

Data Warehouse Service (DWS)

8.1.3.331

O&M Guide

Issue 02

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Huawei Cloud Computing Technologies Co., Ltd.

Address: Huawei Cloud Data Center Jiaoxinggong Road
 Qianzhong Avenue
 Gui'an New District
 Gui Zhou 550029
 People's Republic of China

Website: <https://www.huaweicloud.com/intl/en-us/>

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1 O&M Scenario Description

Table 1-1 describes troubleshooting scenarios and guidelines for maintenance personnel after software has been installed and initial services are running properly.

NOTE

Huawei Cloud Stack uses ManageOne to perform routine O&M. For details about the functions and scenario-specific operations on ManageOne Maintenance Portal, see "O&M Guide" in the [Huawei Cloud Stack 8.3.1 Product Documentation](#).

Table 1-1 O&M scenarios

O&M	Sub-Scenario	Description	Operation
Common O&M	-	<ul style="list-style-type: none">Common database O&M operations, including cluster restart, status query, and active/standby switchoverCommon hybrid cloud operations, including logging in to the CloudAutoDeploy-CDK master node and cluster nodes	For details, see Common Operations .

O&M	Sub-Scenario	Description	Operation
Trouble shooting	-	Information collection and fault handling of common fault scenarios of services on the GaussDB(DWS) management and tenant sides	For details, see the <i>Data Warehouse Service (DWS) 8.1.3.331 Fault Management (for Huawei Cloud Stack 8.3.1)</i> in the <i>Data Warehouse Service (DWS) 8.1.3.331 Maintenance Guide (for Huawei Cloud Stack 8.3.1)</i> .
Alarm handling	-	<p>View alarm information on the GaussDB(DWS) management and tenant sides, and handle alarms promptly to ensure the proper running of the system.</p> <ul style="list-style-type: none"> • View alarm details. • Clear reported alarms by referring to the online help. • Clear critical and major alarms that affect services as soon as possible. • Analyze historical alarms and check whether repeated alarms are reported periodically. 	<p>For details, see the <i>Data Warehouse Service (DWS) 8.1.3.331 Maintenance Guide (for Huawei Cloud Stack 8.3.1)</i>.</p>
Log reference	Management side	Use ManageOne Maintenance Portal to collect module logs on the cloud service management side for fault locating.	<p>For details, see the <i>Data Warehouse Service (DWS) 8.1.3.331 References (for Huawei Cloud Stack 8.3.1)</i> in the <i>Data Warehouse Service (DWS) 8.1.3.331 Maintenance Guide (for Huawei Cloud Stack 8.3.1)</i>.</p>
	Tenant side	Use Service OM to collect and download run logs and audit logs of components and nodes in a GaussDB(DWS) cluster.	
Error code reference	-	View details about error codes during GaussDB(DWS) installation or use, including error scenarios, possible causes, and handling suggestions.	<p>For details, see the <i>Data Warehouse Service (DWS) 8.1.3.331 Maintenance Guide (for Huawei Cloud Stack 8.3.1)</i>.</p>
Routine inspection	Management side	<p>Check system health using the following tools:</p> <p>FusionCare provides health check and information collection. You can easily check the health of related nodes and generate check reports.</p> <p>FusionCare, an inspection tool provided by ManageOne Maintenance Portal, inspects the GaussDB(DWS) management side.</p>	For details, see Routine Inspection .

O&M	Sub-Scenario	Description	Operation
	Tenant side	Use FusionCare to perform routine inspection on GaussDB(DWS) clusters applied by tenants.	
Backup and restoration	Management side	Perform routine backup, or back up DWS-DB databases before upgrading service instances or adjusting major services.	For details, see Backup and Restoration .
	Tenant side	Back up or restore service data of a GaussDB(DWS) cluster using snapshots.	
Service monitoring	-	Monitor performance metrics and alarms of ManageOne services, cloud services, nodes, and instances in real time to identify risks.	For details, see Service Monitoring .
Security	Accounts	Periodically change usernames and passwords involved in each product component.	For details, see Security Management .
	Certificates	Periodically update certificates to improve system security and prevent certificate expiration.	
	Security hardening	Perform security hardening on security parameters involved in cluster usage.	
Risky operations	-	<ul style="list-style-type: none"> Strictly follow the instructions in "Critical Operations" when performing critical operations. Simulate critical operations in a test environment before implementation. Maintenance engineers must provide support during the implementation. 	For details, see Forbidden and High-Risk Operations .
Emergency planning	-	Handle emergencies effectively to recover your services with minimized impact according to emergency planning.	For details, see the Data Warehouse Service (DWS) 8.1.3.331 Emergency Handling Guide (for Huawei Cloud Stack 8.3.1) .

2 Common Operations

2.1 Common Database Operations

2.1.1 Precautions

If you are using a hybrid cloud, you must log in to the cluster sandbox to perform the following basic database operations. For details, see [Logging In to a Node in the Tenant Cluster](#).

2.1.2 Starting and Stopping a Cluster

Starting a Cluster

Step 1 Run the following command to start the cluster:

```
gs_om -t start
```

----End

Stopping a Cluster

Step 1 Run the following command to stop the cluster:

```
gs_om -t stop
```



For details about how to start and stop nodes, see [gs_om in Developer Guide](#).

----End

Example

Starting a cluster:

```
gs_om -t start
Starting cluster.
=====
```

```
Successfully started primary instance. Wait for standby instance.
=====
```

```
.  
Successfully started cluster.  
=====  
cluster_state : Normal  
redistributing : No  
node_count : 3  
Coordinator State  
    normal : 2  
    abnormal : 0  
GTM State  
    primary : 1  
    standby : 1  
    abnormal : 0  
    down : 0  
Datanode State  
    primary : 4  
    standby : 4  
    secondary : 4  
    building : 0  
    abnormal : 0  
    down : 0
```

```
Successfully started cluster.
```

Stopping a cluster:

```
gs_om -t stop  
Stopping cluster.  
=====  
Successfully stopped cluster.  
=====  
End stop cluster.
```

Troubleshooting

If the cluster fails to be started or stopped, troubleshoot it based on the log information in the log file. For details, see [Appendix A Log References](#).

If the startup fails due to a timeout, you can run the following command to increase the timeout duration, which is 300s by default:

```
gs_om -t start --time-out=300
```

2.1.3 Querying Status

Background

You can query the status of the entire GaussDB(DWS) cluster, its hosts, instances (including GTMs, CNs, and DNs), data redistribution status, and load balancing status. The query results show whether the status of the cluster or a single host is normal.

Prerequisites

The cluster has been started.

Procedure

- Step 1** Run the following command to query the cluster status:
- ```
gs_om -t status --detail
```

**Table 2-1** describes parameters in the query result.

To query the status of instances on a certain host and of the instances forming a primary/standby relationship with them, add **-h** to the command. For example:

```
gs_om -t status -h plat2 --detail
```

**plat2** indicates the name of the host to be queried.

To only query the status of instances on the host you logged in to, run the following command:

```
gs_om -t status -h plat1
```

----End

## Parameter Description

**Table 2-1** Status description

| Column         | Description                                                                                                                                         | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cluster_state  | Specifies the cluster status. Displays whether the entire cluster is running as expected.                                                           | <ul style="list-style-type: none"><li>Normal: The cluster is available and the data has redundancy backup. All the processes are running and the primary-standby relationship is normal.</li><li>Unavailable: The cluster is unavailable. Two or more primary, standby, and secondary DNs statuses are abnormal. All the primary and standby GTMs and CNs are abnormal.</li><li>Degraded: The cluster is available without data redundancy backup. Only one of the primary, standby, and secondary DNs are abnormal, only the primary GTM is in HA mode, and only some of CNs are abnormal.</li></ul> |
| redistributing | Data is being redistributed.                                                                                                                        | <ul style="list-style-type: none"><li><b>Yes:</b> The cluster is in data redistribution status.</li><li><b>No:</b> The cluster is not in data redistribution status.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                        |
| balanced       | The column is balanced. Displays whether the primary-standby switchover occurs in the cluster instance so that the host loading becomes unbalanced. | <ul style="list-style-type: none"><li><b>Yes:</b> The host loading is balanced in the cluster.</li><li><b>No:</b> The host loading is not balanced in the cluster.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                          |
| node           | Specifies the host name.                                                                                                                            | Specifies the host name where the instance is located.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| Column   | Description                    | Value                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| node_ip  | Specifies the host IP address. | Specifies the IP address of the host where the instance is located.                                                                                                                                                                                                                                                                                                                                                                   |
| instance | Specifies the instance ID.     | Specifies the instance ID.                                                                                                                                                                                                                                                                                                                                                                                                            |
| state    | Specifies the instance status. | <ul style="list-style-type: none"> <li>• <b>Primary:</b> The instance is the primary instance.</li> <li>• <b>Standby:</b> The instance is the standby instance.</li> <li>• <b>Secondary:</b> The instance is the secondary instance.</li> <li>• <b>Pending:</b> The instance is in arbitration.</li> <li>• <b>Unknown:</b> The instance status is unknown.</li> <li>• <b>Down:</b> The instance is in the shutdown status.</li> </ul> |

## Examples

View details about the cluster status, including the instance status:

```
gs_om -t status --detail
[CMServer State]
node node_ip instance state

1 linux-221 192.168.1.221 1 /DWS/manager/cm/cm_server Standby
2 linux-222 192.168.1.222 2 /DWS/manager/cm/cm_server Primary

[Cluster State]
cluster_state : Normal
redistributing : No
balanced : Yes

[Coordinator State]
node node_ip instance state

1 linux-221 192.168.1.221 5001 /DWS/data1/coordinator Normal
2 linux-222 192.168.1.222 5002 /DWS/data1/coordinator Normal
3 linux-ncqd 192.168.1.223 5003 /DWS/data1/coordinator Normal

[Central Coordinator State]
node node_ip instance state

2 linux-222 192.168.1.222 5002 /DWS/data1/coordinator Normal

[GTM State]
node node_ip instance state sync_state

2 linux-222 192.168.1.222 1001 /DWS/manager/gtm P Primary Connection ok Sync
1 linux-221 192.168.1.221 1002 /DWS/manager/gtm S Standby Connection ok Sync
```

| [ Datanode State ] |            |                |      |                           |         |               |         |  |   |            |               |
|--------------------|------------|----------------|------|---------------------------|---------|---------------|---------|--|---|------------|---------------|
| node instance      | node_ip    | instance state |      | state   node              | node_ip | node instance | node_ip |  |   |            |               |
| <hr/>              |            |                |      |                           |         |               |         |  |   |            |               |
| <hr/>              |            |                |      |                           |         |               |         |  |   |            |               |
| 1                  | linux-221  | 192.168.1.221  | 6001 | /DWS/data1/h0dn1/primary0 | P       | Primary       | Normal  |  | 2 | linux-222  |               |
| 192.168.1.222      |            |                | 6002 | /DWS/data1/h0dn1/standby1 | S       | Standby       | Normal  |  | 3 | linux-ncqd | 192.168.1.223 |
| 3002               |            |                |      | /DWS/data1/h0dn1/dummy2   | R       | Secondary     | Normal  |  |   |            |               |
| 1                  | linux-221  | 192.168.1.221  | 6003 | /DWS/data2/h0dn2/primary0 | P       | Primary       | Normal  |  | 3 | linux-ncqd |               |
| 192.168.1.223      |            |                | 6004 | /DWS/data2/h0dn2/standby1 | S       | Standby       | Normal  |  | 2 | linux-222  | 192.168.1.222 |
| 3003               |            |                |      | /DWS/data2/h0dn2/dummy2   | R       | Secondary     | Normal  |  |   |            |               |
| 2                  | linux-222  | 192.168.1.222  | 6005 | /DWS/data1/h1dn1/primary0 | P       | Primary       | Normal  |  | 3 | linux-ncqd |               |
| 192.168.1.223      |            |                | 6006 | /DWS/data1/h1dn1/standby1 | S       | Standby       | Normal  |  | 1 | linux-221  | 192.168.1.221 |
| 3004               |            |                |      | /DWS/data1/h1dn1/dummy2   | R       | Secondary     | Normal  |  |   |            |               |
| 2                  | linux-222  | 192.168.1.222  | 6007 | /DWS/data2/h1dn2/primary0 | P       | Primary       | Normal  |  | 1 | linux-221  |               |
| 192.168.1.221      |            |                | 6008 | /DWS/data2/h1dn2/standby1 | S       | Standby       | Normal  |  | 3 | linux-ncqd | 192.168.1.223 |
| 3005               |            |                |      | /DWS/data2/h1dn2/dummy2   | R       | Secondary     | Normal  |  |   |            |               |
| 3                  | linux-ncqd | 192.168.1.223  | 6009 | /DWS/data1/h2dn1/primary0 | P       | Primary       | Normal  |  | 1 | linux-221  |               |
| 192.168.1.221      |            |                | 6010 | /DWS/data1/h2dn1/standby1 | S       | Standby       | Normal  |  | 2 | linux-222  | 192.168.1.222 |
| 3006               |            |                |      | /DWS/data1/h2dn1/dummy2   | R       | Secondary     | Normal  |  |   |            |               |
| 3                  | linux-ncqd | 192.168.1.223  | 6011 | /DWS/data2/h2dn2/primary0 | P       | Primary       | Normal  |  | 2 | linux-222  |               |
| 192.168.1.222      |            |                | 6012 | /DWS/data2/h2dn2/standby1 | S       | Standby       | Normal  |  | 1 | linux-221  | 192.168.1.221 |
| 3007               |            |                |      | /DWS/data2/h2dn2/dummy2   | R       | Secondary     | Normal  |  |   |            |               |

#### **2.1.4 Performing a Switchover**

## Scenarios

For maintenance purposes, database administrators may need to manually switch over DNs or GTMs during cluster running to restore the original primary/standby relationship or to handle a hardware fault.



Switchover is performed for maintenance. Before a switchover, ensure that the cluster is running properly, all services are stopped, and the `pgxc_get_senders_catchup_time()` function shows no ongoing catchup between the primary and standby nodes.

Switchovers include common and fast primary/standby switchovers. Common primary/standby switchovers are suitable in common scenarios. Fast primary/standby switchovers are suitable when there are heavy service loads and high concurrency.

Target GTMs and DNs must be in normal status before undergoing a fast primary/standby switchover.

The following two types of fast primary/standby switchovers are supported:

- Switchover on a pair of primary and standby DNs  
cm\_ctl switchover -n nodeid -D DWS/data1/h1dn1/dummy2 -q

In this command, **q** indicates the fast switchover, **nodeid** indicates the node ID of the standby instance which will be promoted to primary, and *DWS*/*data1/h1dn1/dummy2* indicates the data directory of the standby DN or GTM.

### NOTICE

The **-q** operation kills the original primary DN and then performs a failover to the standby DN. Therefore, fast switchover cannot be performed in the scenario where one primary DN and multiple standby DNs are deployed.

- Switchover on all GTMs and DNs (to initial primary/standby relationships)  
`cm_ctl switchover -a -q`

## Procedure

- Step 1** Run the following command on the host where the current standby DN or GTM is deployed to manually perform a switchover:

```
gs_om -t switch -h plat1 -D DWS/data1/h1dn1/dummy2
```

**plat1** is the host where the current standby DN or GTM is deployed.

*DWS/data1/h1dn1/dummy2* is the data directory of the standby DN or GTM on **plat1**.

### NOTICE

For the same pair of primary/standby instances, you cannot perform a new switchover if the previous switchover has not completed. If a switchover is performed when the host thread is processing services, the thread cannot stop, and switchover timeout will be reported. Actually, the switchover is ongoing at the background and will complete after the thread finishes service processing and stops. For example, when a thread is deleting a large partitioned table, the primary instance may fail to respond to the switchover request.

----End

## Examples

Switch the standby DN to the primary. Assume that the path of **plat1** (host of the standby DN) is */DWS/data1/h1dn1/dummy2*.

```
gs_om -t switch -h plat1 -D /DWS/data1/h1dn1/dummy2
Switching instances.
Successfully switched instances.
```

## Exception Handling

Exception scenarios are as follows:

- The switchover takes a long time under high service loads. In this case, you do not need to handle it.
- During a switchover, due to network faults and high disk usage, the following exceptions may occur: the primary and standby instances are disconnected; two standby DNs exist in a single DN pair; and the switchover times out. In this case, perform the following steps to handle them:

- Step 1** Run the following commands to query the current instance status:

```
gs_om -t status -h plat1
...
node : 1
instance_id : dn_6001_6002
node_ip : 192.168.0.11
data_path : /DWS/data1/h0dn1/primary0
type : Datanode
instance_state : Standby
static_connections : 2
HA_state : Need repair
reason : Mode not matched
gs_om -t status -h plat2
...
node : 2
instance_id : dn_6001_6002
node_ip : 192.168.0.12
data_path : /DWS/data1/h1dn1/primary0
type : Datanode
instance_state : Standby
static_connections : 2
HA_state : Need repair
reason : Mode not matched
```

The query result shows that the status of two instances is **Standby**, which is abnormal.

**Step 2** Query the host where the CM Server resides.

```
gs_om -t status --detail ## Find the server where the primary CM Server is resides.
```

**Step 3** Log in to the server where the primary CM Server resides.

**Step 4** Query the process number of the primary CM Server.

```
ps -ef | grep cm_server ## Query the primary CM Server process
Ruby 29158 26901 0 09:43 pts/3 00:00:00 grep cm_server
```

125124 is the process number of the primary CM Server.

**Step 5** Kill the process of the primary CM Server.

```
kill -9 125124
```

After the CM Server is automatically restarted, the abnormal primary and standby instances are stopped and their relationship is arbitrated again.

**Step 6** Wait until the instance status is correct, and perform a switchover again. For details, see [Procedure](#).

----End

## 2.1.5 Generating a Configuration File

### Background

If the static configuration file is damaged while you use GaussDB(DWS), GaussDB(DWS) cannot obtain information about the cluster topology structure and primary/standby relationship, affecting the cluster function. In this case, you can use the **gs\_om** tool to generate a static configuration file to replace the damaged file, ensuring normal cluster running.

### Prerequisites

None

## Procedure

- Step 1** Run the following command to generate the configuration file in a specified directory on the current host:

```
gs_om -t generateconf -X /opt/dws/xml/cluster.xml --distribute
```

/opt/dws/xml/cluster.xml is the directory for storing XML configuration files during cluster installation.

### NOTE

1. After the command is executed, the new configuration file storage directory is displayed in the log information. This directory contains three configuration files named by host names, which are used to replace the configuration files of corresponding hosts, respectively.
2. If --distribute is not specified, perform **Step 2** to distribute static configuration files to their corresponding hosts. If --distribute is specified, the static configuration files are automatically distributed and you do not need to perform **Step 2**.

- Step 2** (Optional) Replace the damaged static configuration files of the three hosts in the /DWS/manager/app/bin directory.

Take one of the hosts as an example:

```
mv /DWS/manager/app/bin/cluster_static_config_SIA1000056771 /DWS/manager/app/bin/
```

----End

## Examples

Run the following commands on any of the hosts in the cluster to generate the configuration file:

```
gs_om -t generateconf -X /opt/dws/xml/cluster.xml --distribute
Generating static configuration files for all nodes.
Creating temp directory to store static configuration files.
Successfully created the temp directory.
Generating static configuration files.
Successfully generated static configuration files.
Static configuration files for all nodes are saved in /DWS/manager/app/bin.
Distributing static configuration files to all nodes.
Successfully distributed static configuration files.
```

Run the following command to open the directory that contains the generated configuration file to check whether three new files are displayed:

```
cd /DWS/manager/app/bin
ll
total 456
-rwxr-xr-x 1 Ruby dbgrp 155648 2016-07-13 15:51 cluster_static_config_plat1
-rwxr-xr-x 1 Ruby dbgrp 155648 2016-07-13 15:51 cluster_static_config_plat2
-rwxr-xr-x 1 Ruby dbgrp 155648 2016-07-13 15:51 cluster_static_config_plat3
```

## 2.1.6 Routine Maintenance

### 2.1.6.1 Routine O&M Check Items

#### Checking Cluster Status

GaussDB(DWS) provides tools to query the database and instance status, ensuring that the database and instance are running properly to provide data services.

- Check instance status.  
`gs_check -U dbadmin -i CheckClusterState`
- Check Item  
`SHOW parameter_name;`
- Modify parameter values.  
`gs_guc reload -Z coordinator -D /DWS/data1/coordinator -c "paraname=value"`

## Checking Lock Information

The lock mechanism is an important method to ensure data consistency. Information check helps learn database transactions and running status.

- Query lock information in the database.  
`SELECT * FROM pg_locks;`
- Query the status of threads waiting to get locks.  
`SELECT * FROM pg_thread_wait_status WHERE wait_status = 'acquire lock';`
- Query the status of events waiting to get locks.  
`SELECT node_name, thread_name, tid, wait_status, query_id FROM pgxc_thread_wait_status WHERE wait_status = 'acquire lock';`
- End the system process.  
Search for the system process that is running and run the following commands to kill the process:  
`ps ux  
kill -9 pid`

## Collecting Statistics on Events

Long-term running of SQL statements will occupy a lot of system resources. The event occurrence time and occupied memory size need to be checked to learn database running status.

- Query the time points about an event.  
Run the following command to query the thread start time, transaction start time, SQL start time, and status change time of the event:  
`SELECT backend_start,xact_start,query_start,state_change FROM pg_stat_activity;`
- Query the number of sessions on the current server.  
`SELECT count(*) FROM pg_stat_activity;`
- Collect system-level statistics.  
Run the following command to query information about the session that uses the maximum memory:  
`SELECT * FROM pv_session_memory_detail() ORDER BY usedsize desc limit 10;`

## Checking an Object

Tables, indexes, partitions, and constraints are key storage objects of the database. As a database administrator, you need to routinely maintain key information and these objects.

- View the table details.  
`\d+ table_name`
- Query table statistics.  
`SELECT * FROM pg_statistic;`

- View the index details.  
`\d+ index_name`
- Query partitioned-table information.  
`SELECT * FROM pg_partition;`
- Collect statistics.  
Run the **ANALYZE** statement to collect related statistics on the database.  
Run the **VACUUM** statement to reclaim space and update statistics.
- Query constraint information.  
`SELECT * FROM pg_constraint;`

## Checking an SQL Report

Run **EXPLAIN** to view execution plans.

## Backing Up Data

Never forget to back up data. During the routine work, the backup execution and backup data validity need to be checked to ensure data security and encryption security.

- Export a specified user.  
`gs_dump dbname -p port -f out.sql -U user_name -W password`
- Export a schema.  
`gs_dump dbname -p port -n schema_name -f out.sql`
- Export a table.  
`gs_dump dbname -p port -t table_name -f out.sql`

## Checking Basic Information

Basic information includes versions, components, and patches. Periodic database information checks and records are important for database life cycle management.

- Check version information.  
`SELECT version();`
- Check the table and database sizes.  
`SELECT pg_table_size('table_name');`  
`SELECT pg_database_size('database_name');`

### 2.1.6.2 Checking OS Parameters

#### 2.1.6.2.1 Method

Use the **gs\_checkos** tool provided by GaussDB(DWS) to check the OS status.

#### Prerequisites

- The hardware and network are working properly.
- The trust relationship of user **root** among the hosts is normal.
- Only user **root** is authorized to run the **gs\_checkos** tool.

## Procedure

**Step 1** Run the following command to check OS parameters of servers where the cluster nodes are deployed:

```
gs_checkos -i A
```

Check the OS parameters to ensure that the preinstallation is ready and that it can efficiently operate after it is installed.

----End

## Example

Before running the **gs\_checkos** command, execute pre-processing scripts by running **gs\_reinstall** to prepare the environment. The parameter A is used as an example.

```
gs_checkos -i A
Checking items:
A1. [OS version status] : Normal
A2. [Kernel version status] : Normal
A3. [Unicode status] : Normal
A4. [Time zone status] : Normal
A5. [Swap memory status] : Normal
A6. [System control parameters status] : Normal
A7. [File system configuration status] : Normal
A8. [Disk configuration status] : Normal
A9. [Pre-read block size status] : Normal
A10. [IO scheduler status] : Normal
A11. [Network card configuration status] : Normal
A12. [Time consistency status] : Warning
A13. [Firewall service status] : Normal
A14. [THP service status] : Normal
Total numbers:14. Abnormal numbers:0. Warning number:1.
```

The parameter B is used as an example.

```
gs_checkos -i B
Setting items:
B1. [Set system control parameters] : Normal
B2. [Set file system configuration value] : Normal
B3. [Set pre-read block size value] : Normal
B4. [Set IO scheduler value] : Normal
B5. [Set network card configuration value] : Normal
B6. [Set THP service] : Normal
Total numbers:6. Abnormal numbers:0. Warning number:0.
```

### 2.1.6.2.2 Troubleshooting

If you use the **gs\_checkos** tool to check the OS and find its status being **Abnormal**, run the following command to view detailed error information:

```
gs_checkos -i A --detail
```

The **Abnormal** state cannot be ignored because the OS in this state affects cluster installation. The **Warning** state does not affect cluster installation and thereby can be ignored.

- If the check result for OS version (A1) is **Abnormal**, replace OSs out of the mixed programming scope to those within the scope.
- If the check result for the kernel version (A2) is **Warning**, the platform kernel versions in the cluster are different.

- If the Unicode status (A3) check result is **Abnormal**, set the same character set for all the hosts. You can add "export LANG=Unicode code in the /etc/profile file.  
`vim /etc/profile`
- If the time zone status (A4) is **Abnormal**, set the same time zone for all the hosts. You can copy the time zone file in the /usr/share/zoneinfo/ directory as the /etc/localtime file.  
`cp /usr/share/zoneinfo/$Primary time zone/$Secondary time zone /etc/localtime`
- If the swap status (A5) check result is **Abnormal**, a possible cause is that the swap is larger than memory. You can troubleshoot it by reducing the swap or increasing the memory.
- If the system control parameter (A6) check result is **Abnormal**, you can troubleshoot it in either of the two ways:
  - Run the following command:  
`gs_checkos -i B1`
  - Modify the /etc/sysctl.conf file based on the error message and run **sysctl -p** to make it take effect.  
`vim /etc/sysctl.conf`
- If the file system configuration status (A7) check result is **Abnormal**, run the following command to troubleshoot it:  
`gs_checkos -i B2`
- If the disk configuration status (A8) check result is **Abnormal**, set the disk mounting format to **rw,noatime,inode64,allocsize=16m**.  
Run the **man mount** command to mount the **XFS** parameter:  
`rw,noatime,inode64,allocsize=16m`  
You can also set the **XFS** parameter in the /etc/fstab file. For example:  
`/dev/data /data xfs rw,noatime,inode64,allocsize=16m 0 0`
- If the pre-read block size (A9) check result is **Abnormal**, run the following command to troubleshoot it:  
`gs_checkos -i B3`
- If the I/O scheduling status (A10) check result is **Abnormal**, run the following command to troubleshoot it:  
`gs_checkos -i B4`
- If the network adapter configuration status (A11) check result is **Warning**, run the following command to troubleshoot it:  
`gs_checkos -i B5`
- If the time consistency (A12) check result is **Abnormal**, verify that the NTP service has been installed and started, and synchronizes time from the NTP clock.
- If the check result for firewall status (A13) is **Abnormal**, disable the firewall. Run the following commands:
  - SUSE:  
`SuSEfirewall2 stop`
  - Red Hat 7:  
`systemctl disable firewalld`
  - Red Hat 6:  
`service iptables stop`
- If the THP service (A14) check result is **Abnormal**, run the following command to troubleshoot it:  
`gs_checkos -i B6`

## 2.1.6.3 Checking Cluster Health Status

### 2.1.6.3.1 Method

Use the **gs\_check** tool provided by GaussDB(DWS) to check the cluster health status.

### Important Notes

- Only user **root** is authorized to check new nodes added during cluster scale-out. In other cases, the check is performed by user **omm**.
- The parameter **-i** or **-e** must be set. **-i** is used to specify a single item to be checked and **-e** is used to specify an inspection scenario where multiple items will be checked.
- If **-i** is not set to a root item or no such items are contained in the check item list of the scenario specified by **-e**, you do not need to enter the name and password of a user with the root permission.
- You can run **--skip-root-items** to skip root items.
- Check the consistency between the new node and existing nodes. Run the **gs\_check** command on an existing node and specify the **--hosts** parameter. The IP address of the new node needs to be written into the hosts file.

### Procedure

Method 1:

**Step 1** Run the following command to check the cluster database status:

```
gs_check -i CheckClusterState
```

In the command, **-i** indicates the check item and is case-insensitive. The format is **-i CheckClusterState**, **-i CheckCPU** or **-i CheckClusterState,CheckCPU**.

Supported check items are listed in

**Cluster status check items**. You can create a check item as needed.

----End

Method 2:

**Step 1** Run the following command to check the cluster health:

```
gs_check -e inspect
```

In the command, **-e** indicates the inspection scenario and is case-insensitive. The format is **-e inspect** or **-e upgrade**.

The inspection scenarios include **inspect** (routine inspection), **upgrade** (inspection before upgrade), **expand** (inspection before cluster scale-out), **binary\_upgrade** (inspection before in-place upgrade), and **health** (health inspection). You can create an inspection scenario as needed.

----End

Method 3:

**Step 1** Copy the inspection tool **gs\_check** and the **inspection** directory to all scale-out new nodes.

**Step 2** Write the IP addresses of the scale-out new nodes into the **ipListFile** file and separate the IP addresses with line feeds.

**Step 3** Run the following command to check the new nodes before cluster scale-out:

```
gs_check -e expand_new_node --hosts ipListFile
```

-**e** must be set to **expand\_new\_node**, indicating the inspection before cluster scale-out.

----End

The cluster inspection is performed to check cluster status during cluster running or to check the environment and conditions before critical operations, such as upgrade or cluster scale-out. For details about the inspection items and scenarios, see [Cluster status check items](#).

