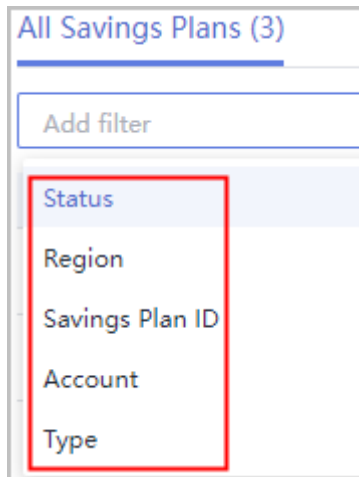
Step 1 Log in to Cost Center.

Step 2 Choose **Savings Plans > Summary**.

Step 3 View all savings plans in the current account.

 **NOTE**

You can filter savings plans by savings plan ID, status, linked account, type, and region.



Field	Description
Savings Plan ID	Unique identifier of a savings plan
Status	Status of a savings plan, including Start Pending, Active, Retired, and Frozen
Linked Account	Account that a savings plan belongs to
Type	Type of a savings plan
Region	Region that a savings plan applies to
Site	Site that the savings plan is used for
Specifications	Cloud service specifications eligible for a savings plan
Hourly Commitment	Committed amount per hour for a savings plan
Payment Option	Payment option of a savings plan, which can be no upfront, partial upfront, or all upfront
Started	Time when you can start using a savings plan
Ended	Time when you should stop using a savings plan

----End

Viewing the Details of a Savings Plan

Step 1 Log in to Cost Center.

Step 2 Choose **Savings Plans > Summary**.

Step 3 Click the ID link of a savings plan to view its details.

- Basic information

Field	Description
Savings Plan ID	ID of the savings plan
Savings Plan Type	Type of the savings plan
Linked Account	Account that the savings plan belongs to
Service Type	Cloud services eligible for the savings plan
Region	Region that the savings plan applies to
Specifications	Cloud service specifications eligible for the savings plan
Order	ID of the order for the savings plan. You can click the link to go to the order details page.
Commitment Term	Committed amount per hour for the savings plan
Started	Time when you start using a savings plan
Ended	Time when you stop using a savings plan

- Purchase information

Field	Description
Total Commitment	Total amount of your commitment when purchasing the savings plan Total Commitment = Hourly Commitment x Commitment Term
Upfront Fee	Money you paid up front when purchasing an all upfront or partial upfront savings plan
Recurring Hourly Fee	Amount payable per hour when you purchase a no upfront or partial upfront savings plan
Commitment Term	Savings plan term in hours

- MTD Usage information

Field	Description
Savings	Month-to-date savings. Savings = Pay-per-Use Cost Equivalent - Commitment

Field	Description
Pay-per-Use Cost Equivalent	Month-to-date amount you would have spent on the same pay-per-use resources if you did not commit to the savings plan
Commitment	Month-to-date amount you committed when purchasing the savings plan
Utilization	Month-to-date utilization percentage of the savings plan Utilization = Used Commitment/Commitment x 100%
Used Commitment	Month-to-date amount that has been paid for using the savings plan

----End

9.5 Viewing How Savings Plans Are Applied

9.5.1 Viewing the Billing Information of Savings Plans

Step 1 Log in to Billing Center.

Step 2 Choose **Billing > Bills**.

Step 3 Click the **Overview** tab to view your bill summary.

Viewing discounts

You can view the discount amount in **Total**. Click the discount amount to view the discount details for the savings plan.

Discount Type	Discount Amount (USD)
Savings plans	2.46900555

Viewing the amount paid for using savings plans

Resource Type	Duration	Amount
Pay-per-use, General Computing Enhanced(c3.medium.2)1vCPUs2GB/linux	68.159722222 hours	\$2.04 USD
Pay-per-use, General Computing(s2.medium.2)1vCPUs2GB/linux	376.450277777 hours (deducted: \$5.02 USD)	\$0.00 USD

① Actual amount paid for pay-per-use resources whose usage cannot be covered by the savings plan.

② Duration and amount covered by the savings plan.

Viewing the savings plan order information and hourly commitment

Order No.	Plan Name	Commitment	Usage	Amount
CS2306091548C35QI	Partial upfront, s2SP	\$0.02 USD/Hour, (Hourly billing - Monthly Settlement)	147 hours	\$1.47 USD
CS2306091548C35QI	Partial upfront, s2SP	\$0.02 USD/Hour, (Upfront purchase - Monthly Settlement)	1 year(8760 hours)	\$87.60 USD

In the example, the 1-year savings plan was purchased using **Partial upfront** with hourly commitment of \$0.02 USD. You can click the order No. to view the order details.

- ① Recurring hourly fee of the savings plan.
- ② Upfront payment of the savings plan.

Step 4 Click the **Bill Details** tab. You can view the detailed bills by usage or billing cycle.

The following bills for the upfront payment and recurring payment are taken as an example:

Service	Resour	Billing	Bill Type	Resource N...	Usage Type	Unit Price	Unit	Total	Usage	Packa...	List Pri...	Discon...	Amount	Monthly Set...	Order No./Transaction...	Payment Option
ZDQ4 Demo...	ECS SP-Sin...	Savings Plans	Expenditure	SP-50621523-af8							87.60	0.00	87.60	87.60	CS2306091548C35QI	Partial upfront
ZDQ4 Demo...	ECS SP-Sin...	Savings Plans	Expenditure	SP-50621523-af8		0.01	Dollar/Hour	147	hours		0.00	0.00	1.47	1.47	CS2306091548C35QI	Partial upfront

The details are as follows:

- List price = Unit price x Usage = 1.74 x 0.0689655288 = \$0.12000002 USD
- Discount amount = List price = \$0.12000002 USD
- **Amount deducted from the savings plan = List price x Savings plan discount = 0.12000002 x 60% = \$0.072000001 USD**

Resource Type	Billing Mode	Bill Type	Resource N...	Usage Type	Unit Price	Unit	Total Usage (Pri...)	Usage...	List Pri...	Discon...	Amount	Discount Type	Amount Deduct...	Savings Plan	Savings Plan Ds...
Cloud Host	Pay-per-Use	Expenditure	ecs-df55	Duration	1.74	Dollar/Hour	0.089655288	hours	0.12000002	0.12000002	0.00	Savings plans	0.07200001	6119-438-3300-4	60%

----End

9.5.2 Analyzing the Cost of Savings Plans

You can use the cost analysis function in Cost Center to view the original costs, amortized costs, and usage details of your purchased savings plans.

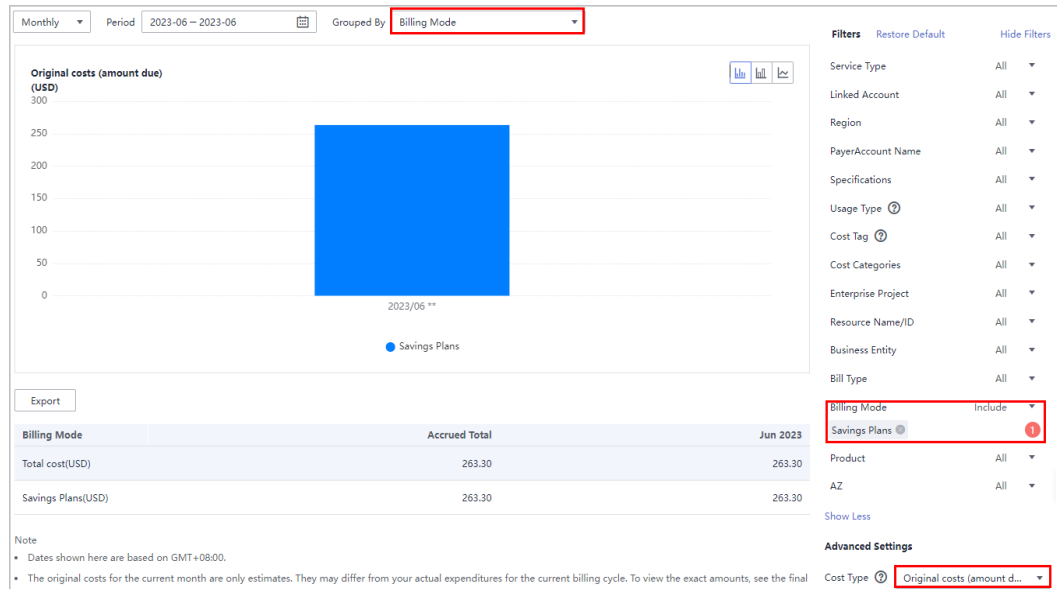
Viewing Original Costs

Step 1 Log in to Cost Center.

Step 2 Choose **Cost Analysis**.

Step 3 Set **Grouped By** to **Billing Mode**. Under **Filters**, include **Savings Plans** in **Billing Mode**.

Step 4 View the original costs of your savings plans over the selected period.



Step 5 Analyzing Costs

1. Click **export records**.
2. Set **Cost Type** to **Original costs** in the displayed dialog box, and then click **OK**.
 - **Service Type**: type of the purchased savings plan, for example, **ECS Savings Plan**.
 - **Bill Type**
 - **Expenditure - purchase**: expenditures paid up front for purchasing a savings plan
 - **Refund - unsubscription**: refund for the unsubscription from a savings plan
 - **Expenditure - hourly billing**: hourly expenditures of a savings plan

----End

9.5.3 Viewing the Usage of Savings Plans

You can view the utilization and coverage of your purchased savings plans to visually understand how they apply to your resource usage.

NOTE

- Enterprise master accounts associated with member accounts can view the utilization and coverage across all their member accounts during the association.
- Savings plan utilization and coverage are updated once every 24 hours, but some data may take longer than one day to be displayed.

Viewing Utilization Analyses

You can view the utilization of a savings plan in a specified period, including the total savings, pay-per-use cost equivalent, and amount deducted from the savings plan. If the utilization of a savings plan is low, you can add more pay-per-use resources that are eligible for the savings plan.

Savings plan utilization = Amount deducted from the savings plan/Total amount saved by using the savings plan x 100%

Step 1 Log in to Cost Center.

Step 2 Choose **Savings Plans > Analysis > Utilization Analysis**.

Step 3 Set search criteria to view the savings plan utilization.

