

Alibaba Cloud AnalyticDB for MySQL

MySQL analytic clusters

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Document conventions

Style	Description	Example
	A danger notice indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	 Danger: Resetting will result in the loss of user configuration data.
	A warning notice indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	 Warning: Restarting will cause business interruption. About 10 minutes are required to restart an instance.
	A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.	 Notice: If the weight is set to 0, the server no longer receives new requests.
	A note indicates supplemental instructions, best practices, tips, and other content.	 Note: You can use Ctrl + A to select all files.
>	Closing angle brackets are used to indicate a multi-level menu cascade.	Click Settings > Network > Set network type.
Bold	Bold formatting is used for buttons, menus, page names, and other UI elements.	Click OK.
Courier font	Courier font is used for commands.	Run the <code>cd /d C:/window</code> command to enter the Windows system folder.
Italic	Italic formatting is used for parameters and variables.	<code>bae log list --instanceid Instance_ID</code>
[] or [a b]	This format is used for an optional value, where only one item can be selected.	<code>ipconfig [-all -t]</code>

Style	Description	Example
{ } or {a b}	This format is used for a required value, where only one item can be selected.	switch {active stand}

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1 Overview

MySQL analytic clusters are provided as a solution to perform complex analytics and queries that may have low performance in ApsaraDB RDS for MySQL. A MySQL analytic cluster can analyze trillions of data records from multiple dimensions in milliseconds. This allows you to gain quick data-driven insights into your business.

After you create a MySQL analytic cluster, the full and incremental data of your primary ApsaraDB RDS for MySQL instance are automatically synchronized to the new cluster in real time. You can view the data synchronization progress and latency on the basic information page of the cluster. This way, you do not need to build data warehouses or worry about how to write data into your database, or whether the data is synchronized in real time. You can click **Create AnalyticDB for MySQL Cluster** on the Basic Information page of the ApsaraDB for RDS console to create a MySQL Analytic cluster. The MySQL analytic cluster provides ten times analytics performance compared with an ApsaraDB RDS for MySQL instance.

What is a MySQL analytic cluster?

A MySQL analytic cluster is an [AnalyticDB for MySQL cluster](#) of the Basic Edition. Compared with AnalyticDB for MySQL clusters, MySQL analytic clusters have the following benefits:

- One-click purchase

You only need to purchase MySQL analytic clusters in the ApsaraDB for RDS console to perform data synchronization. You do not need to separately purchase AnalyticDB for MySQL clusters and Data Transmission Service (DTS) instances.

- One-time authorization

When you create a MySQL analytic cluster for the first time, you must follow the prompts to complete authorization. Then the system automatically grants permissions between ApsaraDB RDS for MySQL, DTS, and AnalyticDB for MySQL.

- Automatic data synchronization

MySQL analytic clusters have built-in DTS, which automatically synchronizes data after the analytic clusters are created.

- MySQL analytic clusters are fully integrated with online transaction processing (OLTP) and online analytical processing (OLAP) systems.

**Note:**

The data synchronization channels used by DTS are provided free of charge for the first six months.

Compared with MySQL instances, MySQL analytic clusters have the following benefits:

- The complex analytics performance of MySQL analytic clusters is about ten times that of MySQL instances.
- MySQL analytic clusters synchronize replicas in compliance with the Raft consensus protocol and create indexes in a lightweight manner, allowing you to read and write data in real time with higher throughput.
- MySQL analytic clusters allow you to upgrade to storage-intensive nodes or compute-intensive nodes and store hot data and cold data separately. You can also retain historical data permanently at minimal costs (coming soon).
- MySQL analytic clusters support automatic scaling of node groups and disk capacity within seconds at any time.

