MapReduce Service

Billing Description

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1 Overview

This topic introduces how MRS is billed along with details about billing modes, billing items, renewals, and accounts in arrears.

- **Billing Modes**

  Currently, MRS resources can be billed on a yearly/monthly or pay-per-use basis.

  Yearly/Monthly billing is a prepaid mode. In this mode, you pay for resources before using them. Your bill is settled based on the required duration you specify. Before you make a purchase, you need to ensure that your account balance is abundant. Pay-per-use billing is a postpaid mode. In this mode, you are billed based on the duration you use MRS resources.

  For details about the two billing modes, see **Overview**.

  After purchasing an MRS instance, you can change your billing mode to meet changing needs. For details, see **Introduction**.

- **Billing Items**

  The billing items of an MRS cluster consist of the MRS management service and IaaS infrastructure resources (ECS and EVS). For details about the billing factors and formulas for each billing item, see **Billing Items**.

  For details about billing examples in actual scenarios and the fee calculation process of each billing item in different billing modes, see **Billing Examples**.

- **Renewals**

  If a yearly/monthly MRS cluster expires, the cluster cannot run properly. If you want to continue using the MRS cluster, you need to renew it within the specified period. Otherwise, you cannot perform operations on the cluster on the MRS management console, or call cluster APIs. O&M services such as automatic monitoring and alarm reporting will be stopped. You can renew your subscription manually or automatically. For more information about renewal, see **Introduction**.

- **Bills**

  On the management console, hover the mouse over **More** and choose > **Bills**. On the **Dashboard** page, you can view the bills related to MRS clusters. For details, see **Bills**.

- **Overdue Payment**

  For MRS clusters billed yearly/monthly, you never pay for them in arrears.

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In pay-per-use mode, cluster fees are deducted every hour. If your account balance is insufficient to pay for the expense occurred in the last hour, your account will be in arrears, and MRS clusters have a **retention period**. If the clusters are renewed within the retention period, they will be available and charged from the original expiration date. For details, see **Arrears**.

- **Stopping billing**

  The terminated or unsubscribed MRS cluster is no longer billed. For details, see **Stopping Billing**.

- **Cost management**

  Manage your cost composition, allocation, analysis, and optimization. For details, see **Managing Costs**.

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2 Billing Modes

2.1 Overview

MRS provides two billing modes: yearly/monthly and pay-per-use to meet your requirements in different scenarios.

- Yearly/monthly: You pay for the cluster by year or month, in advance. The minimum usage duration is one month and the maximum usage duration is one year.
- Pay-per-use: Nodes are charged by actual duration of use, with a billing usage period of one hour.

Table 2-1 lists the differences between the billing modes.

Table 2-1 Billing modes

Billing Mode	Yearly/Monthly	Pay-per-Use	Reference
Payment	Prepayment Billed by the subscription term you purchase	Postpayment Billed by usage duration of MRS clusters	-
Billing usage period	You are charged based on the usage duration. The minimum duration is one month and the maximum duration is one year.	Billed by second and settled by hour	-
Billing items	MRS management fee and IaaS infrastructure resource fee (ECSs and EVSs)	MRS management fee and IaaS infrastructure resource fee (ECSs and EVSs)	**Billing Items**

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Billing Mode	Yearly/Monthly	Pay-per-Use	Reference
Billing mode change	-	Can be changed to yearly/monthly.	**Changing the Billing Mode from Pay-per-Use to Yearly/Monthly**
Specification change	Specifications can be changed, which affects the pricing. MRS supports the following changes: • Node specifications • Node quantity	Specifications can be changed, which affects the pricing. MRS supports the following changes: • Node specifications • Node quantity	-
Application scenario	This mode is cost-effective and suitable when the duration of resource usage is predictable. The yearly/monthly mode is recommended for long-term users.	This mode is ideal when you want more flexibility and control on compute resource usage.	-

2.2 Yearly/Monthly Billing

Yearly/Monthly billing is a prepaid billing mode in which you pay before using resources. It is suitable when your resource requirements are fixed because you can pay less by using longer. This section describes the billing rules for yearly/monthly MRS resources.

Application Scenarios

In yearly/monthly billing mode, you need to pay for a required duration in advance. This mode is suitable for long-term and relatively fixed service requirements.

The yearly/monthly billing mode is recommended for the following scenarios:

- The duration of resource usage is predictable.
- The demand for compute resources is stable.
- The service resource usage is stable.

Billing Usage Period

A yearly/monthly ECS is billed for the purchased duration (UTC+8:00). A billing usage period starts from the time when your MRS cluster is started or renewed (accurate to seconds) and ends at 23:59:59 on the expiration date.

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The subscription of a yearly/monthly cluster that has not expired can be canceled. The billing stops when the subscription is canceled..

For example, if you purchase a one-month MRS instance on June 08, 2023, 15:50:04, the billing usage period is from June 08, 2023, 15:50:04 to July 08, 2023, 23:59:59.

Impact on Billing After Specification Change

If the specifications of your yearly/monthly MRS instance do not meet your service requirements, you can modify the specifications on the MRS console. MRS provides the following configuration modification methods:

- Scale-out: Scale out Core or Task nodes. For details, see **Scaling Out a Cluster**. Scale out data disks.
- **Auto Scaling**: The number of nodes in a cluster can be automatically adjusted based on the service data volume to increase or decrease resources. For details, see **Configuring Auto Scaling Rules**.

  NOTE

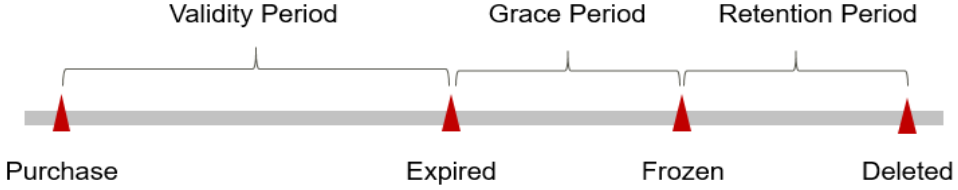
  - The price displayed at the bottom when you purchase an MRS cluster will not include the auto scaling fee if you specify only the auto scaling range for the Task nodes without configuring the instance count. The price will include the auto scaling fee after you configure both the auto scaling range and instance count. When the auto scaling conditions are met, the price will be affected after node scaling.
  - If you add nodes through the auto scaling function, the added nodes will be billed by the actual usage duration per hour regardless of whether the cluster's billing mode is yearly/monthly or pay-per-use mode.

Scale-in affects the performance of the MRS cluster and therefore is not recommended. The nodes that are deleted are charged based on the actual usage duration and are stop being billed after the scale-in.

Impacts of Expiration

Figure 2-1 describes the status of each stage of a yearly/monthly MRS instance. After an MRS instance is purchased, it enters the valid period and runs normally during this period. If the MRS instance is not renewed after it expires, before being deleted, it first enters a grace period and then a retention period.

Figure 2-1 Lifecycle of a yearly/monthly MRS instance



Expiration Reminder

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The system will send you a reminder (by email, SMS, or in-app message) 7 days before a yearly/monthly MRS cluster expires to remind you to renew the subscription.

Impact After Expiration

If you do not renew your subscription before the yearly/monthly MRS instance expires, the instance enters the grace period first. During the grace period, you can access MRS clusters but cannot:

- Scale out clusters or expand data disks.
- Scale in clusters.
- Add Task nodes.
- Unsubscribe from a cluster.