1. Set **Period** to **Monthly, Daily**. You can query data from the last 18 months. Utilization is calculated based on how your savings plans applied to your usage over the look-back period.
 - **Monthly:** You can view the month-to-date and year-to-date utilization, and also the utilization from the last 3, 6, or 12 months. Also you can manually search for data within a specific period (18 months at most).
 - **Daily:** You can view the month-to-date utilization, and also the utilization from the last 7 days, 14 days, 30 days, or 3 months.
2. View your utilization data over the selected period.


Table 9-4 Savings plan utilization fields

Field	Description	Example
Average Utilization	Percentage of the savings plan that was used over the selected period	<p>Suppose that you purchased an all upfront 3-year savings plan with an hourly price of \$0.5 USD. During the selected period from June 1, 2023 to June 30, 2023, the total savings plan commitment is \$360 USD.</p> <p>Suppose that your usage billed with the savings plan rates totals \$180 USD during the selected period. Your utilization for that savings plan is 50% (180/360 x 100%).</p> <p>Suppose that the list price of your pay-per-use equivalent is \$370 USD, the total savings will be \$10 USD (370 - 360).</p>
Used Commitment	Amount of the savings plan that was used over the selected period	
Total Commitment	Total committed amount of the savings plan over the selected period Total Commitment = Hourly Commitment x Number of active savings plan hours over the selected period	
Total Savings	Amount of money saved after the savings plan was applied to your eligible resources over the selected period	
Pay-per-Use Cost Equivalent	Amount of money that you would have paid at the list price if the savings plan was not applied to your eligible resource usage over the selected period	

3. View your utilization trend over the selected period.
4. Apply filters to include or exclude certain types of data. You can select up to 50 items for each filter.

Table 9-5 Savings plan utilization filters

Filter	Description
Linked Account	Displays data for enterprise master/member accounts associated with the account to get savings plan utilization.
Region	Displays data for a specified region (such as CN South-Guangzhou) to get savings plan utilization.
Specifications	Displays specified specifications to get savings plan utilization.
Type	Displays specified savings plan types to get savings plan utilization.

Step 4 View savings plan utilization and click  in the table if you want to export the savings plan utilization data.

 **NOTE**


- You can click  in the upper right corner of the table to control which fields are displayed.
- When you export the savings plan data, if there is currently no data, 0% is displayed.

Table 9-6 Fields in the exported table

Field	Description
Savings Plan ID	Unique identifier of the savings plan
Account	Name of the account that purchases the savings plan
Region	Region that the savings plan applies to
Site	Site that the savings plan is used for
Specifications	Specifications eligible for the savings plan
Utilization	Percentage of the savings plan that was used Utilization = Amount deducted from the savings plan/Total amount saved by using the savings plan x 100%
Savings	Total amount saved by using the savings plan compared to pay-per-use pricing

----End

Viewing Coverage Analyses

You can view the coverage of a savings plan for a specified period, including the average coverage and the additional pay-per-use cost. If the coverage of a savings plan is low, you can purchase additional savings plans of the same type.

Savings plan coverage = Amount deducted from the savings plan / (Amount deducted from the savings plan + Cost of eligible usage not covered by the savings plan) x 100%

Step 1 Log in to Cost Center.

Step 2 Choose **Savings Plans > Analysis > Coverage Analysis**.

Step 3 Set search criteria to view the savings plan coverage.

1. Set **Period** to **Monthly, Daily**. You can query data from the last 18 months. Coverage shows how much of your eligible usage was covered by your savings plans over the look-back period.
 - **Monthly**: You can view the month-to-date and year-to-date coverage, and also the coverage from the last 3, 6, or 12 months. Also you can manually search for data within a specific period (18 months at most).
 - **Daily**: You can view the month-to-date coverage, and also the coverage from the last 7 days, 14 days, 30 days, or 3 months.
2. View your coverage data over the selected period.

Table 9-7 Savings plan coverage fields

Field	Description	Example
Average Coverage	Average coverage of all savings plans over the selected period Average coverage = Amount deducted from savings plans / (Amount deducted from savings plans + Cost of eligible usage not covered by savings plans) x 100%	Suppose you purchased a savings plan (discount: 48% off) and the hourly commitment is \$2 USD/hour. If you have two pay-per-use instances and the unit price is \$3 USD per instance per hour over the period from July 1, 2023 to July 2, 2023. In this case: <ul style="list-style-type: none"> - The unit price after the savings plan is applied is \$1.56 USD (3 x 0.52), and 1.282 (2/1.56) instances can be billed with the savings plan per hour. Over the selected period, the total amount deducted from the savings plan is \$96 USD (2 x 48). - The hourly additional pay-per-use cost is \$2.154 USD ((2 - 1.282) x 3). Over the selected period, the total additional pay-per-use cost is \$103.392 USD (2.154 x 48). - The average coverage is calculated as follows: 96/(96 + 103.392) x 100% = 48.15%
Additional Pay-per-Use Cost	Amount of pay-per-use resources uncovered by the savings plan over the selected period	

3. View your coverage trend over the selected period.
4. Apply filters to include or exclude certain types of data. You can select up to 50 items for each filter.

Table 9-8 Savings plan coverage filters

Filter	Description
Linked Account	Displays data for enterprise master/member accounts associated with the account to get savings plan coverage.
Service Type	Displays data for a specified service type to get savings plan coverage.
Region	Displays data for a specified region (such as CN South-Guangzhou) to get savings plan coverage.
Specifications	Displays specified specifications to get savings plan coverage.

Filter	Description
Enterprise Project	Displays data for a specified enterprise project to get savings plan coverage.
Cost Tag	Displays data for a specified cost tag to get savings plan coverage.
Cost Category	Displays data for a specified cost category to get savings plan coverage.

Step 4 View savings plan coverage and click  in the table if you want to export the savings plan coverage data.

 **NOTE**




- You can click  in the upper right corner of the table to control which fields are displayed.
- When you export the savings plan data, if there is currently no data, 0% is displayed.

Table 9-9 Fields in the exported table

Field	Description
Linked Account	Account that uses the pay-per-use resource
Service Type	Service type of the pay-per-use resource
Resource Type	Resource type of the pay-per-use resource
Region	Region where the pay-per-use resources were used
Specifications	Specifications of the pay-per-use resources
Usage Type	Usage type for the pay-per-use resources
Used Commitment	Amount of the savings plan that was used over the selected period
Additional Pay-per-Use Cost	Amount of pay-per-use resources that are not covered by the savings plan over the selected period
Average Coverage	Average coverage of pay-per-use resources covered by the savings plan over the selected period

----End

Optimizing Savings Plans Based on Utilization and Coverage

- High utilization and coverage: Your purchased savings plans are fully utilized, delivering significant savings.

- High utilization but low coverage: Many pay-per-use resources are not covered by the purchased savings plans. You can increase the savings plan commitment to reduce more costs.
- Low utilization and coverage: Your purchased savings plans are underutilized. Only few resources are covered by the savings plans. You can adjust the use of your resources so that as many as pay-per-use resources can be covered by the savings plans to reduce costs.
- Low utilization but high coverage: The commitment of your purchased savings plans greatly exceeds that required by your pay-per-use resources. You can try to lower the savings plan commitment or purchase other types of savings plans to best fit into your service requirements.

9.6 FAQ

How Do I Understand the Hourly Commitment of a Savings Plan?

When you buy a savings plan, you commit to using a specified amount over a one- or three-year term. Your hourly commitment is the minimum amount you promised to spend. The expenditure of eligible pay-per-use resources will be paid for using the savings plan at a discounted rate. If you use partial upfront or zero upfront, you still need to pay the hourly commitment value even if the actual amount for a specific hour is less than the committed amount.

Suppose the price of a c6.xlarge.4 ECS in CN North-Beijing4 is \$1.46 USD/hour (discount: 67.8% off), and your hourly commitment is \$10 USD. In each hour, the number of c6.xlarge.4 ECSs whose usage can be paid for using the savings plan is as follows: $10 / (1.46 \times 0.322) = 21.27$.

How Do I Buy a Savings Plan?

- Method 1
Log in to Cost Center, and choose **Savings Plans > Recommendations**. Then, click **Buy Savings Plan** in the **Operation** column of the specified savings plan.
- Method 2
Log in to Cost Center, and choose **Savings Plans > Summary**. Then, click **Buy Savings Plan** in the upper right corner of the page.
- Method 3
Log in to the management console, and choose **Compute > Elastic Cloud Server**. Then, click **Savings Plans** in the navigation pane. In the displayed page, click **Buy Savings Plan** in the upper right corner.

What Will Happen When My Savings Plan Expires?

After your savings plans expire, the pay-per-use resource usage will be billed at standard pay-per-use rates, but the resources will not be released, avoiding any negative impacts on your ongoing services.

10 Cost Allocation

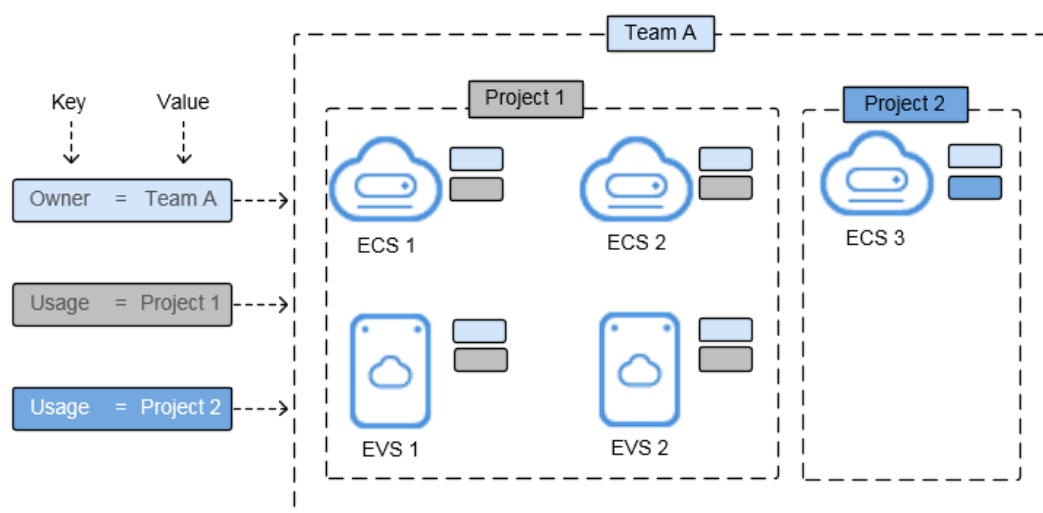
10.1 Cost Tags

10.1.1 Overview of a Cost Tag

What Is a Tag?