Prerequisites

- To create a MySQL analytic cluster, ApsaraDB RDS for MySQL must be one of the following editions:
 - ApsaraDB RDS for MySQL 8.0 Enterprise Edition
 - ApsaraDB RDS for MySQL 8.0 High-availability Edition (with local or standard SSDs)
 - ApsaraDB RDS for MySQL 5.7 Enterprise Edition
 - ApsaraDB RDS for MySQL 5.7 High-availability Edition (with local or standard SSDs)
 - ApsaraDB RDS for MySQL 5.6
- The ApsaraDB RDS for MySQL instance contains tables.

Billing

The fees billed for a MySQL analytic cluster are the sum of fees of AnalyticDB for MySQL and DTS. For more information about the pricing for AnalyticDB for MySQL, see [Basic Edition](#).

The data synchronization channels used by DTS are provided free of charge for the first six months. For more information, see [Pricing](#).

**Note:**

The default data synchronization channels are of the medium specification. If the latency of synchronization is too high for your needs, you can upgrade the specifications of the DTS instance. For more information, see [#unique_5](#).

Features

MySQL analytic clusters have the following features:

- MySQL analytic clusters support two billing methods: subscription and pay-as-you-go. You can select a billing method based on business requirements.
- Full data synchronization is performed automatically. You do not need to manually configure synchronization tasks.
- If the source database contains tables without primary keys, the first columns in the tables are synchronized as primary keys to MySQL analytic clusters.



Note:

AnalyticDB for MySQL allows you to perform INSERT and UPDATE operations only on tables with defined primary keys.

- If the source database contains data whose types are not supported by MySQL analytic clusters (such as JSON and geographic location data), the analytic clusters discard the columns of such data types during schema initialization..
- If you modify the field types in the source table during data synchronization, the synchronization task will be interrupted. You must manually configure the synchronization task.

Limits

- You can create up to two MySQL analytic clusters for an ApsaraDB RDS for MySQL instance.
- MySQL analytic clusters are not deleted if the source database is deleted.
- If a new database is created in the source instance during data synchronization, the new database is not automatically synchronized. You must manually configure a synchronization task for the new database. For more information, see [Add an object to a data synchronization task](#).
- Do not create tables without primary keys during data synchronization. Otherwise, the synchronization task will be interrupted.

- We recommend that you fix the interrupted synchronization in a timely manner. Otherwise, the data correctness may be compromised seven days after the synchronization task is interrupted.

FAQ

- Are MySQL analytic clusters read-only instances?

MySQL analytic clusters are not read-only instances. Other business can perform write operations on AnalyticDB for MySQL clusters.

- How do I scale in, scale out, upgrade, downgrade, restore, or delete MySQL analytic clusters?

1. Log on to the [AnalyticDB for MySQL console](#).
2. In the upper-left corner of the page, select the region where the analytic cluster resides.
3. On the **Overview** page, click **Clusters** in the left-side navigation pane.
4. On the **V3.0 Clusters** page, scale in, scale out, upgrade, downgrade, restore, or delete the analytic cluster.

Cluster ID	Status	Cluster Type	Version	Creation Time	Billing Method	Instance Type	Node Groups	Actions
am-bp- am-bp16mp2mlj...	Creating	MySQL Analytic Cluster	3.0	Mar 10, 2020, 09:52	Pay-as-you-go	T8	1	Switch to Subscription Billing Scale Out More
am-bp- adb	Running	Regular	3.0	Aug 09, 2019, 13:27	Pay-as-you-go	C8	2	Switch to Subscription Billing Scale Out More

- How do I troubleshoot data synchronization latency issues in MySQL analytic clusters?
 - If the specifications of a DTS instance cannot support the large amounts of data written in the source database, you must upgrade the instance specifications for better synchronization performance. For more information, see [#unique_5](#).
 - For tables without defined primary keys, DTS automatically sets primary keys for these tables during synchronization. This slows down the update of hot data rows. You can submit a ticket to allow AnalyticDB for MySQL technical engineers to help you solve the problem.
 - If the write performance of a MySQL analytic cluster reaches the upper limit, you must upgrade the cluster.