If the yearly/monthly MRS instance is not renewed after the grace period ends, its status turns to **Frozen** and it enters a retention period. You cannot perform any operations on the MRS cluster while it is in the retention period.

After the retention period expires, if the yearly/monthly MRS cluster is not renewed, the cluster service will be terminated and the data in the system will be permanently deleted.

NOTE

- To delete an expired cluster that is no longer used, log in to the MRS console, locate the row that contains the target cluster in the active cluster list, and choose **More** > **Release** in the **Operation** column.
- For details about renewal, see **Introduction**.

2.3 Pay-per-Use Billing

Pay-per-use is a billing mode where you pay after using the resources. This billing mode does not require you to make any prepayments or long-term commitments. This section describes the billing rules for pay-per-use MRS instances.

Application Scenarios

- Your cluster is used for program R&D or function test in the early stage.
- You may only need to use the resources temporarily and for urgent purposes.

Billing Usage Period

Pay-per-use MRS usage is calculated by the second and billed every hour (UTC+08:00). The billing starts when the purchased MRS cluster is started and ends when the cluster is deleted.

NOTE

It takes some time for an MRS cluster to start. The billing starts when the cluster is created (that is, the cluster status changes from **Starting** to **Running**) instead of when the cluster is created. You can view the cluster creation time in the **Created** column of the active cluster list.

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For example, if you purchased a pay-per-use MRS instance at 8:45:30 and deleted it at 8:55:30, you are billed for the 600 seconds from 8:45:30 to 8:55:30.

Impact on Billing After Specification Change

If the specifications of your pay-per-use MRS instance do not meet your service requirements, you can modify the specifications on the MRS console. MRS provides the following configuration modification methods:

- Scale-out: Scale out Core or Task nodes. For details, see **Scaling Out a Cluster**. Scale out data disks.
- **Auto Scaling**: The number of nodes in a cluster can be automatically adjusted based on the service data volume to increase or decrease resources. For details, see **Configuring Auto Scaling Rules**.

  NOTE

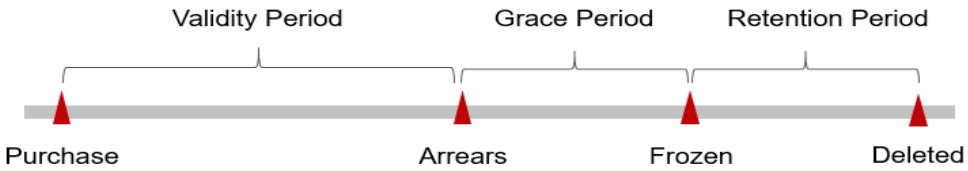
  - The price displayed at the bottom when you purchase an MRS cluster will not include the auto scaling fee if you specify only the auto scaling range for the Task nodes without configuring the instance count. The price will include the auto scaling fee after you configure both the auto scaling range and instance count. When the auto scaling conditions are met, the price will be affected after node scaling.
  - If you add nodes through the auto scaling function, the added nodes will be billed by the actual usage duration per hour regardless of whether the cluster's billing mode is yearly/monthly or pay-per-use mode.

Scale-in affects the performance of the MRS cluster and therefore is not recommended. The nodes that are deleted are charged based on the actual usage duration and are stop being billed after the scale-in.

Impacts of Expiration

Figure 2-2 describes the status of pay-per-use MRS resources in different periods. After an MRS instance is purchased, it enters the valid period and runs normally during this period. If your account goes into arrears, the MRS instance enters a grace period and then a retention period.

Figure 2-2 Life cycle of a pay-per-use MRS instance



Arrears notifications

The system deducts fees from your account balance for pay-per-use resources at the end of each billing cycle. If your account goes into arrears, the system will notify you by email, SMS, or in-app message.

Impact of arrears

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Your account may fall into arrears after pay-per-use fees for MRS are deducted from the account balance. However, your pay-per-use resources will not be stopped immediately. There will be a grace period. You are still responsible for expenditures generated during the grace period. Log in to the management console and choose > **Bills**. On the **Overview** page, you can view the bills on the **Overview** page in **Billing Center**.

If you do not bring your account balance current before the grace period expires, the resources turn to **Frozen** and some operations are restricted. You are advised to top up your account as soon as possible. The restricted operations are as follows:

- Creating clusters
- Scaling out clusters or expanding data disks
- Scaling in clusters
- Adding Task nodes

If you do not bring your account balance current before the retention period ends, services in the cluster will be terminated and the data in the system will be permanently deleted.

Billing for Stopped Instances

Generally, after all ECSs in a pay-per-use MRS cluster are stopped:

- The MRS cluster management service fee is still charged. You can delete the cluster to stop billing.
- For details about the billing rules for stopped ECSs, see **Billing**.
- For details about the billing rules for stopped EVS disks, see **Billing for Disks**.

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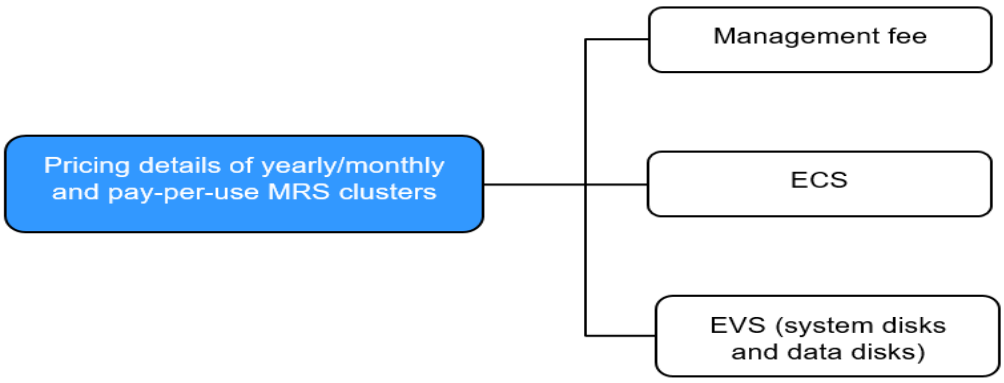
3 Billing Items

The billing items of an MRS cluster consist of the MRS management service and IaaS infrastructure resources (ECSs and EVS disks).

Figure 3-1 MRS billing composition



For details, see **Table 3-1**.

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Table 3-1 MRS cluster billing items

Billing Item	Description	Billing Mode	Formula
MRS management fee	The management fee of an MRS cluster is charged by core and the billing varies by region. The billing items include: • MRS normal cluster management fee: It is used when you purchase an MRS normal cluster. • LTS MRS cluster management fee: It is used when you purchase an LTS MRS cluster.	Yearly/ Monthly and pay-per-use	**Number of cores x Number of nodes x Unit price of core specifications x Required duration** The price of a single core varies by cluster type and region. For details, see **Price Calculator**.
ECSs	You are billed by ECS flavor, including vCPUs and memory. Computing and storage capabilities vary by the number of vCPUs and memory size.	Yearly/ Monthly and pay-per-use	**Number of nodes x ECS unit price x Required duration** For details about the unit price of an ECS, see **Price Calculator**.
EVS disks (system disks and data disks)	You are billed by EVS disk flavors, including disk type and capacity. Regardless of whether you use the disk after purchasing it, you will be charged right away.	Yearly/ Monthly and pay-per-use	**EVS disk size x EVS disk unit price x Purchase quantity x Required duration** For details about the EVS disk unit price, see **Price Calculator**.