Tags are used to identify cloud resources, such as instances, images, and disks. If you have several types of cloud resources that are relevant under your account, you can use tags to classify these cloud resources (by usage, owner, environment, or others).

Figure 10-1 Example tags



In this example, you assign two tags to each cloud resource. Each tag contains a key and a value that you define. The key of one tag is **Owner**, and the key of another tag is **Usage**. Each tag has a value. For details about tag naming principles, see [Principles for Naming Tags](#).

You can quickly search for and filter specific cloud resources based on the tags added to them. For example, you can define a set of tags for cloud resources in an account to track the owner and usage of each cloud resource, making resource management easier.

What Is a Cost Tag?

You can activate tags in Cost Center to help classify and track your Huawei Cloud costs. Once activated, such tags are referred to as cost tags. Only activated tags can be used to organize your resource costs and for cost analysis. For details, see [Activating Cost Tags](#).

There are two types of tags:

- Expenditure tags: You can add such tags when creating resources. They will appear on the **Cost Tags** page 24 hours after their associated resources have generated expenditures.
- Predefined tags: You can create such tags on the TMS console. They will appear on the **Cost Tags** page immediately after being created.

When to Use Cost Tags

You can use cost tags to summarize or filter cost data on the **Cost Analysis** page or track the cost and usage of a specific resource on the **Budgets** page.

Constraints on Using Cost Tags

For details about the cloud services that support tag management, see [TMS and Other Services](#).

It can take up to 48 hours before the most recent tag information is displayed. The following is an example scenario.

1. You activate the cost tag **groupA**.
2. You attach the cost tag **groupA** when placing an order.
3. You can query the cost data by **groupA** in Cost Center about 45 hours after the order is placed.

Adding a Tag

To learn how to add tags (for ECS for example), see [Adding Tags](#). You can also use Tag Management Service (TMS) to add tags to cloud resources. For details, see [Adding Tags to Cloud Resources](#).

10.1.2 Activating Cost Tags

Important Notes

Generally, tags appear on the **Cost Tags** page 24 hours after resource expenditures are generated. If there are no tags to activate, consider shortening the tag length or removing the colon from tags.

You can filter or group cost data by cost tag only after the tags are activated and their associated resources have incurred costs. Activated tags are not used for historical costs.

If you are using a member account that has been associated with your master account for unified accounting management, you are not allowed to activate or deactivate tags. Instead, you can only use the tags activated by your master account for data analysis.

Activating or Deactivating a Tag

- Step 1** Log in to Cost Center.
- Step 2** Choose **Cost Allocation > Cost Tags**.
- Step 3** Select a tag and activate or deactivate it.

<input type="button" value="Activate"/> <input type="button" value="Deactivate"/> <input type="button" value="Add filter"/>			
<input checked="" type="checkbox"/> Tag	Tag Source	Status	Operation
<input checked="" type="checkbox"/> Group	Predefined tags	● Deactivated	Activate
<input checked="" type="checkbox"/> Project	Expenditure tags	● Activated	Activate

There are two types of tags:

- Expenditure tags: You can add such tags when creating resources. They will appear on the **Cost Tags** page 24 hours after their associated resources have generated expenditures.
- Predefined tags: You can create such tags on the TMS console. They will appear on the **Cost Tags** page immediately after being created.

----End

10.2 Cost Categories

10.2.1 Overview of a Cost Category

A cost category automatically groups your costs based on the rules you configure, such as linked account, service type, bill type, cost tag, and enterprise project, or even the custom rules configured for other cost categories.

A cost category goes into effect at the beginning of each month. If you add or modify a cost category in the middle of a month, month-to-date cost data will use the new cost category. After you create or edit a cost category, it can take up to four hours for your cost and usage details to be categorized.

Categorized Cost Information

There are multiple ways of looking at your business, for example, in terms of departments, projects, or applications. A cost category is a unique way, and you can create multiple cost categories accordingly. If you are using a master account and have enabled unified accounting management, you can also use cost categories to group the costs of your enterprise. For details, see [Cost Management for Enterprises](#).

After creating a cost category, you can use it to analyze and monitor your costs and manage your budgets. You can use cost categories to summarize or filter cost

and usage data. You can also learn about the application of cost categories in the exported cost details, where each created category is displayed in a separate column.

Splitting Shared Costs

Shared costs include the costs for the resources (network, storage, or resource packages) shared across departments or the costs that cannot be directly split by cost tag or enterprise project configured for the resources. These costs are not directly attributable to a singular owner, and hence cannot be categorized into a singular cost category. In this case, you can define cost splitting rules to fairly allocate these costs among teams or business units.

You can use cost categories to split shared costs, and also create custom categories and map your costs into these categories based on the splitting rules you define. Only net original costs (actual payments) and net amortized costs (amortized actual payments) can be split.

Establishing Multilevel Hierarchical Relationships

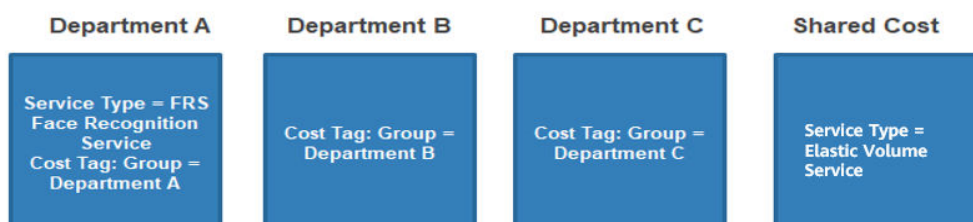
You can select from a list of cost category dimensions to create your cost category rules. Specifically, use existing cost categories as the prerequisites and define your own cost splitting rules. Assume that your enterprise has cost units from multiple departments and each department has multiple teams within. You can create multilevel hierarchical relationships among your cost categories to replicate your organizational structure. This way, you can easily track the cost usage of each team.

10.2.2 Application Scenarios

Example Scenario

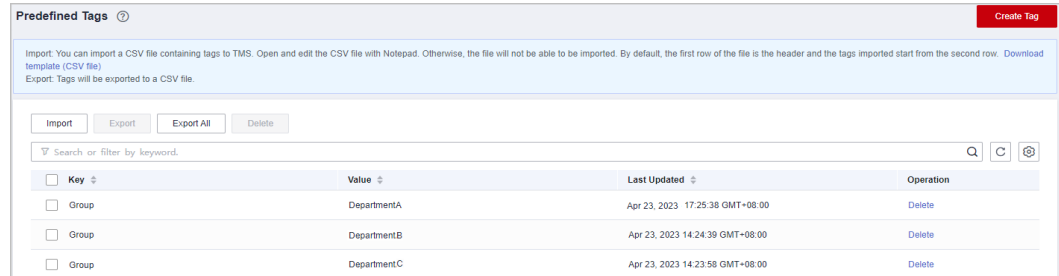
You want to allocate costs across Department A, Department B, and Department C in your company, and the department of most of the costs can be identified based on the tags configured for the resources. In addition, Department A uses the Face Recognition Service that does not support tag management, and an Elastic Volume Service (EVS) is shared across all departments.

As mentioned earlier, you can use the tag key **Group** and tag values **Department A**, **Department B**, and **Department C** to group most of your costs, as shown in the following figure.



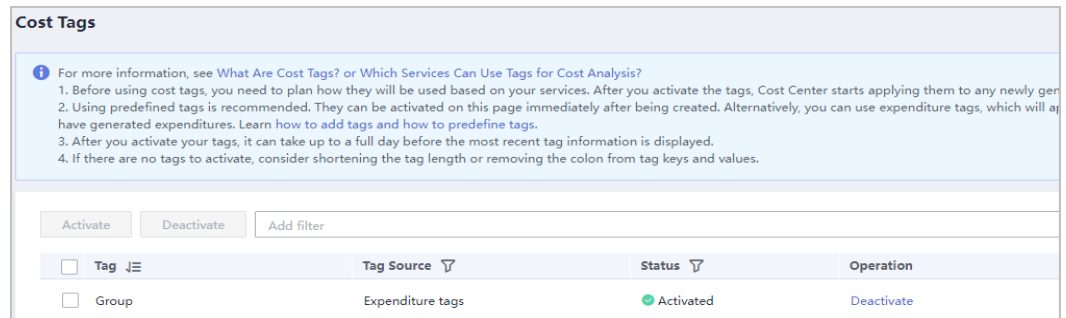
Step 1 Creating Cost Tags

Create tags before using cloud services. For details, see [Creating Predefined Tags](#). For example, you can create the tag key **Group** with three tag values (**DepartmentA**, **DepartmentB**, and **DepartmentC**).



Step 2 Activating Cost Tags

Activate the created tag **Group** so that it can be applied to cost categories.



Step 3 Creating Cost Categories (Defining Rules)

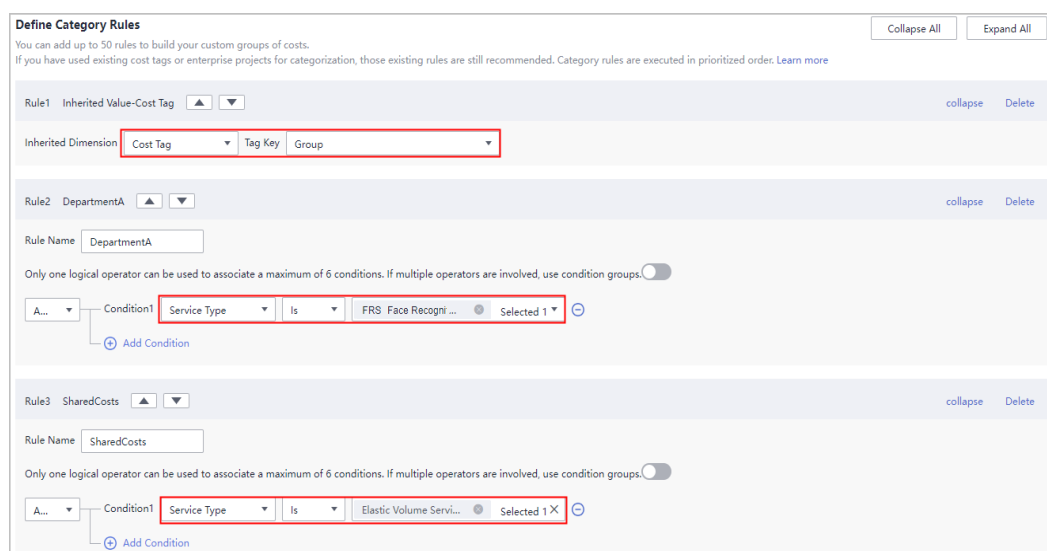
Create a cost category and define the following rules for it.