- How do I troubleshoot data synchronization errors occurred in MySQL analytic clusters?
 1. Log on to the [AnalyticDB for MySQL console](#).
 2. In the upper-left corner of the page, select the region where the analytic cluster resides.
 3. On the **Overview** page, click **Clusters** in the left-side navigation pane.
 4. On the **V3.0 Clusters** page, click **Cluster ID** corresponding to the target analytic cluster. On the **Cluster Information** page, view the error message in the **Synchronization** section. You can submit a ticket to AnalyticDB for MySQL technical engineers.

Create and view a MySQL analytic cluster

[Create and view a MySQL analytic cluster](#)

2 Create and view a MySQL analytic cluster

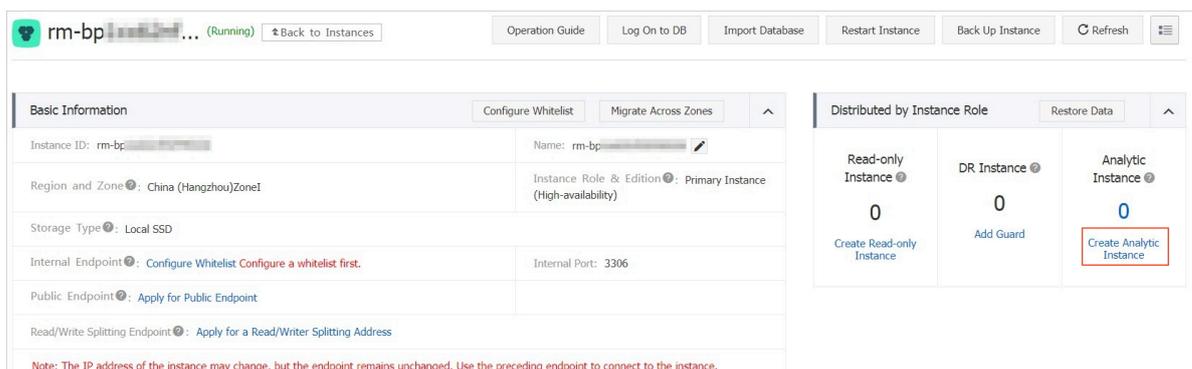
This topic describes how to create and view a MySQL analytic cluster.

Prerequisites

- To create a MySQL analytic cluster, ApsaraDB RDS for MySQL must be one of the following editions:
 - ApsaraDB RDS for MySQL 8.0 Enterprise Edition
 - ApsaraDB RDS for MySQL 8.0 High-availability Edition (with local or standard SSDs)
 - ApsaraDB RDS for MySQL 5.7 Enterprise Edition
 - ApsaraDB RDS for MySQL 5.7 High-availability Edition (with local or standard SSDs)
 - ApsaraDB RDS for MySQL 5.6
- The ApsaraDB RDS for MySQL instance contains tables.

Create a MySQL analytic cluster

1. Log on to the [ApsaraDB for RDS console](#).
2. In the upper-left corner of the page, select the region where the instance resides.
3. Find the instance and click the instance ID.
4. On the right of the **Basic Information** page, click **Create AnalyticDB for MySQL Cluster**.



5. Verify permissions.



Note:

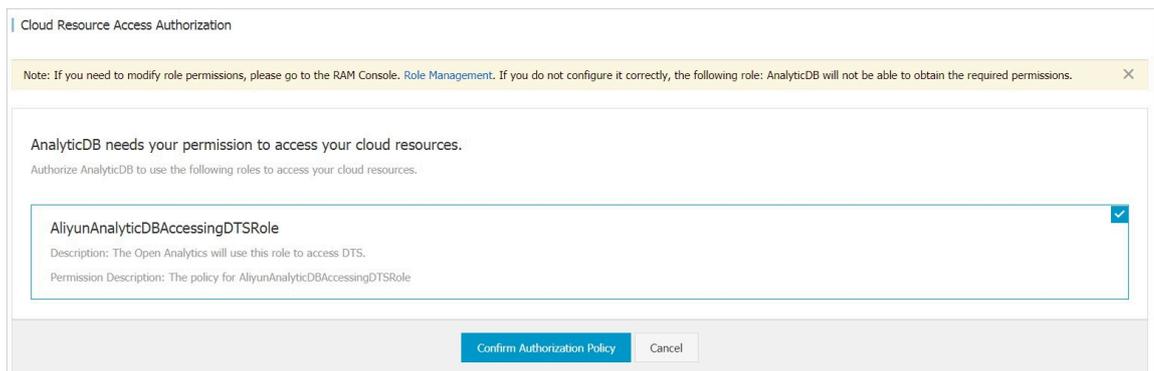
If you have already completed authorization, you will be redirected to the buy page of AnalyticDB for MySQL after you click **Create AnalyticDB for MySQL Cluster**.

No Permissions

Please grant AnalyticDB for MySQL service account with [permissions](#) for accessing the DTS service

Complete the following steps:

- Grant access permissions on DTS to AnalyticDB for MySQL accounts.
 - Grant read permissions on source databases and read and write permissions on destination databases to DTS accounts.
- a. Click **permissions**.
 - b. On the **Cloud Resource Access Authorization** page, click **Confirm Authorization Policy** to complete authorization. After the authorization is successful, you will be redirected to the buy page of AnalyticDB for MySQL.



6. Select a billing method.

- **Pay-as-you-go:** A pay-as-you-go analytic cluster is charged at an hourly rate based on your actual resource usage. We recommend that you select this billing method for short-term requirements. You can release a pay-as-you-go analytic cluster when you no longer need it to save cost.
- **Subscription:** You must pay an upfront subscription fee when you create an analytic cluster. We recommend that you select this billing method for long-term requirements because it is more cost-effective than pay-as-you-go billing. Longer subscription periods have larger discounts.

7. Configure the parameters as prompted.

Table 2-1: Parameters

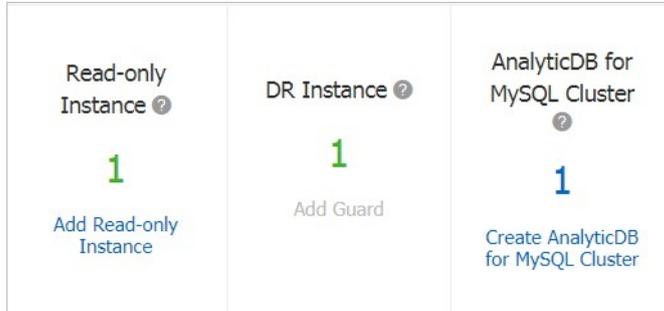
Parameter	Description
RDS Instance	The instance ID of the source ApsaraDB RDS for MySQL instance.
Version	3.0 The version of the MySQL analytic cluster . The default value is 3.0 and cannot be modified.
Region	The region where the MySQL analytic cluster is located. The analytic cluster and the ApsaraDB RDS for MySQL instance must be in the same region. The region is automatically set and cannot be modified.
Zone	An independent physical area within a region. There are no substantive differences between zones.
Edition	You can only purchase the Basic Edition for MySQL analytic clusters. For more information about the pricing for AnalyticDB for MySQL, see Basic Edition. The default value is Basic Edition and cannot be modified.
Network Type	The network type of the MySQL analytic cluster. The default value is VPC. Virtual Private Cloud (VPC) is an isolated network environment that provides enhanced security. You can select a VPC in the specified region.
VSwitch	Select a VSwitch from the specified VPC.