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4 Billing Examples

Billing Scenario

Assume that a user purchased a pay-per-use MRS analysis cluster of the normal edition at 15:30:00 on March 18, 2023 and the configurations were as follows:

- **master_node_default_group** node group (Master node group for short)
  - Number of nodes: 3
  - Node specifications: c6.2xlarge.2 (8 vCPUs and 16 GB)
  - System disk: ultra-high I/O and 480 GB
  - Data disk: ultra-high I/O and 600 GB
- **core_node_analysis_group** node group (Core node group for short)
  - Number of nodes: 3
  - Node specifications: c6.xlarge.4 (4 vCPUs and 16 GB)
  - System disk: general-purpose SSD and 480 GB
  - Data disk: general-purpose SSD and 600 GB

After a period of time, the user found that the current specifications of the MRS cluster could not meet service requirements and added a node to the **core_node_analysis_group** node group at 09:00:00 on March 20, 2023. However, the memory of the **master_node_default_group** node group was insufficient for supporting the sustainable growth of services. At 10:00:00 on March 20, 2023, the user upgraded the specifications of the Master node to c6.2xlarge.4 (8 vCPUs and 32 GB). Since the cluster was intended for long-term use, the billing mode was switched to yearly/monthly on March 20, 2023, 11:00:00, and the billing period is for one month. How much is the total fee of the MRS instance in March and April?

Billing Analysis

The usage of the MRS instance can be divided into two phases based on the billing mode: pay-per-use from March 18, 2023, 15:30:00 to March 20, 2023, 11:00:00, and yearly/monthly from March 20, 2023, 11:00:00 to April 20, 2023, 23:59:59.

Pay-per-use billing

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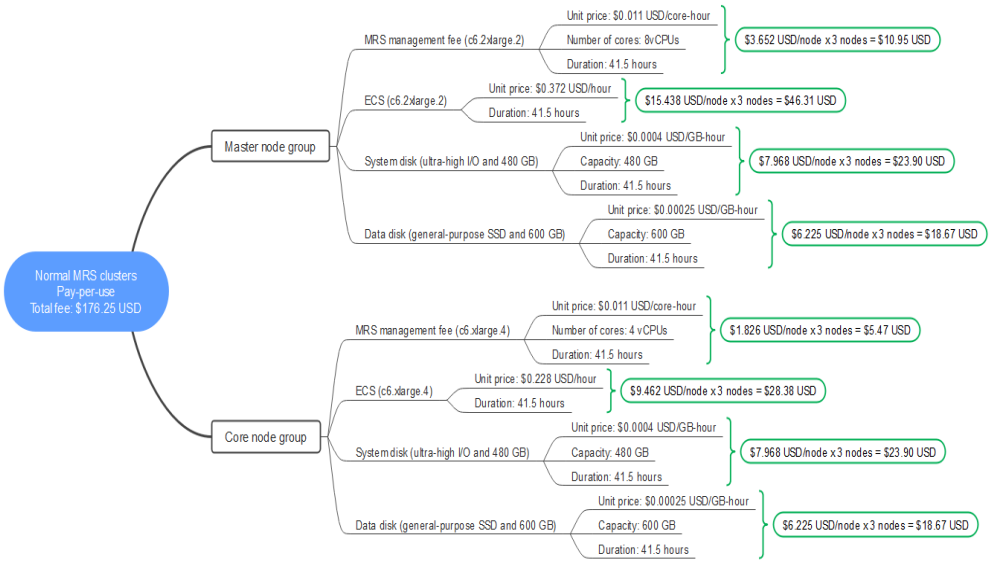
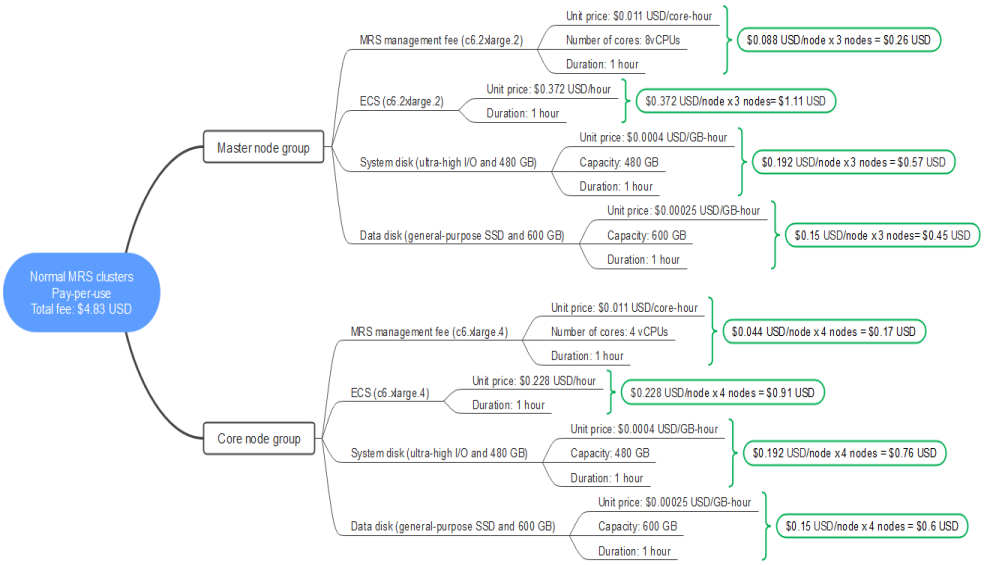
From March 18, 2023, 15:30:00 to March 20, 2023, 09:00:00, the billing is based on the cluster specifications used during cluster creation for 41.5 hours. The fees are calculated as follows.



If one node is added to the Core node group from 9:00:00 to 10:00:00 on March 20, 2023 for one hour, the fee is calculated as follows.



If the specifications of the Master node group are upgraded to c6.2xlarge.4 (8 vCPUs and 32 GB) for one hour from 10:00:00 to 11:00:00 on March 20, 2023. The fee is calculated as follows.