Table 10-1 Defining rules

Rule	Type	Content
Rule 1: Inherited Value - Cost Tags	Use existing rules. NOTE If you have used existing cost tags or enterprise projects to group cost data, existing rules are recommended. Example: If rules are defined based on the cost tag Group , cost data will be grouped for DepartmentA , DepartmentB , and DepartmentC .	Condition: Inherited Dimension is Cost Tag , and Tag Key is Group .
Rule 2: Department A	Add rules.	Condition: Service Type is FRS Face Recognition Service .
Rule 3: Shared costs	Add rules.	Condition: Service Type is Elastic Volume Service .

Rule	Type	Content
Uncategorized costs	-	Costs that do not match the preceding rules.

Figure 10-2 Creating rules



In this example, costs are amortized in the way described in [Table 10-2](#).

Table 10-2 Cost amortization

Cost For	Costs Amortized in the Current Month
Department A	100
Department B	200
Department C	50
Shared costs	40
Uncategorized costs	100

Step 4 Creating Cost Categories (Allocating Shared Costs)

Four hours after the cost category is created, you can define cost splitting rules to split the shared costs across departments.

- Select **Custom** for **Allocation Method** to allocate 50% of the shared costs to Department A, 30% to Department B, and 20% to Department C.
- Select **Custom** for **Allocation Method** to allocate 30% of the uncategorized costs to Department A, 30% to Department B, and 40% to Department C.

NOTE

Currently, there are three cost allocation methods:

- Proportionally:** Allocate your costs in proportion to the weight of each target value.
 Example: Suppose the value of target B is \$800 USD and the value of target C is \$200 USD. As the ratio of target B to target C is 4:1, 80% of the source value will be allocated to target B and 20% to target C.
- Evenly:** Allocate your costs evenly across your target values.
 Example: Suppose there are two target values (A and B). With this method, the source value is evenly allocated to A and B, 50% for each.
- Custom:** Allocate your costs based on a custom percentage for each target value. The percentages must add up to 100%.

Figure 10-3 Defining splitting rules

(Optional) Define Splitting Rules
 Include flexi-purchase coupons
 Include stored value cards
 Net Amortized Cost

You can define splitting rules to allocate shared costs across your cost categories. Currently, only net original costs (actual payment) and net amortized costs (amortized actual payment) can be split. You can view and export the cost splitting results in the cost category details. The cost splitting results will not be displayed on the cost analysis and budget management pages.

Rule1

Source Value: Uncategorized
 MTD cost: \$ ██████████ An inherited value can be used as the source or target value one or two days after a cost category is created.

Target Value: DepartmentA Selected 3

Allocation: Proportionally Evenly Custom

Method

The following table displays how your costs of Uncategorized are split by custom percentage. For details, access the cost category details page.

Target Value	Percentage	Associated Cost (USD)
DepartmentA	50.00 %	██████████
DepartmentB	30.00 %	██████████
DepartmentC	20.00 %	██████████
Total	100.00 %	██████████

Rule2

Source Value: Shared costs
 MTD cost: \$ ██████████ An inherited value can be used as the source or target value one or two days after a cost category is created.

Target Value: DepartmentA Selected 3

Allocation: Proportionally Evenly Custom

Method

The following table displays how your costs of Shared costs are split by custom percentage. For details, access the cost category details page.

Target Value	Percentage	Associated Cost (USD)
DepartmentA	30.00 %	██████████
DepartmentB	30.00 %	██████████
DepartmentC	40.00 %	██████████
Total	100.00 %	██████████

Table 10-3 Cost splitting rules

Rule	Source Value	Target Value	Allocation Method	Content	Associated Cost
Rule 1	Uncategorized costs	Department A Department B Department C	Custom	Department A: 50% Department B: 30% Department C: 20%	Department A: $100 \times 50\% = 50$ Department B: $100 \times 30\% = 30$ Department C: $100 \times 20\% = 20$
Rule 2	Shared costs	Department A Department B Department C	Custom	Department A: 30% Department B: 30% Department C: 40%	Department A: $40 \times 30\% = 12$ Department B: $40 \times 30\% = 12$ Department C: $40 \times 40\% = 16$

Step 5 Viewing Cost Splitting Results

The following table lists the cost (**Net Amortized Cost** as an example) split for each department.

Table 10-4 Cost split for each department

Department	Net Amortized Cost	Split Amount	Amount Allocated	Proportion
Department A	100	50 + 12	162	33.06%
Department B	200	30 + 12	242	49.39%
Department C	50	20 + 16	86	17.55%

10.2.3 Managing Cost Categories

Important Notes

After a cost category is created, it will group costs for the current and coming months.

Cost category changes will only affect grouping of costs for the current and coming months. After you create or edit a cost category, it can take up to four hours for your cost and usage details to be categorized.

You can create up to 10 cost categories.

Creating a Cost Category

Step 1 Log in to Cost Center.

Step 2 Choose **Cost Allocation > Cost Categories**.

Step 3 Click **Create Cost Category**.

Step 4 Define category rules to group your costs.

NOTE

You can define up to 20 rules for each category.

1. Specify a category name.

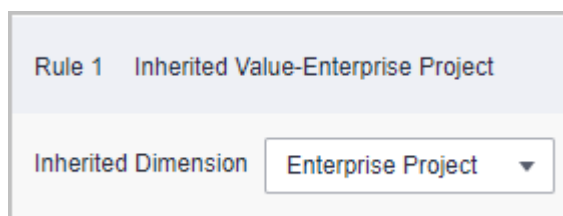
Enter a name to uniquely identify your cost category. The name cannot be changed once your cost category is created.

2. Define category rules.

Category rules are executed in prioritized order.

- Use existing rules for a cost category. This method lets you flexibly define a rule that dynamically inherits the value of a cost category or enterprise project to group your costs. You are advised to use the existing rules.

You can choose to group costs by enterprise project, as shown in the following figure.



- Define new rules. You can also associate multiple conditions for a cost category by using logical operators.

Table 10-5 Logical operators

Logical Operator	Description	Example
And	Indicates that all conditions must be met.	If the logical operator is set to And and all of conditions 1, 2, and 3 are met, the rule can be used to categorize the costs.
Or	Indicates that any of configured conditions needs to be met.	If the logical operator is set to Or and any of the conditions (1, 2, and 3) is met, the rule can be used to categorize the costs.

One logical operator can be used to associate a maximum of five conditions. If multiple operators are involved, use condition groups. For details, see [Calculation Logic](#).

3. Group uncategorized costs.

All costs that do not comply with the rules you defined will be grouped into the default group **Uncategorized**. You can rename the group, for example, **Shared Costs**.

Step 5 (Optional) Split shared costs.

 **NOTE**

When you use existing rules, the source and target values become available four hours after you create the cost category.

You cannot view cost splitting details in real time, including the cost of a split source and the percentage used for proportionally allocation, in a cost category you created. You are advised to create cost splitting rules four hours after you create a cost category.

Field	Description
Source Value	<p>Shared costs you want to split, which can be either of the following:</p> <ul style="list-style-type: none"> Costs in Step 4.2 that have been categorized but have not met the splitting requirements, for example, the costs of the default enterprise project. Costs in Step 4.3 that are not captured in your cost category rules
Target Value	The cost categories you want to split your costs across
Allocation Method	<ul style="list-style-type: none"> Proportionally: Allocate your costs in proportion to the weight of each target value. Example: Suppose the value of target B is \$800 USD and the value of target C is \$200 USD. As the ratio of target B to target C is 4:1, 80% of the source value will be allocated to target B and 20% to target C. Evenly: Allocate your costs evenly across your target values. Example: Suppose there are two target values (A and B). With this method, the source value is evenly allocated to A and B, 50% for each. Custom: Allocate your costs based on a custom percentage for each target value. The percentages must add up to 100%.

Step 6 Click **Create**.

----End

Modifying a Cost Category

Step 1 Log in to Cost Center.

Step 2 Choose **Cost Allocation > Cost Categories**.

Step 3 Click **Edit** in the **Operation** column of the cost category you want to modify the configured category rules and cost splitting rules.

Category Name	Created	Updated	Operation
[blurred]	Apr 20, 2022 10:24:58 GMT+08:00	May 13, 2022 11:08:42 GMT+08:00	Edit Delete View in Cost Analysis

----End

Deleting a Cost Category

Step 1 Log in to Cost Center.

Step 2 Choose **Cost Allocation > Cost Categories**.

Step 3 Click **Delete** in the **Operation** column of the cost category you want to delete.

Category Name	Created	Updated	Operation
[blurred]	Apr 20, 2022 10:24:58 GMT+08:00	May 13, 2022 11:08:42 GMT+08:00	Edit Delete View in Cost Analysis

----End

Calculation Logic

- Default logic: One logical operator can be used to associate a maximum of five conditions.

As shown in the following figure, a logical operator (**And**) is used to associate the three conditions. All these three conditions must be met at the same time so that the rule can be used to categorize costs.

Only one logical operator can be used to associate a maximum of 5 conditions. If multiple operators are involved, use condition groups.

And	Condition1	Cost Tag	CDK-Dynamic-Provisioning-Node	Is	5698a7cd-1825-11ec...	Selected 2
	Condition2	Service Type	Is	Content Delivery N...		Selected 1
	Condition3	Service Type	Is	Anti-DDoS Anti-DDoS		Selected 1

The following is an example of condition settings:

Example condition 1: **Cost Tag project Is IT**. When the value of the cost tag **project** is **IT**, this rule will be used to categorize costs.

Example condition 2: **Cost Tag project Is not IT**. When the value of the cost tag **project** is not **IT**, this rule will be used to categorize costs.