## Examples

Check result of a single item:

```
perfadm@lfgp000700749:/opt/dws/tools/script> gs_check -i CheckCPU
Parsing the check items config file successfully
Distribute the context file to remote hosts successfully
Start to health check for the cluster. Total Items:1 Nodes:3

Checking... [=====] 1/1
Start to analysis the check result
CheckCPU.....OK
The item run on 3 nodes. success: 3

Success. All check items run completed. Total:1 Success:1 Failed:0
For more information please refer to /opt/dws/tools/script/gspylib/inspection/output/
CheckReport_201902193704661604.tar.gz
```

Local execution result:

```
perfadm@lfgp000700749:/opt/dws/tools/script> gs_check -i CheckCPU -L

2017-12-29 17:09:29 [NAM] CheckCPU
2017-12-29 17:09:29 [STD] Check the CPU usage of the host. If the value of idle is greater than 30% and the value of iowait is less than 30%, this item passes the check. Otherwise, this item fails the check.
2017-12-29 17:09:29 [RST] OK

2017-12-29 17:09:29 [RAW]
Linux 4.4.21-69-default (lfgp000700749) 12/29/17 _x86_64_

17:09:24 CPU %user %nice %system %iowait %steal %idle
17:09:25 all 0.25 0.00 0.25 0.00 0.00 99.50
17:09:26 all 0.25 0.00 0.13 0.00 0.00 99.62
17:09:27 all 0.25 0.00 0.25 0.13 0.00 99.37
17:09:28 all 0.38 0.00 0.25 0.00 0.13 99.25
17:09:29 all 1.00 0.00 0.88 0.00 0.00 98.12
Average: all 0.43 0.00 0.35 0.03 0.03 99.17
```

Check result in a scenario:

```
[perfadm@SIA1000131072 Check]$ gs_check -e inspect
Skip CheckHdfsForeignTabEncoding because it only applies to V1R5 upgrade V1R6 with cluster.
Parsing the check items config file successfully
The below items require root privileges to execute:[CheckBlockdev CheckIOConfigure CheckMTU CheckRXTX
CheckMultiQueue CheckFirewall CheckSshdService CheckSshdConfig CheckCrondService CheckNoCheckSum
CheckSctpService CheckMaxProcMemory CheckBootItems CheckFilehandle CheckNICModel
CheckDropCache]
```

```
Please enter root privileges user[root]:
Please enter password for user[root]:
Check root password connection successfully
Distribute the context file to remote hosts successfully
Start to health check for the cluster. Total Items:64 Nodes:3
Checking... [=====] 64/64
Start to analysis the check result
CheckClusterState.....OK
The item run on 3 nodes. success: 3
CheckDBParams.....OK
.....
CheckMpprcFile.....OK
The item run on 3 nodes. success: 3

Analysis the check result successfully
Failed. All check items run completed. Total:64 Success:56 Warning:5 NG:3 Error:0
For more information please refer to /opt/dws/tools/script/gspylib/inspection/output/
CheckReport_inspect_201902207129254785.tar.gz
```

### 2.1.6.3.2 Troubleshooting

Troubleshoot exceptions detected in the inspection by following the instructions in this section.

**Table 2-2** Cluster running status

| Check Item          | Abnormal Status                                             | Troubleshooting                                                                                                                         |
|---------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| CheckClusterState   | The cluster or cluster instances are not started.           | Run the following command to start the cluster and cluster instances:<br><code>gs_om -t start</code>                                    |
|                     | The status of the cluster or cluster instances is abnormal. | Check the status of hosts and instances. Troubleshoot it based on the status information.<br><code>gs_check -i CheckClusterState</code> |
| CheckDBParams       | Database parameters have incorrect values.                  | Use the <b>gs_guc</b> tool to set the parameters to specified values.                                                                   |
| CheckDebugSwitch    | The log level is incorrect.                                 | Use the <b>gs_guc</b> tool to set <b>log_min_messages</b> to a correct level.                                                           |
| CheckDirPermissions | The directory permission is incorrect.                      | Change the directory permission to a specified value ( <b>750</b> or <b>700</b> ).<br><code>chmod 750 DIR</code>                        |

| Check Item        | Abnormal Status                                                      | Troubleshooting                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CheckReadonlyMode | The read-only mode is enabled.                                       | <p>Verify that the usage of the disk for DNs does not exceed the threshold (90% by default) and no other O&amp;M operations are performed.</p> <pre>gs_check -i CheckDataDiskUsage<br/>ps ux</pre> <p>Use the <b>gs_guc</b> tool to disable the read-only mode.</p> <pre>gs_guc reload -N all -Z coordinator -I all -c<br/>'default_transaction_read_only = off'<br/>gs_guc reload -N all -Z data -I all -c<br/>'default_transaction_read_only = off'</pre> |
| CheckCgroup       | Cgroup data is consistent.                                           | Set the Cgroup data on each node to be consistent.                                                                                                                                                                                                                                                                                                                                                                                                          |
| CheckEnvProfile   | Environment variables are inconsistent.                              | Update the environment variable information.                                                                                                                                                                                                                                                                                                                                                                                                                |
| CheckBlockdev     | The size of the pre-read block is not 16384 KB.                      | Use the <b>gs_checkos</b> tool to set the size of the pre-read block to 16384 KB and write the setting into the auto-startup file.                                                                                                                                                                                                                                                                                                                          |
| CheckCursorNum    | The number of cursors failed to be checked.                          | Check whether the database is properly connected and whether the cluster status is normal.                                                                                                                                                                                                                                                                                                                                                                  |
| CheckPgxcgroup    | There are <b>pgxc_group</b> tables that have not been redistributed. | Precede with the redistribution.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| CheckBlackList    | Blacklist syntax exists.                                             | Delete the blacklist syntax from the database.                                                                                                                                                                                                                                                                                                                                                                                                              |
| CheckDiskFormat   | Disk configuration on each node is inconsistent.                     | Set configuration on each node to be consistent.                                                                                                                                                                                                                                                                                                                                                                                                            |
| CheckSpaceUsage   | The disk space is insufficient.                                      | Clear or expand the disk for the directory.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| CheckInodeUsage   | The disk indexes are insufficient.                                   | Clear or expand the disk for the directory.                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Check Item                   | Abnormal Status                                                                                                                              | Troubleshooting                                                                                                                                                                                                         |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CheckSwapMemory              | The swap memory is greater than the physical memory.                                                                                         | Reduce or disable the swap memory.                                                                                                                                                                                      |
| CheckLogicalBlock            | The size of the logical block is not 512 KB.                                                                                                 | Use the <b>gs_checkos</b> tool to set the size of the logical block to 512 KB and write the setting into the auto-startup file.<br><code>gs_checkos -i B4</code>                                                        |
| CheckIOrequestQueue          | The requested I/O is not <b>32768</b> .                                                                                                      | Use the <b>gs_checkos</b> tool to set the requested I/O to <b>32768</b> and write the setting into the auto-startup file.<br><code>gs_checkos -i B4</code>                                                              |
| CheckCurConnCount            | The number of current connections exceeds 90% of the allowed maximum number of connections.                                                  | Break idle CN connections.                                                                                                                                                                                              |
| CheckMaxAsynchronousRequests | The maximum number of asynchronous requests is less than 104857600 or [(Number of CN instances + Number of primary DN instances) x 1048576]. | Use the <b>gs_checkos</b> tool to set the maximum number of asynchronous requests to the larger one between 104857600 and [Number of (CN instances + primary DN instances)] x 1048576.<br><code>gs_checkos -i B4</code> |
| CheckMTU                     | The MTU value on each node is inconsistent.                                                                                                  | Sets the MTU value on each node to 1500.<br><code>ifconfig eth* MTU 1500</code>                                                                                                                                         |
| CheckIOConfigure             | The I/O mode is not <b>deadline</b> .                                                                                                        | Use the <b>gs_checkos</b> tool to set the I/O mode to <b>deadline</b> and write the setting into the auto-startup file.<br><code>gs_checkos -i B4</code>                                                                |
| CheckRXTX                    | The NIC RX/TX value is not <b>4096</b> .                                                                                                     | Use the <b>checkos</b> tool to set the NIC RX/TX value to <b>4096</b> .<br><code>gs_checkos -i B5</code>                                                                                                                |

| Check Item       | Abnormal Status                                                                                    | Troubleshooting                                                                                                                                                                                                |
|------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CheckPing        | The IP addresses failed to be pinged.                                                              | Check the network settings, network status, and firewall status between the IP addresses.                                                                                                                      |
| CheckNetworkDrop | The network packet loss rate is greater than 1%.                                                   | Check the network load and status between the corresponding IP addresses.                                                                                                                                      |
| CheckMultiQueue  | Multiqueue is not enabled for the NIC, and NIC interruptions are not bound to different CPU cores. | Enable multiqueue for the NIC, and bind the NIC interruptions to different CPU cores.                                                                                                                          |
| CheckEncoding    | Encoding format on each node is inconsistent.                                                      | Write consistent encoding format to <b>in/etc/profile</b> for each node.<br><code>echo "export LANG=XXX" &gt;&gt; /etc/profile</code>                                                                          |
| CheckActQryCount | Archiving mode is enabled and archiving directory is not under the CN directory.                   | Disable archiving mode or set the archiving directory to be under the CN directory.                                                                                                                            |
| CheckFirewall    | The firewall is enabled.                                                                           | Disable the firewall.<br><b>redHat(CentOS)7.x:</b> <code>systemctl status firewalld.service</code><br><b>redHat(CentOS)6.x:</b> <code>service iptables down</code><br><b>SuSE:</b> <code>firewall2 down</code> |
| CheckKernelVer   | The kernel version on each node is inconsistent.                                                   | Use the <b>gs_replace</b> tool to replace the node whose kernel version is inconsistent with that of others.<br><b>gs_replace</b>                                                                              |
| CheckMaxHandle   | The maximum number of handles is less than 1,000,000.                                              | Set the soft and hard limits in the <b>91-nofile.conf</b> or <b>90-nofile.conf</b> file to <b>1000000</b> .<br><b>gs_checkos -i B2</b>                                                                         |
| CheckNTPD        | The NTPD service is disabled or the time difference is greater than 1 minute.                      | Enable the NTPD service and set the time to be consistent.                                                                                                                                                     |

| Check Item        | Abnormal Status                                                                 | Troubleshooting                                                                                                                                                                                                                                                                          |
|-------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CheckOSVer        | Certain OSs are not supported or the OSs are not in the same hybrid list.       | Use <b>gs_replace</b> to replace abnormal nodes with those supported by OSs or those in the same hybrid list.<br><b>gs_replace</b>                                                                                                                                                       |
| CheckSysParams    | OS parameter settings do not meet requirements.                                 | Use the <b>gs-checkos</b> tool to set parameters to values meeting requirements, or set them in the configuration file.<br><b>gs_checkos -i B1</b><br><b>vim /etc/sysctl.conf</b>                                                                                                        |
| CheckTHP          | The THP service is disabled.                                                    | Use the <b>gs_checkos</b> to enable the THP service.<br><b>gs_checkos -i B6</b>                                                                                                                                                                                                          |
| CheckTimeZone     | The time zone on each node is inconsistent.                                     | Set the time zone on each node to be consistent.<br><b>cp /usr/share/zoneinfo/\$Primary time zone/\$Secondary time zone /etc/localtime</b>                                                                                                                                               |
| CheckCPU          | The CPU usage is high or the I/O waiting time is too long.                      | Upgrade CPU or improve disk performance.                                                                                                                                                                                                                                                 |
| CheckSshdService  | The SSHD service is disabled.                                                   | Enable the SSHD service and write the setting into the auto-startup file.<br><b>server sshd start</b><br><b>echo "server sshd start" &gt;&gt; initFile</b>                                                                                                                               |
| CheckSshdConfig   | The SSHD service is incorrectly configured.                                     | Reconfigure the SSHD service.<br>PasswordAuthentication=no;<br>MaxStartups=1000;<br>UseDNS=yes;<br>ClientAliveInterval=10800/ClientAliveInterval=0<br><br>Restart the service.<br><b>server sshd start</b>                                                                               |
| CheckCrondService | The Crond service is not enabled.                                               | Install the Crond service and enable it.                                                                                                                                                                                                                                                 |
| CheckStack        | The stack size is less than 3072.                                               | Use the <b>gs_checkos</b> tool to set the stack size to <b>3072</b> and restart the processes with a smaller stack size.<br><b>gs_checkos -i B2</b>                                                                                                                                      |
| CheckNoChecksum   | <b>NoCheckSum</b> is incorrectly set or its value is inconsistent on each node. | Set <b>NoCheckSum</b> to a consistent value on each node. If <b>redHat6.4</b> or <b>redHat6.5</b> with the NIC binding mode <b>bond0</b> exists, set <b>NoCheckSum</b> to <b>Y</b> . In other cases, set it to <b>N</b> .<br><b>echo Y &gt; /sys/module/sctp/parameters/no_checksums</b> |

| Check Item        | Abnormal Status                                                                                      | Troubleshooting                                                                                                                                     |
|-------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| CheckSysPortRange | OS IP ports are not within the required port range or cluster ports are within the OS IP port range. | Set the OS IP ports within <b>26000</b> to <b>65535</b> and set the cluster ports beyond the OS IP port range.<br><code>vim /etc/sysctl.conf</code> |
| CheckMemInfo      | Memory size on each node is inconsistent.                                                            | Use physical memory of the same specifications.                                                                                                     |
| CheckHyperThread  | The CPU hyper thread is disabled.                                                                    | Enable the CPU hyper thread.                                                                                                                        |
| CheckTableSpace   | The tablespace path is nested with the cluster path or nested with the path of another tablespace.   | Migrate tablespace data to the tablespace with a valid path.                                                                                        |
| CheckSctpService  | The SCTP service is disabled.                                                                        | Install and enable the SCTP service.<br><code>modprobe sctp</code>                                                                                  |

## 2.1.6.4 Checking Database Performance

### 2.1.6.4.1 Method

Use the **gs\_checkperf** tool provided by GaussDB(DWS) to check hardware performance.

### Prerequisites

- The cluster is running properly.
- Services are running properly on the database.

### Procedure

**Step 1** Run the following command to check the cluster performance:

```
gs_checkperf
```

----End

For details about performance measurement items, see [Performance check items](#).

## Example

Run the following command to display performance statistics in simple mode on the screen:

```
gs_checkperf -i pmk -U dbadmin
Cluster statistics information:
 Host CPU busy time ratio : 1.43 %
 MPPDB CPU time % in busy time : 1.88 %
 Shared Buffer Hit ratio : 99.96 %
 In-memory sort ratio : 100.00 %
 Physical Reads : 4
 Physical Writes : 25
 DB size : 70 MB
 Total Physical writes : 25
 Active SQL count : 2
 Session count : 3
```

### 2.1.6.4.2 Troubleshooting

After you use the **gs\_checkperf** tool to check the cluster performance and find it abnormal, troubleshoot it by following the instructions provided in this section.

**Table 2-3** Cluster-level performance status

| Abnormal Status                             | Troubleshooting                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High CPU usage of hosts                     | <ol style="list-style-type: none"><li>1. Add high-performance CPUs, or replace current CPUs with them.</li><li>2. Use the <b>top</b> command to check which processes cause high CPU usage, and use the <b>kill</b> command to shut down unused processes.<br/><b>top</b></li></ol>                                                                                                           |
| GaussDB(DWS) CPU usage is excessively high. | <ol style="list-style-type: none"><li>1. Add high-performance CPUs, or replace current CPUs with them.</li><li>2. Use the <b>top</b> command to check which database processes cause high CPU usage, and use the <b>kill</b> command to shut down unused processes.<br/><b>top</b></li><li>3. Use the <b>gs_expand</b> tool for scale-out, adding new hosts to lower the CPU usage.</li></ol> |
| Low hit ratio of the shared memory          | <ol style="list-style-type: none"><li>1. Expand the memory.</li><li>2. Run the following command to check the OS configuration file <b>/etc/sysctl.conf</b> and increase the value of <b>kernel.shmmmax</b>.<br/><b>vim /etc/sysctl.conf</b></li></ol>                                                                                                                                        |
| Low memory sorting rate                     | Expand the memory.                                                                                                                                                                                                                                                                                                                                                                            |

| Abnormal Status         | Troubleshooting                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High I/O and disk usage | <ol style="list-style-type: none"><li>1. Replace existing disks with high-performance ones.</li><li>2. Properly distribute data, evenly distributing I/O requests to all the physical disks.</li><li>3. Do <b>VACUUM FULL</b> to the entire database.<br/><code>vacuum full;</code></li><li>4. Clean up the disk.</li><li>5. Reduce the number of concurrent transactions.</li></ol> |
| Transaction statistics  | Query the <b>pg_stat_activity</b> system catalog to break unnecessary connections.                                                                                                                                                                                                                                                                                                   |

**Table 2-4** Node-level performance status

| Abnormal Status   | Troubleshooting                                                                                                                                                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High CPU usage    | <ol style="list-style-type: none"><li>1. Add high-performance CPUs, or replace current CPUs with them.</li><li>2. Use the <b>top</b> command to check which processes cause high CPU usage, and use the <b>kill</b> command to shut down unused processes.<br/><code>top</code></li></ol> |
| High memory usage | Expand or clear the memory.                                                                                                                                                                                                                                                               |
| High I/O usage    | <ol style="list-style-type: none"><li>1. Replace existing disks with high-performance ones.</li><li>2. Clean up the disk.</li><li>3. Use memory read/write to replace as much disk I/O as possible, putting frequently accessed files or data in the memory.</li></ol>                    |

**Table 2-5** Session/process-level performance status

| Abnormal Status                 | Troubleshooting                                                                                                                                                                                                                                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High CPU, memory, and I/O usage | Check which processes cause high CPU, memory, or I/O usage. If they are unnecessary processes, kill them. If they are necessary, analyze the specific cause of high usage. For example, if SQL statement execution occupies much memory, check whether the SQL statements need optimization. |

## 2.1.6.5 Checking and Deleting Logs

You are advised to monthly check OS logs and database run logs for monitoring system status and troubleshooting, and to monthly clean database run logs for saving disk space.

### 2.1.6.5.1 Checking OS Logs

You are advised to monthly check OS logs to detect and prevent potential OS problems.

#### Procedure

Run the following command to check OS log files:

```
vim /var/log/messages
```

(Pay attention to words like **kernel**, **error**, and **fatal** in logs generated within the last month and handle the problems based on the alarm information.)

### 2.1.6.5.2 Checking Cluster Run Logs

The database can still run if errors may occur during the execution of some operations. However, data may be inconsistent before and after the error occurrence. Therefore, you are advised to monthly check cluster run logs to detect potential problems in a timely manner.

#### Prerequisites

- The host used for collecting logs is running properly and the network connection is normal. The trust relationship among database installation users is normal.
- An OS tool (for example, **gstack**) that **gs\_collector** requires has been installed. If it is not installed, an error message is displayed, and this collection item is skipped.

#### Procedure

**Step 1** Run the following command to collect the database log files:

```
gs_collector --begin-time="20210830 01:01" --end-time="20210830 23:59"
```

In the command, *20210830 01:01* indicates the log begin time and *20210830 23:59* indicates the log end time.

**Step 2** Based on command output in **Step 1**, navigate to the related log collection directory, decompress collected database logs, and check these logs.

Assume that the log collection directory is **/opt/dws/tmp/collector\_20210830\_064002.tar.gz**.

```
tar -xvzf /opt/dws/tmp/collector_20210830_064002.tar.gz
cd /opt/dws/tmp/collector_20210830_064002
```

----End

## Examples

- Parameters **--begin-time** and **--end-time** are used to run the **gs\_collector** command.

```
gs_collector --begin-time="20160616 01:01" --end-time="20160616 23:59"
```

If information similar to the following is displayed, the logs have been archived:

```
Successfully collected configuration files and processed stack information.
All results are stored in /opt/dws/tmp/collector_20160616_175615.tar.gz.
```

- Parameters **--begin-time**, **--end-time**, and **-h** are used to run the **gs\_collector** command.

```
gs_collector --begin-time="20160616 01:01" --end-time="20160616 23:59" -h plat2
```

If information similar to the following is displayed, the logs have been archived:

```
Successfully collected configuration files and processed stack information.
All results are stored in /opt/dws/tmp/collector_20160616_190225.tar.gz.
```

- Parameters **--begin-time**, **--end-time**, and **-f** are used to run the **gs\_collector** command.

```
gs_collector --begin-time="20160616 01:01" --end-time="20160616 23:59" -f /opt/software/dws/
output
```

If information similar to the following is displayed, the logs have been archived:

```
Successfully collected configuration files and processed stack information.
All results are stored in /opt/software/dws/output/collector_20160616_190511.tar.gz.
```

- Parameters **--begin-time**, **--end-time**, and **--keyword** are used to run the **gs\_collector** command.

```
gs_collector --begin-time="20160616 01:01" --end-time="20160616 23:59" --keyword="os"
```

If information similar to the following is displayed, the logs have been archived:

```
Successfully collected configuration files and processed stack information.
All results are stored in /opt/dws/tmp/collector_20160616_190836.tar.gz.
```

- Parameters **--begin-time**, **--end-time**, and **-o** are used to run the **gs\_collector** command.

```
gs_collector --begin-time="20160616 01:01" --end-time="20160616 23:59" -o /opt/software/dws/
output
```

If information similar to the following is displayed, the logs have been archived:

```
Successfully collected configuration files and processed stack information.
All results are stored in /opt/software/dws/output/collector_20160726_113711.tar.gz.
```

- Parameters **--begin-time**, **--end-time**, and **-l** (the file name must be in .log format) are used to run the **gs\_collector** command.

```
gs_collector --begin-time="20160616 01:01" --end-time="20160616 23:59" -l /opt/software/dws/
logfile.log
```

If information similar to the following is displayed, the logs have been archived:

```
Successfully collected configuration files and processed stack information.
All results are stored in /opt/software/dws/output/collector_20160726_113711.tar.gz.
```

### 2.1.6.5.3 Cleaning Run Logs

A large number of run logs will be generated during database running and occupy huge disk space. You are advised to delete old run logs and retain those generated within one month.

## Procedure

**Step 1** Delete logs.

1. Back up logs generated one month ago to other disks.
2. Navigate to the log save directory.  
`cd $GAUSSLOG`
3. Navigate to the related sub-directory and run the following command to delete logs generated one month ago:  
`rm Log name`  
The naming convention of a log file is **postgresql-year-month-day\_HHMMSS.log**.

----End

### 2.1.6.6 Checking Time Consistency

Database transaction consistency is guaranteed by a logical clock and not affected by OS time. However, OS time inconsistency will lead to problems like abnormal backend O&M and monitoring functions. Therefore, you are advised to monthly check time consistency among nodes.

## Procedure

**Step 1** Create a configuration file containing information about nodes in the cluster.

```
vim /tmp/mpphosts
```

Add the host name of each node.

```
plat1
plat2
plat3
```

**Step 2** Save the configuration file.

```
:wq!
```

**Step 3** Run the following command to write the time on each node to the **/tmp/sys\_ctl-os1.log** file:

```
for ihost in `cat /tmp/mpphosts`; do ssh -n -q $ihost "hostname;date"; done > /tmp/sys_ctl-os1.log
```

**Step 4** Check whether time on the nodes is consistent based on the result. The time difference between nodes should not exceed 30s.

```
cat /tmp/sys_ctl-os1.log
plat1
Thu Feb 9 16:46:38 CST 2017
plat2
Thu Feb 9 16:46:49 CST 2017
plat3
Thu Feb 9 16:46:14 CST 2017
```

----End

### 2.1.6.7 Checking the Number of Applications

If the number of connections between applications and the database exceeds the maximum, new connections will fail to be established. You are advised to daily check the number of connections, freeing up idle connections in a timely manner or increasing the allowed maximum number of connections.

## Procedure

- Step 1** Run the following SQL statement to check the number of connections:

```
SELECT count(*) FROM (SELECT pg_stat_get_backend_idset() AS backendid) AS s;
```

Information similar to the following is displayed. 2 indicates that two applications are connected to the database.

```
count

 2
(1 row)
```

- Step 2** View the currently allowed maximum connections.

```
SHOW max_connections;
```

Information similar to the following is displayed. 200 indicates the currently allowed maximum number of connections.

```
max_connections

200
(1 row)
```

----End

## Troubleshooting

If the number of connections in the command output is close to the value of **max\_connections** of the database, delete existing connections or change the upper limit based on site requirements.

- Step 1** Run the following SQL statements. **state** is **idle**, and **state\_change** indicates no recent connection information updates.

```
SELECT * FROM pg_stat_activity where state='idle' order by state_change;
```

Information similar to the following is displayed:

```
datid | datname | pid | usesysid | username | application_name | client_addr
| client_hostname | client_port | backend_start | xact_start | quer
y_start | state_change | waiting | enqueue | state | resource_pool
| query
-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+
13626 | postgres | 140390162233104 | 10 | gaussdba |
| -1 | 2016-07-15 14:08:59.474118+08 | | 2016-07-15 14
.09:04.496769+08 | 2016-07-15 14:09:04.496975+08 | f | | idle | default_pool
| select count(group_name) from pgxc_group;
13626 | postgres | 140390132872976 | 10 | gaussdba | cn_5002 | 10.180.123.163
| 48614 | 2016-07-15 14:11:16.014871+08 | | 2016-07-15 14
.21:17.346045+08 | 2016-07-15 14:21:17.346095+08 | f | | idle | default_pool
| SET SESSION AUTHORIZATION DEFAULT;RESET ALL;
(2 rows)
```

- Step 2** Free up idle connections.

Check each connection and free them up after obtaining approval from the user of the connection. Run the following SQL command to free up the connection using the **pid** obtained in the previous step:

```
SELECT pg_terminate_backend(140390132872976);
```

Information similar to the following is displayed:

```
SELECT pg_terminate_backend(140390132872976);
pg_terminate_backend

t
(1 row)
```

If no connections can be freed up, go to the next step.

**Step 3** Increase the allowed maximum number of connections.

```
gs_guc set -Z coordinator -D /DWS/data1/coordinator -c "max_connections= 800"
```

**800** is the new allowed maximum.

**Step 4** Restart database services to make the new settings take effect.



Restarting the cluster interrupts user-performed operations. Therefore, restart the cluster at an appropriate time to prevent operation interruption.

```
gs_om -t stop && gs_om -t start
```

----End

### 2.1.6.8 Routinely Maintaining Tables

To ensure proper database running, after INSERT and DELETE operations, you need to routinely do **VACUUM FULL** and **ANALYZE** as appropriate for customer scenarios and update statistics to obtain better performance.

#### Related Concepts

You need to routinely run **VACUUM**, **VACUUM FULL**, and **ANALYZE** to maintain tables, because:

- **VACUUM FULL** reclaims disk space occupied by updated or deleted data and combines small-size data files.
- **VACUUM** maintains a visualized mapping to track pages that contain arrays visible to other active transactions. A common index scan uses the mapping to obtain the corresponding array and check whether pages are visible to the current transaction. If the array cannot be obtained, the visibility is checked by fetching stack arrays. Therefore, updating the visible mapping of a table can accelerate unique index scans.
- **VACUUM** can avoid old data loss caused by duplicate transaction IDs when the number of executed transactions exceeds the database threshold.
- **ANALYZE** collects statistics on tables in databases. The statistics are stored in the PG\_STATISTIC system catalog. Then, the query optimizer uses the statistics to work out the most efficient execution plan.

#### Procedure

**Step 1** Run the **VACUUM** or **VACUUM FULL** command to reclaim disk space.

- **VACUUM**:

Do **VACUUM** to the table:

```
VACUUM customer;
```

```
VACUUM
```

This command can be concurrently executed with database operation commands, including **SELECT**, **INSERT**, **UPDATE**, and **DELETE**; excluding **ALTER TABLE**.

Do **VACUUM** to the partitioned table:

```
VACUUM customer_par PARTITION (P1);
VACUUM
```

- **VACUUM FULL:**

```
VACUUM FULL customer;
VACUUM
```

**VACUUM FULL** needs to add exclusive locks on tables it operates on and requires that all other database operations be suspended.

When reclaiming disk space, you can query for the session corresponding to the earliest transactions in the cluster, and then end the earliest long transactions as needed to make full use of the disk space.

- a. Run the following command to query for `oldestxmin` on the GTM:

```
select * from pgxc_gtm_snapshot_status();
```

- b. Run the following command to query for the PID of the corresponding session on the CN. `xmin` is the `oldestxmin` obtained in the previous step.

```
select * from pgxc_running_xacts() where xmin=1400202010;
```

## Step 2 Do **ANALYZE** to update statistical information.

```
ANALYZE customer;
ANALYZE
```

Do **ANALYZE VERBOSE** to update statistics and display table information.

```
ANALYZE VERBOSE customer;
ANALYZE
```

You can use **VACUUM ANALYZE** at the same time to optimize the query.

```
VACUUM ANALYZE customer;
VACUUM
```



### NOTE

**VACUUM** and **ANALYZE** cause a substantial increase in I/O traffic, which may cause poor performance of other active sessions. Therefore, you are advised to set **Cost-based Vacuum Delay** by specifying the `vacuum_cost_delay` parameter.

## Step 3 Delete a table

```
DROP TABLE customer;
DROP TABLE customer_par;
DROP TABLE part;
```

If the following output is displayed, the index has been deleted.

```
DROP TABLE
```

----End

## Maintenance Suggestion

- Routinely do **VACUUM FULL** to large tables. If the database performance deteriorates, do **VACUUM FULL** to the entire database. If the database performance is stable, you are advised to monthly do **VACUUM FULL**.
- Routinely do **VACUUM FULL** to system catalogs, mainly **PG\_ATTRIBUTE**.

- The automatic vacuum process (**AUTOVACUUM**) in the system automatically runs the **VACUUM** and **ANALYZE** statements to reclaim the record space marked as the deleted state and to update statistics related to the table.

### 2.1.6.9 Routinely Recreating an Index

#### Context

When data deletion is repeatedly performed in the database, index keys will be deleted from the index page, resulting in index distention. Recreating an index routinely improves query efficiency.

The database supports B-tree, GIN, and psort indexes.

- Recreating a B-tree index helps improve query efficiency.
  - If massive data is deleted, index keys on the index page will be deleted. As a result, the number of index pages reduces and index bloat occurs. Recreating an index helps reclaim wasted space.
  - In the created index, pages adjacent in its logical structure are adjacent in its physical structure. Therefore, a created index achieves higher access speed than an index that has been updated for multiple times.
- You are advised not to recreate a non-B-tree index.

#### Rebuilding an Index

Use either of the following two methods to recreate an index:

- Run the **DROP INDEX** statement to delete an index and run the **CREATE INDEX** statement to create an index.

When you delete an index, a temporary exclusive lock is added in the parent table to block related read/write operations. When you create an index, the write operation is locked but the read operation is not. The data is read and scanned by order.
- Run the **REINDEX** statement to recreate an index:
  - When you run the **REINDEX TABLE** statement to recreate an index, an exclusive lock is added to block related read/write operations.
  - When you run the **REINDEX INTERNAL TABLE** statement to recreate an index for a **desc** table (), an exclusive lock is added to block read/write operations on the table.

#### Procedure

Assume the ordinary index **areaS\_idx** exists in the **area\_id** column of the imported table **areaS**. Use either of the following two methods to recreate an index:

- Run the **DROP INDEX** statement to delete the index and run the **CREATE INDEX** statement to create an index.
  - a. Delete an index.

```
DROP INDEX areaS_idx;
DROP INDEX
```
  - b. Create an index.

```
CREATE INDEX areaS_idx ON areaS (area_id);
CREATE INDEX
```

- Run the **REINDEX** statement to recreate an index.
  - Run the **REINDEX TABLE** statement to recreate an index.  
`REINDEX TABLE area$;`  
`REINDEX`
  - Run the **REINDEX INTERNAL TABLE** statement to recreate an index for a **desc** table ().  
`REINDEX INTERNAL TABLE area$;`  
`REINDEX`

### 2.1.6.10 Suggestions on Data Security Maintenance

To ensure data security in GaussDB(DWS) and avoid accidents, such as data loss and illegal data access, read this section carefully.

#### Avoiding Data Loss

You are advised to plan periodical physical backup and save related backup files. When a fatal error occurs in the system, you can use the backup files to restore the system to the state before the backup.

#### Avoiding Illegal Data Access

- You are advised to hierarchically manage database user permissions. The database administrator creates users and grants rights to the users based on service requirements to ensure users have proper access to the database.
- You are advised to deploy the GaussDB(DWS) server and client (or applications developed based on the client library) in trusted internal networks. If the server and client must be deployed in an untrusted network, enable SSL encryption before the service is started to ensure data transmission security in the untrusted network. Note that enabling SSL encryption reduces database performance.

#### Avoiding Personal Data Leakage Through System Logs

- Delete personal data before sending debug logs to others for analysis.