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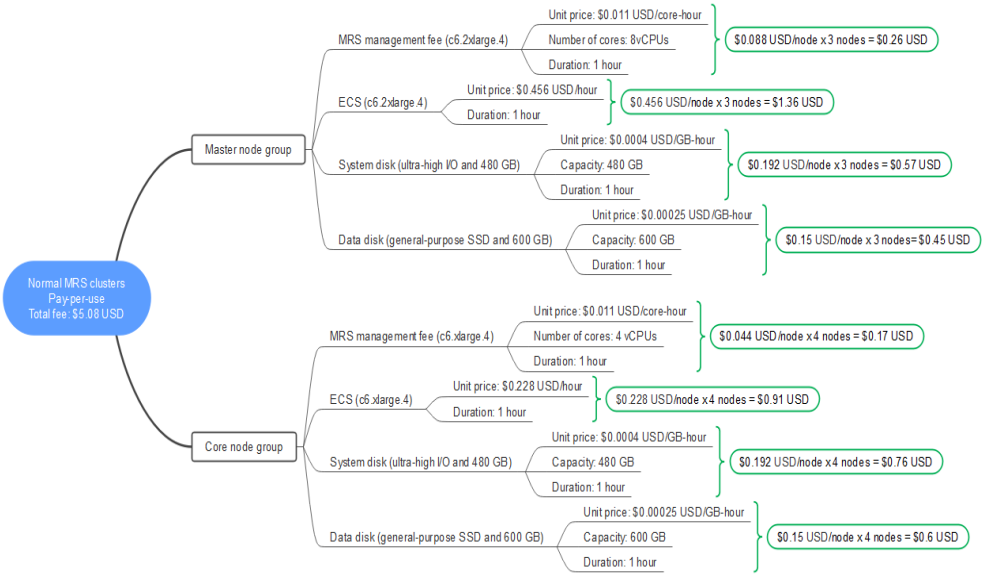
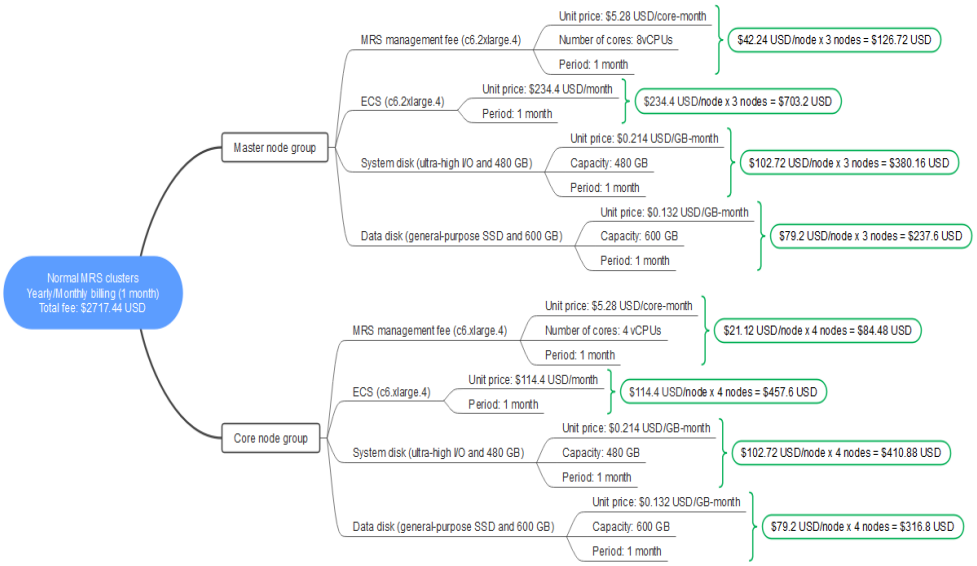


Yearly/Monthly billing

From March 20, 2023, 11:00:00 to April 20, 2023, 23:59:59, the billing mode is yearly/monthly, and the billing period is for one month. The fees are calculated as follows.



From March to April, the total price of this ECS is $2903.6 USD (176.25 + 4.83 + 5.08 + 2717.44).

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5 Billing Mode Changes

5.1 Introduction

You can change the billing mode of the created cluster later to meet changing needs. The corresponding IaaS infrastructure resource fee changes accordingly. MRS only allows you to change the billing mode from pay-per-use to yearly/monthly. **Table 5-1** lists the MRS billing items that support this billing mode change. You can change the billing mode of an MRS instance from pay-per-use to yearly/monthly to enjoy price discounts.

Table 5-1 Billing items that support billing mode change

Billing Item	Change description	Reference
MRS management fee	The billing mode of MRS management changes accordingly.	**Changing the Billing Mode from Pay-per-Use to Yearly/Monthly**
ECSs	The billing mode of ECSs in the cluster changes accordingly.	
EVS disks	The billing mode of the EVS disks attached to the ECSs in the cluster changes accordingly. Non-shared, pay-per-use disks cannot be changed to yearly/monthly billing separately. They must be changed together with ECSs. After the change, they have the same expiration times as the servers.	

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5.2 Changing the Billing Mode from Pay-per-Use to Yearly/Monthly

If you want to use a pay-per-use MRS cluster for a long time, you can change the billing mode of the MRS cluster to yearly/monthly to reduce costs. By doing so, a new order is generated and the yearly/monthly resource takes effect immediately after you pay the order.

Assume that you bought a pay-per-use MRS instance on June 18, 2023, 15:29:16, and you changed the instance's billing mode to yearly/monthly on June 18, 2023, 16:30:30 (a change-to-yearly/monthly order generated). After you paid the order, the gateway immediately entered the yearly/monthly billing mode.

On the management console, choose > **Bills** and the following bills are generated on the **Bills** page in **Bill Center**:

- Pay-per-use: June 18, 2023, 15:00:00 to June 18, 2023, 16:00:00. Fees are generated for the period from 15:29:16 to 16:00:00.
- Pay-per-use: June 18, 2023, 16:00:00 to June 18, 2023, 17:00:00. Fees are generated for the period from 16:00:00 to 16:30:30.
- Yearly/Monthly: June 18, 2023, 16:30:30

Prerequisites

- The billing mode of the target MRS cluster is pay-per-use.
- The target MRS cluster is in the **Running** state.

Procedure

Step 1 Log in to the MRS console.

Step 2 In the left navigation pane, choose **Clusters** > **Active Clusters**.

Step 3 In the **Operation** column corresponding to the cluster for which you want to change the billing mode, click **Change to Yearly/Monthly**.

Step 4 If you are sure you want to change the billing mode, click **Yes**.

Step 5 On the **Change Subscription** page that is displayed, choose how often you would like to renew and click **Pay**.

After the order is submitted, the cluster status changes from **Running** to **Changing to Yearly/Monthly**.

After the order is paid, the cluster billing mode starts changing to **Yearly/Monthly**. After the billing mode is changed, the cluster status turns into **Running**.

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NOTE

After the billing mode is changed to yearly/monthly, task nodes in a cluster are still billed in pay-per-use mode. During the change, the configured AS rules do not trigger scaling actions. Change the billing mode at an appropriate time to avoid any adverse impact on your services.

----End

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6 Renewal

6.1 Introduction

If a yearly/monthly MRS cluster expires, the ECSs cannot run properly. If you want to continue using the MRS cluster, you need to renew it within the specified period. Otherwise, the cluster service will be terminated and data in the system will be permanently deleted.

Only yearly/monthly MRS clusters can be renewed. Pay-per-use MRS clusters can run as long as you have sufficient account balance.

If your subscription is renewed before it expires, all resources are retained and your MRS cluster is not affected. For details about the statuses of an MRS cluster after it expires, see **Impacts of Expiration**.

Renewal Functions

Table 6-1 describes the functions related to the renewal of yearly/monthly MRS clusters.

Table 6-1 Renewal-related functions

Function	Description
Manually Renewing an MRS Cluster	You can renew a yearly/monthly MRS cluster on the MRS console anytime as long as it is not deleted automatically.
Auto-renewing an MRS Cluster	After auto-renewal is enabled, MRS automatically renews the subscription before the subscription expires. This prevents resources from being automatically deleted if you forget to manually renew the subscription.

You can renew your subscription across the life cycle of your yearly/monthly MRS cluster, as shown in **Figure 6-1**.

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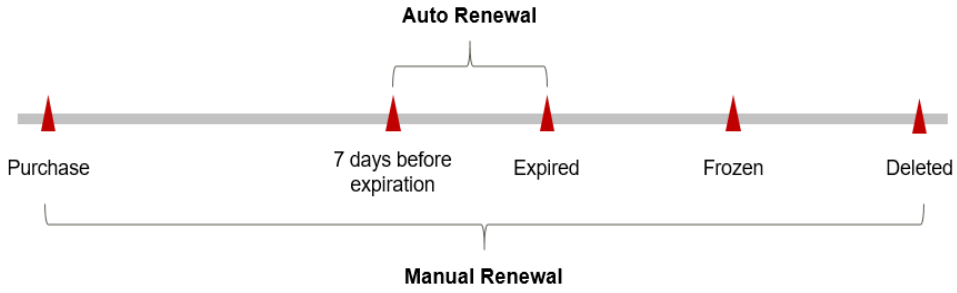
Figure 6-1 MRS cluster lifecycle



- An MRS cluster is in the **Running** state from the time when it is purchased to the time when it expires.
- After the cluster expires, the cluster status changes to **Expired**.
- If the MRS cluster is not renewed upon expiration, it enters the grace period. If it is not renewed after the grace period ends, the status changes to **Frozen**.
- If you do not renew your subscription after the grace period expires, your resource enters a retention period. If you do not renew the subscription within the retention period, your resource is automatically deleted.