⚠ CAUTION

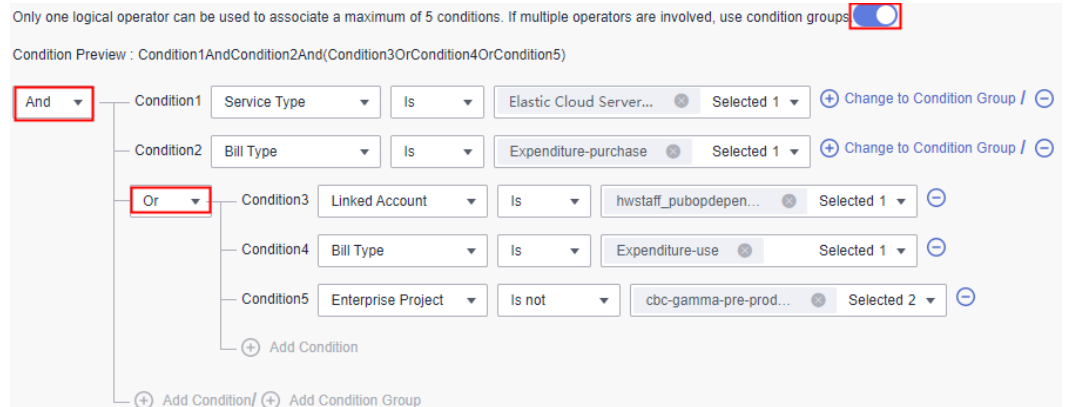
- When you use cost tags to group your costs, if the operator is **Is not**, the rule will not be used to categorize the costs that do not have tags.
Example: The key of a cost tag is **project**, and the key values are **IT1**, **IT2**, and **IT3**. If you configure a condition where **Cost Tag project Is not IT1**, the costs whose cost tag values are **IT2** and **IT3** will be grouped. Costs that do not have the cost tag **project** will not be grouped.
- When you use enterprise projects to group your costs, if the operator is **Is not**, the rule will be used to categorize the costs that do not belong to any enterprise projects.
Example: There are three enterprise projects (**project 1**, **project 2**, and **project 3**). If you configure a condition where **Enterprise Project Is not project 1**, costs that do not have enterprise projects as well costs whose enterprise projects are **project 2** and **project 3** will be grouped.

Example condition 3: **Cost Tag project Starts with IT**. When the value of the cost tag **project** starts with **IT**, this rule will be used to categorize costs.
Example condition 4: **Cost Tag project Is absent**. If the cost tag **project** is not used, this rule will be used to categorize costs.

Table 10-6 Conditional operators supported by different cost categorizing dimensions

Dimension	Is	Is Not	Starts With	Is Absent
Linked Account	Supported	Supported	Not Supported	Not Supported
Service Type	Supported	Supported	Not Supported	Not Supported
Bill Type	Supported	Supported	Not Supported	Not Supported
Cost Tags	Supported	Supported	Supported	Supported
Enterprise Project	Supported	Supported	Supported	Not Supported
Cost Categories	Supported	Supported	Supported	Not Supported

- Nested logic: Two logical operators can be used to associate up to five conditions.
As shown in the following figure, two logical operators are used to associate five conditions in a nested manner.



10.2.4 Viewing Cost Category Details

Important Notes

The splitting details of shared costs are only displayed on the cost category details page. Splitting rules do not affect the data for cost analysis, budget management, and cost details.

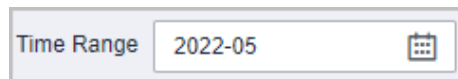
Viewing Cost Category Details

Step 1 Log in to Cost Center.

Step 2 Choose **Cost Allocation > Cost Categories**.

Step 3 Click the name of a cost category.

Step 4 Specify **Time Range** in the upper right corner of the displayed page.



Step 5 View the details about the cost category.

1. Basic information



In this area, the cost category name, creation time, and last update time are displayed.

2. Splitting rules

Splitting Rules Edit		
Source Value	Target Value	Allocation Method
default	alpha:beta:gamma	Proportionally

In this area, the splitting rules for shared costs are displayed, and you can click **Edit** to modify the splitting rules.

3. Splitting details

- Cost distribution is displayed in the ring chart on the left.
- The table on the right shows the cost splitting details for **Net Amortized Cost** or **Net Original Cost**

Field	Description
Item	Category rule name
Net Amortized Cost	Net amortized cost after the cost splitting rules have been applied
Net Original Cost	Net original cost after the cost splitting rules have been applied
Split Amount	Split amount of the shared cost. If the value of this field is negative, the corresponding cost is the split source.
Amount Allocated	Amount allocated. Amount allocated = Net amortized cost or Net original cost + Split amount
Proportion	Percentage of an allocated cost to the total cost allocated.

----End

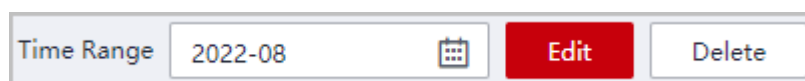
Modifying Splitting Rules for Historical Costs

Step 1 Log in to Cost Center.

Step 2 Choose **Cost Allocation > Cost Categories**.

Step 3 Click the name of a cost category.

Step 4 Specify **Time Range** and click **Edit** in the upper right corner of the displayed page.



NOTE

The splitting rules for the cost data of last three months as well as the current month can be modified.

You can choose to only modify the category rules.

Step 5 Modify the category rules and splitting rules and click **Save**.

NOTE

After you modify a cost category, it can take up to four hours for your cost and usage details to be categorized.

----End

Exporting Cost Splitting Details

In the **Splitting Details** area on the cost category details page, click **Export** to export the cost splitting details.



10.2.5 Application of Cost Categories

Using a Cost Category to Group Costs

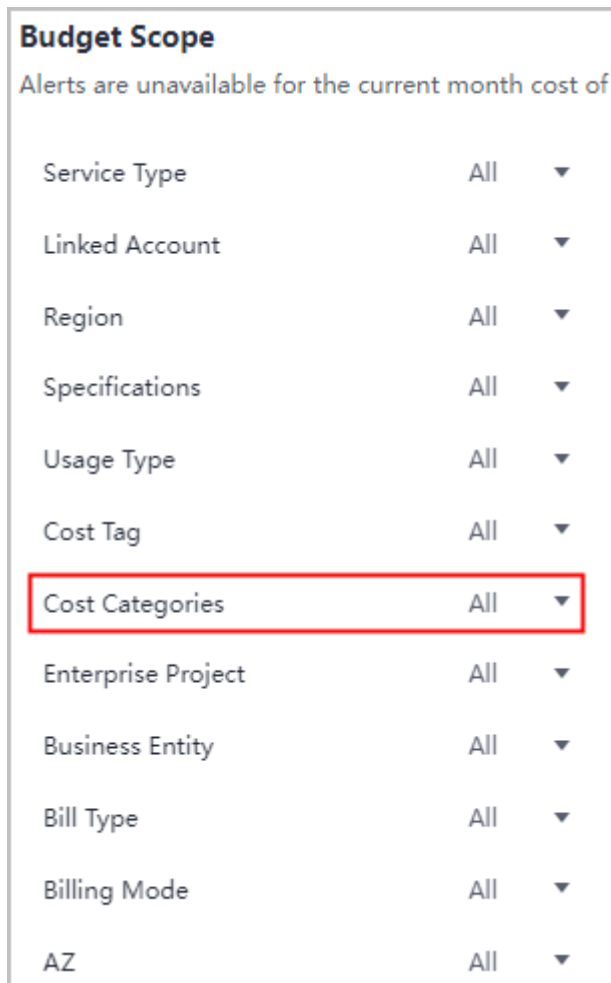
In Cost Center, choose **Cost Analysis**, and set **Grouped By** to **Cost Categories** to group data.

Using a Cost Category to Filter Costs

In Cost Center, choose **Cost Analysis**. Under **Filters**, select a cost category to filter costs.

Using a Cost Category to Specify a Budget Scope

In Cost Center, choose **Budgets**. Click **Create Budget** and select a cost category in the **Budget Scope** area.



Monitoring Cost Anomalies for a Cost Category

In Cost Center, choose **Cost Anomaly Detection**. Click **Create Monitor** and select **Cost Categories** for **Monitor Type**. This monitor tracks the pay-per-use expenditure anomalies for a cost category rule.

Name Your Monitor

* Monitor Name

Monitored Objects

Up to 10 cost category rules can be selected.

* Cost Category

* Rule

Detection Rules

Pay-per-use expenditures: AI algorithms are used to intelligently identify unexpected expenditure spikes based on machine learning.

Yearly/monthly expenditures: Expenditures are identified as anomalies if they have increased by % over the previous billing cycle.

[View detailed rules](#)

Cost Categories in the Exported Cost Details

On the **Cost Analysis** page, click **export records**. In the exported files, each created category is displayed in a separate column.

#	Z	AA	AE	AC	AD	AE	AF	AG	AH	AI	AI	AK	AL	AM	AN	AR	AS	AT	AI	RE	RE	
1		SpecificRegion	C:Region	AZ	Usage	TyyUsage	TyyUsage	UniUsage	Package	Usage	in List	Fric	Original	Coupons	UEXPORT	CEEXPORT	CTag	poli	Tag:用途	Tag:视频	Cost Unit:业务部门	Cost Unit:项目
2		Redis	cr-north	CN	North	0lanqab201			0	0	0	166	166	0	0	0						
3		bandwidth	cr-north	CN	North	0lanqab201			0	0	0	23	23	0	0	0						

11 Reports

11.1 Analysis Reports

On the **Cost Analysis** page, you can save the analyses that you have created by configuring specific filters or other requirements, as reports. When you view a saved report later on, the system displays the same type of report, but updated with the most recent data.

Preconfigured Reports

Huawei Cloud provides preconfigured reports for quick cost analysis. Preconfigured reports cannot be deleted. They can only be copied and added.

Table 11-1 Reports on costs and usage

Report Name	Description
Monthly Costs by Service Type	Types of services with high original costs over the last six months
Monthly Costs by Linked Account	Linked accounts with high original costs over the last six months
Daily Costs	Daily original costs over the last three months and in the following one month
Monthly Amortized Costs	Monthly amortized costs over the last six months
Pay-Per-Use ECS Monthly Costs and Usage	Monthly original costs and usage of pay-per-use ECSs over the last six months

Creating a Cost and Usage Report

Method 1:

Step 1 Log in to Cost Center.

Step 2 Choose **Reports > Analysis Reports**.


Step 3 Click **Create a Report**.

Step 4 Select **Cost and usage** and click **Create Report**.

Step 5 Configure filters on the **Cost Analysis** page and click **Save Report**.

 **NOTE**

- For details about the filters, see [Viewing Cost Analyses](#).