The log level **log\_min\_messages** is set to **DEBUGx** (x indicates the DEBUG level and the value ranges from 1 to 5). The information recorded in debug logs may contain personal data.

- Delete personal data before sending system logs to others for analysis. If the SQL statement fails to be executed, the error SQL statement is recorded in the system logs by default, and the SQL statement may contain personal data.
- Setting **log\_min\_error\_statement** to **PANIC** to prevent error SQL statements from being recorded in system logs. However, disabling this function causes errors cannot be located.

### 2.1.6.11 Cluster status check items

Table 2-6 Cluster status check

| Type | Check Item     | Description                                                                                                                                                                                                                                                                                                                                          | --set Supported or Not |
|------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| OS   | CheckCPU       | Checks the CPU usage of the host. If <b>idle</b> is greater than 30% and <b>iowait</b> is less than 30%, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                           | No                     |
|      | CheckFirewall  | Checks the firewall status of the host. If the firewall is disabled, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                               | Yes                    |
|      | CheckTimeZone  | Checks whether nodes in the cluster use the same time zone. If they do, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                            | No                     |
|      | CheckSysParams | Checks whether the values of OS parameters for each node are as expected. If the parameters do not meet the requirements of the warning field, a warning is reported. If the parameters do not meet the requirements of the NG field, this item fails the check, and the parameters are printed.<br>For details, see <a href="#">OS parameters</a> . | Yes                    |
|      | CheckOSVer     | Checks OS version information on each node in the cluster. If the versions are all in the compatibility list and in the same hybrid list, this item passes the check. Otherwise, this item fails the check.                                                                                                                                          | No                     |
|      | CheckNTPD      | Checks the NTPD service. If the service is enabled and the time difference across nodes is within 1 min, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                           | No                     |

| Type | Check Item        | Description                                                                                                                                                                                                                                                                           | --set<br>Supported<br>or Not |
|------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckTHP          | Checks the THP service. If the service is enabled, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                  | Yes                          |
|      | CheckSshdService  | Checks whether the sshd service is started. If it is, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                               | No                           |
|      | CheckCrondService | Checks whether the crontab service is started. If it is, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                            | Yes                          |
|      | CheckCrontabLeft  | Checks whether the crontab file contains remaining Gauss information. If it does not, this item passes the check. Otherwise, this item fails the check.                                                                                                                               | Yes                          |
|      | CheckDirLeft      | Checks whether the <b>/opt/huawei/Bigdata/</b> , <b>/var/log/Bigdata/</b> , and <b>/home/omm</b> directories of new nodes remain after scale-out. If they do not exist or exist only in the <b>mount</b> directory, this item passes the check. Otherwise, this item fails the check. | Yes                          |
|      | CheckProcessLeft  | Checks whether a new node has the gaussdb and omm processes remained after scale-out. If it does not, this item passes the check. Otherwise, this item fails the check.                                                                                                               | Yes                          |
|      | CheckStack        | Checks stack depths. If the stack depths across nodes are inconsistent, a warning is reported. If the stack depths are consistent and greater than or equal to 3072, this item passes the check. If the stack depths are consistent but less than 3072, this item fails the check.    | Yes                          |

| Type | Check Item        | Description                                                                                                                                                                                                                                                                                                                                                                                                 | --set<br>Supported<br>or Not |
|------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckNoCheckSum   | <p>Checks the value of <b>nochecksum</b>.</p> <ul style="list-style-type: none"> <li>When bond NICs are used on the Red Hat 6.4 or 6.5, if the check result is <b>Y</b> on every node, this item passes the check. Otherwise, this item fails the check.</li> <li>In other OSs, if the check result is <b>N</b> on every node, this item passes the check. Otherwise, this item fails the check.</li> </ul> | No                           |
|      | CheckOmmUserExist | Checks whether user <b>omm</b> exists on new nodes after scale-out. If it does not, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                       | Yes                          |
|      | CheckPortConflict | Checks whether CN and DN ports are occupied. If they are not, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                             | Yes                          |
|      | CheckSysPortRange | Checks the value range of the system parameter <b>ip_local_port_range</b> . If the value range is 26000 to 65535, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                         | Yes                          |
|      | CheckEtcHosts     | If <b>localhost</b> is not configured for <b>/etc/hosts</b> , there is a mapping whose comment contains <b>#GaussDB(DWS)</b> , or the names of hosts having the same IP address are different, this item fails the check. Otherwise, this item passes the check. In addition, if host names are the same but IP addresses are different, this item also fails the check.                                    | No                           |

| Type | Check Item            | Description                                                                                                                                                                                                                                                                               | --set<br>Supported<br>or Not |
|------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckCpuCount         | Checks the number of CPU cores. If the number is different from that of available CPUs, this item fails the check. If the two numbers are the same but unavailability messages exist, a warning is reported. If the CPU information of all nodes is different, this item fails the check. | No                           |
|      | CheckSctpService      | Checks the SCTP service. If the service is enabled and written in the startup file, this item passes the check. Otherwise, this item fails the check.                                                                                                                                     | Yes                          |
|      | CheckHyperThread      | Checks hyper-threading. If it is started, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                               | No                           |
|      | CheckMemInfo          | Checks whether the total memory size of each node is the same. If it is, this item passes the check. Otherwise, a warning is reported.                                                                                                                                                    | No                           |
|      | CheckBalanceStat e    | Checks load balancing status. If <b>Balance</b> is <b>YES</b> , this item passes the check. If <b>Balance</b> is not <b>YES</b> , a warning is reported. If the query fails, this item fails the check.                                                                                   | No                           |
|      | CheckCmserverSta ndby | Checks CM Server status. If the query result is <b>Standby</b> , this item passes the check. Otherwise, a warning is reported.                                                                                                                                                            | No                           |

| Type | Check Item      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | --set<br>Supported<br>or Not |
|------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckSshdConfig | <p>Checks the <code>/etc/ssh/sshd_config</code> file.</p> <p>(a) <code>PasswordAuthentication=yes</code>;<br/>         (b) <code>MaxStartups=1000</code><br/>         (c) <code>UseDNS=no</code>;<br/>         (d) <code>ClientAliveInterval</code> is greater than 10800 or equal to 0.</p> <p>If the above information is configured, this item passes the check. If a and c configurations are incorrect, a warning is reported. If b and d configurations are incorrect, this item fails the check.</p> | Yes                          |
|      | CheckMaxHandle  | Checks the maximum handle value of the OS. If the value is greater than or equal to 1 million, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                                            | Yes                          |
|      | CheckKernelVer  | Checks the kernel version of each node. If the version information is consistent, this item passes the check. Otherwise, a warning is reported.                                                                                                                                                                                                                                                                                                                                                             | No                           |
|      | CheckEncoding   | Checks the system code of each node in the cluster. If the codes are consistent, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                                                          | No                           |
|      | CheckBootItems  | Checks whether there are manually added startup items. If there are, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                                                                      | No                           |
|      | CheckDropCache  | Checks whether there is a dropcache process running on each node. If there is, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                                                            | No                           |

| Type   | Check Item          | Description                                                                                                                                                                                                                                                                                                                                                                                      | --set<br>Supported<br>or Not |
|--------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|        | CheckFilehandle     | <p>Checks the following conditions. If both the conditions are met, this item passes the check. Otherwise, this item fails the check.</p> <ul style="list-style-type: none"> <li>The number of processes opened by each gaussdb process does not exceed 800,000.</li> <li>The number of handles used by the slave process does not exceed that of handles used by the master process.</li> </ul> | No                           |
|        | CheckKeyProAdj      | Checks all key processes. If the <b>omm_adj</b> value for all key processes is <b>0</b> , this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                      | No                           |
|        | CheckMaxProcMemory  | Checks whether the value of <b>max_process_memory</b> on CNs and primary/standby DNs is greater than 1 GB. If it is not, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                       | Yes                          |
| Device | CheckSwapMemory     | Checks the swap memory size. If the check result is 0, this item passes the check. Otherwise, a warning is reported. If the result is greater than the total memory, this item fails the check.                                                                                                                                                                                                  | Yes                          |
|        | CheckLogicalBlock   | Checks the logical block size of a disk. If the result is 512, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                 | Yes                          |
|        | CheckIorequestqueue | Checks the I/O value. If the value is <b>32768</b> , this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                           | Yes                          |

| Type | Check Item            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                            | --set<br>Supported<br>or Not |
|------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckMaxAsyIORequests | Checks the maximum number of asynchronous requests. If the number of asynchronous requests is greater than 104857600 and greater than (Asynchronous DN I/O requests + Asynchronous CN I/O requests) x 1048576, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                       | Yes                          |
|      | CheckIOConfigure      | Checks the I/O configuration. If the result is <b>deadline</b> , this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                     | Yes                          |
|      | CheckBlockdev         | Checks the size of the pre-read block. If the result is 16384, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                       | Yes                          |
|      | CheckDiskFormat       | Checks the XFS format information about a disk. If the result is <b>rw,noatime,inode64,allocsize=16m</b> , this item passes the check. Otherwise, a warning is reported.                                                                                                                                                                                                                                                                               | No                           |
|      | CheckinodeUsage       | For new nodes, checks all disks. For old nodes, checks cluster paths ( <b>GAUSSHOME/PGHOST/GAUSSHOME/GAUSSLOG/tmp</b> and instance directories). Checks the usage of the above directories. If the usage exceeds the warning threshold (60% by default), a warning is reported. If the usage exceeds the NG threshold (80% by default), this item fails the check. If the usage is less than or equal to the NG threshold, this item passes the check. | No                           |

| Type | Check Item          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | --set<br>Supported<br>or Not |
|------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckSpaceUsage     | <p>For new nodes, checks all disks.</p> <p>For old nodes, checks cluster paths (<b>GAUSSHOME/PGHOST/</b><br/><b>GAUSSHOME/GAUSSLOG/tmp</b> and instance directories).</p> <p>Checks the usage of the above directories. If the usage exceeds the warning threshold (70% by default), a warning is reported. If the usage exceeds the NG threshold (90% by default), this item fails the check. Also checks the available space of the <b>GAUSSHOME/PGHOST/</b><br/><b>GPHOME/GAUSSLOG/tmp/data</b> directory. If the space is less than the threshold, this item fails the check. Otherwise, this item passes the check.</p>                  | No                           |
|      | CheckSpaceForShrink | <p>Checks whether the disk space usage exceeds the threshold (70% by default) after specified hosts are removed from the logical cluster and data distribution is finished among remaining hosts. If it does, this item fails the check and scale-in cannot be performed.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>It is recommended that this check be internally invoked by <b>gs_shrink</b>, instead of being manually invoked.</li> <li>The following parameters need to be added for this check: <b>[--nodegroup-name=LCGROUPNAME] [--ShrinkNodes= HOSTNAME]</b>. Use commas (,) to separate host names.</li> </ul> | No                           |
|      | CheckDiskConfig     | Checks whether disk configurations are consistent. If the names, sizes, and mounting points of disks are the same, this item passes the check. If any of them is inconsistent, a warning is reported.                                                                                                                                                                                                                                                                                                                                                                                                                                         | No                           |

| Type    | Check Item           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | --set<br>Supported<br>or Not |
|---------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|         | CheckXid             | Checks the value of <b>xid</b> . If the value is greater than 1 billion, a warning is reported. If the value is greater than 1.8 billion, this item fails the check.                                                                                                                                                                                                                                                                                                                                                                                                 | No                           |
|         | CheckSysTabSize      | Checks the system catalog capacity of each instance. If the available capacity of each disk is greater than the total capacity of system catalogs for all instances on the disk, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                   | No                           |
| Cluster | CheckClusterState    | Checks the fencedUDF status. If it is <b>down</b> , a warning is reported. In this case, check the cluster status. If it is <b>Normal</b> , this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                                                        | No                           |
|         | CheckConfigFile-Diff | Checks whether the static configuration file and installation XML file meet the scale-out conditions. If they do, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                                                                                  | No                           |
|         | CheckDBParams        | <p>For CNs, checks the size of the shared buffer and the <b>Sem</b> parameter.</p> <p>For primary DNs, checks the size of the shared buffer and the maximum number of connections.</p> <p>The shared buffer size should be greater than 128 KB, greater than <b>shmmmax</b>, and greater than <b>shmmax</b>.</p> <p>If there are CNs, <b>Sem</b> must be greater than the rounded up result of (Maximum number of DN connections + 150)/16.</p> <p>If the above items are met, this item passes the check. If any of them is not met, this item fails the check.</p> | Yes                          |

| Type | Check Item          | Description                                                                                                                                                                                                                                                                                                                                            | --set<br>Supported<br>or Not |
|------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckDebugSwitch    | Checks the value of the <b>log_min_messages</b> parameter in the configuration file of each instance on each node. If the value is empty, the default log level <b>warning</b> is used. In this case, if the actual log level is not <b>warning</b> , a warning is reported.                                                                           | Yes                          |
|      | CheckUpVer          | Checks the version of the upgrade package on each node in the cluster. If the versions are consistent, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                               | No                           |
|      | CheckDirPermissions | Checks permissions for the node directories (instance Xlog path, <b>GAUSSHOME</b> , <b>GPHOME</b> , <b>PGHOST</b> , and <b>GAUSSLOG</b> ). If the directories allow for the write permission and at most 750 permission, this item passes the check. Otherwise, this item fails the check.                                                             | Yes                          |
|      | CheckEnvProfile     | Checks the environment variables ( <b>\$GAUSSHOME</b> , <b>\$LD_LIBRARY_PATH</b> , and <b>\$PATH</b> ) of nodes and those of the CMS, CMA, GTM, CN, and DN processes. If there are node environment variables that are correctly configured and process environment variables exist, this item passes the check. Otherwise, this item fails the check. | No                           |
|      | CheckGaussVer       | Checks whether the gaussdb version of each node is consistent. If the versions are consistent, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                       | No                           |

| Type | Check Item         | Description                                                                                                                                                                                                                                                                                                                                                                                   | --set<br>Supported<br>or Not |
|------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckPortRange     | Checks the port range. If the value of <b>ip_local_port_range</b> is within the threshold (26000 to 65535 by default) and an instance port is out of the range, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                             | No                           |
|      | CheckReadOnlyMode  | Checks the read only mode. If the value of <b>default_transaction_read_only</b> on all CNs in the cluster is <b>off</b> , this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                   | No                           |
|      | CheckCatchup       | Checks whether the CatchupMain function can be found in the gaussdb process stack. If it cannot, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                            | No                           |
|      | CheckProcessStatus | Checks the owner of the om_monitor, cm_agent, cm_server, gs_gtm, and gaussdb processes. If their owner is only user <b>omm</b> , this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                            | No                           |
|      | CheckSpecialFile   | Checks whether the files in the <b>tmp</b> directory ( <b>PGHOST</b> ), OM directory ( <b>GPHOME</b> ), log directory ( <b>GAUSSLOG</b> ), data directory, and program directory ( <b>GAUSSHOME</b> ) contain special characters or whether there are files that do not belong to user <b>omm</b> . If none of them exists, this item passes the check. Otherwise, this item fails the check. | No                           |
|      | CheckCollector     | Checks whether information is successfully collected in the output directory. If it is, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                     | No                           |

| Type     | Check Item         | Description                                                                                                                                                                                          | --set<br>Supported<br>or Not |
|----------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|          | CheckCgroup        | Checks whether Cgroup data is consistent on each node. If it is, this item passes the check. Otherwise, this item fails the check.                                                                   | Yes                          |
|          | CheckOMMonitor     | Checks whether there is the om_monitor process on each node. If there is, this item passes the check. Otherwise, this item fails the check.                                                          | Yes                          |
|          | CheckLargeFile     | Checks whether there is a file over 4 GB in each DN directory. If there is such a file in any DN directory and its subdirectories, this item fails the check. Otherwise, this item passes the check. | No                           |
|          | CheckProStartTim e | Checks whether the interval for starting key processes exceeds 5 minutes. If it does not, this item passes the check. Otherwise, this item fails the check.                                          | No                           |
|          | CheckDilateSysTa b | Checks whether a system catalog is bloated. If it is not, this item passes the check. Otherwise, this item fails the check.                                                                          | Yes                          |
|          | CheckMpprcFile     | Checks whether the environment variable isolation file is modified. If it is not, this item passes the check. Otherwise, this item fails the check.                                                  | No                           |
| Database | CheckLockNum       | Checks the number of database locks. If a result is returned, this item passes the check.                                                                                                            | No                           |
|          | CheckActQryCoun t  | Checks the number of active connections on CNs and <b>max_active_statements</b> . If the former is greater than the latter, a warning is reported.                                                   | No                           |

| Type | Check Item            | Description                                                                                                                                                                                                                    | --set<br>Supported<br>or Not |
|------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckArchiveParameter | Checks the database archive parameter. If the parameter is not enabled or is enabled for CNs, this item passes the check. If it is enabled but not for CNs, this item fails the check.                                         | Yes                          |
|      | CheckBlackList        | Checks the database blacklist syntax. If there are no blacklists, this item passes the check. Otherwise, this item fails the check.                                                                                            | No                           |
|      | CheckCNum             | Checks the number of CNs in the cluster. If the number is less than or equal to 10, this item passes the check. Otherwise, this item fails the check.                                                                          | No                           |
|      | CheckCurConnCount     | Checks the number of database connections. If the number is less than 90% of the maximum connection quantity, this item passes the check. Otherwise, this item fails the check.                                                | No                           |
|      | CheckCursorNum        | Checks the number of cursors in the database. If a result is returned, this item passes the check. Otherwise, this item fails the check.                                                                                       | No                           |
|      | CheckMaxDataNode      | Checks the maximum number of DNs. If the number is less than the number of nodes configured in the XML file multiplied by the number of DNs (90 x 5 by default), a warning is reported. Otherwise, this item passes the check. | Yes                          |
|      | CheckPgPrepared-Xacts | Checks the <b>pgxc_prepared_xacts</b> parameter. If no 2PC transactions are found, this item passes the check. Otherwise, this item fails the check. (2PC is short for two-phase commit.)                                      | Yes                          |

| Type | Check Item         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | --set<br>Supported<br>or Not |
|------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckPgxcgroup     | Checks the number of redistributed records in the <b>pgxc_group</b> table. If the result is 0, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | No                           |
|      | CheckLockState     | Checks whether the cluster is locked. If it is not, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | No                           |
|      | CheckIdleSession   | Checks the number of non-idle sessions. If the result is 0, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | No                           |
|      | CheckDBConnection  | Checks whether the database can be connected. If it can, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | No                           |
|      | CheckGUCConsistent | <ul style="list-style-type: none"> <li>• For a logical cluster, checks the following conditions. If both the conditions are met, this item passes the check. Otherwise, this item fails the check.           <ul style="list-style-type: none"> <li>- The values of GUC parameters whose values cannot be changed on the same type of instances within the cluster are consistent.</li> <li>- The values of GUC parameters whose values can be changed on the same type of instances within the cluster are consistent.</li> </ul> </li> <li>• For a non-logical cluster, checks whether the values of GUC parameters in the same types of instances within the cluster are consistent. If they are, this item passes the check. Otherwise, this item fails the check.</li> </ul> | No                           |

| Type | Check Item       | Description                                                                                                                                                                                                                                                      | --set<br>Supported<br>or Not |
|------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckGUCValue    | Checks the result of $[(\text{max\_connections} + \text{max\_prepared\_transactions}) \times \text{max\_locks\_per\_transaction}]$ . If it is greater than or equal to 1 million, this item passes the check. Otherwise, this item fails the check.              | Yes                          |
|      | CheckCgroupTable | Checks the Cgroup system catalog. If there are no new user-created Cgroups, this item passes the check. Otherwise, a warning is reported.                                                                                                                        | Yes                          |
|      | CheckPMKData     | Checks whether the PMK schema of the database contains abnormal data. If it does not, this item passes the check. Otherwise, this item fails the check.                                                                                                          | Yes                          |
|      | CheckSysTable    | Checks the system catalog. If the check can be performed, this item passes the check.                                                                                                                                                                            | No                           |
|      | CheckSysTabSize  | Checks the system catalog capacity of each instance. If the available capacity of each disk is greater than the total capacity of system catalogs for all instances on the disk, this item passes the check. Otherwise, this item fails the check.               | No                           |
|      | CheckTableSpace  | Checks tablespace paths. If no tablespace path and cluster path are nested and no tablespace paths are nested, this item passes the check. Otherwise, this item fails the check.                                                                                 | No                           |
|      | CheckTableSkew   | Checks the skew of table data. If a table has unbalanced data distribution among DNs and the DN with the most data has over 100,000 records more than the DN with the smallest amount of data, this item fails the check. Otherwise, this item passes the check. | No                           |

| Type | Check Item                  | Description                                                                                                                                                                                                 | --set<br>Supported<br>or Not |
|------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckDNSkew                 | Checks the skew of table data at the DN level. If the DN with the most data has 5% more than the DN with the smallest amount of data, this item fails the check. Otherwise, this item passes the check.     | No                           |
|      | CheckUnAnalyzeTable         | Checks for a table that has not been analyzed. If there is such a table and the table contains at least one record, this item fails the check. Otherwise, this item passes the check.                       | Yes                          |
|      | CheckCreateView             | If the query statement for creating a view contains sub-queries, and parsing and rewriting sub-query results result in duplicate aliases, this item fails the check. Otherwise, this item passes the check. | No                           |
|      | CheckHashIndex              | If there are hash indexes, this item fails the check. Otherwise, this item passes the check.                                                                                                                | No                           |
|      | CheckHdfsForeignTabEncoding | If database code is not in the SQL-ASCII or LATIN1 format and there are HDFS foreign tables, this item fails the check. Otherwise, this item passes the check.                                              | No                           |
|      | CheckNextvalInDefault       | Checks whether a DEFAULT expression contains <b>nextval</b> (sequence). If it does, this item fails the check. Otherwise, this item passes the check.                                                       | No                           |
|      | CheckNodeGroupName          | If the name of a Node Group contains non-SQL_ASCII characters, this item fails the check. Otherwise, this item passes the check.                                                                            | Yes                          |
|      | CheckPgxcRedistb            | If any temporary table remains in the database after data redistribution, this item fails the check. Otherwise, this item passes the check.                                                                 | No                           |

| Type    | Check Item        | Description                                                                                                                                                                     | --set<br>Supported<br>or Not |
|---------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|         | CheckPoolerNum    | Checks the pooler usage. If it exceeds 33000, this item fails the check. If it exceeds 28000, a warning is reported. Otherwise, this item passes the check.                     | No                           |
|         | CheckReturnType   | Checks whether a user-defined function contains invalid return value types. If it does, this item fails the check. Otherwise, this item passes the check.                       | No                           |
|         | CheckSysadminUser | Checks whether there are database administrators in addition to the owner of the cluster. If there are, this item fails the check. Otherwise, this item passes the check.       | No                           |
|         | CheckTDDate       | Checks whether the ORC table in a Teradata database contains columns of the DATE type. If it does, this item fails the check. Otherwise, this item passes the check.            | No                           |
|         | CheckDropColumn   | Checks whether there are tables on which <b>DROP COLUMN</b> has been performed. If there are, this item fails the check. Otherwise, this item passes the check.                 | No                           |
|         | CheckDiskFailure  | Checks for disk faults. If there is an error during full data query in the cluster, this item fails the check. Otherwise, this item passes the check.                           | No                           |
| Network | CheckPing         | Checks the connectivity of all nodes in the cluster. If all their IP addresses can be pinged from each other, this item passes the check. Otherwise, this item fails the check. | No                           |
|         | CheckRXTX         | Checks the RX/TX value for <b>backIP</b> of a node. If it is <b>4096</b> , this item passes the check. Otherwise, this item fails the check.                                    | Yes                          |

| Type | Check Item       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | --set<br>Supported<br>or Not |
|------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      | CheckMTU         | Checks the MTU values of the NICs corresponding to the node backIP addresses. (The MTU values of physical NICs after being bonded must be the same.) If an MTU value is not <b>1500</b> , a warning alarm is reported. If the MTU values in the cluster are the same, the item passes the check. Otherwise, the check item fails.                                                                                                                                               | Yes                          |
|      | CheckNetworkDrop | Checks the packet loss rate of each IP address within 1 minute. If the rate does not exceed 1%, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                               | No                           |
|      | CheckBond        | Checks whether <b>BONDING_OPTS</b> or <b>BONDING_MODULE_OPTS</b> is configured. If they are not, a warning is reported. In this case, checks whether the bond mode of each node is the same. If it is, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                        | Yes                          |
|      | CheckMultiQueue  | Checks <b>cat /proc/interrupts</b> . If multiqueue is enabled for NICs and different CPUs are bound, this item passes the check. Otherwise, this item fails the check.                                                                                                                                                                                                                                                                                                          | Yes                          |
|      | CheckUsedPort    | <p>Checks the value of <b>net.ipv4.ip_local_port_range</b>. If the value is greater than or equal to the default value of the OS (32768 to 61000), this item passes the check.</p> <p>Checks the number of random TCP ports. If the number is less than 80% of the total number of random ports, this item passes the check.</p> <p>Checks the number of random SCTP ports. If the number is less than 80% of the total number of random ports, this item passes the check.</p> | No                           |

| Type | Check Item      | Description                                                                                                                                                                                                                                                                                                                                                                                                   | --set<br>Supported<br>or Not                                                                                                                                                                                                                    |
|------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | CheckNICModel   | Checks whether NIC models or driver versions are consistent across nodes. If they are, this item passes the check. Otherwise, a warning is reported.                                                                                                                                                                                                                                                          | No                                                                                                                                                                                                                                              |
|      | CheckRouting    | Checks the number of IP addresses on the service network segment for each node. If the number exceeds 1, a warning is reported. Otherwise, this item passes the check.                                                                                                                                                                                                                                        | No                                                                                                                                                                                                                                              |
|      | CheckNetSpeed   | When the network is fully loaded, checks whether the average NIC receiving bandwidth is greater than 600 MB. If it is, this item passes the check.<br><br>When the network is fully loaded, checks the network ping value. If it is shorter than 1s, this item passes the check.<br><br>When the network is fully loaded, checks the NIC packet loss rate. If it is less than 1%, this item passes the check. | No                                                                                                                                                                                                                                              |
|      | CheckIRQ        | CheckS the software interrupt with the highest CPU usage. If the CPU usage is greater than 90%, a warning is reported. Otherwise, the check result is passed.                                                                                                                                                                                                                                                 | No                                                                                                                                                                                                                                              |
|      | CheckTCPRetrans | Check the TCP send and resend messages and calculate the retransmission rate. If the retransmission rate is greater than 0.001, a warning is reported. Otherwise, the check result is passed.                                                                                                                                                                                                                 | No                                                                                                                                                                                                                                              |
|      | Others          | CheckDataDiskUsage                                                                                                                                                                                                                                                                                                                                                                                            | Checks the disk where the DN directory and tablespace directory are located. If the disk format is XFS, EXT3, or EXT4, and the disk space and inode usage are lower than 90%, this item passes the check. Otherwise, this item fails the check. |