Auto-renewal can be enabled anytime before a subscription expires. The system attempts to automatically renew the subscription at 03:00 seven days before the subscription expires. If the fee deduction fails, there will be one attempt at 03:00 every day until the subscription expires or the renewal is successful. You can change the auto-payment date for renewal as required.

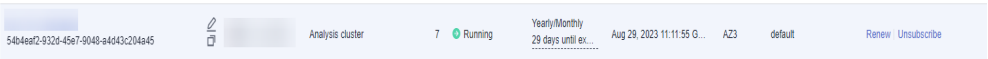
6.2 Manually Renewing an MRS Cluster

You can renew a yearly/monthly MRS cluster on the MRS console anytime as long as it is not deleted automatically.

Procedure

Step 1 Log in to the MRS console.

Step 2 In the active cluster list, locate the row that contains the cluster to be renewed and click **Renew** in the **Operation** column.



----End

Setting a Renewal Date

If the MRS clusters have different expiry dates or the MRS clusters and attached EVS disks have different expiry dates, you can set the same renewal day, for example, the first day of each month, to make it easier to manage renewals.

For details, see **Setting a Renewal Date**.

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6.3 Auto-renewing an MRS Cluster

Auto-renewal is easier and prevents MRS clusters from being automatically deleted if you forget to manually renew them. The auto-renewal rules are as follows:

- The first auto-renewal date and billing cycle are calculated based on the expiration date of the subscription.
- The auto-renewal period of an MRS cluster varies depending on how you enable auto-renewal.
- Auto-renewal can be enabled anytime before a subscription expires. The system attempts to automatically renew the subscription at 03:00 seven days before the subscription expires. If the fee deduction fails, there will be one attempt at 03:00 every day until the subscription expires or the renewal is successful.
- After auto-renewal is enabled, you can still manually renew your MRS cluster. After a manual renewal is complete, auto-renew is still in effect, and auto-renewal will be done 7 days before the new subscription expires.
- By default, the renewal fee is deducted from your account seven days before the new expiry date. You can change this auto-renewal payment date as required.

For more information about auto-renewal, see **Auto-renewal**.

Prerequisites

Your yearly/monthly MRS cluster has not expired.

Enabling Auto-Renewal on the Purchase Page

You can enable auto-renewal on the page for purchasing yearly/monthly MRS clusters. For more information about purchasing an MRS cluster, see **Buying a Custom Cluster**.

If you enable auto-renewal when buying an MRS cluster, the auto-renewal periods are as follows:

- Your subscription will be renewed each month for monthly billing.
- Your subscription will be renewed each year for yearly billing.

Enabling Auto-Renewal in the Active Cluster List

Step 1 Log in to the MRS console.

Step 2 In the left navigation pane, choose **Clusters** > **Active Clusters**.

Step 3 Locate the row that contains the target cluster, choose **More** > **Modify Auto-renewal** in the **Operation** column to modify the auto-renewal function.

----End

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Enabling Auto-Renewal on the Renewals Page

Step 1 Log in to the MRS console.

Step 2 Hover over in the upper part of the console and choose **Renewal** from the drop-down list.

The **Renewals** page is displayed.

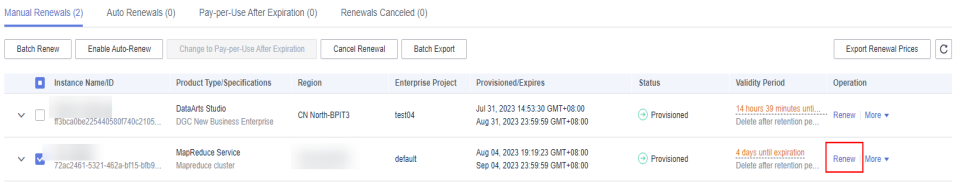
Step 3 Select the search criteria.

- In the **Auto Renewals** tab, you can view the resources for which auto-renewal has been enabled.
- You can enable auto-renewal for resources in the **Manual Renewals**, **Pay-per-Use After Expiration**, and **Renewals Canceled** tabs.

Step 4 Enable auto-renewal for yearly/monthly MRS clusters.

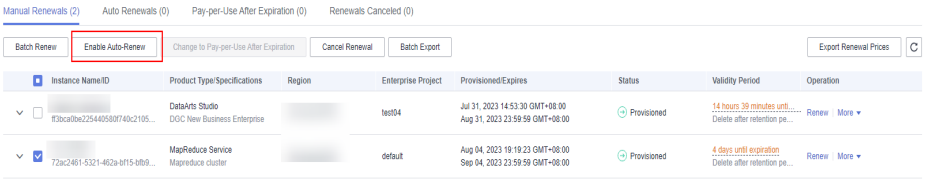
- Enabling auto-renewal for a single MRS cluster: Select the target cluster and click **Enable Auto-Renew** in the **Operation** column.

  Figure 6-2 Enabling auto-renewal for a single MRS cluster

- Enabling auto-renewal for multiple resources at a time: Select the target MRS clusters and click **Enable Auto-Renew** above the list.

  Figure 6-3 Enabling auto-renewal for multiple MRS clusters

Step 5 Select a renewal period, specify the desired auto-renewal times, and click **Pay**.

If auto-renewal is enabled on the **Renewals** page, the auto-renewal period is subject to the selected renewal period and number of auto-renewals. For example, if you set the subscription duration to three months, MRS will be automatically renewed for another three months before each expiration.

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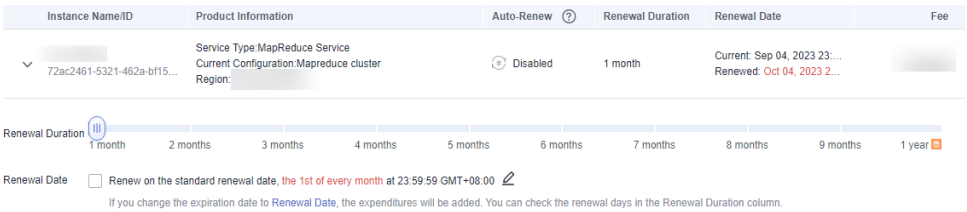
Figure 6-4 Enabling auto-renewal



----End

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7 Bills

On the management console, choose > **Bills** to go to the **Billing Center**. On the **Bills** page, view the resource bills to learn about the usage and charging information of the resource in a certain period.

Bill Generation

Transaction records for yearly/monthly subscriptions are generated immediately after being paid for.

The usage of pay-per-use resources is reported to the billing system at a fixed interval. A pay-per-use resource is billed by the hour, day, or month, depending on the resource's usage type.

Pay-per-use MRS clusters are settled by hour and you are not charged immediately after a record is generated.

Viewing the Bills of a Specific Resource Using the Resource ID

Step 1 Log in to the MRS console and choose **Analytics** > **MapReduce Service**. The active MRS cluster list is displayed.

Step 2 Click the name of the cluster to be queried, click **Nodes**, and record the ID of the target cluster node.