- Click  in the upper left corner of the page to edit the report name.

----End

Method 2:

Step 1 Log in to Cost Center.

Step 2 Choose **Cost Analysis**.

Step 3 Configure filters on the **Cost Analysis** page.

For details about the filters, see [Viewing Cost Analyses](#).

Step 4 Click **Save Report**.

Step 5 Specify a name for the report, and click **OK**.

----End

Copying a Report

Step 1 Log in to Cost Center.

Step 2 Choose **Reports > Analysis Reports**.

Step 3 Locate the report you want to copy and click **Copy** in the **Operation** column.

Step 4 Specify a name for the report, and click **OK**.

Step 5 Configure filters on the **Cost Analysis** page and click **Save Report**.

----End

Viewing a Report

Step 1 Log in to Cost Center.

Step 2 Choose **Reports > Analysis Reports**.

Step 3 Click the name of a report to go to the **Cost Analysis** page and view the report details.

 **NOTE**

- The most recent cost data is displayed based on the filters configured in the report.
- You can also modify and save the filters.

----End

Deleting a Report

Step 1 Log in to Cost Center.

Step 2 Choose **Reports > Analysis Reports**.

Step 3 Locate the report you want to delete and click **Delete** in the **Operation** column.

 **NOTE**

Preconfigured reports cannot be deleted.

Step 4 Click **Yes** in the displayed dialog box.

----End

11.2 Budget Reports

You can create reports for your budgets, and Huawei Cloud will send you the budget reports on a specified day.

Important Notes

Budget reports are delivered at approximately 02:00 (GMT+08:00) on the specified day.

A maximum of 50 budget reports are allowed for an account.

Creating a Budget Report

Step 1 Log in to Cost Center.

Step 2 Choose **Reports > Budget Reports**.

Step 3 Click **Create Budget Report** in the upper right corner of the page.

Step 4 Set the report name, select budgets to be included, and click **Next**.

Step 5 Set the report frequency, select the report recipients, and click **Next**.

① Set your budget report ——— ② Specify delivery settings ——— ③ Confirm information

Delivery Settings

Report Frequency Daily Weekly Monthly

Report Recipients(1/50)

Recipients

[+ Select From Contracts](#)

NOTE

You can add up to 50 recipients for each budget alert. If you want to add or modify recipient information, go to the **Recipient Management** page in the Message Center.

Step 6 Confirm your budget report information and click **Save**.

----End

12 Exporting Cost Details

12.1 Exporting Cost Details to Local Directories

Important Notes

You can view your cost details of last 18 months.

Cost Center refreshes your amortized costs once every 24 hours, and some data may take longer than 24 hours to be displayed. The current month costs of monthly-settlement cloud services, such as CDN and VPC, are available for export after 12:00 noon on the 4th day of the following month.

Procedure

- Step 1** Log in to Cost Center.
- Step 2** Choose **Cost Details Export**.
- Step 3** On the **Export to Local Directory** page, set the cost type, start time, end time, and data scope. Then, click **Export**.

NOTE

Cost details are refreshed every 24 hours, but the cost data for the current month may take longer than 24 hours to be displayed.

You can export the details of amortized costs and original costs on a monthly basis.

Cost Type	File Name Identifier	Example File Name	Description
Amortized costs	%Account name %_AmortizedCost DetailByUsage_Y YYY-MM	Jack_AmortizedCost DetailByUsage_2022 -03_2022-05_20220 519022405_0001.csv	Reflects the original costs amortized based on the usage in each billing cycle. The file only contains the month-to-date amortized costs. For details about the fields in the exported cost details, see Fields in Exported Amortized Cost Details .
Original costs	%Account name %_OriginalCostDe tail_YYYY-MM	Jack_OriginalCostDe tail_2022-03_2022-0 5_20220519022940_ 0001.csv	Reflects the original costs for purchased and used resources. For details about the fields in the exported cost details, see Fields in Exported Original Cost Details .

----End

12.2 Export to Local Directory - Fields for Amortized Costs

Table 12-1 Fields in exported amortized cost details

Field	Description
Month	The month costs are amortized over. See Rules for Amortized Costs for details.
Enterprise Project	The enterprise project selected when you purchase a cloud service. If no enterprise project is selected, default is displayed as the value for this field. If the enterprise project management is not supported for the cloud service, Not categorized is presented.
Enterprise Project ID	The ID of the specified enterprise project. If no enterprise project is selected during purchases, 0 is displayed as the value of this field.
Linked Account	Huawei Cloud account which cloud resources belong to.
PayerAccount Name	Account used to pay for Huawei Cloud resources.

Field	Description
Business Entity	Business entity that a cloud service belongs to. Example: Huawei Cloud (The business entity of reseller accounts is the same as that of their partner.)
Service Type Code	Code of the cloud service type. Example: hws.service.type.vpc
Service Type	Type of a cloud service. Example: VPC
Resource Type Code	Resource type code of a cloud service. Example: hws.resource.type.ip
Resource Type	Type of the resources of a cloud service. Example: EIP
Service Type Code (Child Resource)	Service type code of a child resource.
Service Type (Child Resource)	Service type of a child resource.
Resource Type Code (Child Resource)	Resource type code of a child resource.
Resource Type (Child Resource)	Resource type of a child resource.
Product ID	ID of a product.
Billing Mode	Billing mode of the product. This parameter is not applicable when the order type is unsubscription. <ul style="list-style-type: none"> ● Yearly/Monthly ● Pay-per-Use

Field	Description
Bill Type	<p>Type of a billing item.</p> <ul style="list-style-type: none"> ● Expenditure-purchase: expenditures for purchased yearly/monthly products ● Expenditure-renewal: expenditures for yearly/monthly subscriptions that you manually renew ● Expenditure-use: expenditures for pay-per-use resources ● Expenditure-auto-renewal: expenditures for yearly/monthly subscriptions that are automatically renewed ● Expenditure-hourly billing: expenditures for reserved instances that are billed hourly ● Expenditure-monthly payment: expenditures for services that are paid for on a monthly basis ● Expenditure-unsubscription service charge: handling fees for unsubscriptions ● Expenditure-month-end deduction for support plan: expenditures for the support plan at the end of a month ● Expenditure-change: expenditures for changing the specifications of yearly/monthly products ● Expenditure-tax: taxes for yearly/monthly subscriptions and pay-per-use products ● Expenditure-difference amount: expenditures that HCDP users need to pay for if their expenditures do not reach the minimum guaranteed amount Difference amount = Guaranteed minimum payment amount – Expenditure amount ● Refund-unsubscription: expenditures for a yearly/monthly subscription that is unsubscribed from or that specifications were downgraded for ● Refund-change: expenditures for a yearly/monthly subscription that specifications were downgraded for ● Refund-change to pay-per-use: refunds generated when a yearly/monthly subscription is changed to pay-per-use billing ● Refund-tax: taxes refunded when a yearly/monthly subscription is unsubscribed from or that specifications were downgraded for ● Adjustment-compensation: amount compensated by Huawei Cloud ● Adjustment-deduction: account adjustment made by Huawei Cloud. For example, when Huawei Cloud adjusts a specification downgrade order, the original refund amount is paid first. ● Adjustment-compensation tax: taxes for Huawei Cloud compensations ● Adjustment-deduction tax: taxes for Huawei Cloud account adjustments

Field	Description
Order No.	Unique identifier of a yearly/monthly or a reserved instance order.
Start Time	Time when billing for a specified cloud service starts.
End Time	Time when billing for a specified cloud service ends.
Billing Cycle	Billing cycle in which original costs for resources are generated.
Resource ID	Unique ID of a cloud service resource.
Resource Name	User-defined name of a cloud service resource.
Child Resource ID	Unique ID of a child resource.
Child Resource Name	Name of a child resource.
Specification Code	A group of codes used to describe the specifications of a cloud service. Example: s3.small.1.linux
Specifications	Resources specifications.
Region Code	Code of a region.
Region	Cloud service region that provides public cloud service resources independently and serves a large geographical area.
AZ	A physically isolated zone where resources have their own independent power supply and internal networks. One region can have multiple AZs, and if one AZ becomes faulty, the other AZs in the same region can still provide services. AZs in the same region can access each other as they are on the same intranet.
Usage Type Code	Code of a usage type. Example: Duration
Usage Type	The way a pay-per-use cloud service is billed. Example: Duration:Second (Stream computing:Stream computing:Duration)
Usage	The amount a cloud service was used within the amortization period, measured by such items as duration, capacity, count, or traffic.
Usage Unit	The unit used to measure the product usage.
Package Usage	The usage of a resource included in a package within the amortization period. If this usage does not exceed the package quota, no extra expenditures are incurred.

Field	Description
Usage in Reserved Instances	The usage of a resource included in a reserved instance within the amortization period. If this usage does not exceed the RI quota, no extra expenditures are incurred.
Original Cost	Original cost of a resource. This is equivalent to the amount due in the bill.
Current Month Amortized	Cost already amortized in the current month.
Amortized Cash Coupon	Amount of cash coupons in Current Month Amortized .
Cost Tag	The name of a cost tag for a resource within the amortization period. If there are multiple cost tags for a given resource, then multiple values will be displayed. Example: Department

12.3 Export to Local Directory - Fields for Original Costs

Table 12-2 Fields in exported original cost details

Field	Description
Billing Cycle	Month which the cost data you are exporting belongs to.
Enterprise Project	The enterprise project selected when you purchase a cloud service. If no enterprise project is selected, default is displayed as the value for this field. If the enterprise project management is not supported for the cloud service, Not categorized is presented.
Enterprise Project ID	The ID of the specified enterprise project. If no enterprise project is selected during purchases, 0 is displayed as the value of this field.
Linked Account	Huawei Cloud account which cloud resources belong to.
PayerAccount Name	Account used to pay for Huawei Cloud resources.
Business Entity	Business entity that a cloud service belongs to. Example: Huawei Cloud (The business entity of reseller accounts is the same as that of their partner.)