### 2.1.6.12 OS parameters

Table 2-7 OS parameters

| Parameter Name                | Parameter Description                                                                                                                                                                                                                                                                                                                                            | Recommended Value |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| net.ipv4.tcp_max_tw_buckets   | Specifies the maximum number of TCP/IP connections concurrently remaining in the <b>TIME_WAIT</b> state. If the number of TCP/IP connections concurrently remaining in the <b>TIME_WAIT</b> state exceeds the value of this parameter, the TCP/IP connections in the <b>TIME_WAIT</b> state will be released immediately, and alarm information will be printed. | 10000             |
| net.ipv4.tcp_tw_reuse         | Reuses sockets whose status is <b>TIME-WAIT</b> for new TCP connections. <ul style="list-style-type: none"><li>• <b>0:</b> This function is disabled.</li><li>• <b>1:</b> This function is enabled.</li></ul>                                                                                                                                                    | 1                 |
| net.ipv4.tcp_tw_recycle       | Rapidly reclaims sockets whose status is <b>TIME-WAIT</b> in TCP connections. <ul style="list-style-type: none"><li>• <b>0:</b> This function is disabled.</li><li>• <b>1:</b> This function is enabled.</li></ul>                                                                                                                                               | 1                 |
| net.ipv4.tcp_keepalive_time   | Specifies how often Keepalived messages are sent through TCP connections when Keepalived is enabled.                                                                                                                                                                                                                                                             | 30                |
| net.ipv4.tcp_keepalive_probes | Specifies the number of Keepalived detection packets sent through a TCP connection before the connection is regarded invalid. The product of the parameter value multiplied by the value of the <b>tcp_keepalive_intvl</b> parameter determines the response timeout duration after a Keepalived message is sent through a connection.                           | 9                 |
| net.ipv4.tcp_keepalive_intvl  | Specifies how often a detection packet is re-sent when the previous packets are not acknowledged.                                                                                                                                                                                                                                                                | 30                |
| net.ipv4.tcp_retries1         | Specifies the maximum TCP reattempts during the connection establishment process.                                                                                                                                                                                                                                                                                | 5                 |

| Parameter Name                   | Parameter Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Recommended Value |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| net.ipv4.tcp_syn_retries         | Specifies the maximum SYN packet reattempts in the TCP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5                 |
| net.ipv4.tcp_synack_retries      | Specifies the maximum SYN response packet reattempts in the TCP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5                 |
| net.sctp.path_max_retrans        | Specifies the maximum SCTP reattempts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10                |
| net.sctp.max_init_retransmits    | Specifies the maximum INIT packet reattempts in the SCTP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 10                |
| net.sctp.association_max_retrans | Specifies the maximum reattempts of a single logical connection in the SCTP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 10                |
| net.sctp.hb_interval             | Specifies the retransmission interval of heartbeat detection packets in the SCTP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 30000             |
| net.ipv4.tcp_retries2            | <p>Specifies the number of times that the kernel re-sends data to a connected remote host. A smaller value leads to earlier detection of an invalid connection to the remote host, and the server can quickly release this connection.</p> <p>If "connection reset by peer" is displayed, increase the value of this parameter to avoid the problem.</p>                                                                                                                                                                                                                                                                                                                     | 12                |
| vm.overcommit_memory             | <p>Specifies the kernel check method during memory allocation.</p> <ul style="list-style-type: none"> <li>• <b>0:</b> The system accurately calculates the current available memory.</li> <li>• <b>1:</b> The system returns a success message without a kernel check.</li> <li>• <b>2:</b> The system returns a failure message if the memory size you have applied for exceeds the result of the following formula: Total memory size x Value of <b>vm.overcommit_ratio</b>/100 + Total SWAP size.</li> </ul> <p>The default value is <b>2</b>, which is too conservative. The recommended value is <b>0</b>. If memory usage is high, set this parameter to <b>1</b>.</p> | 0                 |

| Parameter Name         | Parameter Description                                                                                                                                                                                                                      | Recommended Value                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| net.sctp.sndbuf_policy | <p>Specifies the buffer allocation policy on the SCTP sender.</p> <ul style="list-style-type: none"> <li>• <b>0:</b> The buffer is allocated by connection.</li> <li>• <b>1:</b> The buffer is allocated by association.</li> </ul>        | 0                                  |
| net.sctp.rcvbuf_policy | <p>Specifies the buffer allocation policy on the SCTP receiver.</p> <ul style="list-style-type: none"> <li>• <b>0:</b> The buffer is allocated by connection.</li> <li>• <b>1:</b> The buffer is allocated by association.</li> </ul>      | 0                                  |
| net.sctp.sctp_mem      | <p>Specifies the maximum free memory of the kernel SCTP stack. Three memory size ranges in the unit of page are provided: <b>min</b>, <b>default</b>, and <b>max</b>. If the value is <b>max</b>, packet loss occurs.</p>                  | 94500000<br>915000000<br>927000000 |
| net.sctp.sctp_rmem     | <p>Specifies the total free memory for receiving data in the kernel SCTP stack. Three memory size ranges in the unit of page are provided: <b>min</b>, <b>default</b>, and <b>max</b>. If the value is <b>max</b>, packet loss occurs.</p> | 8192 250000<br>16777216            |
| net.sctp.sctp_wmem     | <p>Specifies the total free memory for sending data in the kernel SCTP stack. Three memory size ranges in the unit of page are provided: <b>min</b>, <b>default</b>, and <b>max</b>. If the value is <b>max</b>, packet loss occurs.</p>   | 8192 250000<br>16777216            |
| net.ipv4.tcp_rmem      | <p>Specifies the free memory in the TCP receiver buffer. Three memory size ranges in the unit of page are provided: <b>min</b>, <b>default</b>, and <b>max</b>.</p>                                                                        | 8192 250000<br>16777216            |
| net.ipv4.tcp_wmem      | <p>Specifies the free memory in the TCP sender buffer. Three memory size ranges in the unit of page are provided: <b>min</b>, <b>default</b>, and <b>max</b>.</p>                                                                          | 8192 250000<br>16777216            |
| net.core.wmem_max      | <p>Specifies the maximum size of the socket sender buffer.</p>                                                                                                                                                                             | 21299200                           |
| net.core.rmem_max      | <p>Specifies the maximum size of the socket receiver buffer.</p>                                                                                                                                                                           | 21299200                           |

| Parameter Name               | Parameter Description                                                                                                                                                                                                                                           | Recommended Value             |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| net.core.wmem_default        | Specifies the default size of the socket sender buffer.                                                                                                                                                                                                         | 21299200                      |
| net.core.rmem_default        | Specifies the default size of the socket receiver buffer.                                                                                                                                                                                                       | 21299200                      |
| net.ipv4.ip_local_port_range | Specifies the range of temporary ports that can be used by a physical server.                                                                                                                                                                                   | 26000-65535                   |
| kernel.sem                   | Specifies the kernel semaphore.                                                                                                                                                                                                                                 | 250 6400000<br>1000 25600     |
| vm.min_free_kbytes           | Specifies the minimum free physical memory reserved for unexpected page breaks.                                                                                                                                                                                 | 5% of the total system memory |
| net.core.somaxconn           | Specifies the maximum length of the listening queue of each port. This is a global parameter.                                                                                                                                                                   | 65535                         |
| net.ipv4.tcp_synccookies     | Specifies whether to enable SYN cookies to guard the OS against SYN attacks when the SYN waiting queue overflows. <ul style="list-style-type: none"> <li>• <b>0:</b> The SYN cookies are disabled.</li> <li>• <b>1:</b> The SYN cookies are enabled.</li> </ul> | 1                             |
| net.sctp.addip_enable        | Specifies whether dynamic address reset of the SCTP is enabled. <ul style="list-style-type: none"> <li>• <b>0:</b> This function is disabled.</li> <li>• <b>1:</b> This function is enabled.</li> </ul>                                                         | 0                             |
| net.core.netdev_max_backlog  | Specifies the maximum number of data packets that can be sent to the queue when the rate at which the network device receives data packets is higher than that at which the kernel processes the data packets.                                                  | 65535                         |
| net.ipv4.tcp_max_syn_backlog | Specifies the maximum number of unacknowledged connection requests to be recorded.                                                                                                                                                                              | 65535                         |
| net.ipv4.tcp_fin_timeout     | Specifies the default timeout duration.                                                                                                                                                                                                                         | 60                            |
| kernel.shmall                | Specifies the total shared free memory of the kernel.                                                                                                                                                                                                           | 11529215046068<br>46720       |
| kernel.shmmax                | Specifies the maximum value of a shared memory segment.                                                                                                                                                                                                         | 18446744073709<br>551615      |

| Parameter Name                           | Parameter Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Recommended Value |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| net.ipv4.tcp_sack                        | <p>Specifies whether selective acknowledgment is enabled. The selective acknowledgment on out-of-order packets can increase system performance. Restricting users to sending only lost packets (for wide area networks) should be enabled, but this will increase CPU usage.</p> <ul style="list-style-type: none"><li>• <b>0:</b> This function is disabled.</li><li>• <b>1:</b> This function is enabled.</li></ul>                                                                                                      | 1                 |
| net.ipv4.tcp_timestamps                  | <p>Specifies whether the TCP timestamp (12 bytes are added in the TCP packet header) enables a more accurate RTT calculation than the retransmission timeout (for details, see RFC 1323) for better performance.</p> <ul style="list-style-type: none"><li>• <b>0:</b> This function is disabled.</li><li>• <b>1:</b> This function is enabled.</li></ul>                                                                                                                                                                  | 1                 |
| vm.extfrag_threshold                     | <p>When system memory is insufficient, Linux will score the current system memory fragments. If the score is higher than the value of <b>vm.extfrag_threshold</b>, <b>kswapd</b> triggers memory compaction. When the value of this parameter is close to <b>1000</b>, the system tends to swap out old pages when processing memory fragments to meet the application requirements. When the value of this parameter is close to <b>0</b>, the system tends to do memory compaction when processing memory fragments.</p> | 500               |
| vm.overcommit_ratio                      | <p>When the system uses the algorithms where memory usage never exceeds the thresholds, the total memory address space of the system cannot exceed the value of <b>swap+RAM</b> multiplied by the percentage specified by this parameter. When the value of <b>vm.overcommit_memory</b> is set to <b>2</b>, this parameter takes effect.</p>                                                                                                                                                                               | 90                |
| /sys/module/sctp/parameters/no_checksums | Specifies whether <b>checksum</b> is disabled in SCTP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0                 |

| Parameter Name | Parameter Description                                                                                     | Recommended Value |
|----------------|-----------------------------------------------------------------------------------------------------------|-------------------|
| MTU            | Specifies the maximum transmission unit (MTU) for a node NIC. The default value is <b>1500</b> in the OS. | 1500              |

### 2.1.6.13 Performance check items

Table 2-8 Performance check items

| Type                   | Performance Parameter  | Description                                                               |
|------------------------|------------------------|---------------------------------------------------------------------------|
| Cluster level          | Host CPU Usage         | CPU usage of the host                                                     |
|                        | Gauss CPU Usage        | Usage of the Gauss CPU                                                    |
|                        | Shared Memory Hit Rate | Hit rate of the shared memory                                             |
|                        | Memory Sorting Ratio   | Ratio of completed sorts in memory                                        |
|                        | I/O Usage              | Number and time of file reads and writes                                  |
|                        | Disk Usage             | Number of file writes, average write duration, and maximum write duration |
|                        | Transaction Statistics | Number of current SQL executions and sessions                             |
| Host level             | CPU Usage              | Host CPU usage, including CPU busy time and CPU idle time                 |
|                        | Memory Usage           | Host memory usage, including total physical memory and used memory        |
|                        | I/O Usage              | Number and time of file reads and writes                                  |
| Session/ Process level | CPU Usage              | Session CPU usage, including CPU busy time and CPU idle time              |
|                        | Memory Usage           | Session memory usage, including total physical memory and used memory     |
|                        | I/O Usage              | Number of shared buffer hits in a session                                 |

| Type                                                    | Performance Parameter | Description                                                                                                |
|---------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------|
| SSD performance<br>(Only user <b>root</b> can view it.) | Write Performance     | The <b>dd</b> command ( <b>flag=direct bs=8M count=2560</b> ) is used to write data into an SSD every 10s. |
|                                                         | Read Performance      | The <b>dd</b> command ( <b>flag=direct bs=8M count=2560</b> ) is used to read data from an SSD every 7s.   |

## 2.2 Logging In to the CloudAutoDeploy-CDK Master Node

**Step 1** Log in to ManageOne Maintenance Portal via <https://ManageOne Maintenance Portal URL:31943>. Alternatively, log in to the unified portal and choose **OperationCenter**.

- Password login: Enter the username and password of the account.
  - Default account: **bss\_admin**

 NOTE

For ManageOne upgraded from 8.2.0 or earlier, the default username is **admin**.  
For ManageOne 8.2.1 or later, the default username is **bss\_admin**.

- Preset password: See the preset password of the ManageOne Maintenance Portal account on the "Type A (Portal)" sheet in [Huawei Cloud Stack 8.3.1 Account List](#).

- Login using a USB key: Insert a USB key with preset user certificates, select the required device and certificate, and enter the PIN.

Log in to ManageOne Maintenance Portal.

**Step 2** In the **Cloud O&M Management** navigation pane, click **Service\_OM**. The Service OM page is displayed.

**Step 3** On the Service OM console page, click **VM**.

**Step 4** Query the IP address of the CloudAutoDeploy-CDK node. In the search box in the upper right corner, enter the keyword **EICCommon-Region-Master** to search for VMs. Generally, three VMs are available. You can record the IP address of any one of them.

**Step 5** Log in to the CloudAutoDeploy-CDK master node as user **opsadmin** using a remote login tool, and then switch to user **root**. The IP address is obtained in [Step 4](#).

**su - root**

- Default password of user **opsadmin**: Search for **EICCommon-Region-Master-01** in the "Type A (Background)" sheet of [Huawei Cloud Stack 8.3.1 Account List](#).

- Default password of user **root**: Search for **EICCommon-Region-Master-01** in the "Type A (Background)" sheet of **Huawei Cloud Stack 8.3.1 Account List**.

----End

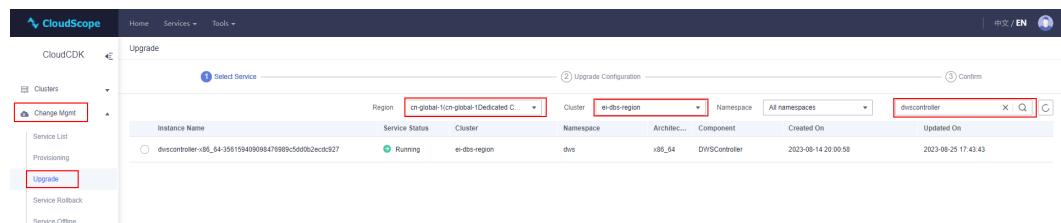
## 2.3 Querying MySQL Database Information

**Step 1** Log in to CloudScope using a browser as a system administrator.

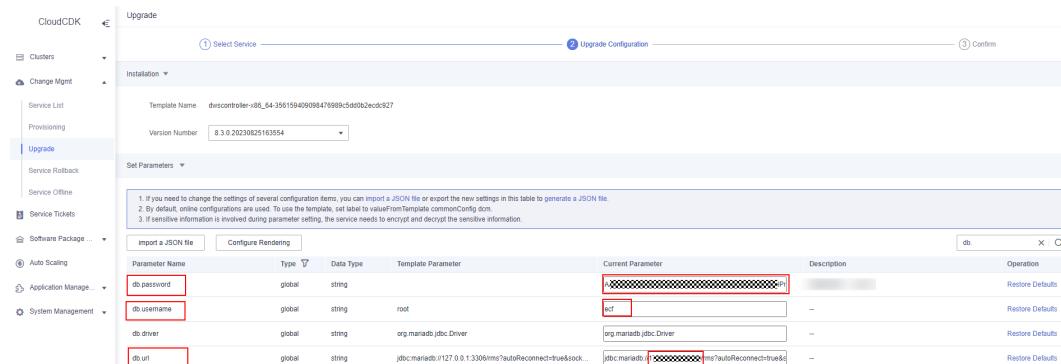
- URL: **https://Address\_for\_accessing\_CloudScope**, for example, **https://cloudscope.demo.com**
- For details about the URL for accessing CloudScope, see the COP information on the "Portal" sheet of the deployment parameter table exported from HCC Turnkey during Auto Change Platform installation.
- Default account: **op\_cdk\_sso**
- To obtain the default password of the account, search for the default password of the account on the "CloudScopeLite" sheet of **Huawei Cloud Stack 8.3.1 Account List**.

**Step 2** Choose **Services > Change Mgmt > CloudAutoDeploy-CDK**.

**Step 3** In the navigation pane on the left, choose **Change Magmt & > Upgrade**, select the corresponding region, and select the cluster **ei-dbs-region**. Search for **dwscontroller** in the search box, select the corresponding dwscontroller, and click **Next**.



**Step 4** Enter the keyword **db**. in the search box on the right and record the password ciphertext corresponding to **db.password**, username corresponding to **db.username**, and database IP address and port number corresponding to **db.url**.



**Step 5** Decrypt the password ciphertext by referring to **Decrypting the Password Ciphertext** and record the decrypted password.

----End

## 2.4 Obtaining the Tenant AK/SK

### Scenario

This section describes how to obtain the AK and SK of the tenant account on ManageOne Operation Portal for authentication.

- Access Key ID (AK): indicates the ID of the access key, which is a unique identifier used in conjunction with a Secret Access Key to sign requests cryptographically.
- Secret Access Key (SK): indicates the key used with its associated AK to cryptographically sign requests and identify request senders to prevent requests from being modified.

### Procedure

**Step 1** Log in to ManageOne Operation Portal.

**Step 2** Click the avatar in the upper right corner and choose **My Settings > Manage Access Key**.

**Step 3** Click **Add Access Key**. In the displayed dialog box, click **OK** to save the access keys to the default download path of your browser.

 **NOTE**

Each user can create a maximum of two valid access keys. If there are already two access keys, delete one or both of them and create a new one.

**Step 4** Open the downloaded **credentials.csv** file to obtain the access keys (AK and SK).

----End

## 2.5 Logging In to the rms Database on the Management Side

**Step 1** Log in to the CloudAutoDeploy-CDK master node by referring to [Logging In to the CloudAutoDeploy-CDK Master Node](#).

**Step 2** Log in to an O&M container by referring to [Logging In to the O&M Container](#).

**Step 3** Run the following command to connect to the MySQL database. The IP address of the database host can be obtained according to [Querying MySQL Database Information](#). For details about the password, see the **Type A (Background)** sheet in the [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS** for **Product Name** in column A, and search for **ecf**.

**mysql -hDatabase\_host\_IP\_address -P7306 -uecf;**

Enter the password of user **ecf** as prompted and run the following command to switch to the **rms** database:

`use rms;`

`----End`

## 2.6 Logging In to the GaussDB Database of DMS

**Step 1** Log in to ManageOne Maintenance Portal via <https://ManageOne Maintenance Portal URL:31943>. Alternatively, log in to the unified portal and choose **OperationCenter**.

- Password login: Enter the username and password of the account.
  - Default account: **bss\_admin**



For ManageOne upgraded from 8.2.0 or earlier, the default username is **admin**.  
For ManageOne 8.2.1 or later, the default username is **bss\_admin**.

- Preset password: See the preset password of the ManageOne Maintenance Portal account on the "Type A (Portal)" sheet in [Huawei Cloud Stack 8.3.1 Account List](#).
- Login using a USB key: Insert a USB key with preset user certificates, select the required device and certificate, and enter the PIN.

Log in to ManageOne Maintenance Portal.

**Step 2** In the **Cloud O&M Management** navigation pane, click **Service\_OM**. The Service OM page is displayed.

**Step 3** Choose **Services > Resource > Compute Resource**, click the **VMs** tab, search for **DWS-Gauss-DB** in the search box, and record the IP address of DWS-Gauss-DB01 or DWS-Gauss-DB02.

**Step 4** Use PuTTY to log in to any DWS-Gauss-DB node as user **opsadmin**, and run the **su - root** command to switch to user **root**.

- To obtain the default password of user **opsadmin**, search for **GaussDB(DWS)-Gauss-DB01** in the **Type A (Background)** sheet of the [Huawei Cloud Stack 8.3.1 Account List](#).
- To obtain the default password of user **root**, search for **GaussDB(DWS)-Gauss-DB01** in the **Type A (Background)** sheet of the [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 5** Switch to user **dbadmin**.

`su - dbadmin`

**Step 6** Connect to the DMS database. For details about the password, see **Type B (EI Enterprise Intelligence)** in [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS** for **Cloud Service** in column A and search for **DMS database node** to obtain the password.

`gsql -Udbadmin -W Password`

`----End`

## 2.7 Logging In to a dwscontroller Pod

**Step 1** Log in to the CloudAutoDeploy-CDK master node by referring to [Logging In to the CloudAutoDeploy-CDK Master Node](#).

**Step 2** Query the pods.

```
kubectl get pods -n dws -owide
```

Information similar to the following is displayed. **dwscontroller-xxx** indicates the pod names.

| NAME                                  | READY     | STATUS  | RESTARTS | AGE   | IP            | NODE          | NOMINATED |
|---------------------------------------|-----------|---------|----------|-------|---------------|---------------|-----------|
| NODE                                  | READINESS | GATES   |          |       |               |               |           |
| dms-collection-cbc7c6c-gx79t          | 1/1       | Running | 0        | 4d22h | 192.168.0.32  | 192.168.8.118 | <none>    |
| <none>                                |           |         |          |       |               |               |           |
| dms-collection-cbc7c6c-nt7sg          | 1/1       | Running | 0        | 4d22h | 192.168.0.107 | 192.168.8.127 | <none>    |
| <none>                                |           |         |          |       |               |               |           |
| dms-monitoring-5f44598478-njkv2       | 1/1       | Running | 0        | 4d22h | 192.168.0.128 | 192.168.8.120 | <none>    |
| <none>                                |           |         |          |       |               |               |           |
| dms-monitoring-5f44598478-qwj4l       | 1/1       | Running | 0        | 4d22h | 192.168.0.144 | 192.168.8.119 | <none>    |
| <none>                                |           |         |          |       |               |               |           |
| <b>dwscontroller-56864d578d-2kz5s</b> | 1/1       | Running | 0        | 26h   | 192.168.0.111 | 192.168.8.127 | <none>    |
| <none>                                |           |         |          |       |               |               |           |
| <b>dwscontroller-56864d578d-wx8qr</b> | 1/1       | Running | 0        | 26h   | 192.168.0.75  | 192.168.8.125 | <none>    |
| <none>                                |           |         |          |       |               |               |           |

**Step 3** Log in to a **dwscontroller** pod. In the following command, **dwscontroller\_pod\_name** indicates the name obtained in [Step 2](#).

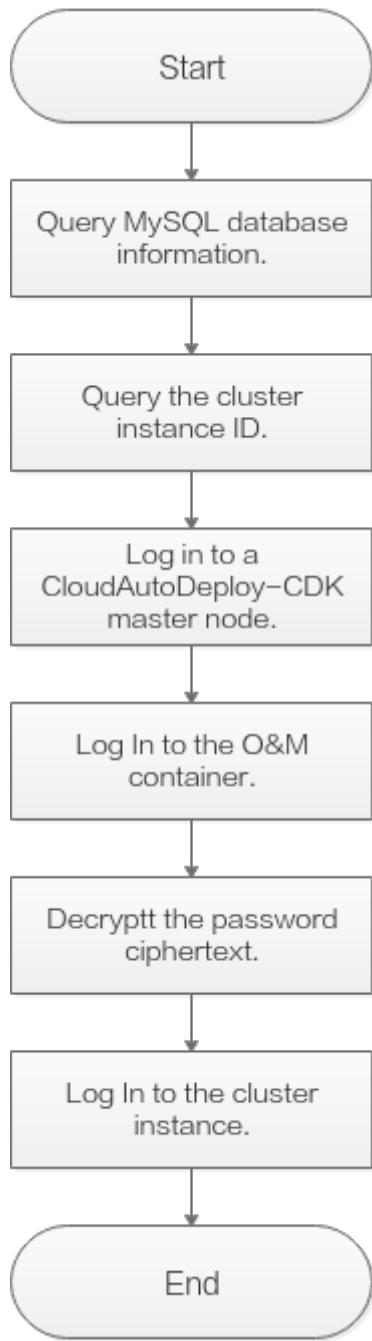
```
kubectl exec -ti -n dws dwscontroller_pod_name bash
```

----End

## 2.8 Logging In to a Node in the Tenant Cluster

This section describes how to use O&M pods to log in to cluster nodes for troubleshooting on the tenant side. The following figure shows the login process.

**Figure 2-1** Login process



## Querying MySQL Database Information

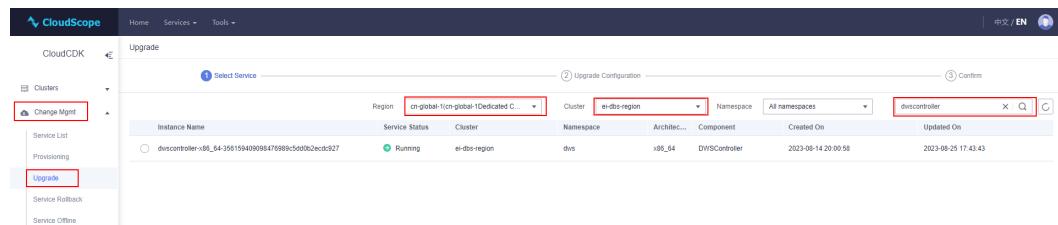
**Step 1** Log in to CloudScope using a browser as a system administrator.

- URL: [https://Address\\_for\\_accessing\\_CloudScope](https://Address_for_accessing_CloudScope), for example, <https://cloudscope.demo.com>
- For details about the URL for accessing CloudScope, see the COP information on the "Portal" sheet of the deployment parameter table exported from HCC Turnkey during Auto Change Platform installation.
- Default account: **op\_cdk\_sso**

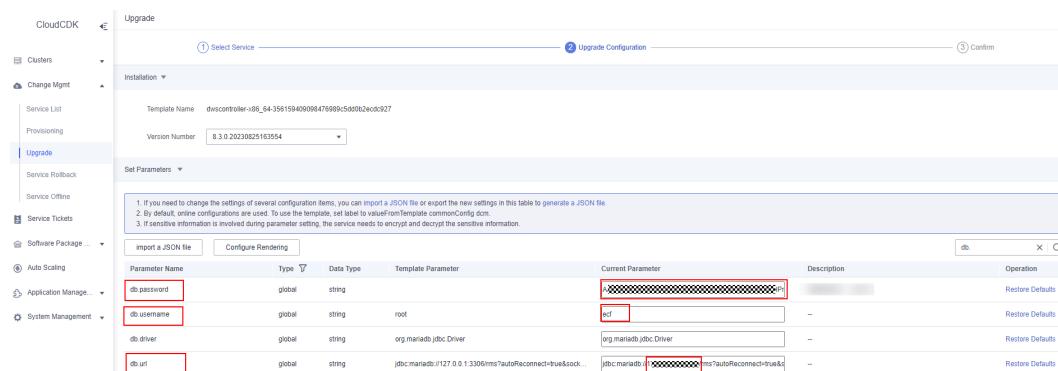
- To obtain the default password of the account, search for the default password of the account on the "CloudScopeLite" sheet of [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 2** Choose **Services > Change Mgmt > CloudAutoDeploy-CDK**.

**Step 3** In the navigation pane on the left, choose **Change Magmt & > Upgrade**, select the corresponding region, and select the cluster **ei-dbs-region**. Search for **dwscontroller** in the search box, select the corresponding dwscontroller, and click **Next**.



**Step 4** Enter the keyword **db.** in the search box on the right and record the password ciphertext corresponding to **db.password**, username corresponding to **db.username**, and database IP address and port number corresponding to **db.url**.



**Step 5** After the recording is complete, click **Home** in the upper left corner to exit the current page to prevent misoperations.

----End

## Querying the Cluster Instance ID

**Step 1** Log in to CloudScope using a browser as a system administrator.

- URL: [https://Address\\_for\\_accessing\\_CloudScope](https://Address_for_accessing_CloudScope), for example, <https://cloudscope.demo.com>
- For details about the URL for accessing CloudScope, see the COP information on the "Portal" sheet of the deployment parameter table exported from HCC Turnkey during Auto Change Platform installation.
- Default account: **op\_cdk\_sso**
- To obtain the default password of the account, search for the default password of the account on the "CloudScopeLite" sheet of [Huawei Cloud Stack 8.3.1 Account List](#).

- Step 2** In the **Common Links** area, click **Service CM**. Select your region and then access the **Service CM** page.
- Step 3** Choose **Service List > Data Warehouse Service** to switch to the corresponding namespace.
- Step 4** Choose **Sre OM Management > Clusters** on the left, click the cluster name to go to the node list page, and record the ID of a CN whose name contains **cn**.

| Node ID                               | Node Name                                         | Node Status | Recent Task Status | Latest Task Time |
|---------------------------------------|---------------------------------------------------|-------------|--------------------|------------------|
| oce3249a-979f-496d-a20b-8fffa3e23c4   | auto-default--ypr0G8Z9NrgzPQJc1O2LR1MIVS-dws-c... | Normal      | --                 | --               |
| 45890065-2042-45f7-8772-5839000c3271  | auto-default--ypr0G8Z9NrgzPQJc1O2LR1MIVS-dws-c... | Normal      | --                 | --               |
| 5602290e2-2960-4833-89a1-254968526166 | auto-default--ypr0G8Z9NrgzPQJc1O2LR1MIVS-dws-d... | Normal      | --                 | --               |

----End

## Logging In to the CloudAutoDeploy-CDK Master Node

- Step 1** Log in to ManageOne Maintenance Portal via <https://ManageOne Maintenance Portal URL:31943>. Alternatively, log in to the unified portal and choose **OperationCenter**.

- Password login: Enter the username and password of the account.
  - Default account: **bss\_admin**



For ManageOne upgraded from 8.2.0 or earlier, the default username is **admin**.  
For ManageOne 8.2.1 or later, the default username is **bss\_admin**.

- Preset password: See the preset password of the ManageOne Maintenance Portal account on the "Type A (Portal)" sheet in **Huawei Cloud Stack 8.3.1 Account List**.
- Login using a USB key: Insert a USB key with preset user certificates, select the required device and certificate, and enter the PIN.

Log in to ManageOne Maintenance Portal.

- Step 2** In the **Cloud O&M Management** navigation pane, click **Service\_OM**. The Service OM page is displayed.

- Step 3** On the Service OM console page, click **VM**.

- Step 4** Query the IP address of the CloudAutoDeploy-CDK node. In the search box in the upper right corner, enter the keyword **EICCommon-Region-Master** to search for VMs. Generally, three VMs are available. You can record the IP address of any one of them.

- Step 5** Log in to the CloudAutoDeploy-CDK master node as user **opsadmin** using a remote login tool, and then switch to user **root**. The IP address is obtained in **Step 4**.

**su - root**

- Default password of user **opsadmin**: Search for **EICommon-Region-Master-01** in the "Type A (Background)" sheet of [Huawei Cloud Stack 8.3.1 Account List](#).
- Default password of user **root**: Search for **EICommon-Region-Master-01** in the "Type A (Background)" sheet of [Huawei Cloud Stack 8.3.1 Account List](#).

----End

## Logging In to the O&M Container

**Step 1** Run the following command on the CloudAutoDeploy-CDK master node to query the O&M pod names:

**kubectl get pod -n ecf**

Information similar to the following is displayed. Find the pod whose name starts with **dwsmaintaintool**. Any pod whose **STATUS** is **Running** can be used as an O&M pod.

| NAME                                    | READY | STATUS  | RESTARTS | AGE  |
|-----------------------------------------|-------|---------|----------|------|
| dbsevent-5995495644-6px4m               | 1/1   | Running | 0        | 47m  |
| dbsevent-5995495644-hrt8l               | 1/1   | Running | 0        | 47m  |
| dbsisight-79f5fdfc4d-8qcmp              | 1/1   | Running | 0        | 2d2h |
| dbsisight-79f5fdfc4d-kntp6              | 1/1   | Running | 0        | 2d2h |
| dbsmonitor-577696776c-j5cpt             | 1/1   | Running | 0        | 2d2h |
| dbsmonitor-577696776c-kwbzj             | 1/1   | Running | 0        | 2d2h |
| <b>dwsmaintaintool-6849847c4b-9mxgf</b> | 1/1   | Running | 0        | 2d1h |
| <b>dwsmaintaintool-6849847c4b-mdqz6</b> | 1/1   | Running | 0        | 2d1h |
| ecfclustermanager-85987598fd-pst2k      | 1/1   | Running | 0        | 40m  |
| ecfclustermanager-85987598fd-x5jn9      | 1/1   | Running | 0        | 40m  |

**Step 2** Log in to an O&M pod.

**kubectl exec -it Pod\_name -n ecf bash**

Replace *Pod\_name* with the name of a pod queried in **Step 1** whose **STATUS** is **Running**. The following shows an example.

**kubectl exec -it dwsmaintaintool-ff99697f6-vtkcb -n ecf bash**

----End

## Decrypting the Password Ciphertext

**Step 1** Run the following command on the O&M container to go to the **/opt/cloud/3rdComponent/opsTool** directory:

**cd /opt/cloud/3rdComponent/opsTool**

**Step 2** Start the tool.

**java -jar SccTool.jar**

**Step 3** Enter **3 {Password ciphertext}** as prompted to decrypt the password. For example, enter the ciphertext of the database user password queried in GeoGenius.

**3 {Password ciphertext}**

Press **Enter** to obtain the plaintext of the decrypted password.

```
international Encrypt, please input 1 and '' and password's plaintext
international Encrypt password in file, please input 2 and '' and absolute path of file
wcc,international,sm business Decrypt, please input 3 and '' and password's ciphertext
wcc,international,sm business Decrypt password in file, please input 4 and '' and absolute path of file
sm business Encrypt, please input 5 and '' and password's plaintext
sm business Encrypt password in file, please input 6 and '' and absolute path of file
wcc Encrypt,please input 7 and '' and password's plaintext
wcc Encrypt password in file, please input 8 and '' and absolute path of file
wcc Decrypt and international Encrypt, please input 9 and '' and password's plaintext
wcc Decrypt and sm business Encrypt, please input 10 and '' and password's plaintext
international Decrypt and WCC Encrypt, please input 11 and '' and password's plaintext
sm business Decrypt and WCC Encrypt, please input 12 and '' and password's plaintext
international Decrypt and sm business Encrypt,please input 13 and '' and password's plaintext
sm business Decrypt and international Encrypt,please input 14 and '' and password's plaintext
3 BBBBAAUAAAAAAAHA/AB7D4eUSPI+eBRegOVoLXN1cG3aR3DcpBB8a3XUXt88j+1QX4A8A*****AAAQtW
zuJ9vpKV88oI
```

**Decrypt result:**  
[REDACTED]

**Step 4** Press CTRL+C to exit the tool.

----End

## Logging In to a Cluster Instance

**Step 1** Run the following command in the **/opt/cloud/3rdComponent/opsTool** directory of the O&M container to log in to the cluster instance: Obtain the username, host IP address, and port number from [Querying MySQL Database Information](#). Cluster instance ID is obtained from [Querying the Cluster Instance ID](#).

```
sh connectTool.sh -u Username -drms -h Host_IP -p Port_number -n Instance_ID -t Standalone
```

After the command is executed, enter the password as prompted. Obtain the password from [Decryption the Password Ciphertext](#).

```
[service@dwsmaintaintool-78bd4b8b55-b5f6g opsTool]$ sh connectTool.sh -u ***** -drms -h ***** -p ***** -n 68***** -t Standalone
Start connect DB server and query result.....

Password:

Query result complete.

host is 192.168.0.239

start connect instance server.....

spawn /bin/m -f /opt/cloud/3rdComponent/opsTool/tmp19605/connect_20230224033436_28179.exp >/dev/null 2>&1

spawn /bin/sh -i /opt/cloud/3rdComponent/opsTool/tmp19605/ssh_key Mike@***** -o StrictHostKeyChecking=no -o UserKnownHostsFile=/dev/null

Warning: Permanently added '*****' (ED25519) to the list of known hosts.

Authorized users only. All activities may be monitored and reported.

Enter passphrase for key '/opt/cloud/3rdComponent/opsTool/tmp19605/ssh_key':

Authorized users only. All activities may be monitored and reported.

Last login: Fri Feb 24 03:31:27 2023 from *****

Authorized users only. All activities may be monitored and reported.

[Mike@host-***** ~]# su

Password:

[root@host-***** Mike]#
```

**Step 2** Switch to user **Ruby** and log in to the cluster sandbox.

**su - Ruby**

**ssh `hostname -i`**



It takes some time to log in to the sandbox using **ssh \$HOSTNAME**. Use **ssh `hostname -i`** or **ssh ip** instead.