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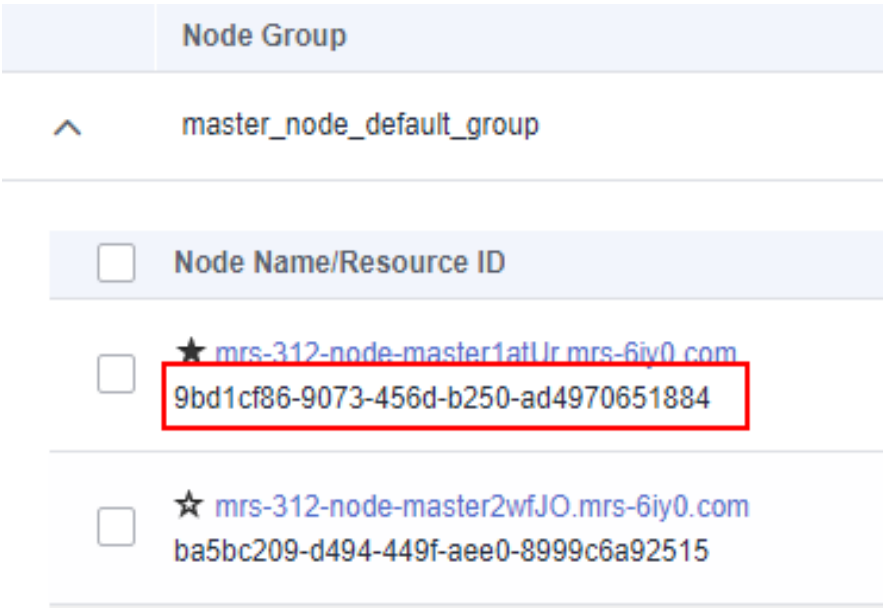
Figure 7-1 Viewing the cluster node ID



Step 3 Click the name of the node to be queried. On the displayed ECS page, click on the left of the system disk and data disk names and record the ID of each EVS disk.

Step 4 Click **Summary**. In the **ECS Information** area, view and record the ECS ID.

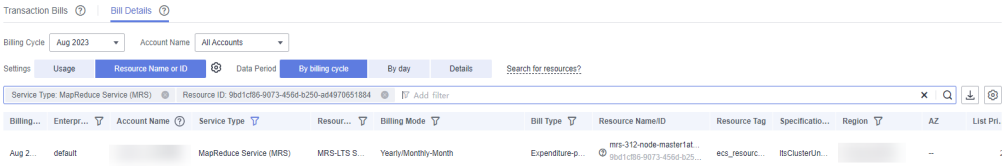
Step 5 On the top menu bar of the console, choose > **Bills**.

Step 6 Choose **Transactions and Detailed Bills** in the navigation pane on the left, click the **Bill Details** tab, and set **Settings** to **Resource Name or ID**.

View the management fee of a specified MRS cluster using the resource ID.

Step 7 Click the search bar, select **Service Type**, and specify **MapReduce Service (MRS)**. Enter the cluster node ID obtained in **Step 2** and click to search for the service management fee of the resource.

Figure 7-2 Viewing the management fee of a specified MRS cluster using the resource ID



View the fee of a specified ECS or an EVS disk using the resource ID.

Step 8 Click the search bar and select **Resource ID**. Enter the system disk ID and data disk ID obtained in **Step 3** and click to search for the system disk or data disk fee.

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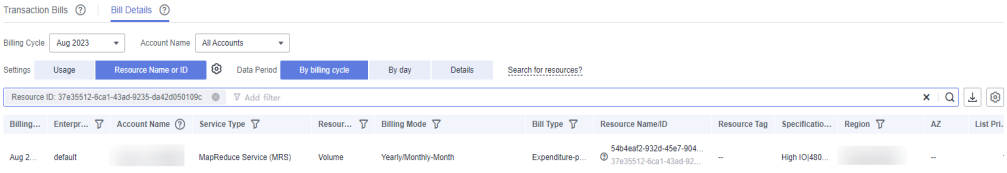
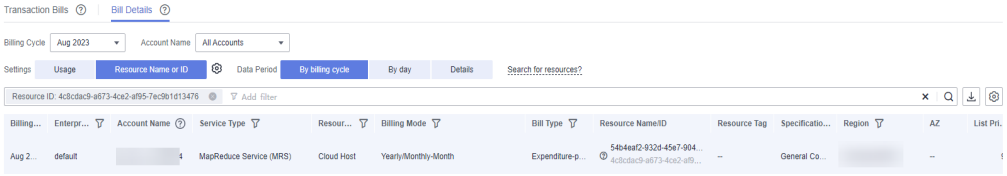
Figure 7-3 Viewing the fee of an ECS or EVS



Step 9 Click the search bar and select **Resource ID**. Enter the ECS ID obtained in **Step 4** and click to search for the cluster node fee.

Figure 7-4 Viewing the fee of a cluster node



----End

Checking the Consistency of the Actual Usage and Billed Usage

Assume that a user purchased a pay-per-use MRS cluster of the normal edition at 14:38:04 on July 24, 2023 and deleted it at 15:38:04 on July 24, 2023 and the cluster specifications were as follows:

- **master_node_default_group** node group (Master node group for short)
  - Number of nodes: 3
  - Node specifications: c6.4xlarge.4 (16 vCPUs | 64 GB)
  - System disk: ultra-high I/O and 100 GB
  - Data disk: ultra-high I/O and 200 GB
- **core_node_analysis_group** node group (Core node group for short)
  - Number of nodes: 2
  - Node specifications: c6.2xlarge.4 (8 vCPUs | 32 GB)
  - System disk: general-purpose SSD and 100 GB
  - Data disk: general-purpose SSD and 200 GB

Transaction bills of MRS normal clusters

The usage of a pay-per-use MRS cluster is calculated by second and billed by hour. Each MRS cluster node is billed separately. Choose > **Bills** on the top of the MRS console to enter the **Billing Center**. Choose **Bills** > **Bill Details**. On the **Transaction Bills** tab page, check whether the information about each billing cycle is consistent with the actual information, as shown in **Table 7-1**.

Table 7-1 MRS cluster transaction bill

Product type	MRS

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Product	• MRS-BASIC Service Charge • ECSs • EVS disks
Billing mode	Pay-per-use
Expenditure time	From July 24, 2023, 14:38:04 to July 24, 2023, 15:38:04, the billing system generates transaction bills for each billing cycle. • July 24, 2023, 14:38:04–July 24, 2023, 15:00:00 • July 24, 2023, 15:00:00–July 24, 2023, 16:00:00
List price	List price: • MRS management fee = **Number of cores x Number of nodes x Unit price of core specifications x Required duration** • ECS fee: **Number of nodes x ECS unit price x Required duration** • EVS disk (system disk and data disk) fee: **EVS disk size x EVS disk unit price x Quantity x Required duration** In this example, the usage of a normal MRS cluster in the first billing cycle is 1,316 seconds. You can query the unit price at **Price Calculator**.
Truncated amount	Huawei Cloud bills a resource with the price (USD) accurate to the eighth decimal place. However, the amount due is truncated to the second decimal place, while the third and subsequent decimal places are referred to as the truncated amount.
Amount due	Amount due = List price – Truncated amount

Detailed bills of MRS normal clusters

On the management console, choose **Billings & Costs** > **Bills**. On the **Billing Center** page that is displayed, choose **Billing** > **Transactions and Detailed Bills**. In the **Bill Details** tab, you can view bill details from multiple dimensions. By default, the bill details of a resource are displayed by usage and by billing cycle. You can check bill details by referring to **Table 7-2**.