Field	Description
Service Type Code	Code of the cloud service type. Example: hws.service.type.vpc
Service Type	Type of a cloud service. Example: VPC
Resource Type Code	Resource type code of a cloud service. Example: hws.resource.type.ip
Resource Type	Type of the resources of a cloud service. Example: EIP
Service Type Code (Child Resource)	Service type code of a child resource.
Service Type (Child Resource)	Service type of a child resource.
Resource Type Code (Child Resource)	Resource type code of a child resource.
Resource Type (Child Resource)	Resource type of a child resource.
Product ID	ID of a product.
Billing Mode	Billing mode of the product. This parameter is not applicable when the order type is unsubscription. <ul style="list-style-type: none"> ● Yearly/Monthly ● Pay-per-Use

Field	Description
Bill Type	<p>Type of a billing item.</p> <ul style="list-style-type: none"> ● Expenditure-purchase: expenditures for purchased yearly/monthly products ● Expenditure-renewal: expenditures for yearly/monthly subscriptions that you manually renew ● Expenditure-use: expenditures for pay-per-use resources ● Expenditure-auto-renewal: expenditures for yearly/monthly subscriptions that are automatically renewed ● Expenditure-hourly billing: expenditures for reserved instances that are billed hourly ● Expenditure-monthly payment: expenditures for services that are paid for on a monthly basis ● Expenditure-unsubscription service charge: handling fees for unsubscriptions ● Expenditure-month-end deduction for support plan: expenditures for the support plan at the end of a month ● Expenditure-change: expenditures for changing the specifications of yearly/monthly products ● Expenditure-tax: taxes for yearly/monthly subscriptions and pay-per-use products ● Expenditure-difference amount: expenditures that HCDP users need to pay for if their expenditures do not reach the minimum guaranteed amount Difference amount = Guaranteed minimum payment amount – Expenditure amount ● Refund-unsubscription: expenditures for a yearly/monthly subscription that is unsubscribed from or that specifications were downgraded for ● Refund-change: expenditures for a yearly/monthly subscription that specifications were downgraded for ● Refund-change to pay-per-use: refunds generated when a yearly/monthly subscription is changed to pay-per-use billing ● Refund-tax: taxes refunded when a yearly/monthly subscription is unsubscribed from or that specifications were downgraded for ● Adjustment-compensation: amount compensated by Huawei Cloud ● Adjustment-deduction: account adjustment made by Huawei Cloud. For example, when Huawei Cloud adjusts a specification downgrade order, the original refund amount is paid first. ● Adjustment-compensation tax: taxes for Huawei Cloud compensations

Field	Description
	<ul style="list-style-type: none"> Adjustment-deduction tax: taxes for Huawei Cloud account adjustments
Order No.	Unique identifier of a yearly/monthly or a reserved instance order.
Start Time	Time when billing for a specified cloud service starts.
End Time	Time when billing for a specified cloud service ends.
Resource ID	Unique ID of a cloud service resource.
Resource Name	User-defined name of a cloud service resource.
Child Resource ID	Unique ID of a child resource.
Child Resource Name	Name of a child resource.
Specification Code	<p>A group of codes used to describe the specifications of a cloud service.</p> <p>Example: s3.small.1.linux</p>
Specifications	Resources specifications.
Region Code	Code of a region.
Region	Cloud service region that provides public cloud service resources independently and serves a large geographical area.
Availability Zone	A physically isolated zone where resources have their own independent power supply and internal networks. One region can have multiple AZs, and if one AZ becomes faulty, the other AZs in the same region can still provide services. AZs in the same region can access each other as they are on the same intranet.
Usage Type Code	<p>Code of a usage type.</p> <p>Example: Duration</p>
Usage Type	<p>The way a pay-per-use cloud service is billed.</p> <p>Example: Duration:Second (Stream computing:Stream computing:Duration)</p>
Usage Unit	The unit used to measure the product usage.
Usage	Pay-per-use resource usage within the specified period, measured by such items as duration, capacity, count, or traffic.
Package Usage	Usage of a resource included in a package within a given period. If this usage does not exceed the package quota, no extra expenditures are incurred.

Field	Description
Usage in Reserved Instances	Usage of a resource included in a reserved instance within a given period. If this usage does not exceed the reserved instance quota, no extra expenditures are incurred.
List Price	The price of a product without any discounts applied.
Amount Due	Amount that should be paid for used cloud services after discounts are applied. The discounts include commercial discounts, and partner authorized discounts.
Cash Coupon Used	Amount paid using cash coupons.
Cost Tag	The name of a cost tag for a resource. If there are multiple cost tags for a given resource, then multiple values will be displayed. Example: Department

13 Export History

Important Notes

Export records will be automatically deleted three days after having been generated. Download the exported files in a timely manner.

After submitting an export request on the **Cost Analysis**, and **Budgets** pages, you can obtain the exported files on the **Export History** page.

Procedure

Step 1 Log in to Cost Center.

Step 2 Choose **Export History**.

Step 3 Select an export record and click **Download** in the **Operation** column to download the corresponding file to a local directory.

----End

14 Cost Management for Enterprises

This section describes cost management for enterprises using unified accounting management.

Data Scope

- Cost Center shows the following data for a master account:
 - Cost and usage data of the master account
 - The cost and usage data of the member accounts
- Cost Center provides member accounts only with the cost and usage data. If they are no longer associated with the master account and have become individual users, they will only be able to access the cost and usage data generated during the disassociation period but not those generated during the association period.

Budgets

- A master account can select member accounts from **Linked Account** to track their cost and usage data. For details, see [Creating a Budget](#).
- Member accounts can create their own budgets. If they are no longer associated with any master account and have become individual users, the budgets created will become invalid. If they still need budgets, they have to create new ones.

Cost Analysis

- A master account can select member accounts from **Linked Account** to analyze their cost data. For details, see [Viewing Cost Analyses](#).
- Member accounts can only view their cost data. If they are no longer associated with the master account and have become individual users, they will only be able to access the cost and usage data generated during the disassociation period but not those generated during the association period.

NOTE

In independent accounting management, a master account can view the cost data of its member accounts only when authorized.

Analysis Reports

- A master account can select member accounts from **Linked Account** to analyze their cost data. For details, see [Analysis Reports](#). If a master account is disassociated from its member accounts and becomes an individual user, it can no longer view the analysis reports of the member accounts.
- If any member accounts are disassociated from the master account and become individual users, they can only view their own analysis reports (**PayerAccount Name** are set to the member accounts).

Cost Anomaly Detection

- A master account can create a monitor of the **linked account** type to detect any pay-per-use and yearly/monthly cost anomalies of the master account or its member accounts.
- Member accounts can only create a monitor of any type except for **linked account** to detect their possible pay-per-use and yearly/monthly cost anomalies.

Changing from Pay-per-Use to Yearly/Monthly

- A master account can select member accounts from **Linked Account** to view the cost optimization option of changing the billing mode from pay-per-use to yearly/monthly for the member accounts. For details, see [Yearly/Monthly Subscriptions](#).
- Member accounts can only view the cost optimization option of changing the billing mode from pay-per-use to yearly/monthly. If they are no longer associated with the master account and have become individual users, they will only be able to access the cost optimization option during the disassociation period.

Cost Tags

- A master account manages its own cost tags and its member accounts' cost tags, including activating or deactivating tags. For details, see [Activating Cost Tags](#).
- Member accounts can only use the tags activated by their associated master account. Any member accounts disassociated from the master account can no longer use the tags activated by their master accounts. If they still need to use those tags, they have to activate them by themselves.

Preferences

- the master account is responsible for evaluating the cost optimization option of changing the billing mode from pay-per-use to yearly/monthly, and its member accounts can only use the preferences chosen by the master account.
- Member accounts can enable shared cost splitting, regardless of whether they are associated for .

15 Permissions

15.1 Introduction

If you need to assign different permissions to personnel in your enterprise to access Cost Center, Identity and Access Management (IAM) is a good choice for fine-grained permissions management.

IAM is a free service. You only pay for the resources in your account. For more information about IAM, see [IAM Service Overview](#).

System-Defined Roles

New IAM users do not have any permissions assigned by default. You need to first add them to one or more groups and attach policies or roles to these groups. The users then inherit permissions from the groups and can perform specified operations on cloud services based on the permissions they have been assigned. IAM provides frequently used roles that have permissions to access different services, and you have the permissions granted to these roles.

You can grant users permissions by using roles and policies.

- **Roles:** A coarse-grained authorization strategy provided by IAM to assign permissions based on users' job responsibilities. Only a limited number of service-level roles are available for authorization. Huawei Cloud services depend on each other. When you grant permissions using roles, you also need to attach dependent roles. Roles are not ideal for fine-grained authorization and least privilege access.
- **Policies:** A fine-grained authorization strategy that defines permissions required to perform operations on specific cloud resources under certain conditions. This type of authorization is more flexible and is ideal for least privilege access.

[Table 15-1](#) lists all the system-defined roles for Cost Center.

Table 15-1 System-defined roles

Role Name	Permissions
BSS Administrator	Full permissions for Cost Center. This role is generally granted to the administrator.
BSS Operator	Permissions include querying cost analyses, budget details, and cost tags in Cost Center. This role is generally granted to the technical personnel, such as R&D and O&M personnel.
BSS Finance	Financial permissions. Users with these permissions can perform all financial operations in Cost Center. This role is generally granted to financial personnel.

Table 15-2 lists the common operations supported by system-defined roles for Cost Center.

Table 15-2 Common operations supported by system-defined roles

Page	Function	BSS Administrator	BSS Operator	BSS Finance
-	Enabling Cost Center	Supported	Not supported	Supported
Overview	Viewing current month costs	Supported	Supported	Supported
	Viewing daily costs	Supported	Supported	Supported
	Viewing current month trends	Supported	Supported	Supported
	Viewing recently accessed reports	Supported	Supported	Supported
Cost Analysis	Querying cost analyses	Supported	Supported	Supported
	Exporting cost details	Supported	Not supported	Supported
Budgets	Setting a budget	Supported	Not supported	Supported
	Viewing budget details	Supported	Supported	Supported
	Exporting budgets	Supported	Not supported	Supported
Reports	Creating and saving reports	Supported	Not supported	Supported

Page	Function	BSS Administrator	BSS Operator	BSS Finance
	Viewing reports	Supported	Supported	Supported
Budget Reports	Configuring budget reports	Supported	Not supported	Supported
	Deleting budget reports	Supported	Not supported	Supported
	Viewing budget reports	Supported	Supported	Supported
Cost Anomaly Detection	Creating cost monitors	Supported	Not supported	Supported
	Deleting cost monitors	Supported	Not supported	Supported
	Viewing cost monitors and anomalies	Supported	Supported	Supported
	Accessing Cost Analysis	Supported	Supported	Supported
	Disabling alerts for cost anomalies	Supported	Not supported	Supported
	Viewing alert settings for cost anomalies	Supported	Supported	Supported
Yearly/ monthly subscriptions	Evaluating cost optimization option of changing pay-per-use to yearly/ monthly	Supported	Supported	Supported
Cost Tags	Viewing cost tags	Supported	Supported	Supported
	Activating cost tags	Supported	Not supported	Supported
Cost Category	Creating cost categories	Supported	Not supported	Supported
	Deleting cost categories	Supported	Not supported	Supported
	Viewing cost categories	Supported	Supported	Supported
	Exporting cost splitting details	Supported	Not supported	Supported

Page	Function	BSS Administrator	BSS Operator	BSS Finance
	Viewing cost analyses	Supported	Supported	Supported
Preferences	Enabling functions	Supported	Not supported	Supported
	Disabling functions	Supported	Not supported	Supported
Export History	Exporting historical records	Supported	Not supported	Supported
Cost Optimization	Viewing cost optimization summary	Supported	Supported	Supported
	Viewing cost optimization subscriptions	Supported	Supported	Supported
	Configuring cost optimization subscriptions	Supported	Not supported	Supported
Cost Details Export	Exporting cost details	Supported	Not supported	Supported

Creating a Custom Policy

You can create custom policies to supplement the system-defined roles. For details about the actions supported by custom policies, see [Table 15-3](#).