**Step 3** If you need to log in to another node in the cluster, run the following commands to query the IP address of the node (*node\_ip* in the command output). Then run the corresponding command to enter the sandbox.

**gs\_om -t status --detail**

**ssh node\_ip**

**Step 4** Perform O&M operations by referring to cases in this document.

----End

## 2.9 Viewing the Mapping Between PM and VM Disks

### Scenario

In the ECS + passthrough disk scenario, if a PM disk is faulty or damaged, you need to remove and restore the disk on a VM. This section describes how to view the mapping between the PM and VM disks.

### Obtaining the VM ID on Service OM

**Step 1** Log in to ManageOne Maintenance Portal via <https://ManageOne Maintenance Portal URL:31943>. Alternatively, log in to the unified portal and choose **OperationCenter**.

- Password login: Enter the username and password of the account.
  - Default account: **bss\_admin**
- Preset password: See the preset password of the ManageOne Maintenance Portal account on the "Type A (Portal)" sheet in [Huawei Cloud Stack 8.3.1 Account List](#).
- Login using a USB key: Insert a USB key with preset user certificates, select the required device and certificate, and enter the PIN.

#### NOTE

For ManageOne upgraded from 8.2.0 or earlier, the default username is **admin**.  
For ManageOne 8.2.1 or later, the default username is **bss\_admin**.

**Step 2** In the **Common Links** area, click **Service OM**. Select your region to access the Service OM page.

**Step 3** Choose **Services > Resource > Compute Resource > VMs**, and find the VM corresponding to the cluster name. Click the target VM name to go to the details page and find the ID, as shown in the following figure.

The screenshot shows the ManageOne Service OM interface. The top navigation bar includes Home, Services (selected), Monitor, and System. Below the navigation is a search bar with the placeholder "-dws-cn-cn-2-1 (VM)". The main content area has tabs for Summary, Configuration, Snapshots, Whole VM Cold Migration Tasks, and OpenStack Alarms. The Summary tab is selected. Under 'Configure Basic Information', there is a table with the following data:

| Name              | -dws-cn-cn-2-1                                     | ID                             | 780c5073-7d1d-4703-94d6-66aa0cc841d9           |
|-------------------|----------------------------------------------------|--------------------------------|------------------------------------------------|
| Host              | 46B9FE91-A144-05B7-EA11-6E204ECEE492               | Host Group                     | HDD:kvm_hostgroup                              |
| Availability Zone | az1.dc1                                            | Architecture Type              | X86                                            |
| VM Group          | 0e42e3a4-b1bd-4b17-b7ad-1ff892bc9cb9-001           | IP Address                     | 192.168.2.90;192.168.2.149;192.168.2.27;100... |
| MAC Address       | fa:16:3e:6f:76:e8;fa:16:3e:df:fa:b4;fa:16:3e:33... | Created                        | 12/31/2020 12:08:11 GMT+08:00                  |
| Creator ID        | 174a258c37734cad954d8833889b7010                   | Project Name                   | --                                             |
| Project ID        | c9f5f6fb72c640dc83c75e0719e57fd9                   | Centralized License Scheduling | N/A                                            |
| Status            | Running                                            | Task Status                    | --                                             |
| vCPUs             | 4                                                  | Memory (MB)                    | 16384                                          |
| Boot Disk (GB)    | 50                                                 | Description                    | --                                             |
| CPU Model         | --                                                 |                                |                                                |

----End

## Querying the VM Instance Name on a PM

**Step 1** Log in to ManageOne Maintenance Portal via <https://ManageOne Maintenance Portal URL:31943>. Alternatively, log in to the unified portal and choose **OperationCenter**.

- Password login: Enter the username and password of the account.
  - Default account: **bss\_admin**



For ManageOne upgraded from 8.2.0 or earlier, the default username is **admin**.  
For ManageOne 8.2.1 or later, the default username is **bss\_admin**.

- Preset password: See the preset password of the ManageOne Maintenance Portal account on the "Type A (Portal)" sheet in [Huawei Cloud Stack 8.3.1 Account List](#).
- Login using a USB key: Insert a USB key with preset user certificates, select the required device and certificate, and enter the PIN.

Log in to ManageOne Maintenance Portal.

**Step 2** Under **Cloud O&M Management**, click **cps\_web** to log in to the FusionSphere OpenStack web client.

The default username is **admin**. To obtain the default password, search for **FusionSphere OpenStack web client** in the **Type A (Portal)** sheet of the [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 3** In the navigation tree on the left of the FusionSphere OpenStack CPS page, click **Summary**. Locate the PM whose **Node Type** is **Controller** from the host list and record its management IP address.

**Step 4** Log in to the management IP address of the controller node using SSH as user **fsp** and switch to user **root**.

**su - root**

- To obtain the default password of user **fsp**, search for **FusionSphere OpenStack** in the **Type A (Background)** sheet of the [Huawei Cloud Stack 8.3.1 Account List](#).
- To obtain the default password of user **root**, search for **FusionSphere OpenStack** in the **Type A (Background)** sheet of the [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 5** Import environment variables.

**source set\_env**

Select authentication method 1 and enter the password.

Obtain the value by searching for **FusionSphere OpenStack** in the **Type A (Background)** sheet of the [Huawei Cloud Stack 8.3.1 Account List](#).

Run the **TMOOUT=0** command to disable logout on timeout.

**Step 6** Query the instance name of the VM instance ID obtained in [Obtaining the VM ID on Service OM](#).

```
nova show VM_instance_ID | grep instance
```

```
C8005f91-A144-4899-EA11-7000AC2CE774:/home/fsp # nova show 780c5079-7d1d-4703-94d6-56aa0dc841d9 | grep instance
| OS-EXT-SRV-ATTR:instance_name
| instance-098910e9
| metadata
| "image_name": "DWS_X95_OLAP_ECS_V_2020120213542",
| "metering.image_id": "0e088147-8ca4-4ac6-9b3-ea97cb4c1100",
| "metering.mimetype": "gold",
| "metering.resourcetype": "1",
| "vpc_id": "3e5515fb-8d6c-49a7-9436-065d21a8a085",
| "os_bit": "64",
| "cascaded.instance_extra_info": "system_serial_number:780c5079-7d1d-4703-94d6-56aa0dc841d9,max_vcpus:4,max_cpus:4,cpu_min:7,cpu_max:10,cpu_pinning:1,cpu_pinned:4,current_mem:12884,xml_support_live_resize:1,mem_num_of_gb:10,mem_timeout:70,cpu_type:4,pci_bridge:2, os_type:Linux, charging_mode: 0"
C8005f91-A144-4899-EA11-7000AC2CE774:/home/fsp #
```

In the command output, `instance-xxxxxxxx` indicates the VM instance name on the PM.

----End

## Logging In to the Host Machine to Query the dumpxml Drive Letter

**Step 1** On Service OM, choose **Services > Resource > Compute Resource > VMs**. On the page that is displayed, query the ID of the host machine where the VM is located based on the VM name, as shown in the following figure.

| Name                  | Host ID                              | Host Group        | Availability Zone | Status  | Power Status | Flavor        | IP Address           | Batch Cold Migration |
|-----------------------|--------------------------------------|-------------------|-------------------|---------|--------------|---------------|----------------------|----------------------|
| LB-1228-dws-cn-cn-6-1 | 41BCFE91-A144-62BA-EA11-70201CBEA5SD | HDD:kvm_hostgr... | az1:dc1           | Running | Running      | 2vCPUs   16GB | 25.213.2.75.25.21... | Supported            |
| vs-cn-cn-3-1          | 71B7FE91-A144-ASAD-EA11-BA20426CF61B | HDD:kvm_hostgr... | az1:dc1           | Running | Running      | 2vCPUs   16GB | 25.213.2.73.25.21... | Supported            |
| vs-cn-cn-1-1          | 66B8FE91-A144-E68D-EA11-9A200631CF1B | HDD:kvm_hostgr... | az1:dc1           | Running | Running      | 2vCPUs   16GB | 25.213.2.96.25.21... | Supported            |
| vs-cn-cn-1-1          | 41BCFE91-A144-62BA-EA11-70201CBEA5D  | HDD:kvm_hostgr... | az1:dc1           | Running | Running      | 2vCPUs   16GB | 25.213.2.89.25.21... | Supported            |
| -dws-cn-cn-2-1        | 46B0FE91-A144-0587-EA11-6E204ECE492  | HDD:kvm_hostgr... | az1:dc1           | Running | Running      | 4vCPUs   16GB | 192.168.2.90.192...  | Not supported : ...  |
| -dws-cn-cn-1-1        | 71B7FE91-A144-ASAD-EA11-BA20426CF61B | HDD:kvm_hostgr... | az1:dc1           | Running | Running      | 4vCPUs   16GB | 192.168.2.120.19...  | Not supported : ...  |
| -dws-cn-cn-3-1        | 66B8FE91-A144-E68D-EA11-9A200631CF1B | HDD:kvm_hostgr... | az1:dc1           | Running | Running      | 4vCPUs   16GB | 192.168.2.91.192...  | Not supported : ...  |
| 130008_cn2-dws-dn-2-1 | 41BCFE91-A144-62BA-EA11-70201CBEA5D  | HDD:kvm_hostgr... | az1:dc1           | Running | Running      | 2vCPUs   16GB | 192.168.0.50.25.2... | Supported            |
| 130008_cn2-dws-dn-3-1 | 66B8FE91-A144-E68D-EA11-9A200631CF1B | HDD:kvm_hostgr... | az1:dc1           | Running | Running      | 2vCPUs   16GB | 192.168.0.103.25...  | Supported            |
| 130008_cn2-dws-dn-4-1 | 71B7FE91-A144-ASAD-EA11-BA20426CF61B | HDD:kvm_hostgr... | az1:dc1           | Running | Running      | 2vCPUs   16GB | 192.168.0.114.25...  | Supported            |

**Step 2** Switch to the **Summary** page of FusionSphere OpenStack CPS and locate the management IP address of the host machine based on the host ID.

**Step 3** Log in to the management IP address of the host machine as user **fsp** using SSH, and switch to user **root**.

**su - root**

- To obtain the default password of user **fsp**, search for **FusionSphere OpenStack** in the **Type A (Background)** sheet of the [Huawei Cloud Stack 8.3.1 Account List](#).
- To obtain the default password of user **root**, search for **FusionSphere OpenStack** in the **Type A (Background)** sheet of the [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 4** Query all VM instance names of the host machine.

**virsh list --all**

```
46B9FE91-A144-05B7-EA11-6E204ECEE492:/home/fsp # virsh list --all
 Id Name State

 1 instance-00001699 running
 2 instance-00000ffb running
 3 instance-0000167c running
 4 instance-000014e8 running
 5 instance-000016a3 running
 6 instance-0000166b running
 7 instance-000015bd running
 8 instance-000014ef running
 9 instance-0000169f running
 10 instance-000015df running
 11 instance-000014c6 running
 12 instance-0000154c running
 13 instance-0000166e running
 14 instance-000016ae running
 15 instance-000016c7 running
 16 instance-00001549 running
 17 instance-000016c3 running
 18 instance-0000162a running
 19 instance-0000168b running
 20 instance-00001630 running
 21 instance-000016e7 running
```

```
46B9FE91-A144-05B7-EA11-6E204ECEE492:/home/fsp #
```

Query the ID based on the instance name obtained in [Step 6](#), for example, **21**.

**Step 5** Query the **dumpxml** file information using the ID. The mapping between the **dumpxml** drive letter and WWN is listed in the file. Replace *VM\_instance\_ID* with the instance ID queried in [Step 4](#).

**virsh dumpxml VM\_instance\_ID**

```
<disk type='block' device='lun' rawio='yes'>
 <driver name='qemu' type='raw' cache='none' io='threads' />
 <source dev='/dev/disk/by-id/wwn-0x5000039998381465' />
 <target store=''/>
 <target dev='sdg' bus='scsi' />
 <alias name='scs10-0-6-0' />
 <address type='drive' controller='0' bus='0' target='6' unit='0' />
</disk>
```

For example, the WWN of the **dumpxml** drive letter **sdg** is **wwn-0x5000039998381465**. You can record the WWNs of other disks in **dumpxml**.

#### NOTE

The drive letter in **dumpxml** is not the actual drive letter on the VM, but there is a relationship between them. The following uses 12 disks as an example.

Drive letter of **dumpxml**: sdb sdc sdd sde sdf **sdg** sdh sdi sdj sdk sdl sdm  
VM drive letter: sda adb sdc sdd sde **sdf** sdg sdh sdi sdj sdk sdl

Query the **dumpxml** drive letter based on the WWN. Then you can determine the corresponding VM drive letter based on the sequence. In this example, the **dumpxml** drive letter is **sdg** and the VM drive letter is **sdf**.

**Step 6** Query the mapping between physical disks and WWNs.

```
cat /etc/sysdisk.info|python -m json.tool
```

```
"wwn-0x500003999821b485": {
 "dev": "/dev/sdh",
 "id_serial": "3500003999821b485",
 "path": "pci-0000:5e:00.0-scsi-0:0:7:0",
 "pci_address": "0000:5e:00.0",
 "scsi_address": "0:0:7:0"
},
"wwn-0x5000039998381465": {
 "dev": "/dev/sdc",
 "id_serial": "35000039998381465",
 "path": "pci-0000:5e:00.0-scsi-0:0:2:0",
 "pci_address": "0000:5e:00.0",
 "scsi_address": "0:0:2:0"
},
"wwn-0x5000039998381bc1": {
 "dev": "/dev/sdj",
 "id_serial": "35000039998381bc1",
 "path": "pci-0000:5e:00.0-scsi-0:0:9:0",
 "pci_address": "0000:5e:00.0",
 "scsi_address": "0:0:9:0"
},
"wwn-0x500003999838221d": {
 "dev": "/dev/sdl",
 "id_serial": "3500003999838221d",
 "path": "pci-0000:5e:00.0-scsi-0:0:10:0",
 "pci_address": "0000:5e:00.0",
 "scsi_address": "0:0:10:0"
}
```

You can obtain the letter of the physical disk based on the WWN obtained in [Step 5](#). For example, the physical disk corresponding to the VM disk **sdf** is **sdc**.

----End

## 2.10 Collecting dwcontroller Logs

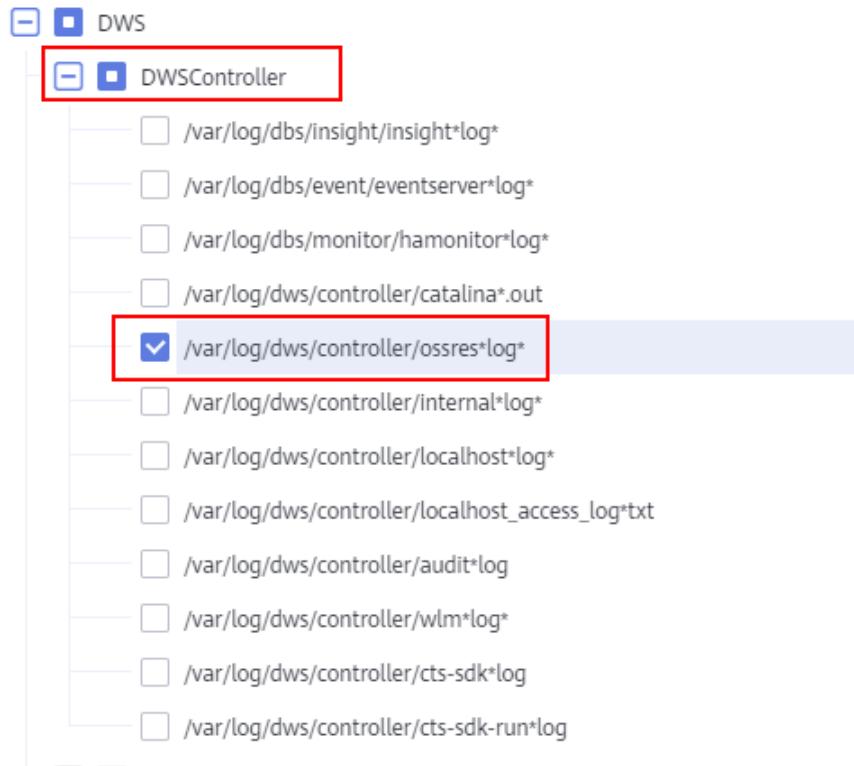
## Scenario

This section describes how to collect management logs. You are advised to collect logs on the ManageOne unified log platform. If ManageOne cannot provide services, manually collect logs by following the instructions provided in [Collecting dwscontroller Logs on the CDK Node](#).

Collecting dwscontroller Logs Using ManageOne Maintenance Portal

- Step 1 Log in to ManageOne Maintenance Portal as an O&M administrator.
  - Step 2 In the main menu, choose **O&M > Logs > Run Logs**.
  - Step 3 In the navigation pane on the left, click **Management Run Log Download**.
  - Step 4 Click **Add Download Log Task** to download log files.
    1. Go to the **Custom** tab page and enter the task name.
    2. Set the time segment for the log file. Click **Custom** next to **Time Segment** and set the time segment for the log to be downloaded.
    3. In the log file list, search for **DWS** and select **DWS > DWSController > /var/log/dws/controller/ossres\*log\***.

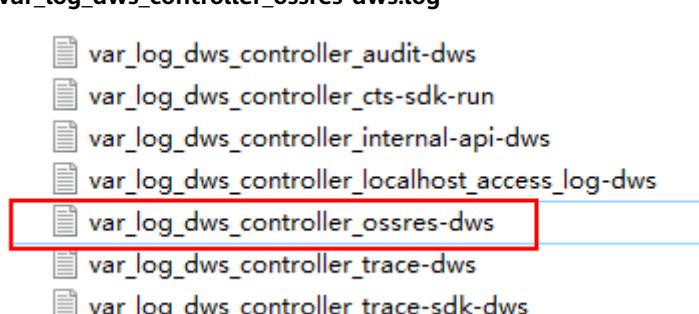
Figure 2-2 Configuring a log download task



**Step 5** Click **OK**. After logs are collected, download them to the local PC.

 NOTE

- Decompress the downloaded log file and you will get multiple .zip files. Each .zip file is the log package of a management-plane VM node. The name of each .zip file consists of the name of the VM of the management-plane microservice and the management IP address, as shown in the figure below. The log files of a container are randomly distributed on different management VMs. Therefore, you need to decompress all the .zip at a time. For example, if the **ossres-dws.log** files exist in the following two directories, you need to decompress the two files at the same time to obtain the complete log.
  - ECF\_Region\_Node-02\_192.168.2.10.zip
  - ECF\_Region\_Node-03\_192.168.2.15.zip
  - DWS\_DMS\_Region\_Node-01\_192.168.2.30.zip
- The format of the log file is *Directory\_level\_of\_the\_host\_where\_the\_log\_file\_is\_located + Log\_name*. For example, if the path of the host where the dbsinsight component log file **ossres-dws.log** is located is **/var/log/dws/controller**, the log file name can be:  
**var\_log\_dws\_controller\_ossres-dws.log**



var\_log\_dws\_controller\_audit-dws  
var\_log\_dws\_controller\_cts-sdk-run  
var\_log\_dws\_controller\_internal-api-dws  
var\_log\_dws\_controller\_localhost\_access\_log-dws  
**var\_log\_dws\_controller\_ossres-dws**  
var\_log\_dws\_controller\_trace-dws  
var\_log\_dws\_controller\_trace-sdk-dws

----End

## Collecting dwscontroller Logs on the CDK Node

**Step 1** Log in to the CloudAutoDeploy-CDK master node by referring to [Logging In to the CloudAutoDeploy-CDK Master Node](#).

**Step 2** Obtain dwscontroller logs.

- Query the DWS Controller pod names.

**kubectl get pod -n dws -owide**

Information similar to the following is displayed. **dwscontroller-xxx** indicates the pod names.

NAME	READY	STATUS	RESTARTS	AGE	IP	NODE
NOMINATED NODE	READYNESS GATES					
dms-collection-cbc7c6c-gx79t	1/1	Running	0	4d22h	192.168.0.32	192.168.8.118
<none>	<none>					
dms-collection-cbc7c6c-nt7sg	1/1	Running	0	4d22h	192.168.0.107	192.168.8.127
<none>	<none>					
dms-monitoring-5f44598478-njkv2	1/1	Running	0	4d22h	192.168.0.128	192.168.8.120
<none>	<none>					
dms-monitoring-5f44598478-qwj4l	1/1	Running	0	4d22h	192.168.0.144	192.168.8.119
<none>	<none>					
<b>dwscontroller-56864d578d-2kz5s</b>	1/1	Running	0	26h	192.168.0.111	192.168.8.127
<none>	<none>					

```
dwscontroller-56864d578d-wx8qr 1/1 Running 0 26h 192.168.0.75 192.168.8.125
<none> <none>
```

2. Log in to a **dwscontroller** pod.

```
kubectl exec -it dwscontroller_container_name -n dws bash
```

3. Go to the log directory. Copy the **ossres-dws.log** file to the CDK Master node, enter **yes** as prompted, and enter the **root** password of the CloudAutoDeploy-CDK master node.

```
cd /opt/cloud/3rdComponent/tomcat/logs
```

```
scp ossres-dws.log root@CDK_Master_node_IP_address:/tmp
```

4. Log in to the CloudAutoDeploy-CDK master node as user **opsadmin** and run the following commands to switch to user **root** and change the owner of the log file to **opsadmin**:

```
su - root
```

```
chown -R opsadmin:wheel /tmp/ossres-dws.log
```

5. Use SFTP to log in to the CloudAutoDeploy-CDK master node as user **opsadmin** and download log files from the **/opt** directory.

6. Delete log files.

```
rm -rf /tmp/ossres-dws.log
```

----End

## 2.11 Managing the Email Configuration

This section describes how to configure the mailbox as technical support engineers and maintenance engineers. If the email forwarding function for the health check result is enabled, FusionCare automatically sends the health check result to the specified email address.

### Prerequisites

- You have logged in to ManageOne Maintenance Portal.
- An email server has been deployed.

### Procedure

**Step 1** On ManageOne Maintenance Portal, click **fusionCare** in the **Cloud O&M Management** area to enter the FusionCare system.

**Step 2** Choose **System Management > Email Configuration** to go to the **Email Configuration** page.

**Step 3** Configure email parameters, as shown in [Figure 2-3](#).

**Figure 2-3** Setting the email configuration information

The screenshot shows a configuration dialog for email settings. It includes fields for the email server (192.168.190.73), port number (465), sender's email address (hct@huawei.com), and a checked checkbox for enabling identity authentication. The username is fusioncare and the password is masked. A checked checkbox for SSL connection is present, along with a test email address (fusioncare@huawei.com) and a 'Test' button. Below these, there are fields for email subject (health check result) and recipient's email address (fusioncare@huawei.com). An info message at the bottom suggests using commas to separate multiple addresses. An 'OK' button is located at the bottom left.

**Table 2-9** Email configuration-related parameters

Parameter	Parameter Description
Email Server	Specifies the email server address. For example, set <b>Email Server</b> to <b>192.168.190.73</b> or <b>mail.huawei.com</b> .
Port Number	Specifies the port number of an email server.
Sender's Email Address	Specifies the email address of the sender.
Test Email Address	To test the mailbox configuration, set <b>Test Email Address</b> , and click <b>Test</b> . If the mail server supports SSL, select <b>Enable SSL Connection</b> to improve system security.
Email Subject	Specifies the subject of the email.
Recipient's Email Address	Separate multiple email addresses with commas (,).

**Step 4** Click **OK** to complete the email configuration.

 **NOTE**

- Only one email information record can be added.
- To modify the email configuration, you can only configure email information again by following the preceding steps.

**----End**

# 3 O&M operations on Service CM

Prerequisites: You have logged in to the ManageOne main portal.

## Procedure

**Step 1** Enter <https://ManageOne Address> for accessing the ManageOne main portal in the address box of a browser to log in to the ManageOne main portal. On the top of the page, click the Security Management tab and find ServiceCM under Application Integration Management.

### NOTE

- In Huawei Cloud Stack 8.3.1 and later versions, the ServiceCM portal is adjusted. If Security Management cannot be found, the current environment base version is earlier than 8.3.1. In this case, you need to use the old method to access the Service OM page through ManageOne Maintenance Portal to go to the Data Warehouse Service O&M page.
- The old Service OM page is greatly different from the current page. However, the O&M functions and buttons of DWS are basically the same. This O&M guide can also be used as a reference for O&M.

**Step 2** Click ServiceCM. On the Authorization Management page that is displayed, check whether the dws identity exists. If the dws identity does not exist, manually add it.

**Step 3** Go back to the Application Integration Management page and click Login on the right of ServiceCM. In the displayed dialog box, select the application instance and click OK.

**Step 4** In the ServiceCM plug-in list, click the target plug-in dws-servicecm to go to the O&M page.

Self-Service Development Platform			
akits-console	dbs-ops	dws-servicecm	cdm-om
Description: serviceCM v2	Description: DBS Operation System	Description: [REDACTED]	Description: [REDACTED]
2024-04-22 20:09:45	2024-03-29 18:13:18	2024-04-17 21:20:53	2024-04-02 21:22:51
pangulargemmodels-console	lakeformation-om	git-console	
Description: serviceCM v2	Description: LakeFormation ServiceCM Plugin	Description: serviceCM v2	
2024-04-10 11:49:04	2024-04-13 19:31:37	2024-04-18 11:19:52	

**Step 5** The plug-in menu is displayed on the left. You can click a tab to access the corresponding O&M page.

dws-servicecm		Cluster List									
		Cluster Name	Cluster ID	Cluster Status	Status Detail	Task Information	Tenant Name	Created	Database Version	GuestAgent Version	Operation
<a href="#">Cluster management</a>		001	81985083-810b-4a88-a282-c05f5ba017b4	Available	NORMAL	--	tanshiwei	2024/4/25 10:18:51	8.1.3.331	8.3.1	<a href="#">Repair</a> <a href="#">Collect Log</a> <a href="#">More</a>
<b>----End</b>											

## 3.1 Cluster Management

This tag provides cluster-or instance-level O&M functions, such as information query, log collection, and log download.

### 3.1.1 Cluster

#### Scenario

The cluster page displays basic cluster information. You can also perform some O&M operations, such as collecting logs and repairing a cluster, in the Operation column on the right.

#### Procedure

**Step 1** Log in to the **dws-servicecm** page and click **Clusters** on the left.

**Step 2** Perform the advanced search and select the columns that you want to display. On the page, filter the query information based on the search criteria. Click the setting button on the rightmost pane and select the columns that you want to display.

- Step 3** Select a cluster. Select **Log Collection** to collect instance logs.
- Step 4** Select a cluster and choose **More > Network Config**. You can switch the cluster network type to Management Plane Route or Tenant Plane Route.
- Step 5** Select a cluster and choose More > Active/standby balancing. You can perform an active/standby switchover to restore cluster balancing.
- Step 6** Select a cluster and choose **More > Cluster Monitoring Information** to view the monitoring information about cluster nodes.
- Step 7** Select a cluster and choose More > Install OpsAgent to install OpsAgent.
- Step 8** Select a cluster and choose More > Refresh Password to refresh the password.
- Step 9** Select a cluster and click **Repair** to repair the faulty cluster. Currently, only one faulty node can be repaired. If multiple nodes are faulty, the cluster cannot be repaired on the page.
- Step 10** View cluster details. Click the name of the cluster. On the **Cluster Details** page that is displayed, you can view information about cluster's nodes and snapshots.
- Step 11** View node details. Go to the **Cluster Node** tab page and view the cluster node monitoring information. You can filter nodes based on conditions. You can select the columns to display.

**Figure 3-1** Viewing node details

Node Name	Node ID	Node Status	Resource Status	Node Sub-status	Node Type	Creation Started	Database Version	GuestAgent Version
dws_yingji-dws-cn-cn-1-1	3bd59a4d-48b1-4b5c-b...	ACTIVE	In Use	--	dws2xlarge	2024-02-26 15:47:04	B.1.3.230	v8.3.1
dws_yingji-dws-cn-cn-2-1	e9d48de9-815c-497b-8...	ACTIVE	In Use	--	dws2xlarge	2024-02-26 15:47:04	B.1.3.230	v8.3.1
dws_yingji-dws-cn-cn-3-1	e690f2b-4a52-471c-a5...	ACTIVE	In Use	--	dws2xlarge	2024-02-26 15:47:04	B.1.3.230	v8.3.1

- Step 12** View snapshot details. Go to the **Cluster Snapshot** tab page and view the snapshot monitoring information. You can filter snapshots based on conditions. You can select the columns to display.

----End

## 3.1.2 Instance

### Scenario

This section describes how to view the instance's O&M information on the **Instance** page, including collecting logs, and viewing and downloading instance logs.

### Procedure

- Step 1** Log in to dws-servicecm and click Instances on the left.

- Step 2** Click the setting button on the rightmost pane and select the columns that you want to display. On the page, you can perform advanced filtering on data by filtering table headers.

Node Name	Node Status	Cluster Name	Tenant Name	CPU Usage	Used Disk Capacity	Created	Resource Status	Operation
02181724-dws-cn-cn-2-1	●	02181724	tuanbowu	0	0	--	In Use	Collect Log View Log More ▾
02181725-dws-cn-cn-2-1	●	02211557	tuanbowu	0	0	2024/2/21 16:09:02	In Use	Collect Log View Log More ▾
02-dws-cn-cn-2-1	●	zygttest	tuanbowu	11.20333	12.097016	2024/2/21 10:47:12	In Use	Collect Log View Log More ▾
zygttest-dws-cn-cn-1-1	●	zygttest	tuanbowu	0	0	--	In Use	Collect Log View Log More ▾
02181755-dws-cn-cn-1-1	●	02-dws-dn-1-1	tuanbowu	0	0	2024/2/24 15:26:51	In Use	Collect Log View Log More ▾
02190958-dws-cn-cn-1-1	●	dataarts	tuanbowu	0	0	2024/2/19 10:10:11	In Use	Collect Log View Log More ▾
dataarts-dws-cn-cn-2-1	●	dataarts	tuanbowu	9.6840725	6.1292624	2024/2/24 16:31:53	In Use	Collect Log View Log More ▾
dataartsinsight-dws-cn-cn-2-1	●	dataartsinsight	tuanbowu	10.553198	1.0713593	2024/2/24 15:38:16	In Use	Collect Log View Log More ▾

- Step 3** The Operation column on the right provides multiple instance-level O&M functions, including starting and stopping nodes, starting and stopping nodes, detaching disks, and restoring database instances.