Table 7-2 MRS cluster detailed bill

Product type	MRS
Product	• MRS-BASIC Service Charge • ECSs • EVS disks
Billing mode	Pay-per-use

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Resource name/ID	• MRS cluster management fee: check the bill by searching the MRS cluster node name and ID, for example, **3333-node-master1DqDR.com** and **777d75bd-d60e-4546-a2b4-712406ffd744**. • ECS fee: check the bill by searching the ECS name and ID, for example, **d222e5e1-f8a2-419d-9c4f-65c90ba79053_node_master1DqDR** and **d8517e27-c8ff-437f-ac13-48b30389ae0a**. • EVS disk (system disk and data disk) fee: check the bill by searching the system/data disk name and ID, for example, **d222e5e1-f8a2-419d-9c4f-65c90ba79053_node_master1DqD-volume-0000** and **a06d912b-71eb-4993-a988-55e2543d1084**.
Specifications	• Cluster type and number of cores. For example, you can choose normal MRS clusters with 8 cores. • ECS type, vCPU, memory, and OS, for example, General computing | Si2.2xlarge.4 | 8 vCPUs | 32 GB | Linux. • Type and capacity of the EVS disk, for example, High I/O | 100 GB.
Usage type	In pay-per-use billing, the usage type is **Required Duration**.
Unit price	In the pay-per-use billing mode, the unit price is provided only when the amount is equal to the usage multiplied by the unit price. No unit price is provided in other pricing modes, for example, tiered pricing. You can search for the unit price for the following pay-per-use MRS resources: • MRS management: **Price Calculator** • ECS: **Price Calculator** • EVS disk (system and data disk): **Price Calculator**
Usage	The usage is displayed based on the unit price of the product.
Usage unit	Hour
List price	List price: • MRS management fee = **Number of cores x Number of nodes x Unit price of core specifications x Required duration** • ECS fee: **Number of nodes x ECS unit price x Required duration** • EVS disk (system disk and data disk) fee: **EVS disk size x EVS disk unit price x Quantity x Required duration**
Discounted amount	Discounts offered for cloud services, for example, commercial discounts, partner authorized discounts, and promotional discounts. Discounts are based on the list prices.
Amount due	Amount that should be paid for used cloud services after discounts are applied.

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8 Arrears

If there is not a sufficient account balance to pay for your bill and there is no other payment method configured, your account will go into arrears. To continue using MRS, top up your account in time.

Reasons

Your account balance is insufficient to pay for the used resources on the pay-per-use basis.

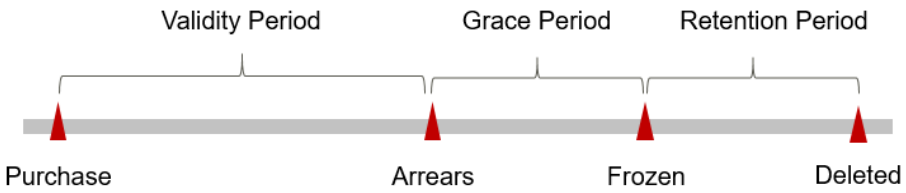
Impact of Arrears

Your account may fall into arrears after pay-per-use fees for MRS are deducted from the account balance. However, your pay-per-use resources will not be stopped immediately. There will be a grace period. You are still responsible for expenditures generated during the grace period. Log in to the management console and choose > **Bills**. On the **Overview** page, you can view the bills on the **Overview** page in **Billing Center**.

If your account is still in arrears after the grace period ends, the resources enter the retention period and their status turns to **Frozen**. You cannot perform any operations on pay-per-use resources in the retention period.

If you do not bring your account balance current before the retention period ends, services in the cluster will be terminated and the data in the system will be permanently deleted.

Figure 8-1 Life cycle of a pay-per-use MRS cluster



Avoiding and Handling Arrears

You need to top up your account once it is in arrears.

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Delete unnecessary MRS clusters to avoid unexpected fees.

On the management console, choose > **Bills**. After entering the **Billing Center**, set quota warning on the **Overview** page. When the available quota is lower than the warning threshold, the system automatically sends an SMS message or email.

If your account is in arrears, top up your account in a timely manner.

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9 Stopping Billing

Resources Billed on a Yearly/Monthly Basis

You pay for a resource billed in yearly/monthly mode, such as a yearly/monthly MRS cluster, when you purchase it. Billing automatically stops when the subscription expires.

- You can unsubscribe from a yearly/monthly resource before the subscription expires. Fees for unused resource will be refunded to you based on refund conditions, including the five-day unconditional unsubscription conditions.
- If you have enabled auto-renewal, disable it before the deduction date (seven days before the expiration date by default) to avoid being charged.

Pay-per-Use Resources

If a pay-per-use MRS cluster is no longer needed, delete it to stop billing.

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10 Managing Costs

As you migrate more of your services to the cloud, managing cloud costs becomes more important. How to manage costs and reduce service loads when using MRS is also our concerns. The following describes how to manage costs in terms of cost composition, allocation, analysis, and optimization. Optimizing costs can help you maximize return on investment.

Cost Composition

There are three MRS cost components.

- Resource costs: cost of resources and resource packages, depending on the billed items of MRS. For details, see **Billing Items**.
- O&M costs: labor costs incurred during the use of MRS clusters.

Huawei Cloud Cost Center helps you manage resource costs efficiently. You need to identify, manage, and optimize O&M costs on the page.

Cost Allocation

A good cost accountability system is the basis of cloud financial management. It ensures that departments, business teams, and owners are accountable for their respective cloud costs. Allocate costs to different teams or projects so that organizations have a clear picture of their respective costs.

Huawei Cloud provides multiple tools for you to optimize cost allocation in Cost Center.

- **Allocate costs by linked account.**

  The enterprise master account can categorize the costs of its member accounts by linked account to manage the accounting of those member accounts. For details, see **Viewing Costs by Linked Account**.
- **Allocate costs by enterprise project.**

  Before allocating costs, enable Enterprise Project Management Service (EPS) and plan your enterprise projects based on your organizational structure or businesses. Select an enterprise project for a newly purchased cloud resource so that the costs of that resource will be allocated to the selected enterprise project. For details, see **Viewing Costs by Enterprise Project**.

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Figure 10-1 Selecting an enterprise project for the MRS cluster

- **Allocate costs by cost tag.**

  Huawei Cloud assigns tags to your cloud resources so they can be sorted in different ways, for example, by purpose, owner, or environment. The following is the process of managing costs by predefined tags.

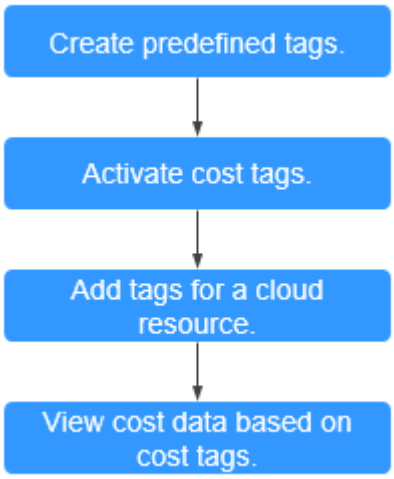

Figure 10-2 Adding a tag to an MRS cluster

For details, see **Viewing Costs by Cost Tag**.

- **Allocate costs by cost category.**

  You can use the **Cost Categories** in Cost Center to split shared costs. Shared costs include the costs for the resources (compute, 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. For details, see **Viewing Cost by Cost Category**.