Table 15-3 Supported actions

Fine-Grained Permissions Policy	Description
bss:costcenter:start	Enables Cost Center.
bss:costanalysis:view	Views cost analysis and overview.
bss:costanalysis:export	Exports cost details, including original and amortized cost details, with cost tags.
bss:costreport:view	Views a list of cost reports.

Fine-Grained Permissions Policy	Description
bss:costreport:update	<p>Manages cost reports, including creating, modifying, and deleting custom reports.</p> <p>If this permission is granted to an IAM user, you must also grant the user the bss:costreport:view permission.</p>
bss:budget:update	<p>Manages budgets, including creating, modifying, and deleting budgets.</p> <p>If this permission is granted to an IAM user, you must also grant the user the bss:budget:view permission.</p>
bss:budget:view	Views budget information, including the budget list and budget details.
bss:budgetreport:update	Adds and modifies budget reports.
bss:budgetreport:delete	Deletes budget reports.
bss:budgetreport:view	Views budget reports, including the budget list and budget details.
bss:costtag:view	Views cost tags.
bss:costtag:update	<p>Activates or deactivates cost tags.</p> <p>If this permission is granted to an IAM user, you must also grant the user the bss:costtag:view permission.</p>
bss:costunit:update	<p>Configures cost categories, including creating and editing cost categories. If this permission is granted to an IAM user, you must also grant the user the bss:costunit:view and bss:costanalysis:view permissions.</p>
bss:costunit:delete	<p>Deletes cost categories. If this permission is granted to an IAM user, you must also grant the user bss:costunit:view permission.</p>
bss:costunit:view	Views the list of cost categories and the details of each cost category.
bss:monitor:update	Adds or edits cost monitors.
bss:monitor:delete	Deletes cost monitors.
bss:monitor:view	Views cost monitors and anomalies.
bss:monitoralert:update	<p>Creates cost anomaly notifications.</p> <p>If this permission is granted to an IAM user, you must also grant the user the bss:monitoralert:view permission.</p>

Fine-Grained Permissions Policy	Description
bss:monitortalert:view	Views cost anomaly notifications.
bss:costoptimization:view	Evaluates cost optimization option of changing pay-per-use to yearly/monthly.
bss:costpreferences:update	Enables functions on the Preferences page.
bss:costpreferences:delete	Disables functions on the Preferences page.
bss:recommendation:view	Views cost optimization summary.
bss:recommendationsub:view	Views cost optimization subscriptions.
bss:recommendationsub:update	Configures cost optimization subscriptions.

15.2 Creating a User Group and Assigning Permissions

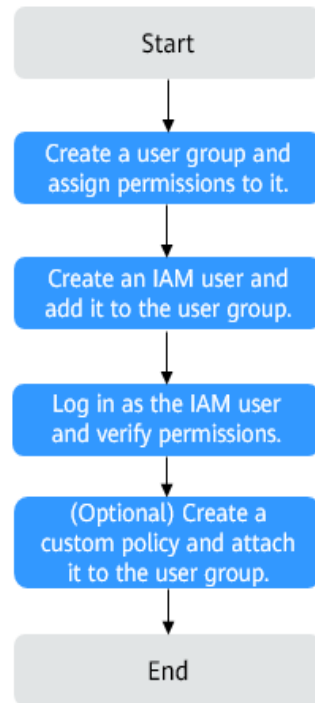
This section describes how to use a group to grant permissions for the Cost Center to a user. [Figure 15-1](#) shows the process for granting permissions.

Prerequisites

Before assigning permissions to a user group, you should learn about the permissions that can be added to the user group and select the permissions as required. For details about the system permissions supported by the Cost Center, see [Introduction](#).

Process Flow

Figure 15-1 Process for granting permissions



1. **Create a user group and assign permissions** to it.
Create a user group on the IAM console, and assign operation permissions for the Cost Center to **BSS Administrator**.
2. **Create an IAM user and add it to a group.**
Create a user on the IAM console and add the user to the group created in 1.
3. Log in to Cost Center and verify permissions.
Log in to Cost Center using the account of the created user and verify whether the created user has the permission for exporting cost details.
On the **Cost Analysis** page, click **export records** to verify it. If the export is successful, the BSS Administrator permission has taken effect.

Example Scenarios

- If users need full permissions to Cost Center, grant **BSS Administrator** to them.
- If users only need to view cost data in Cost Center, grant **BSS Operator** to them.
- If users need to perform financial operations, such as viewing and downloading cost analysis, grant **BSS Finance** to them.
- You can also create custom policies for more fine-grained permissions management. For details about the actions supported by custom policies, see [Table 15-3](#).

15.3 Creating a Custom Policy

You can create custom policies in either of the following ways:

- Visual editor: Select cloud services, actions, resources, and request conditions. This does not require knowledge of policy syntax.
- JSON: Edit JSON policies from scratch or based on an existing policy.

For details, see [Creating a Custom Policy](#). The following section contains examples of custom policies frequently used in the Cost Center.

Example Policies

- Example 1: Grant users all permissions to the Cost Center.

```
{
  "Version": "1.1",
  "Statement": [
    {
      "Action": [
        "BSS:*:*"
      ],
      "Effect": "Allow"
    }
  ]
}
```

- Example 2: Grant users the permissions to view cost analysis and export analysis results.

```
{
  "Version": "1.1",
  "Statement": [
    {
      "Action": [
        "bss.costanalysis.view",
        "bss.costanalysis.export",
      ],
      "Effect": "Allow"
    }
  ]
}
```

16 Quotas and Restrictions

Cost Analysis

Maximum number of items allowed for each filter	50 Under the Cost Category or Cost Tag filter, you can select up to 20 items for a level-1 option and up to 50 items for a level-2 option at a time.
---	---

Budgets

Total number of budgets per account	1000
Maximum number of recipients per budget	10
Characters allowed in a budget name	Letters, digits, hyphens (-), and underscores (_)
Maximum number of items allowed for each filter	50 Under the Cost Category or Cost Tag filter, you can select up to 20 items for a level-1 option and up to 50 items for a level-2 option at a time.

Analysis Reports

Maximum number of reports per account	50
---------------------------------------	----

Budget Reports

Maximum number of budget reports per account	50
Maximum number of budgets per budget report	50
Maximum number of recipients per budget report	50

Export

Maximum number of the same tasks that can be exported at the same time	1
Maximum number of the tasks (of the same type but with different export criteria) that can be exported at the same time	5
Maximum number of export tasks of the same type within 24 hours	50
Maximum duration for storing exported files on the server	3

Cost Tags

Maximum number of tags that can be activated by each user	50
---	----

17 Auditing

17.1 Supported Cost Center Operations

Scenarios

With Cloud Trace Service (CTS), you can record Cost Center operations for later query, auditing, and backtracking.

Prerequisites

You have enabled CTS.

Key Cost Center Operations

Table 17-1 Cost Center operations that can be recorded by CTS

Operation	Resource Type	Trace Name
Querying cost details	costDetail	queryCostDetail
Exporting cost details	costDetail	exportCostDetail
Creating or updating an analysis report	costAnalysis	createOrUpdateAnalysisReport
Deleting an analysis report	costAnalysis	deleteAnalysisReport
Exporting cost analyses	costAnalysis	exportCostAnalysis
Creating or updating a budget	budget	createOrUpdateBudget
Exporting budget details	budget	exportBudgetDetail

Operation	Resource Type	Trace Name
Exporting a budget list	budget	exportBudgetList
Deleting a budget	budget	deleteBudget
Creating or updating a budget report	budget	createOrUpdateBudgetReport
Deleting a budget report	budget	deleteBudgetReport
Creating or updating a cost monitor	costAnomalyDetection	createOrUpdateCostMonitor
Enabling alerting	costAnomalyDetection	enableAlert
Disabling alerting	costAnomalyDetection	disableAlert
Deleting a cost monitor	costAnomalyDetection	deleteCostMonitor
Modifying idle resource identifying rules	recommendation	modifyIdleResourcesIdentifyingRule
Exporting optimization option of changing pay-per-use to yearly/monthly	recommendation	exportPay-per-UseToYearly-MonthlyCostOptimization
Exporting resource package utilization and detailed analyses	resourcePackage	exportResourcePackageUtilizationAnalysis
Exporting resource package coverage and detailed analyses	resourcePackage	exportResourcePackageCoverageAnalysis
Exporting resource package purchase recommendations	recommendation	exportResourcePackageRecommendations
Activating or deactivating cost tags	costTag	activateOrDeactivateCostTags
Creating or updating a cost category	costCategory	createOrUpdateCostCategories

Operation	Resource Type	Trace Name
Deleting a cost category	costCategory	deleteCostCategories
Enabling or disabling Cost Center features	preference	enableOrDisableCostFeature
Configuring cost optimization subscriptions	recommendation	setRecommSubscription
Canceling cost optimization subscriptions	recommendation	deleteRecommSubscription
Exporting cost optimization recommendations	recommendation	exportCostRecommendation

17.2 Viewing Audit Logs

For details about how to view audit logs, see [Querying Real-Time Traces](#).