For example, you can click **Log Collection** to collect instance logs or choose **More > View Logs** to view and download instance logs.

----End

## 3.2 Monitoring Alarms

### 3.2.1 Cluster Monitoring

#### Scenario

On the Cluster Monitoring page, you can restart dms-agent for a DWS cluster.

#### Procedure

- Step 1** Log in to the **dws-servicecm** page and click **Monitoring Alarms > Cluster Monitoring** on the left.
- Step 2** On the page, filter the query information based on the search criteria. You can click the metric switch button to disable some monitoring metrics. Click the setting button on the rightmost pane and select the columns that you want to display.

Cluster Name	Cluster Status	Tenant Name	Created	Number of Nodes	Disk Usage (%)	Operation
01	Normal	585bd930f31b45a1a4a44ebe3d2997ee	2024-04-25 10:14:06	8	2.96	Restart dms-agent Details

- Step 3** In the **Operation** column on the right, click **Restart dms-agent** to restart the dms-agent plug-in installed on the tenant side of the cluster.

- Step 4** In the Operation column on the right, click Details of the selected cluster to go to the monitoring details page. You can modify the monitoring collection and collection storage configurations.

----End

## 3.2.2 Alarm Management

### Scenario

On this page, you can add, delete, modify, and query alarm configurations of the dms-agent plug-in.

### Procedure

- Step 1** Log in to the dws-servicecm page and click **Monitoring Alarms > Alarm Management** on the left.
- Step 2** On the Cluster Alarm Configuration page, you can view the alarm information manually configured for all clusters at the current site. You can enable or disable all alarm items of a cluster or an alarm item of a single cluster.

Cluster Name	Opening Tenant	Number of bound alarms	Operations
system	829006d2d99e49f3ae9ad9901ac0b123	1	Enable Alarms   Disable Alarms
DWS_LCY	829006d2d99e49f3ae9ad9901ac0b123	1	Enable Alarms   Disable Alarms
dws_yingji	829006d2d99e49f3ae9ad9901ac0b123	1	Enable Alarms   Disable Alarms
DWS_IOT	829006d2d99e49f3ae9ad9901ac0b123	0	Enable Alarms   Disable Alarms
datasets	829006d2d99e49f3ae9ad9901ac0b123	1	Enable Alarms   Disable Alarms
dms-Prod-test	829006d2d99e49f3ae9ad9901ac0b123	0	Enable Alarms   Disable Alarms
cluster_fuzz2905	829006d2d99e49f3ae9ad9901ac0b123	22	Enable Alarms   Disable Alarms

- Step 3** On the Alarm Rule Configuration page, you can view the supported alarm rules, and add, modify, enable, disable, and delete alarm rules.

Alarm Rule ID	Alarm Rule	Rule Status	Rule Type	Rule Description	Operation
DWS_2000000017	Number of Queuing Query Statements Exceeds the Threshold	● Enable	Default	This alarm is generated if the threshold of the number of queuing SQL statements exceeds the threshold.	Modify   Enable   Disable   Delete
DWS_2000000016	Data Flushed to Disks of the Query Statement Exceeds the Threshold	● Enable	Default	This alarm is generated if the threshold of data flushed to disks of the SQL statement exceeds the threshold.	Modify   Enable   Disable   Delete
DWS_2000000001	Node CPU Usage Exceeds the Threshold	● Enable	Default	This alarm is generated if the threshold of CPU usage (system + user) of any node exceeds the threshold.	Modify   Enable   Disable   Delete
DWS_2000000009	Node Data Disk I/O Usage Exceeds the Threshold	● Enable	Default	This alarm is generated if the threshold of data disk (/var/chroot/DWS/data[n]) usage exceeds the threshold.	Modify   Enable   Disable   Delete
DWS_2000000015	Node Data Disk Iode Usage Exceeds the Threshold	● Enable	Default	This alarm is generated if the threshold of data disk (/var/chroot/DWS/data[n]) iode usage exceeds the threshold.	Modify   Enable   Disable   Delete
DWS_2000000008	Node Data Disk Usage Exceeds the Threshold	● Enable	Default	This alarm is generated if the threshold of data disk (/var/chroot/DWS/data[n]) usage exceeds the threshold.	Modify   Enable   Disable   Delete
DWS_2000000012	Node Data Disk Latency Exceeds the Threshold	● Enable	Default	This alarm is generated if the threshold of data disk (/var/chroot/DWS/data[n]) latency exceeds the threshold.	Modify   Enable   Disable   Delete
DWS_2000000008	Node Log Disk I/O Usage Exceeds the Threshold	● Enable	Default	This alarm is generated if the threshold of log disk (/var/chroot/DWS/manage...) usage exceeds the threshold.	Modify   Enable   Disable   Delete
DWS_2000000014	Node Log Disk Iode Usage Exceeds the Threshold	● Enable	Default	This alarm is generated if the threshold of log disk (/var/chroot/DWS/manage...) iode usage exceeds the threshold.	Modify   Enable   Disable   Delete
DWS_2000000005	Node Log Disk Usage Exceeds the Threshold	● Enable	Default	This alarm is generated if the threshold of log disk (/var/chroot/DWS/manage...) usage exceeds the threshold.	Modify   Enable   Disable   Delete

- Step 4** When editing an alarm rule, you can make the alarm rule take effect for a specific cluster or user level.

----End

### 3.2.3 Monitoring

#### Scenario

On this page, you can view information about customized monitoring tasks of dms-agent in the DWS cluster and retry failed tasks.

#### Procedure

- Step 1** Log in to the **dws-servicecm** page and click **Monitoring Alarms > Monitoring Tasks** on the left.
- Step 2** On this page, you can view information about all valid tasks added using the customized monitoring function.

----End

### 3.2.4 Custom Monitoring

#### Scenario

Quickly add monitoring metrics. If some metrics are faulty, you can customize monitoring metrics to ensure that the function is available.

#### NOTICE

Only the stream data warehouse supports this function. The DBM databases does not support this function.

No manual judgment is required. If the site does not support this function, a message is displayed in the upper right corner of the page.

#### Procedure

- Step 1** Log in to the **dws-servicecm** page and click **Monitoring Alarms > Cluster Monitoring** on the left.
- Step 2** On this page, you can view all supported customized monitoring tasks and manage monitoring items, such as importing, exporting, enabling, and disabling monitoring items.

----End

## 3.3 Configuration Management

### 3.3.1 Configuring Versions

#### Scenario

Allows users to bring versions online and offline, and view and modify version software package information.

#### Procedure

- Step 1** Log in to dws-servicecm and click Version Configuration on the left.
- Step 2** By default, the version information of the standard data warehouse is queried. You can select a database type from the Database Type drop-down list box on the right to view the version information of other data warehouses.

Version Configuration						
Add Datastore Version		Configuring the Upgrade Trustlist				
Database Type	Datastore Version	Upgrade Version	Upgrade In Console	Version Status	Datastore Type	Operation
▼ dws	8.3.0	91916	Yes	Latest	Change Type: Updating Software Package	
▼ dws	8.2.1.210	91920	Yes	Latest	Change Type: Updating Software Package	
▼ dws	8.2.1.109	91850	Yes	Latest	Change Type: Updating Software Package	
▼ dws	8.2.1	91829	Yes	Latest	Change Type: Updating Software Package	
▼ dws	8.1.3.330	91636	Yes	Latest	Change Type: Updating Software Package	
▼ dws	8.1.3.325	91636	Yes	Latest	Change Type: Updating Software Package	
▼ dws	8.1.3.323	91635	Yes	Latest	Change Type: Updating Software Package	

- Step 3** Entering version information: You can add a version so that you can select the version when creating a DWS cluster.

#### NOTE

Cluster Version: The data is obtained from the kernel package queried in the OBS bucket. If the target version cannot be selected when you add a version, check whether the software package has been uploaded to the OBS bucket.

Software package information: A maximum of three records (ARM kernel package, x86 kernel package, and guestagent software package) are supported. The guestagent software package is mandatory, and at least one kernel package is required.

Add Datastore Version

* Datastore Version	9.0.2		
Version Status	Recommended		
<b>* Package Info</b> At least 1 guestAgent package and 1 kernel package (x86/arm) are required			
<a href="#">Add Package</a>			
Package Info	Package Type	Datastore Version	Operation
<b>* Image Info</b>		<a href="#">Extend Previous Version</a>	<a href="#">Add Image</a>
Image ID	Image Type	OS Version	Operation
<b>Plugin Info</b> Plugin info is not required and you can install plugin while install or upgrade datastore		<a href="#">Add Plugin Info</a>	
Plugin Name	Plugin Type	Install Type	Operati...
<input type="button" value="Confirm"/> <input type="button" value="Cancel"/>			

- Step 4** Update Version Type: You can use this function to control version visibility. When this parameter is set to POC, this version can be used only by some users.
- Step 5** Setting a Tenant Whitelist: You can use this function to configure a version in POC state to be available only to specified users.
- Step 6** Configuring the upgrade whitelist: You can use this function to control the target versions to which a cluster of an earlier version can be upgraded on the user interface.

Configuring the Upgrade Trustlist

The selected version is displayed on the 'Cluster Upgrade' page and can be upgraded to this version when the following conditions are met: The cluster status is normal, no task conflict occurs, and the cluster agent version is not earlier than this version.

<input checked="" type="checkbox"/> 8.3.0	<input checked="" type="checkbox"/> 8.1.3.330
<input checked="" type="checkbox"/> 8.2.1.210	<input checked="" type="checkbox"/> 8.1.3.325
<input checked="" type="checkbox"/> 8.2.1.109	<input checked="" type="checkbox"/> 8.1.3.323
<input checked="" type="checkbox"/> 8.2.1	

Cross-version upgrade allowed

<input type="button" value="Confirm"/>	<input type="button" value="Cancel"/>
----------------------------------------	---------------------------------------

----End

### 3.3.2 XML configuration

#### Scenario

After a new version is released on the management plane, you need to manually upload the XML configuration package to the OBS bucket and import the data to the database on the management plane using the XML import function on the page.

#### Procedure

**Step 1** Log in to dws-servicecm and click XML Configuration on the left.

**Step 2** On this page, you can view, import, and export XML configuration information.

XML configuration				
<input type="button" value="Import"/>	<input type="button" value="Export"/>	File Name	Update Time	Operation
<input type="checkbox"/>	Folder	1.7.xml	2024-02-23 18:04:57	<a href="#">View Details</a>
<input type="checkbox"/>	gucParameters.dws	1.xml	2024-02-23 18:04:59	<a href="#">View Details</a>
<input type="checkbox"/>	gucParameters.dws	8.0.1.xml	2024-02-23 18:04:58	<a href="#">View Details</a>
<input type="checkbox"/>	gucParameters.dws	8.1.0.xml	2024-02-23 18:04:58	<a href="#">View Details</a>
<input type="checkbox"/>	gucParameters.dws	8.1.1.xml	2024-02-23 18:04:58	<a href="#">View Details</a>
<input type="checkbox"/>	gucParameters.dws	8.1.2.xml	2024-02-23 18:04:59	<a href="#">View Details</a>
<input type="checkbox"/>	gucParameters.dws	8.1.3.xml	2024-02-23 18:04:57	<a href="#">View Details</a>
<input type="checkbox"/>	gucParameters.dws	8.2.xml	2024-02-23 18:05:00	<a href="#">View Details</a>
<input type="checkbox"/>	gucParameters.dws3.0	8.2.xml	2024-02-23 18:04:57	<a href="#">View Details</a>
<input type="checkbox"/>	paragroup	configurations-dws.xml	2024-02-23 18:04:56	<a href="#">View Details</a>

----End

### 3.3.3 Feature Whitelist

#### Scenario

This parameter specifies whether some new features are displayed on the GUI or are available only to specified tenants.

#### Procedure

**Step 1** Log in to dws-servicecm and click Feature Whitelist on the left.

**Step 2** A feature can be in any of the following states:

Unavailable to all tenants: This feature cannot be used by any user and is invisible on the user console.

Available to all tenants: This feature is available to all tenants. Any user can view and use this feature.

Available to some tenants: By default, this feature is invisible to all users. You can set a tenant whitelist to allow only customers in the whitelist to use this feature.

Feature Trustlist				
Feature ID	Feature Description	Update Time	Feature Status	Operation
AccessWhiteList	AccessWhiteList	--	All tenants are unavailab...	Tenant Information Management
ColdStorage	coldStorage	2022-08-29 09:09:44	Available for all tenants	Tenant Information Management
GrossFlavorScaleOut	GrossFlavorScaleOut	--	All tenants are unavailab...	Tenant Information Management
CrossRegionalDisasterRecoveryFeature	crossRegionalDisasterRecoveryFeature	2024-01-11 06:14:16	Available for all tenants	Tenant Information Management
crossRegionBackupFeature	crossRegionBackupFeature	2024-02-26 03:03:44	Available for some tena...	Tenant Information Management
DatacheckFeature	DatacheckFeature	--	All tenants are unavailab...	Tenant Information Management
DataMigrationFeature	DataMigration	2024-01-31 01:34:00	Available for all tenants	Tenant Information Management
DistributionAccess	DistributionAccess	2024-02-23 17:43:16	All tenants are unavailab...	Tenant Information Management
DistributionFeature	DistributionFeature	2024-02-23 17:43:16	All tenants are unavailab...	Tenant Information Management
DistributionSubscribe	DistributionSubscribe	2024-02-23 17:43:16	All tenants are unavailab...	Tenant Information Management

10 Total Records: 37 < 1 2 3 4 >

----End

### 3.3.4 Configuring GUC Parameters

#### Scenario

Modify the kernel GUC parameters through the white screen operation.

#### Procedure

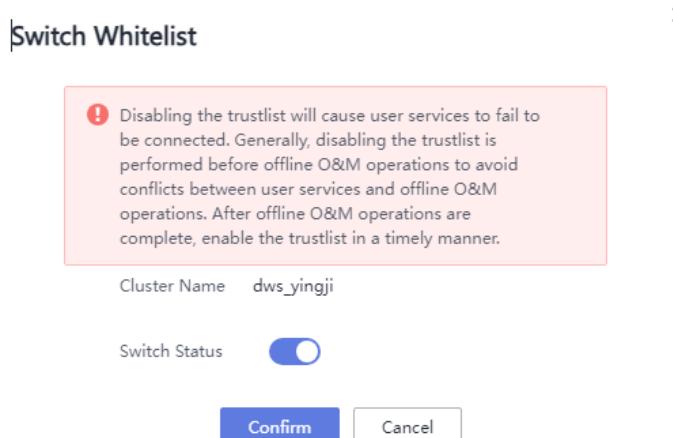
- Step 1** Log in to dws-servicecm and click GUC Configuration on the left.
- Step 2** The DWS cluster information of the current site is displayed on the cluster list page. You can click the operation button on the right to modify parameters.
- Step 3** Modifying GUC parameters: Parameters of CNs, DNs, CMs, and GTMs can be modified.

X

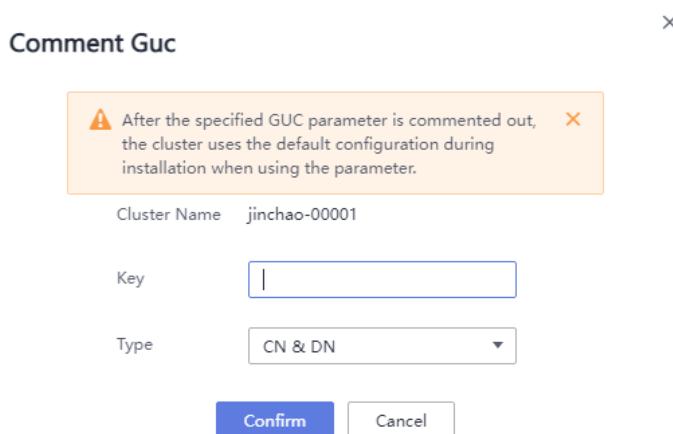
Modify Guc

Cluster Name	dws_yingji
Key	<input type="text"/>
Type	<input type="text"/> CN & DN
Value	<input type="text"/>
<input type="button" value="Confirm"/> <input type="button" value="Cancel"/>	

- Step 4** Switch User Whitelist: If the whitelist is disabled, user services cannot be connected. Generally, this operation is performed before offline O&M operations to prevent conflicts between user services and offline O&M operations. After offline O&M is complete, enable the whitelist in a timely manner.



**Step 5** Commenting out a parameter: After a specified GUC parameter is commented out, the cluster uses the default configuration during installation when using this parameter. After the parameter value is changed again, the comment becomes invalid.



**Step 6** Modification history page: You can view all GUC parameter modification records of the current site.

----End

### 3.3.5 Configuring AZs

#### Scenario

Originally, only ARM servers are available in the AZ of the base. The x86 AZ is added. The DWS service needs to be adapted. You can use the AZ management function to handle the white screen.

#### Procedure

**Step 1** Log in to dws-servicecm and click AZ Configuration on the left.

**Step 2** On this page, you can view information about all AZs in the current environment.

**Step 3** Adding an AZ: Add an AZ. You can copy the flavor configuration from an existing AZ or manually add a flavor without copying the flavor configuration.

**Step 4** Modify AZ: You can modify only Name and Recommended. AZs whose Recommended is Yes are preferentially selected on the Create Cluster page by default.

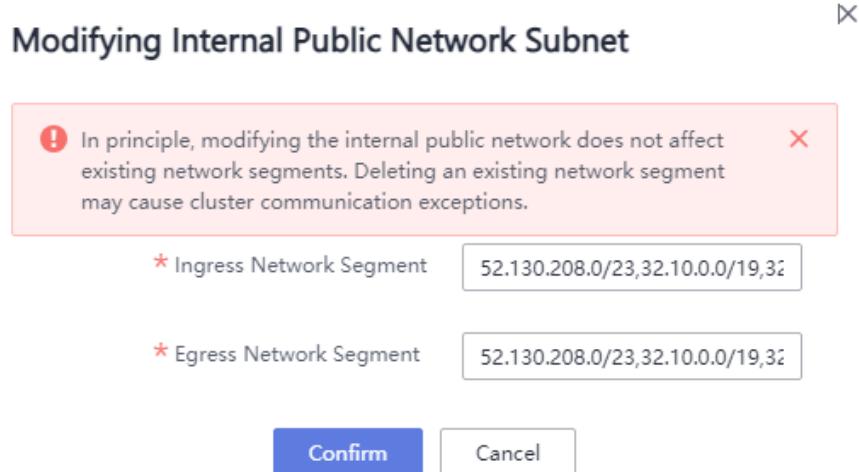
✖

### Modify Zone

Region	*
★ AZ Code	az0.dc0
★ Chinese name	az0.dc0
★ English name	az0.dc0
Recommended	Yes
Replication Configuration	Do Not Copy
<b>Confirm</b> <b>Cancel</b>	

**Step 5** Deleting an AZ: If an AZ contains clusters that are not deleted, the AZ cannot be deleted.

**Step 6** Modifying the subnet of the internal public network plane: Exercise caution when modifying this function. In principle, the internal public network plane can only be added. Deleting the internal public network plane may cause exceptions after scale-out or reduction of the existing cluster.



----End

### 3.3.6 Configuring Specifications

#### Scenario

View the specification configuration, and enable or disable a specification.

#### Procedure

- Step 1** Log in to dws-servicecm and click Specification Configuration on the left.
- Step 2** On this page, you can view all specifications and status information. You can also manually enter new specifications. Disabled specifications cannot be used during cluster creation, but existing clusters under the specifications can still be used.

Only manually specifications can be deleted. A specification used by a cluster that is not deleted cannot be deleted.

Specifications Configuration									
Batch Enable Spec Status		Batch Disabled Spec Status		Entering Specifications		AZ		Enter a keyword.	
Region	AZ	Node Type	Specifications	Cluster Version	Specifications Version	Specifications Status	Operation		
<input type="checkbox"/>	az2.bmz_x86	physical <i>i3.26xlarge.10Jl</i>	104 vCPUs   1024 GB Memory   894...	9.0.2	v1.0	Enable	Update Status   Delete		
<input type="checkbox"/>	az1.dc1	physical <i>i3.26xlarge.10Jl</i>	104 vCPUs   1024 GB Memory   894...	9.0.2	v1.0	Enable	Update Status   Delete		
<input type="checkbox"/>	az2.bmz_x86	physical <i>bms.mve.96u</i>	96 vCPUs   384 GB Memory   11175 ...	9.0.2	v1.0	Enable	Update Status   Delete		
<input type="checkbox"/>	az2.bmz_x86	physical <i>i3.4xlarge.6.test</i>	16 vCPUs   96 GB Memory   7629 Ul...	9.0.2	v1.0	Enable	Update Status   Delete		
<input type="checkbox"/>	az2.bmz_arm	physical <i>i3.4xlarge.6.test</i>	16 vCPUs   96 GB Memory   7629 Ul...	9.0.2	v1.0	Enable	Update Status   Delete		
<input type="checkbox"/>	az1.dc1	physical <i>i3.4xlarge.6.test</i>	16 vCPUs   96 GB Memory   7629 Ul...	9.0.2	v1.0	Enable	Update Status   Delete		
<input type="checkbox"/>	az3.bmz_arm	physical <i>i3.26xlarge.10Jl</i>	104 vCPUs   1024 GB Memory   894...	9.0.2	v1.0	Disable	Update Status   Delete		
<input type="checkbox"/>	az3.bmz_arm	physical <i>bms.mve.96u</i>	96 vCPUs   384 GB Memory   11175 ...	9.0.2	v1.0	Disable	Update Status   Delete		
<input type="checkbox"/>	az1.dc1	physical <i>bms.mve.96u</i>	96 vCPUs   384 GB Memory   11175 ...	9.0.2	v1.0	Disable	Update Status   Delete		
<input type="checkbox"/>	az3.bmz_arm	divs2.hybrid,physical <i>m7d.32xlarge...</i>	128 vCPUs   1024 GB Memory   178...	9.0.2	v1.0	Enable	Update Status		

----End

### 3.4 Upgrade Management

### 3.4.1 Upgrading a cluster.

#### Scenario

Upgrade an existing DWS cluster. The upgrade types include kernel upgrade, hot patch upgrade, and plug-in upgrade.

#### Procedure

**Step 1** Log in to dws-servicecm and click Cluster Upgrade on the left.

**Step 2** You can filter the types of components to be upgraded by type. If you select a cluster, all components in the cluster will be upgraded. If the upgrade type is hotpatch (hot patch upgrade), hot patches can be uninstalled after the upgrade is complete.

Source Version: all clusters of the current version of the selected plug-in;

Target Version: indicates the target version.

----End

### 3.4.2 Upgrade the database.

#### Scenario

After the new version is released, run the SQL statement for upgrading the management plane.

#### Procedure

**Step 1** Log in to dws-servicecm and click Database Upgrade on the left.

**Step 2** Select the upgrade SQL package to be executed.

**Step 3** Select the version and deployment mode to be executed.

**Step 4** Click **Upgrade** to execute the upgrade SQL statement in the corresponding database.

----End

## 3.5 Task Management

#### Scenario

View the task information of the task scheduling framework on the management plane. If a task fails to be executed and can be retried or rolled back, you can perform one-click operations.

#### Procedure

**Step 1** Log in to dws-servicecm and click Task Management on the left.

- Step 2** On this page, you can view information about all recently executed asynchronous tasks, such as failed scale-out tasks. After the error is rectified in the background, you can click **Retry**. When rolling back O&M operations, you can click **Rollback** to roll back operations on the management plane.

Task Management							
Job Information	Scale-Out Started	Ended	Status	POD Name	Cluster	Operation	
dwsBindManageJob 2c98004c8d562f2016de4bd34ce06b5	2024-02-26 09:27:02	2024-02-26 09:27:10	SUCCESS	dwscontroller-65674dbf85-j2p5z	DWS_IOT c98ee164-3e5c-4092-89e0-499bf89bdcd	Rollback   Retry	
dwsBindManageJob 2c98004c8d562f2016de4bd01da06b2	2024-02-26 09:26:49	2024-02-26 09:26:57	SUCCESS	dwscontroller-65674dbf85-j2p5z	DWS_IOT c98ee164-3e5c-4092-89e0-499bf89bdcd	Rollback   Retry	
streamCreateJob 2c98002008d553e3018de4ba655307f	2024-02-26 09:24:18	2024-02-26 09:25:38	SUCCESS	dwscontroller-65674dbf85-tjfcp	DWS_IOT c98ee164-3e5c-4092-89e0-499bf89bdcd	Rollback   Retry	
dwsBindManageJob 2c98004c8d562f2018de4ba685806af	2024-02-26 09:23:58	2024-02-26 09:24:08	SUCCESS	dwscontroller-65674dbf85-j2p5z	DWS_IOT c98ee164-3e5c-4092-89e0-499bf89bdcd	Rollback   Retry	
dwsClusterAffectProcessFalseJob 2c98004c8d562f2018de4ba64b81ae06a9	2024-02-26 09:21:27	2024-02-26 09:23:57	SUCCESS	dwscontroller-65674dbf85-j2p5z	zyget b08e530b-4d90-454a-b3c3-cc7cba4ee908	Rollback   Retry	
rdsDeleteVMJob 2c98002008d553e3018de4a9150d0778	2024-02-26 09:05:03	2024-02-26 09:07:34	SUCCESS	dwscontroller-65674dbf85-tjfcp	zhangjiqiang 1c04a9d9-9fe4-4f8d-84ef-6177c7afdf5	Rollback   Retry	
rdsDeleteVMJob 2c98002008d553e3018de4a9173a077a	2024-02-26 09:05:03	2024-02-26 09:06:06	SUCCESS	dwscontroller-65674dbf85-tjfcp	zhangjiqiang 1c04a9d9-9fe4-4f8d-84ef-6177c7afdf5	Rollback   Retry	
rdsDeleteVMJob 2c98002008d553e3018de4a913300776	2024-02-26 09:05:02	2024-02-26 09:07:21	SUCCESS	dwscontroller-65674dbf85-tjfcp	zhangjiqiang 1c04a9d9-9fe4-4f8d-84ef-6177c7afdf5	Rollback   Retry	
dwsCreateInstanceJob 2c98004c8d562f2016de4a799e0674	2024-02-26 09:03:50	2024-02-26 09:20:02	SUCCESS	dwscontroller-65674dbf85-j2p5z	zyget b08e530b-4d90-454a-b3c3-cc7cba4ee908	Rollback   Retry	
dwsCreateInstanceJob 2c98004c8d562f2018de4a799e0676	2024-02-26 09:03:50	2024-02-26 09:19:56	SUCCESS	dwscontroller-65674dbf85-j2p5z	zyget b08e530b-4d90-454a-b3c3-cc7cba4ee908	Rollback   Retry	

----End

## 3.6 O&M management

### 3.6.1 Database operation

#### Scenario

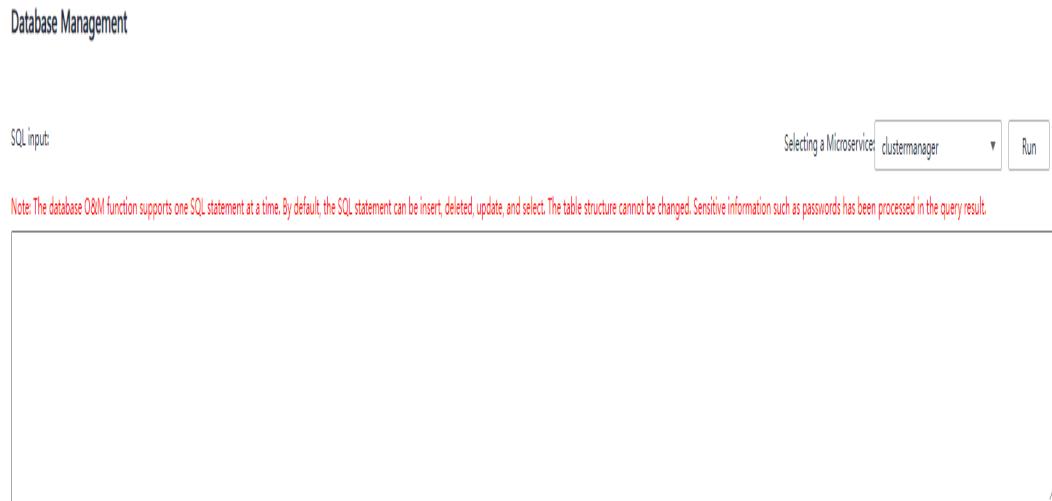
Select microservice components on the page and run simple SQL statements for adding, deleting, modifying, and querying microservice components.

#### Procedure

- Step 1** Log in to dws-servicecm and click Database O&M on the left.

- Step 2** After selecting a microservice, compile an SQL statement and click **Execute**. The execution result is displayed in the lower part (sensitive information will be masked).

Query statements do not need to be approved. INSERT, DELETE, and UPDATE statements can be executed only after being approved by other users with permissions.



----End

## 3.6.2 Change management

### Scenario

View, approve, execute, and cancel SQL work orders.

### Procedure

**Step 1** Log in to dws-servicecm and click Change Management on the left.

**Step 2** On this page, you can view, approve, execute, and cancel SQL work orders.

If a work order is initiated but not approved for more than three days, the status of the work order changes to approval timeout and the work order cannot be executed.

----End

## 3.6.3 Cluster Inspection

### Scenario

O&M personnel can create an inspection task on the dws-servicecm page to inspect a specified cluster.

### Prerequisites

Log in to the dws-servicecm plug-in page as a DWS O&M engineer.

### Procedure

**Step 1** Log in to dws-servicecm and click Cluster Inspection on the left.

**Step 2** On the Cluster Inspection page, you can create an inspection task. Click Create, enter an inspection name, and select a cluster name (a maximum of 100 clusters can be selected).

Create a periodic inspection task with a start and end time set beyond the present moment. Inspections will occur within these predefined periods. You can also manually periodic inspection tasks.

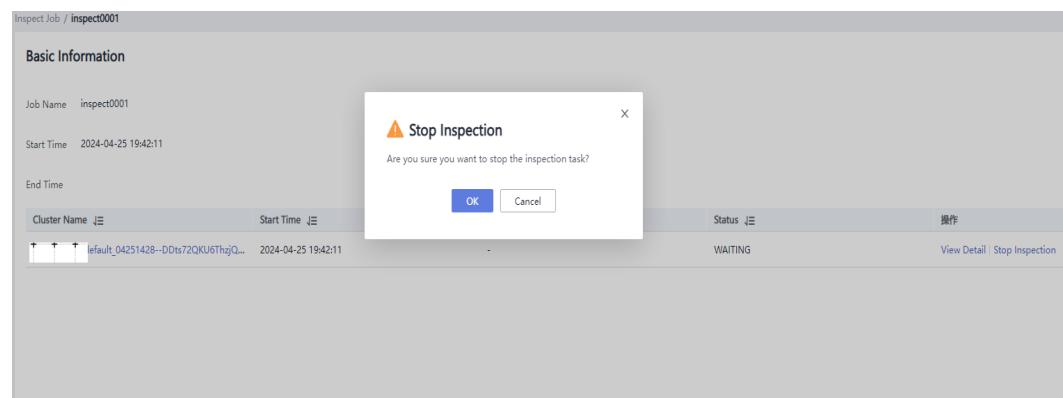
Create a one-time inspection task. After the task is created, the inspection is performed immediately. You can also manually perform the one-time inspection task.