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Cost Analysis

To accurately control and optimize your costs, you need a clear understanding of what parts of your enterprise incurred different costs. Cost Center visualizes original costs and amortized costs in various dimensions and through filters so that you can analyze service usage costs, trends, and factors from a variety of perspectives and scopes.

You can also use Cost Anomaly Detection to detect unexpected expenses in a timely manner. In this way, costs can be monitored, analyzed, and traced.

For details, see **Performing Cost Analysis to Explore Costs and Usage** and **Enabling Cost Anomaly Detection to Identify Anomalies**.

Cost Optimization

- **Cost control**

  You can create different types of budgets on the **Budgets** page of Cost Center to track your costs against the budgeted amount you specified and send alerts to the recipients you configured if the thresholds you defined are reached. You can also create budget reports and we will periodically generate and send to the recipients you configured on a schedule you set.

  For example, an enterprise needs to create a monthly cost budget for MRS. The monthly budget is ¥2,000. The system should send an alarm when the forecast amount is greater than 80% of the budget amount. Then, the created budget is as follows.

  Figure 10-3 Basic budget information

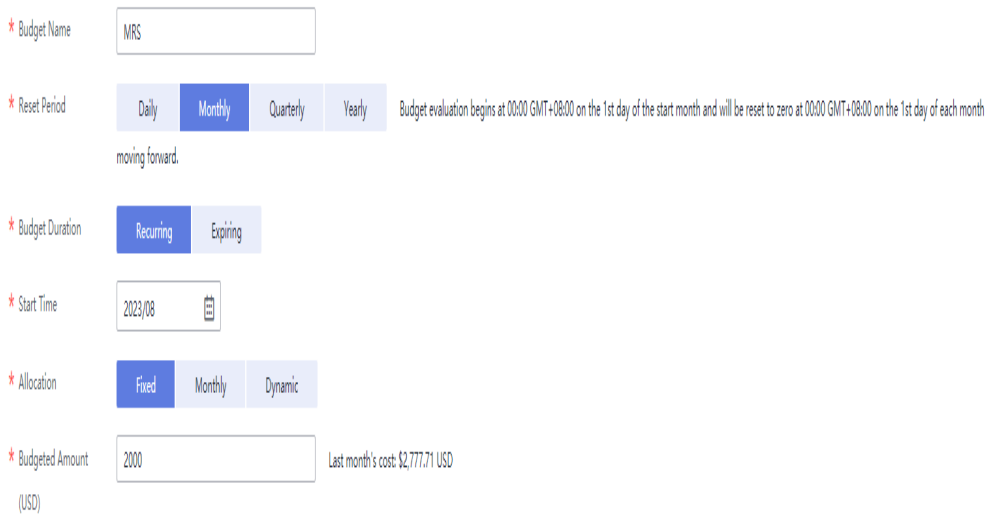

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Figure 10-4 Budget scope

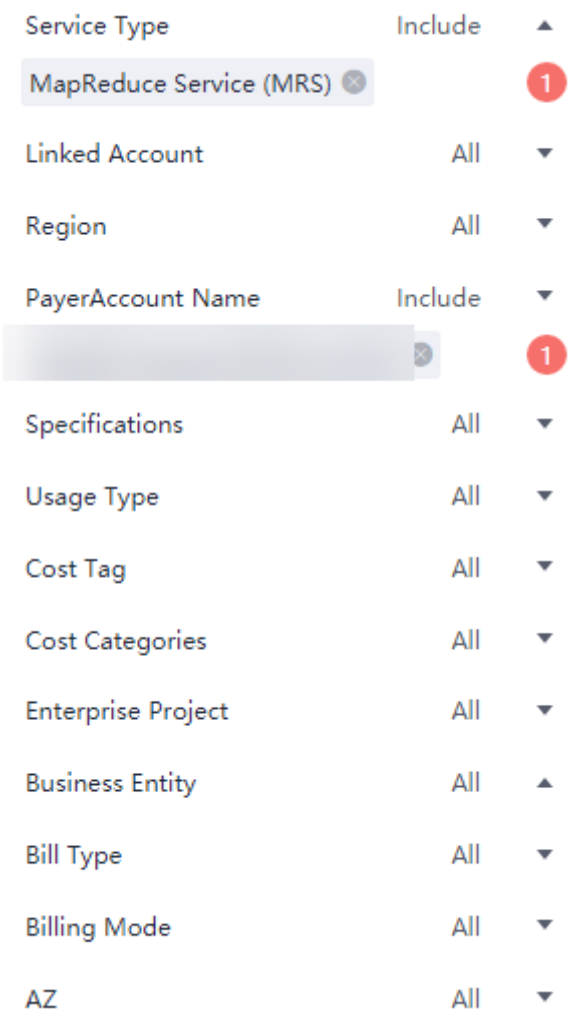
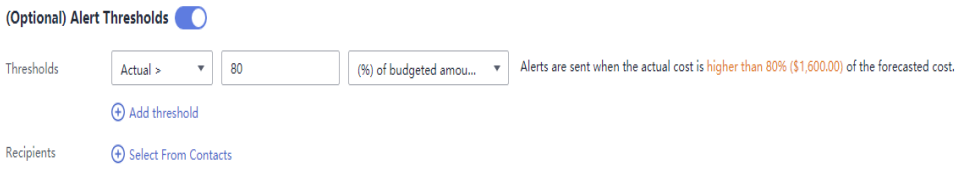


Figure 10-5 Budget alerts



For details, see **Enabling Forecasting and Creating Budgets to Track Cost and Usage**.

- **Resource optimization**

  Cloud Eye helps you monitor resource usage, identify idle resources, and find opportunities to save costs. You can also identify resources with high costs based on the analysis result in the cost analysis phase, and then take optimization measures accordingly.

  – Monitor resource usage (including the usage of CPU, memory, EVS disks, and bandwidth) and evaluate whether the current configuration is too high.

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  - Detect idle resources (unattached EVS disks and unbound EIPs) to avoid waste.

- **Billing mode selection**

  Different types of services have different requirements on resource usage periods and therefore require different billing modes to achieve the optimal outcome.

  - For mature services that are stable for a long time, use the yearly/monthly billing mode.
  - For short-term, unpredictable services that experience traffic bursts and cannot be interrupted, use pay-per-use billing.

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11 FAQs

11.1 Why Is the Price Not Displayed During MRS Cluster Creation?

Question:

Why Is the Price Not Displayed During MRS Cluster Creation?

Answer:

When you are purchasing an MRS cluster, the price displayed at the bottom of the page will not include disk cost if you specify only the number of disks without configuring the instance count. The price will include the disk cost after you configure both the number of disks and instance count.

11.2 How Is the Task Node in an MRS Cluster Billed?

Question:

How Is the Task Node in an MRS Cluster Billed?

Answer:

Task nodes in a cluster are billed in pay-per-use mode, regardless of the cluster billing mode. That is, they are billed per hour based on the actual usage duration.

11.3 Why Does My Unsubscription from ECS Fail After I Unsubscribe from MRS?

Question:

Why Does My Unsubscription from ECS Fail After I Unsubscribe from MRS?

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Answer:

1. Check that the ECS ID is not used by an MRS cluster in use.
2. On the ECS console, find the ECS to be unsubscribed from and click **Locked by MRS** to unlock it.
3. Click **Unsubscribe** again.
4. If the unsubscription still fails, collect the ECS ID and contact Huawei Cloud technical support.

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