Parameter	Description
Instance Type	<p>The instance type of the MySQL analytic cluster. For more information, see Basic Edition and Limits.</p> <p>AnalyticDB for MySQL displays the instance types based on the data volume in an ApsaraDB RDS for MySQL instance.</p> <p>For example, if an ApsaraDB RDS for MySQL instance contains more than 500 tables, only T16, T32, and T52 are displayed.</p>
Node Groups	<p>The Basic Edition has only one node group .</p>
Capacity	<p>The disk capacity of a node group.</p> <p>AnalyticDB for MySQL compares the disk capacity of the ApsaraDB RDS for MySQL instance and displays only the value greater than that of the instance.</p> <p>For example, if the disk capacity of the ApsaraDB RDS for MySQL instance is 500 GB, only values greater than 500 are displayed.</p>

- Adjust the **Duration** slider if you are creating a subscription analytic cluster, and click **Buy Now** on the right of the page.

- On the **Confirm Order** page, select the AnalyticDB for MySQL Subscription Agreement of Service check box, click Activate, and pay for the order as prompted.

After the MySQL analytic cluster is created, you can view the number of MySQL analytic clusters in the ApsaraDB for RDS console.



View a MySQL analytic cluster

You can create a MySQL analytic cluster after you purchase it. After the analytic cluster is created, the data of the source ApsaraDB RDS for MySQL instance is automatically synchronized to the analytic cluster. You can log on to the AnalyticDB for MySQL console to view the analytic cluster status and synchronization status.

- Log on to the [AnalyticDB for MySQL console](#).
- In the upper-left corner of the page, select the region where the analytic cluster resides.
- On the **Overview** page, click **Clusters**.
- On the **V3.0 Clusters** tab, **Cluster Type** is **MySQL Analytic Cluster**.

You can also log on to the [ApsaraDB for RDS console](#). Click the number of the MySQL analytic clusters in the console to go to the Clusters page.

Cluster ID	Status	Cluster Type	Version	Creation Time	Billing Method	Instance Type	Node Groups	Actions
am-bp- am-bp16mp2mlj...	Creating	MySQL Analytic Cluster	3.0	Mar 10, 2020, 09:52	Pay-as-you-go	T8	1	Switch to Subscription Billing Scale Out More
am-bp- adb	Running	Regular	3.0	Aug 09, 2019, 13:27	Pay-as-you-go	C8	2	Switch to Subscription Billing Scale Out More

In the **Status** column, the [status of the MySQL analytic cluster](#) (such as **Running**) and the [synchronization status of ApsaraDB RDS for MySQL data](#) are displayed.

5. Click **Cluster ID** corresponding to the analytic cluster to go to the **Cluster Information** page. In the **Synchronization** section, view the synchronization information.

Synchronization		DTS Task Management	
Synchronization Name	[REDACTED]	Source Instance Name	rm-bp-[REDACTED]
Synchronized Status	● Synchronizing	Full Migration Progress	100%
Incremental Synchronization Latency (seconds)	0		

Source Instance Name is the ID of the ApsaraDB RDS for MySQL instance.

3 Status of clusters and synchronization tasks

The following table lists the status of AnalyticDB for MySQL clusters and DTS synchronization tasks.

Status of AnalyticDB for MySQL clusters

State	Description
Preparing	The cluster is being configured.
Creating	The cluster is being created.
Restoring	The cluster is being restored from the backup.
Running	The cluster is running.
Deleting	The cluster is being deleted.
ClassChanging	The specifications of the cluster is being changed.
NetAddressCreating	A network connection is being created.
NetAddressDeleting	A network connection is being deleted.

Status of DTS synchronization tasks

State	Description
Configuring	The synchronization task is being configured.
Precheck	A precheck is being performed before the synchronization task starts.
Precheck Failed	The synchronization task has failed the precheck. For more information, see Solutions to pre-check failures .
Synchronization Initializing	The synchronization task is performing full data migration.
Synchronous Initialization Failed	The synchronization task fails during full data migration.
Synchronizing	The synchronization task is performing incremental data synchronization.
Synchronization Failed	An error occurred during synchronization.
Suspend	The synchronization task is paused.
Synchronous Objects Changing	The synchronized objects are being modified.

State	Description
Finish	The synchronization task is stopped after you click Stop Task .