**Step 3** Click **Add Inspect Item**, set the inspection type to **Pre-upgrade inspection**, **Routine inspection**, **Inspection before binary upgrade**, or **Pre-scale-out inspection**, select the corresponding inspection items, and click **OK**.

**Step 4** After the inspection is complete, export the inspection report to view results.

**Step 5** You can select unnecessary inspection tasks and click **Delete** to delete them.

**Step 6** For an inspection task that is being executed, you can click the task name to view the task information. In addition, if the guestAgent version is 8.3.1 or later, you can stop the inspection task on the **Basic Information** page of the cluster.



**Step 7** If a failed inspection task does not need to be handled, you can change the inspection status to Successful in the inspection details.

----End

## 3.7 Log Management

### Scenario

On this page, you can view operation logs of the management plane. You can view all API operations in the last half year.

### Procedure

**Step 1** Log in to dws-servicecm and click Log Management on the left.

**Step 2** On this page, you can view all API operations in the last half year and export related records.

v	2024-02-26 18:04:56	Execute Sql	DBSInsight	--	failed	op_cdk_sso	6f5e07ba095545448546f7d55d427a64_2024-02...		
v	2024-02-26 18:04:49	Execute Sql	DBSInsight	--	success	op_cdk_sso	1e2174ad8d0640f98cb77f663e6a28b8_2024-02...		
v	2024-02-26 18:04:20	Execute Sql	DBSInsight	--	success	op_cdk_sso	8c9e11f8236341658d251046be266d0f_2024-02...		
v	2024-02-26 18:00:44	List Package Bucket Objects	DBSInsight	--	success	op_cdk_sso	4f98cbea7b974095a380e7531d003fc4_2024-02...		
v	2024-02-26 17:59:45	List Package Bucket Objects	DBSInsight	--	success	op_cdk_sso	b70f5468ce554a8da7b479da2e9f7624_2024-02...		
v	2024-02-26 17:59:17	Confirm Update Project	DWSController	--	success	op_cdk_sso	a6b54abb3f114f1cb7618c7e376b345_2024-02...		
v	2024-02-26 17:58:59	List Package Bucket Objects	DBSInsight	--	success	op_cdk_sso	a28cd0287d44422b847feb5cd59b3512_2024-0...		
v	2024-02-26 17:57:48	List Package Bucket Objects	DBSInsight	--	success	op_cdk_sso	f12a9fd1945449ca960b07fa7fd911_2024-02...		
v	2024-02-26 17:57:06	Confirm Update Project	DNSController	--	success	op_cdk_sso	bd081b9554f94b4ba1005729d3408851_2024-0...		
v	2024-02-26 17:51:34	Stop Alarm Of Cluster From O...	DMS-Monitoring	e91ce6aa-d100-4c48-8ac4-d9...	success	op_cdk_sso	fedc9d261e4d4116b71f72f40fabfb8_2024-02...		

----End

## 3.8 Plug-in settings

### Scenario

When the frontend interconnects with multiple sites, you can configure backend service information on this page.

### Procedure

**Step 1** Log in to dws-servicecm and click Plug-in Configuration on the left.

**Step 2** Service Backend Configuration: On this page, you can view the DWS Controller microservice address and DMS-monitoring address interconnected with the current environment.

## Plug-in Configuration

Service Backend Configuration      Region Configuration

[Deleting Backend Service Configurations](#)      [Add Service Backend Configuration](#)

**Backend Service Address**

Rest Uri	rest
dwscontroller endpoint	dwscontroller.dws:18080
dms-monitoring endpoint	52.130.212.7:31421
autopilot endpoint	https://52.130.212.7:31424

[Save](#)      [Cancel](#)

**Step 3** Region Configuration: On this page, you can configure site information in multi-region mode.

After a site is added on the page, you can switch to the site when accessing other pages.

----End

# 4 Routine Inspection

## 4.1 Overview

### Purpose

The purpose of routine inspection is to identify potential system risks, to ensure long-term, stable running system operations, to reduce maintenance costs, and to ensure that the system can properly process services without issue.

### Inspection Methods

**Table 4-1** describes the DWS inspection items and methods. Supported inspection scenarios include Routine Inspection, Pre-upgrade Check, Automatic Acceptance, and In-Depth Inspection. In-Depth Inspection is performed by Huawei technical support through FusionCare Center at the remote technical support center.

**Table 4-1** Inspection modes

Inspection Mode	Supported Scenario	Method
Checking alarms	-	Handle the reported alarms on ManageOne.
Inspection on the management side	Performing a routine inspection	Use FusionCare integrated on ManageOne Maintenance Portal.
	Performing a pre-upgrade check	Use FusionCare integrated on ManageOne Maintenance Portal.
	Performing automated acceptance	Use FusionCare integrated on ManageOne Maintenance Portal after GaussDB(DWS) is installed.

Inspection Mode	Supported Scenario	Method
Inspection on the tenant side (The hybrid data warehouse deployed in standalone mode does not support inspection on the tenant side.)	Performing a routine inspection	<p>Use FusionCare integrated on ManageOne Maintenance Portal.</p> <p><b>NOTE</b> Only the newly installed GaussDB(DWS) of HUAWEI CLOUD Stack 8.0.1 or later is supported. GaussDB(DWS) upgraded from HUAWEI CLOUD Stack 8.0.0 is not supported.</p>
	Performing a pre-upgrade check	<p>Use FusionCare integrated on ManageOne Maintenance Portal.</p>
	Performing an inspection before scale-out	<p>For details, see <a href="#">Pre-scale-out Check on the Tenant Side Using gs_check</a>.</p>

## 4.2 Routine Health Check Items

### 4.2.1 FusionCare Inspection Items

**Table 4-2** and **Table 4-3** list the inspection items supported by GaussDB(DWS). The right columns of the table list the inspection scenarios supported by an inspection item, including **Routine Inspection**, **Pre-upgrade Check**, and **Automated Acceptance**. Y indicates that the inspection scenario is supported, and N indicates that the inspection scenario is not supported.



Click of an inspection scenario in the table to obtain the inspection items supported.

## Management Side

**Table 4-2** GaussDB(DWS) inspection items on the management side

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
1	85001	Checking the CPU usage	<ol style="list-style-type: none"> <li>1. Use PuTTY to log in to the faulty service node as the <b>root</b> user.</li> <li>2. Run the <b>top -n 3 -b  grep Cpu  grep -v grep   awk -F id '{print \$1}'   awk -F '' '{print \$4}'   awk -F '%' '{print \$1}'</b> command.</li> <li>3. If the output contains a line indicating that the CPU usage exceeds 90%, the check fails. Otherwise, the check is passed.</li> </ol>	Y	Y	N
2	85002	Checking the memory usage	<ol style="list-style-type: none"> <li>1. Use PuTTY to log in to the faulty service node as the <b>root</b> user.</li> <li>2. Run the <b>cat /proc/meminfo</b> command to check the memory status.</li> <li>3. Calculate the memory usage: <math>(\text{MemTotal} - \text{MemFree} - \text{Buffers} - \text{Cached} - \text{SReclaimable} - \text{HugePages_Free} \times \text{Hugepagesize}) / \text{MemTotal} \times 100\%</math></li> <li>4. If the result is greater than 90%, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N
3	85003	Checking the disk usage	<ol style="list-style-type: none"> <li>1. Use PuTTY to log in to the faulty service node as the <b>root</b> user.</li> <li>2. Run the <b>df -h  grep -v 'Use%'  awk '{print \$6,\$5}'   awk -F % '{print \$1}'</b> command.</li> <li>3. Check the command output. If the output contains a line indicating that the disk usage exceeds 90%, the check fails. Otherwise, the check is passed.</li> </ol>	Y	Y	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
4	85004	Checking DWS pod processes	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>root</b> using PuTTY.</li> <li>Run the following command to check the status of the DWS container process: <b>kubectl get pod -n dws -owide   awk'NR &gt; 1 {print \$1" "\$2" "\$3" "\$7}'</b></li> <li>Check the command output. If the first column of the output is not <b>1/1</b> or the second column is not <b>Running</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
5	85005	Checking ECF pod processes	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>root</b> using PuTTY.</li> <li>Run the following command to check the status of the ecf container process: <b>kubectl get pod -n ecf -owide   awk'NR &gt; 1 {print \$1" "\$2" "\$3" "\$7}'</b></li> <li>Check the command output. If the first column of the output is not <b>1/1</b> or the second column is not <b>Running</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
6	85006	Obtaining the certificate list	<ol style="list-style-type: none"> <li>Call the REST API <b>/rds/v2.0/insight/cesCert</b> of DWS Controller using Postman.</li> <li>Check the command output. If <b>status</b> in the command output is <b>200 OK</b>, the check is passed. Otherwise, the check is not passed.</li> </ol>	N	N	Y
7	85008	Obtaining the cluster list	<ol style="list-style-type: none"> <li>Call the REST API <b>/rds/v2.0/insight/cluster</b> of DWS Controller using Postman.</li> <li>Check the command output. If <b>status</b> in the command output is <b>200 OK</b>, the check is passed. Otherwise, the check is not passed.</li> </ol>	N	N	Y

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
8	85009	Obtaining the cluster backup list	<ol style="list-style-type: none"> <li>Call the REST API <b>/rds/v2.0/insight/clusterBackup</b> of DWS Controller using Postman.</li> <li>Check the command output. If <b>status</b> in the command output is <b>200 OK</b>, the check is passed. Otherwise, the check is not passed.</li> </ol>	N	N	Y
9	85010	Obtaining the action list	<ol style="list-style-type: none"> <li>Call the REST API <b>/rds/v2.0/insight/action</b> of DWS Controller using Postman.</li> <li>Check the command output. If <b>status</b> in the command output is <b>200 OK</b>, the check is passed. Otherwise, the check is not passed.</li> </ol>	N	N	Y
10	85011	Obtaining the instance list	<ol style="list-style-type: none"> <li>Call the REST API <b>/rds/v2.0/insight/instance</b> of DWS Controller using Postman.</li> <li>Check the command output. If <b>status</b> in the command output is <b>200 OK</b>, the check is passed. Otherwise, the check is not passed.</li> </ol>	N	N	Y
11	85012	Obtaining the quota list	<ol style="list-style-type: none"> <li>Call the REST API <b>/rds/v2.0/insight/quota</b> of DWS Controller using Postman.</li> <li>Check the command output. If <b>status</b> in the command output is <b>200 OK</b>, the check is passed. Otherwise, the check is not passed.</li> </ol>	N	N	Y
12	85013	Obtaining project quotas	<ol style="list-style-type: none"> <li>Call the REST API <b>/rds/v2.0/insight/quotas</b> of DWS Controller using Postman.</li> <li>Check the command output. If <b>status</b> in the command output is <b>200 OK</b>, the check is passed. Otherwise, the check is not passed.</li> </ol>	N	N	Y

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
13	85014	Obtaining resource tenants	<ol style="list-style-type: none"> <li>Call the REST API <b>/rds/v2.0/insight/restenant</b> of DWS Controller using Postman.</li> <li>Check the command output. If <b>status</b> in the command output is <b>200 OK</b>, the check is passed. Otherwise, the check is not passed.</li> </ol>	N	N	Y
14	85016	Obtaining the flavor data	<ol style="list-style-type: none"> <li>1. Call the REST API <b>/rds/v2.0/insight/resSpecAttr</b> of DWS Controller using Postman.</li> <li>2. Check the command output. If <b>status</b> in the command output is <b>200 OK</b>, the check is passed. Otherwise, the check is not passed.</li> </ol>	N	N	Y
15	85017	Obtaining the acceleration cluster list	<ol style="list-style-type: none"> <li>1. Call the REST API <b>/rds/v2.0/insight/cluster/allExpressed</b> of DWS Controller using Postman.</li> <li>2. Check the command output. If <b>status</b> in the command output is <b>200 OK</b>, the check is passed. Otherwise, the check is not passed.</li> </ol>	N	N	Y
16	85018	Obtaining the status information about monitoring items	<ol style="list-style-type: none"> <li>1. Call the REST API <b>/rds/v2.0/insight/sre-monitor/{serviceName}/list</b> of DWS Controller using Postman.</li> <li>2. Check the command output. If <b>status</b> in the command output is <b>200 OK</b>, the check is passed. Otherwise, the check is not passed.</li> </ol>	N	N	Y

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
17	85019	Checking the integrity of the DWS service tree	<ol style="list-style-type: none"> <li>1. Log in to ManageOne Maintenance Portal as an administrator and choose <b>Monitoring &gt; Resource Monitoring</b>.</li> <li>2. Click the <b>Service</b> tab, search for <b>DWS</b>, and go to the DWS page.</li> <li>3. On the page that is displayed, select Topology View on the left and check whether the topology of DWS is complete.</li> </ol>	Y	N	N
18	85020	Checking the integrity of the ECF service tree	<ol style="list-style-type: none"> <li>1. Log in to ManageOne Maintenance Portal as an administrator and choose <b>Monitoring &gt; Resource Monitoring</b>.</li> <li>2. Click the <b>Service</b> tab, search for <b>ECF</b>, and go to the ECF page.</li> <li>3. Go to the topology view, and check whether the topology of ECF is complete and correct.</li> </ol>	Y	N	N

## Tenant Side

**Table 4-3** GaussDB(DWS) inspection items on the tenant side

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
1	85102	Checking time zone consistency	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckTimeZone -l CheckTimeZone.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N
2	85116	Checking the value of the key process <b>omm_adj</b>	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckKeyProAdj -l CheckKeyProAdj.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
3	85135	Checking whether zombie processes exist	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckZombieProcess -l CheckZombieProcess.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
4	85208	Checking the disk usage	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckSpaceUsage -l CheckSpaceUsage.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N
5	85300	Checking the cluster status	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckClusterState -l CheckClusterState.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N
6	85302	Checking database cluster parameters	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDBParams -l CheckDBParams.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
7	85306	Checking environment variables	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckEnvProfile -l CheckEnvProfile.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
8	85307	Checking the GaussDB version	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckGaussVer -l CheckGaussVer.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	Y	N
9	85309	Checking the read-only mode	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckreadonlyMode -l CheckreadonlyMode.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N
10	85310	Checking catchup information	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckCatchup -l CheckCatchup.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	Y	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
11	85315	Checking the <b>om_monitor</b> process	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckOMMonitor -l CheckOMMonitor.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N
12	85317	Checking system catalog bloat	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDilateSysTab -l CheckDilateSysTab.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N
13	85320	Checking the trust relationship between nodes	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckTrust -l CheckTrust.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
14	85321	Checking cluster configuration parameters	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckClusterParams -l CheckClusterParams.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	Y	N
15	85323	Checking tablespaces	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckTableSpace -l CheckTableSpace.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N
16	85325	Checking the load balancing status	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckBalanceState -l CheckBalanceState.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
17	85326	Checking the standby CM server status	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckCmserverStandby -l CheckCmserverStandby.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N
18	85329	Checking the DN path	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDnPath -l CheckDnPath.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
19	85332	Checking whether important files exist	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckKeyFilesExist -l CheckKeyFilesExist.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	Y	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
20	85345	Checking GaussDB integrity	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckIntegrity -l CheckIntegrity.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N
21	85404	Checking the number of CNs	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckCNum -l CheckCursorNum.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	Y	N
22	85407	Checking the <b>comm_max_datanode</b> parameter	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckMaxDatanode -l CheckMaxDatanode.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
23	85408	Checking residual two-phase transactions	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckPgPreparedXacts -l CheckPgPreparedXacts.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N
24	85409	Checking the number of tables to be redistributed of <b>pgxc_group</b> .	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the following command: <b>/gs_check -i CheckPgxcgroup -l CheckPgxcgroup.log</b></li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N
25	85410	Checking whether a cluster is locked	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckLockState -l CheckLockState.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
26	85412	Checking the database connection	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDBConnection -l CheckDBConnection.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
27	85419	Checking the pooler usage	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckPoolerNum -l CheckPoolerNum.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
28	85421	Checking the GUC parameter consistency	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckGUCConsistent -l CheckGUCConsistent.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> <li>This inspection item may affect cluster resources.</li> </ol>	Y	Y	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
29	85426	Checking the date columns in Teradata ORC tables	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckTDDate -l CheckTDDate.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N
30	85429	Checking the node group encoding format	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckNodeGroupName -l CheckNodeGroupName.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
31	85430	Checking the created views	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckCreateView -l CheckCreateView.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	Y	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
32	85431	Checking remaining temporary tables after redistribution	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckPgxcRedistb -l CheckPgxcRedistb.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
33	85435	Checking whether the Teradat a compatibility feature is enabled.	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckTDCompatible -l CheckTDCompatible.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
34	85437	Checking the number of records in a single partition	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckPgPartitionRecord -l CheckPgPartitionRecord.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
35	85438	Checking metadata consistency	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckMetaData -l CheckMetaData.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	Y	N
36	85439	Checking pg_catalog	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckCatalog -l CheckCatalog.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	Y	N
37	85440	Checking BCM catchup	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckBcmCatchup -l CheckBcmCatchup.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N
38	85441	Checking node groups	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckNodeGroup -l CheckNodeGroup.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	Y	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
39	85 44 8	Checking proacl information	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckProacl -l CheckProacl.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
40	85 44 9	Checking memory leaks	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckOtherUsedMemory -l CheckOtherUsedMemory.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
41	85 45 0	Checking metadata consistency between CNs and DNs	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckMetaDataConsistency -l CheckMetaDataConsistency.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol> <p><b>NOTICE</b> This inspection item may affect cluster resources.</p>	N	Y	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
42	85453	Checking whether DDL statements can be executed successfully	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDDL -l CheckDDL.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	Y	N
43	85459	Checking the system catalog capacity of each instance	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckSysTabSize -l CheckSysTabSize.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N
44	85461	Checking the return type of user-defined functions	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckReturnType -l CheckReturnType.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N

N o.	Ite m ID	Item Name	Operations and Criteria	Rout ine Insp ectio n	Pre - up gra de Ch eck	Aut oma ted Acce ptan ce
45	85 46 3	Checkin g ultra- wide tables	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckUltraWideTable -l CheckUltraWideTable.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N
46	85 46 5	Checkin g the <b>public</b> permis sions	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckPublicPermission -l CheckPublicPermission.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
47	85 46 7	Checkin g whether the <b>data_re dis</b> schema exists in the databas e	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDataRedisSchema -l CheckDataRedisSchema.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
48	85500	Checking the network connection	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckPing -l CheckPing.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
49	85600	Checking the DN disk usage	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDataDiskUsage -l CheckDataDiskUsage.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	Y	N	N
50	85602	Checking the log directory disk usage	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckLogDiskUsage -l CheckLogDiskUsage.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N

No.	Item ID	Item Name	Operations and Criteria	Routine Inspection	Pre-upgrade Check	Automated Acceptance
51	85603	Checking the temporary directory disk usage	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckTmpDiskUsage -l CheckTmpDiskUsage.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>	N	N	N

## 4.2.2 gs\_check Inspection Items

Table 4-4 GaussDB(DWS) inspection items on the tenant side

No.	Item ID	Item Name	Inspection Method	Operations and Criteria
1	85102	Checking time zone consistency	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckTimeZone -l CheckTimeZone.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>

No.	Item ID	Item Name	Inspection Method	Operations and Criteria
2	85108	Checking the OS version	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckOSVer -l CheckOSVer.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
3	85124	Checking the total memory capacity	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckMemInfo -l CheckMemInfo.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
4	85136	Checking the SSH version	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckSshVersion -l CheckSshVersion.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
5	85139	Checking whether the user virtual memory space is limited	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckVirtualMemory -l CheckVirtualMemory.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>

No.	Item ID	Item Name	Inspection Method	Operations and Criteria
6	85208	Checking the disk usage	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckSpaceUsage -l CheckSpaceUsage.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
7	85209	Checking disk space consistency	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDiskConfig -l CheckDiskConfig.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
8	85300	Checking the cluster status	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckClusterState -l CheckClusterState.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
9	85306	Checking environment variables	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckEnvProfile -l CheckEnvProfile.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>

No.	Item ID	Item Name	Inspection Method	Operations and Criteria
10	85309	Checking the read-only mode	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckReadOnlyMode -l CheckReadOnlyMode.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
11	85310	Checking catchup information	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckCatchup -l CheckCatchup.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
12	85311	Checking the process status	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckProcessStatus -l CheckProcessStatus.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
13	85317	Checking system catalog bloat	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDilateSysTab -l CheckDilateSysTab.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>

No.	Item ID	Item Name	Inspection Method	Operations and Criteria
14	85320	Checking the trust relationship between nodes	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckTrust -l CheckTrust.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
15	85325	Checking the load balancing status	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckBalanceState -l CheckBalanceState.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
16	85342	Checking whether data skew occurs	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDataSkew -l CheckDataSkew.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
17	85349	Checking whether SCP is normal	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckScpFile -l CheckScpFile.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>

No.	Item ID	Item Name	Inspection Method	Operations and Criteria
18	85409	Checking whether the number of records whose <b>in_redistribution</b> is Y in <b>pgxc_group</b> is 0	gs_check	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>/gs_check -i CheckPgxcgroup -l CheckPgxcgroup.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
19	85410	Checking whether a cluster is locked	gs_check	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckLockState -l CheckLockState.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
20	85412	Checking the database connection	gs_check	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDBConnection -l CheckDBConnection.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
21	85417	Checking tablespaces	gs_check	<ol style="list-style-type: none"> <li>Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>Go to the directory where gs_check is located and run the <b>./gs_check -i CheckTableSpace -l CheckTableSpace.log</b> command.</li> <li>Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>

No.	Item ID	Item Name	Inspection Method	Operations and Criteria
22	85421	Checking GUC parameter consistency	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckGUCConsistent -l CheckGUCConsistent.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
23	85426	Checking whether database ORC tables in Teradata mode exist and whether the tables contain date columns	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckTDDate -l CheckTDDate.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
24	85428	Checking whether local tables exist in the ELK environment	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckUnHdfsTable -l CheckUnHdfsTable.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
25	85430	Checking whether the subqueries in a view contain implicit renamed columns	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckCreateView -l CheckCreateView.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>

No.	Item ID	Item Name	Inspection Method	Operations and Criteria
26	8543 1	Checking whether the temporary table <b>pgxc_redirstb</b> remains in the database after redistribution	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckPgPartition -l CheckPgPartition.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
27	8543 7	Checking the number of records in a single partition	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckPgPartition -l CheckPgPartition.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
28	8543 8	Checking metadata consistency	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckMetaData -l CheckMetaData.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
29	8544 8	Checking <b>proacl</b> in the <b>pg_proc</b> system catalog	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckProacl -l CheckProacl.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>

No.	Item ID	Item Name	Inspection Method	Operations and Criteria
30	85450	Checking metadata consistency between CNs and DNs	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckMetaDataConsistency -l CheckMetaDataConsistency.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
31	85460	CheckSys SchemaTable	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckSysSchemaTable -l CheckSysSchemaTable.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
32	85461	Checking whether a user-defined function contains invalid return values	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckReturnType -l CheckReturnType.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>
33	85463	Checking ultra-wide tables	gs_check	<ol style="list-style-type: none"> <li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li> <li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckUltraWideTable -l CheckUltraWideTable.log</b> command.</li> <li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li> </ol>

No.	Item ID	Item Name	Inspection Method	Operations and Criteria
34	85466	Checking whether maximum tenant disk space is properly set	gs_check	<ol style="list-style-type: none"><li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li><li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckUsedSpaceForDbUsers -l CheckUsedSpaceForDbUsers.log</b> command.</li><li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li></ol>
35	85467	Checking the <b>data_redis</b> schema created by a user	gs_check	<ol style="list-style-type: none"><li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li><li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDataRedisSchema -l CheckDataRedisSchema.log</b> command.</li><li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li></ol>
36	85469	Checking whether disk space is limited	gs_check	<ol style="list-style-type: none"><li>1. Log in to the faulty node as user <b>Ruby</b> using PuTTY.</li><li>2. Go to the directory where gs_check is located and run the <b>./gs_check -i CheckDiskSpaceLimited -l CheckDiskSpaceLimited.log</b> command.</li><li>3. Check the command output. If the output is <b>NG</b>, the check is not passed. Otherwise, the check is passed.</li></ol>

## 4.3 Inspection Process

### 4.3.1 Preparations

#### Preparing Tools and Software Packages

**Table 4-5** lists the tools and software packages required for manual inspection. If FusionCare is used for inspection, skip this section.

**Table 4-5 Tools and software packages**

Inspection Method	Software Package	Description	Obtaining Method
Using gs_check on the GaussDB(DWS) tenant side	8.3.1-inspect-xxx.tar.gz	Manual inspection package of the GaussDB(DWS) tenant side.	<ul style="list-style-type: none"><li>Enterprise users: Visit <a href="https://support.huawei.com/enterprise/">https://support.huawei.com/enterprise/</a> using a Support account, select <b>HCS DWS Service 8.3.1 from Version and Patch Number</b> to obtain <b>Public_Cloud_Solution_DWS_Insta nce_xxx.zip</b>, and decompress the package to obtain the inspection software package.</li><li>Carrier users: Visit <a href="https://support.huawei.com/carrier/">https://support.huawei.com/carrier/</a> using a Support account, select <b>HCS DWS Service 8.1.3.SP2 from Version or Patch No.</b> to obtain <b>Public_Cloud_Solution_DWS_Insta nce_xxx.zip</b>, and decompress the package to obtain the inspection software package.</li></ul>

## Preparing Data

The following table lists the data required for manual inspection. If FusionCare is used for inspection, skip this section.

**Table 4-6** Preparing data

Inspection Method	Required Data	Obtaining Method
Manual inspection	IP address of the HCC Turnkey node and password of the <b>fusioncloudddeploy</b> user	Provided by the environment administrator.
	URL, username, and password for logging in to ManageOne Maintenance Portal	Provided by the environment administrator
	URL, username, and password for logging in to ManageOne Operation Portal	Provided by the environment administrator
	URL, username, and password of the CloudAutoDeploy-CDK console	Provided by the environment administrator
	Username and password of the CloudAutoDeploy-CDK master node	Provided by the environment administrator
	MySQL database username and password	Provided by the environment administrator

### 4.3.2 Checking GaussDB(DWS) Alarms

This section describes how to analyze GaussDB(DWS) alarms on ManageOne Maintenance Portal, find out the causes, analyze their impacts on the system, and propose a solution.

#### Prerequisites

You have logged in to ManageOne Maintenance Portal.

#### Procedure

- Step 1** In the main menu, choose **Alarm Management > Alarms > Current Alarms** to go to the alarm information page.
- Step 2** View the alarms.
  - If an alarm exists, go to **Step 3**.
  - If no alarm exists, no further action is required.
- Step 3** Locate the alarms.

In the search result list, click an alarm to view the details. In the alarm details page that is displayed, locate the fault based on the information listed in **Table 4-7**.

**Table 4-7** Alarm information

Key Value	Description
Alarm serial number	Used to locate the fault.
IP address/URL/Domain name	Used to locate the host generating the alarm.
Location information	Provides information about the tenant ID, volume ID, and fault scope.
Additional information	Provides remarks and the alarm handling history, helping find the troubleshooting personnel and track the handling status.

**Step 4** Clear the alarms.

For details, see the alarm online help.

----End

### 4.3.3 FusionCare-based Inspections

#### 4.3.3.1 (Optional) Adding Environment Information

##### Scenarios

This section describes how to add a GaussDB(DWS) environment on FusionCare.

**NOTICE**

After the environment is deployed, if FusionCare is interconnected with ManageOne, FusionCare automatically interconnects with DWS. You do not need to manually add environment information. Skip this section.

##### Prerequisites

You have logged in to ManageOne Maintenance Portal.

##### Procedure

- Step 1** On the **Home** page of ManageOne Maintenance Portal, click **FusionCare(Inspection)** > *Name of the region to be checked* in the **Common Links** area to go to the FusionCare system.
- Step 2** On the FusionCare homepage, choose **System Management** > **Environment Configuration**.
- Step 3** Click **Add Environment**.

**Step 4** Enter the project name and customer cloud name. Click **OK** to add the environment.

 **NOTE**

The environment information can be added only once. If the environment information has been added, it cannot be added again. If you need to add an environment, delete the original environment first.

----End

## Related Operations

- Editing the existing environment information

**Step 1** Choose **System Management** from the main menu.

**Step 2** In the navigation pane, choose **Environment Configuration**.

**Step 3** Click **Edit Environment** in the **Operation** column corresponding to the environment information.

**Step 4** In the displayed **Edit Environment** dialog box, enter the new environment name and click **OK**.

----End

- Deleting an environment: If an environment is no longer used, you can delete it.

After all customer clouds in the environment are deleted, the environment is deleted.

### 4.3.3.2 Creating a Health Check Task

This section describes how to create a health check task for a project or site to identify potential risks to the system and to prevent failures. Detected issues in the health check results need to be handled in real time based on the online handling suggestions.

#### Prerequisites

- You have logged in to ManageOne Maintenance Portal.
- Environment information has been added. For details, see [\(Optional\) Adding Environment Information](#).

#### Procedure

**Step 1** On the **Home** page of ManageOne Maintenance Portal, click **FusionCare(Inspection)** > *Name of the region to be checked* in the **Common Links** area to go to the FusionCare system.

**Step 2** Choose **Health Check > Task List** and click **Create** in the upper left corner.

**Step 3** Configure task information according to [Table 4-8](#).

**Table 4-8** Health check configuration

Parameter	Description	Example Value
Task Name	Name of a health check task.	Beijing site inspection
Task Scenario	<p>Scenario where the health check task is executed. The options are as follows:</p> <ul style="list-style-type: none"><li>• Routine inspection: both the management side and tenant side</li><li>• Pre-upgrade check: both the management side and tenant side</li></ul> <p><b>NOTE</b> For details about the supported inspection items, see <a href="#">FusionCare Inspection Items</a>.</p>	Routine inspection
Task Policy	<p>Execution policy of a health check task. This parameter is mandatory only when <b>Task Scenario</b> is set to <b>Routine health check</b>.</p> <ul style="list-style-type: none"><li>• <b>Real-time task</b>: inspects the environment status in real time, which is used to obtain the latest health status of the environment.</li><li>• <b>Scheduled Task</b>: The health check task is executed at a specified period. If you select this option, set <b>Execution Time</b>.</li><li>• <b>Periodic Task</b>: The health check task is periodically executed at a specified time on one or several days every week. If you select this option, set <b>Execution Time</b> to <b>By week</b> or <b>By month</b>.</li></ul>	Real-time task

Parameter	Description	Example Value
Send check report via email	If you select this option, the task execution information is sent to administrators by email. If the email push task is enabled, configure the email by performing steps in <a href="#">Managing the Email Configuration</a> .	Enabled
Customer Cloud	Target customer cloud where the health check task is executed. <ul style="list-style-type: none"> <li>Management side: Select <b>DWS</b> and select all inspection items.</li> <li>Management node on the tenant side: Select <b>DWS</b> and select all inspection items.</li> </ul>	beijing
Select Objects	Object for which the health check task is executed <ul style="list-style-type: none"> <li><b>Management:</b> nodes on the management side</li> <li><b>Tenant Management Nodes:</b> management nodes on the tenant side</li> </ul> Select at least one node for an inspection task.	<ul style="list-style-type: none"> <li>Management: <b>DWS</b></li> <li>Tenant Management Nodes: <b>DWS</b></li> </ul>
Select Check Items	Items to be checked during the inspection. Select at least one item for an inspection task. <p><b>NOTE</b> By default, all inspection items of all nodes are selected. To modify the items, select the corresponding nodes.</p>	-

#### Step 4 Click Create Now.

You can view the created inspection task in the task list.

----End

### 4.3.3.3 Viewing a Health Check Task

Administrators can view health check tasks to learn about the status and execution progress of health check tasks in a timely manner.

#### Prerequisites

- You have logged in to ManageOne Maintenance Portal.
- A health check task has been created. For details about how to create a health check task, see [Creating a Health Check Task](#).

#### Procedure

- Step 1** On the **Home** page of ManageOne Maintenance Portal, click **FusionCare(Inspection) > Name of the region to be checked** in the **Common Links** area to go to the FusionCare system.
- Step 2** Choose **Health Check > Task List**.
- Step 3** Check the inspection tasks created in the [Creating a Health Check Task](#) and check the inspection items. **Table 4-9** describes the task details.

**Table 4-9** Health check details

Parameter	Description	Example Value
Name	Name of a health check task.	Routine_EVS
Start Time	Time when the latest health check task is started	2019/04/01 21:23:06
Execution Duration	Duration of the inspection task.	10 minutes 48 seconds
Status	Health check task status. The options are as follows: <ul style="list-style-type: none"><li>• Completed</li><li>• Not finished</li></ul>	Completed
Progress	Execution progress of the current task.	100%
Task Scenario	Scenario where a health check task is executed, including: <ul style="list-style-type: none"><li>• Routine inspection</li><li>• Pre-upgrade Check</li></ul>	Routine inspection

Parameter	Description	Example Value
Task Policy	Health check task type. The options are as follows: <ul style="list-style-type: none"><li>● <b>Real-time task</b></li><li>● Scheduled task</li><li>● Periodic task</li></ul>	<b>Real-time task</b>
Object-Check Pass Rate	Pass rate of a task object.	100%
Check-Item Pass Rate	Check item pass rate	100%

----End

## Related Operations

- Modify a health check task.  
On the **Task List** page, locate the row containing the task to be modified, and click **Modify** in the **Operation** column. Currently, only periodic tasks can be modified.
- Delete a health check task.  
On the **Task List** page, select a health check task and click **Delete** above the task list.
- Export a health check report.
  - a. On the **Task List** page, locate the row that contains a desired task, and click **Export Report** in the **Operation** column.
  - b. Choose a report type **Basic Report** or **Synthesis Report**. If you select **Synthesis Report**, set **Customer Name** and **Signature**.



A synthesis report is a Word file that contains health check results of FusionCompute, FusionSphere OpenStack, ManageOne, and IaaS Service.

- c. Click **OK** to export the report.

### 4.3.3.4 Viewing Health Check Results

This section describes how to view the health check results and handling suggestions.

## Prerequisites

- You have logged in to ManageOne Maintenance Portal.
- The inspection task is complete.

## Procedure

- Step 1** On the **Home** page of ManageOne Maintenance Portal, click **FusionCare(Inspection) > Name of the region to be checked** in the **Common Links** area to go to the FusionCare system.
- Step 2** Choose **Health Check > Task List**.
- Step 3** Click the name of the finished inspection task.
- Step 4** On the task details page, perform the operations described in [Table 4-10](#).

**Table 4-10** Operations on the task details page

Task Name	Related Operations
Viewing basic information about a task	In the <b>Basic Information</b> area, view the name and status of the current task.
View the object check pass rate and check item pass rate	View the <b>Object Check Pass Rate</b> and <b>Check Item Pass Rate</b> . You can check them <b>By environment</b> or <b>By product</b> .
Viewing component check results/tenant check results	<ul style="list-style-type: none"><li>• Perform the following operations to view the fault details of the task:<ol style="list-style-type: none"><li>1. On the <b>Component Check Result</b> or <b>Tenant Check Result</b> tab page, click the <b>Check Item Fault Details</b> tab and view the faulty object displayed in the <b>Object Name</b> column.</li><li>2. In the <b>Object Name</b> column, click a check item to view its check result.</li><li>3. Click the link in the <b>Check Item ID</b> column to view the troubleshooting suggestions for the check item.</li></ol></li><li>• Checking the status of each object in the task<ol style="list-style-type: none"><li>1. Click <b>Details</b> in the <b>Operation</b> column to switch to the <b>Object Details</b> dialog box and view the results of the check items selected for the object in the task.</li><li>2. Click the link in the <b>Check Item ID</b> column to view the troubleshooting suggestions for the check item.</li></ol></li></ul> <p><b>NOTE</b> The object status is determined based on the check results of checked items. The object status can be <b>Passed</b> or <b>Failed</b>. If all check items pass the health check, the object status is <b>Passed</b>. If a checked object contains at least one failed check item, the object status is <b>Failed</b>.</p>

Task Name	Related Operations
Exporting a health check report	<ol style="list-style-type: none"><li>Click <b>Export Report</b> in the upper right corner of the page.</li><li>Choose a report type <b>Basic Report</b> or <b>Synthesis Report</b>. If you select <b>Synthesis Report</b>, specify <b>Company Name</b> and <b>Huawei Office</b>.</li></ol> <p><b>NOTE</b> A synthesis report is a Word file that contains health check results of FusionCompute, FusionSphere OpenStack, ManageOne, and IaaS Service.</p> <ol style="list-style-type: none"><li>Click <b>OK</b> to export the report.</li></ol>

----End

## Related Operations

- Recheck: In the upper right corner of the task details page, click **Recheck** to recheck the task.
- Deleting a task: In the upper right corner of the task details page, click **Delete** to delete the task.

## 4.3.4 Pre-scale-out Check on the Tenant Side Using gs\_check

### 4.3.4.1 Installing Inspection Packages

#### Prerequisites

- The OBS service has been installed.
- The inspection software package and project data have been prepared. For details, see [Preparations](#).

#### Procedure

##### Step 1 Upload the inspection package to the OBS bucket.

- Log in to ManageOne Operation Portal, click **Home**. Click the icon consisting of three vertical bars in the upper left corner, and in the displayed service list, click **Object Storage Service** to access the OBS page.
- Log in to the OBS page, click **Create Bucket**, and create a bucket as prompted.
- The bucket name can be customized. For example, create a bucket named **test-hcs**. Click **Create Now**. After the bucket is created, the bucket list page is displayed.
- Click the name of the created bucket and upload the file as prompted.
- Click the name of the uploaded package, click **Object ACL** on the displayed page, edit the permission of **Anonymous User**, and click **Save**.

6. Copy and save the package link, which will be used in [2.6](#).

**Step 2** Download the inspection package.

1. Use PuTTY to log in to the HCC Turnkey node as user **fusionclouddeploy**.
2. Log in to the CloudAutoDeploy-CDK master node by referring to [Logging In to the CloudAutoDeploy-CDK Master Node](#).
3. Obtain the **dws-maintain** pod names.  

```
kubectl get pods -n ecf
```
4. Log in to a pod (pod name obtained in [2.3](#)). *dwsmaintaintool-5cf569b9bb-cdl6x* is used as an example.  

```
kubectl exec -ti dwsmaintaintool-5cf569b9bb-cdl6x -n ecf bash
```
5. Log in to any CN instance of GaussDB(DWS) from the container.  

```
sh connectTool.sh -u Username -drms -h Host_IP -p Port_number -n Instance_name -t Standalone
```

Obtain the username, host IP address, and port number by referring to [Querying MySQL Database Information](#). Obtain the instance name by referring to [Logging In to a Node in the Tenant Cluster](#).
6. Download the package from the OBS. Click the package link obtained in [Step 1.6](#) to download the inspection tool. URL <https://test-hcs.obs.arm-type-1.out.hcsb.com/8.1.1-inspect-b618b38.tar.gz> is used as an example.

**su - Ruby**

```
wget --no-check-certificate https://test-hcs.obs.arm-type-1.out.hcsb.com/8.1.1-inspect-b618b38.tar.gz
```

```
[Ruby@host-172-20-0-21 ~] $ wget --no-check-certificate https://test-hcs.obs.arm-type-1.out.hcsb.com/CheckTools_20200612.zip
--2020-06-17 12:15:22 -- https://test-hcs.obs.arm-type-1.out.hcsb.com/CheckTools_20200612.zip
Resolving test-hcs.obs.arm-type-1.out.hcsb.com (test-hcs.obs.arm-type-1.out.hcsb.com)... 24.68.142.7
Connecting to test-hcs.obs.arm-type-1.out.hcsb.com (test-hcs.obs.arm-type-1.out.hcsb.com)|24.68.142.7|:443... connected.
WARNING: The certificate of 'test-hcs.obs.arm-type-1.out.hcsb.com' is not trusted.
WARNING: The certificate for 'test-hcs.obs.arm-type-1.out.hcsb.com' hasn't got a known issuer.
HTTP request sent, awaiting response... 200 OK
Length: 3118660 (3.0MB) [application/x-zip]
Saving to: "CheckTools_20200612.zip.1"

CheckTools_20200612.zip.1 100%[=====] 2.97M =+KB/s in 0.04s
2020-06-17 12:15:22 (71.9 MB/s) - 'CheckTools_20200612.zip.1' saved [3118660/3118660]
[Ruby@host-172-20-0-21 ~] #
```

**Step 3** Distribute the inspection package.

1. Decompress the inspection package.

```
mkdir /home/Ruby/CheckTools_20200612
```

```
tar -zxfv 8.1.1-inspect-b618b38.tar.gz -C /home/Ruby/
CheckTools_20200612
```

2. Send the inspection package to the sandbox.

Run the **cat /etc/hosts** command to obtain the local IP address of the sandbox. **172.20.0.110** indicates the IP address of the local host.

```
[Ruby@host-172-20-0-21 etc]#
[Ruby@host-172-20-0-21 etc]# cat /etc/hosts
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain
172.20.0.110 host-172-20-0-21 #Gauss200 IP Hosts Mapping
172.20.0.101 host-172-20-0-39 #Gauss200 IP Hosts Mapping
172.20.0.95 host-172-20-0-17 #Gauss200 IP Hosts Mapping
[Ruby@host-172-20-0-21 etc]#
```

```
scp -r /home/Ruby/CheckTools_20200612 Ruby@172.20.0.110:/tmp/
```

3. Enter the sandbox and run the **install** command.

```
ssh 172.20.0.110
```

```
cd /tmp/CheckTools_20200612
python ./install
```

 NOTE

If the **install** command fails to be run, delete the **/tmp/check** directory on each node and run the **install** command again.

```
gs_ssh -c "rm -rf /tmp/check"
python ./install
```

**Step 4** Start the inspection.

----End

#### 4.3.4.2 Performing an Inspection Before Scale-out

##### Scenario

This section describes how to create a health check task before scale-out to detect issues that may affect your services in future so that you can take action to mitigate downtime. Detected issues in the health check results need to be handled in real time based on the online handling suggestions. For details about the supported inspection items, see [gs\\_check Inspection Items](#).

##### Prerequisites

The inspection package has been deployed. For details, see [Installing Inspection Packages](#).

##### Procedure

- Step 1** Enter the GaussDB(DWS) instance by referring to [Logging In to a Node in the Tenant Cluster](#) and enter the sandbox as user **Ruby**.
- Step 2** Perform inspection before the scale-out.
  1. Go to the **/home/Ruby/Check** directory.  
`cd /home/Ruby/Check`
  2. Perform inspection before the scale-out.  
`./gs_check -e expand`

```
[root@host-25-213-103-29 ~]# cd /home/Ruby/Check
[Ruby@host-25-213-103-29 Check]# ll
total 112
-rwx----- 1 Ruby Ruby 82149 Aug 20 08:38 gs_check
drwx----- 7 Ruby Ruby 4096 Aug 20 08:38 inspection
-rw----- 1 Ruby Ruby 9623 Aug 20 08:38 install
-rwx----- 1 Ruby Ruby 6204 Aug 20 08:38 prepare
drwx----- 3 Ruby Ruby 4096 Aug 20 08:38 util
[Ruby@host-25-213-103-29 Check]# ./gs_check -e expand
The following items are skipped when the cluster belong to DWS:
[CheckSShdConfig,CheckSctpService,CheckSysParams,CheckGUCValue,CheckPortRange,CheckNoChecksum,CheckDirPerm,CheckDropColumn,CheckEncoding,CheckMaxHandle,CheckTHP,CheckInodeUsage,CheckMTU,CheckBond,CheckBootItemKBoxDump,CheckSysctl,CheckCnNumberSame,CheckCrontab,CheckLRO,CheckAuditdService]
Parsing the check items config file successfully
Distribute the context file to remote hosts successfully
Start to health check for the cluster. Total Items:39 Nodes:3

Checking... [=====] 39/39
Start to analysis the check result
CheckCatchup.....OK
The item run on 3 nodes. success: 3

checkPgxcgroup.....OK
The item run on 1 nodes. success: 1

CheckDilateSysTab.....OK
The item run on 1 nodes. success: 1

CheckReturnType.....OK
The item run on 1 nodes. success: 1

CheckMaxDataNode.....WARNING
The item run on 1 nodes. warning: 1

CheckCreateView.....OK
The item run on 1 nodes. success: 1

CheckTableSpace.....OK
The item run on 3 nodes. success: 3

checkPgxcRedistb.....OK
The item run on 1 nodes. success: 1
```

**Step 3** View the inspection report by referring to [Viewing the Inspection Report](#).

----End

#### 4.3.4.3 Viewing the Inspection Report

##### Prerequisites

- Check whether OBS has been deployed.
- The inspection has been performed.

##### Procedure

**Step 1** After the inspection is complete, the file path in the last line of the command output is the check result. Send the file path out of the sandbox.

1. Exit the sandbox.

**exit**

2. Obtain the file from the sandbox. Inspection report **/tmp/check/inspection/output/CheckReport\_inspect\_202006174523992381.tar.gz** is used as an example.

```
cp /var/chroot/tmp/check/inspection/output/
CheckReport_inspect_202006174523992381.tar.gz /var/chroot/tools/
```

**Step 2** Obtain the OBS domain name, as shown in the red box in the following figure.

```
cat $GAUSSHOME/etc/region_map
```

```
[Ruby@host-172-20-0-21 etc]# pwd
/var/chroot/DWS/manager/app/etc
[Ruby@host-172-20-0-21 etc]# cat region_map
[
 {
 "defaultRegion": "obs.arm-type-1.out.hcsb.com"
 },
 {
 "arm-type-1": "obs.arm-type-1.out.hcsb.com"
 }
][Ruby@host-172-20-0-21 etc]#
```

**Step 3** Obtain the AK/SK. For details, see [Obtaining the Tenant AK/SK](#).

#### **Step 4** Obtain the AK/SK commands.

Open the key file obtained in **Step 3**, as shown in the following figure. Combine the AK/SK command in the format of *AccessKeyId SecretAccessKey FileName 1 OBSDomainName 443 upload BucketName*

User Name	Access Key Id	Secret Access Key
██████████	***	***

## **Step 5** Upload the package to the OBS.

```
cd /var/chroot/tools
```

**java -jar udstool.jar**

Enter the AK/SK command. If the command output contains **all upload complete.**, the upload is successful, as shown in the following figure.

```
Rubyhost:172-20-0-21 tools]$ ll
total 3212
-rw---- 1 Ruby Ruby 101250 Jun 17 10:24 CheckReport_inspect_2020061728564130000.tar.gz
-rw---- 1 Ruby Ruby 99685 Jun 17 10:24 CheckReport_inspect_202006174523992381.tar.gz
-rwx-- 1 Ruby Ruby 39868 Jun 17 10:24 CheckReport_inspect_202006174523992381.tar.gz
[Ruby@host:172-20-0-21 tools]$ java -jar udstool.jar
AX00000172C500B189E044AC4F89A95C[0]
AX00000172C500B189E044AC4F89A95C[0] CheckReport_inspect_202006174523992381.tar.gz 1 obs.arm.type=1.out.hscb.com:455 upload test.hcs
AX00000172C500B189E044AC4F89A95C[0] CheckReport_inspect_202006174523992381.tar.gz 1 obs.arm.type=1.out.hscb.com:455 upload test.hcs
2020-06-18 01:28:13 967 com.obs.services.ObsClient$init182[0] [OS SDK Version:3.0.3][Endpoint=https://obs-arm-type-1.out.hscb.com:455/][Access Mode=Path]
2020-06-18 01:28:13 860 com.obs.services.internal.RestStorageService$performRequest[436][OkHttp cost 129 ms to apply http request
2020-06-18 01:28:13 860 com.obs.services.internal.RestStorageService$performRequest[530][Storage||]HTTP+XML[performRequest||][2020-06-18 01:28:13][2020-06-18 01:28:13][||responseCode: 200][req
test-id: 00000172C500B189E044AC4F89A95C[0]
2020-06-18 01:28:13 870 com.obs.services.ObsClient$doActionWithResult[2247][Storage||]HTTP+XML[initiateMultiPartUpload||][2020-06-18 01:28:13][2020-06-18 01:28:13][||]
2020-06-18 01:28:13 871 com.obs.services.ObsClient$doActionWithResult[2250][Storage||]HTTP+XML[instantiateMultiPartUpload||][2020-06-18 01:28:13][2020-06-18 01:28:13][||]
2020-06-18 01:28:13 871 com.obs.services.ObsClient$doActionWithResult[2250][ObsClient[instantiateMultiPartUpload] cost 173 ms
bucketName:test.hcs
ObjectKey:CheckReport_inspect_202006174523992381.tar.gz
Put UploadId:00000172C506A89E044AC4F89A95C[0]
fileLength = 99685, partNum = 1
Part 1 upload complete.
all upload completed.
[Ruby@host:172-20-0-21 tools]$./udstool -v
2020-06-18 01:28:13 975 com.obs.services.internal.RestStorageService$performRequest[436][OkHttp cost 10 ms to apply http request
2020-06-18 01:28:13 976 com.obs.services.internal.RestStorageService$performRequest[530][Storage||]HTTP+XML[performRequest||][2020-06-18 01:28:13][2020-06-18 01:28:13][||responseCode: 200][req
test-id: 00000172C500B189E044AC4F89A95C[0]
2020-06-18 01:28:13 988 com.obs.services.ObsClient$doActionWithResult[2247][Storage||]HTTP+XML[uploadPart||][2020-06-18 01:28:13][2020-06-18 01:28:13][||]
2020-06-18 01:28:13 990 com.obs.services.ObsClient$doActionWithResult[2250][ObsClient[incompleteMultiPartUpload] cost 57 ms
ObjectKey:CheckReport_inspect_202006174523992381.tar.gz, Etag: "4f461b63b91cd37d34f16967c28848d1"
[Ruby@host:172-20-0-21 tools]$
```

**Step 6** Delete /var/chroot/tools/CheckReport\_inspect\_202006174523992381.tar.gz.

```
rm -rf /var/chroot/tools/CheckReport_inspect_202006174523992381.tar.gz
```

**Step 7** Go to the OBS page and click **Download** in the **Operation** column to download the file.



If the download fails, clear the certificate in the browser or use another browser.

----End

### **4.3.5 Automated Acceptance**

### 4.3.5.1 Creating an Acceptance Task

#### Scenario

This section describes how to accept the GaussDB(DWS) service after deployment using the automated acceptance function of ManageOne.

#### Procedure

- Step 1** Choose **Automated Acceptance** from the main menu. In the navigation pane, choose **Acceptance Tasks**.
- Step 2** Click **Create** in the upper left corner to go to the **Create Acceptance Task** page.
- Step 3** On the **Create Health Check Task** page, configure parameters as instructed in [Table 4-11](#).

**Table 4-11** Configuration information on the Automated Acceptance page

Parameter	Description	Example
Task Name	Name of an acceptance task	yanshou01
Task Scenario	<ul style="list-style-type: none"><li>● Post-deployment acceptance</li><li>● Post-upgrade acceptance</li></ul>	Post-deployment acceptance
Customer Cloud	Select the customer cloud where a gPaaS & AI DaaS service is deployed.	HUAWEI_CLOUD_Stack
Enable Screenshot	Screenshots are not supported for DWS acceptance.	-
Select Objects	Select the target gPaaS & AI DaaS services for acceptance.	-
Select Cases	Select the acceptance cases to be executed. <b>NOTE</b> By default, all cases of cloud services are selected.	-

Parameter	Description	Example
Parameter Settings	<p>Configuration: You need to obtain the parameters required for cloud service acceptance. Parameters are classified into common parameters shared by all cloud services and private parameters dedicated to each cloud service. Parameters can be set one by one on the GUI or imported in batches.</p> <ul style="list-style-type: none"> <li>Set one by one on the GUI: Click  to view the cloud service details. Configure <b>Value</b> in the parameter list.</li> <li>Batch import: <ol style="list-style-type: none"> <li>After selecting an acceptance object, click <b>Export Template</b>. In the downloaded template, configure <b>Value</b>.</li> <li>Click <b>Import Parameter</b>. In the displayed dialog box, click , select the configured template, and click <b>Upload</b>.</li> </ol> </li> <li>Verify: verifies the correctness of the configured parameters. If the verification is successful, the parameter format is correct. If a parameter fails the verification, modify the parameter based on the error cause.</li> </ul> <p>You can create an acceptance task only after all parameters pass the verification.</p>	-

**Step 4** Click **Create Now** to create an acceptance task.

You can view the created acceptance task in the acceptance task list.

----End

### 4.3.5.2 Viewing an Acceptance Task

#### Procedure

- Step 1** Choose **Automated Acceptance** from the main menu. In the navigation pane, choose **Acceptance Tasks**.
- Step 2** View the acceptance task status based on the acceptance project name. [Table 4-12](#) describes the task details.

**Table 4-12** Acceptance task details

Parameter	Description	Example
Task Name	Name of an acceptance task	yanshou01
Status	Acceptance task status: <ul style="list-style-type: none"><li>• <b>Finished:</b> An acceptance task is complete.</li><li>• <b>Executing:</b> An acceptance task is being executed.</li><li>• <b>Not started:</b> An acceptance task is not started.</li><li>• <b>Suspended:</b> An acceptance task contains suspended test cases.</li></ul>	Finished
Start Time	Time when the acceptance task was last started	2021-05-21 10:15:45
Execution Duration	Duration for executing a task	2min52s
Progress	Progress of a log collection task The progress bar changes in real time based on the task progress.	100%
Task Scenario	Acceptance task scenario: <ul style="list-style-type: none"><li>• Post-deployment acceptance</li><li>• Post-upgrade acceptance</li></ul>	Post-deployment acceptance

Parameter	Description	Example
Failed/Total Cases	Comparison between the number of failed test cases with the total number of test cases	20/40
Created	Creator of an acceptance task	admin
Operation	Operations that can be performed on an acceptance task. The options are as follows: <ul style="list-style-type: none"><li>• <b>Retry:</b> Re-execute an acceptance task.</li><li>• <b>Export Report:</b> Export an acceptance report. Acceptance reports are in .html or .xlsx format. If Word templates are configured for all cloud services in the task, exported reports will be in .docx format.</li></ul>	Retry

----End

## Related Operations

Deleting an acceptance task:

Choose **Automated Acceptance** from the main menu. On the displayed **Acceptance Tasks** page, select the task you want to delete and click **Delete** in the upper part of the page to delete the task.

### 4.3.5.3 Viewing an Acceptance Result

#### Prerequisites

- An acceptance task has been created. For details, see [Creating an Acceptance Task](#).
- The acceptance task has been completed.

#### Procedure

**Step 1** Click the name of a finished acceptance task.

**Step 2** On the task details page, perform the operations described in [Table 4-13](#).

**Table 4-13** Operations on the task details page

Task Name	Procedure
Viewing basic information	In the <b>Basic Information</b> area, view the task name and status. You can also export the acceptance report, retry the task, or delete the task.
Acceptance result: Click the <b>Acceptance Result</b> tab.	Cloud service pass rate and case pass rate: displayed in a pie chart. You can select a cloud service to view its case pass rate.  Acceptance result of each cloud service: For cases that fail to pass the acceptance, click <b>Retry</b> to execute them again, or click <b>Case Details</b> to view the detailed acceptance process on the <b>Case Details</b> page.
Acceptance details: Click the <b>Acceptance Detail</b> tab.	<ul style="list-style-type: none"><li>● Pre-execution Cases: Click <b>Case Details</b> corresponding to a case ID to view the execution process and details.</li><li>● To-Be-Executed Cases:<ul style="list-style-type: none"><li>- Test case details: Click <b>Case Details</b> corresponding to a case ID to view the detailed acceptance process on the <b>Case Details</b> page.</li><li>- Logs: Click <b>View Log</b> corresponding to a case ID to view the case execution logs on the page.</li><li>- Skip: The health check package of the cloud service has been configured with this function. If a test case fails to pass the acceptance test, the subsequent test cases are suspended. If you need to skip this test case, click <b>Skip</b> to continue to execute the subsequent test cases.</li></ul></li><li>● Post-execution Cases: Click <b>Case Details</b> corresponding to a case ID to view the execution process and details.</li></ul>

----End

# 5 Backup and Restoration

## 5.1 Management Side

### 5.1.1 Backup and Restoration on the Management Side

#### Backup Description

Databases on the GaussDB(DWS) management side can be backed up to the SFTP server using ManageOne Maintenance Portal and then restored using the backup files of ManageOne. The involved components are listed as follows.

- MySQL database: DWS-controller, ECF-common, ECF-clustermanager, ModernBI-MySQL, and Autopilot.
- GaussDB database: DMS

**Table 5-1 GaussDB(DWS) databases on the management side**

Database Type	Component	Database Name	VM Node Name	Backup and Restoration Policy	Backup Mode	Restoration Mode
MySQL	DWS-Controller	rms	DWS-DB01 DWS-DB02	Full backup and restoration Incr em ental bac kup and rest ora tion	<ul style="list-style-type: none"> <li>Recommended : <a href="#">Unified Backup Using ManageOne</a></li> <li>Supported: <a href="#">Manu ally Backing Up the MySQL Database</a></li> </ul>	<ul style="list-style-type: none"> <li>Recommended: <a href="#">Restoring the MySQL Database Using the Unified Backup File on ManageOne</a></li> <li>Supported: <a href="#">Restoring Data Using a Manually Backed Up MySQL Database File</a></li> </ul>
	ECF-Common	event, insight, monitor	ECF-Common-DB01 ECF-Common-DB02			
	ECF-ClusterManager	ecf_cm	ECF-CM-DB01 ECF-CM-DB02			
	ModernBI-MySQL	dataartsindsight	DataArtsInsight-DB01 DataArtsInsight-DB02			
	Autopilot	autopilot	DWS-Mysql-DB01 DWS-Mysql-DB02			
	SqlEditor-MySQL	dws_sqleditor	DWS-Mysql-SQL-DB01 DWS-Mysql-SQL-DB02			
Gauss DB	DWS-DMS	dms	DWS-Gauss-DB01 DWS-Gauss-DB02		<a href="#">Unified Backup Using ManageOne</a>	<a href="#">Restoring the DMS Database Using the Unified Backup File on ManageOne</a>

## DBMHA Mode

DBMHA is software used for database HA management. It monitors a database cluster and assigns primary/standby roles to a database. It supports failover and switchover, and can be deployed in single-AZ, cross-AZ, and cross-region modes. DBMHA-Mysql and DBMHA-GaussDB are the HA software for MySQL and GaussDB, respectively.

In Huawei Cloud Stack 8.1.1 and later versions, new databases on the management side use the DBMHA mode. Check your database version before backup or restoration, or incompatibility issues may occur.

### 5.1.2 Data Backup

#### Backup Objects

[Table 5-2](#) lists the backup objects on the GaussDB(DWS) management side.

**Table 5-2** Backup objects

Backup Object	Description	Database Name	VM Node Name
S-DWS-DWSController-MySQL	DWS-Controller MySQL database on the management side	rms	DWS-DB01 DWS-DB02
S-DWS-ECFDB-MySQL	ECF-Common MySQL database on the management side	event, insight, monitor	ECF-Common-DB01 ECF-Common-DB02
S-DWS-ECF-MySQL	ECF-Clustermanager MySQL database on the management side	ecf_cm	ECF-CM-DB01 ECF-CM-DB02
S-DWS-dms-GaussDB	DMS GaussDB database on the management side	dms	DWS-Gauss-DB01 DWS-Gauss-DB02
S-DataArtsInsight-MySQL	DataArtsInsight database on the management side	dataartsinsight	DataArtsInsight-DB01 DataArtsInsight-DB02

#### Backup Preparations

Before backing up data, you can log in to each database and record information about key tables so that you can check whether the restored data meets the expectation during restoration.

**Table 5-3** Key table information

Dat aba se Typ e	Database Name	Key Table
My SQ L	rms	rds_cluster
	event	event_record
	insight	om_cluster_statistics
	monito r	cluster_info
	ecf_cm	rds_cluster
Gau ss db	dms	DMS_META_CLUSTER

**MySQL database:** Database **rms** is used as an example. For other databases, replace the IP address, database name, and table name with those of the corresponding VM node.

**Step 1** Log in to Service OM, choose **Services > Compute Resource > VMs**, and search for **DWS-DB01** to view the IP address.

**Step 2** Log in to the primary DWS-DB node as user **opsadmin** and run the **su - root** command to switch to user **root**.

- For details about the default password of user **opsadmin**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS** for **Product Name** in column A and search for **DWS-DB-01**.
- For details about the default password of user **root**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-DB-01**.

**Step 3** Connect to database **rms**. For details about the password, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS** for **Product Name** in column A, and search for **ecf**.

**su - mysql**

**mysql -P7306 -hIP\_address\_of\_the\_current\_DWS-DB\_node -uecf -pPassword**

**use rms;**

**Step 4** Query the cluster ID, cluster name, and number of records in key table **rds\_cluster** and record them locally.

```
SELECT id,name FROM rds_cluster;
```

```
mysql> select id,name from rds_cluster;
+-----+-----+
| id | name |
+-----+-----+
| 1ec9b21e-4ca1-4818-96b1-bec59aff869-f78d-40a6 |
| 2489daf4-ff16-4a11-8332-0019012018 |
| 3271edcb-c7a6-45d4-92d4-041901-Bigdata_2018 |
| 481fb9df-2c7f-4a81-86b1-bec59aff869-f78d-40a6 |
| 4a8186b1-bec59aff869-f78d-40a6 |
| b6b91c96-ba5c06764df-f22cc396f36-9fa6 |
| cee30f6d-1a3e-41d4-92d4-041901-Bigdata_2018 |
| d1d18322-0019012018 |
| d1d18322-0019012018 |
| d1d18322-0019012018 |
+-----+-----+
10 rows in set (0.00 sec)
```

----End

### GaussDB database

**Step 1** Log in to Service OM, choose **Services > Compute Resource > VMs**, and search for **DWS-Gauss-DB01** to view the IP address.

**Step 2** Log in to the primary DWS-Gauss-DB node as user **opsadmin** and run the **su - root** command to switch to user **root**.

- For details about the default password of user **opsadmin**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-Gauss-DB**.
- For details about the default password of user **root**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-Gauss-DB**.

**Step 3** Connect to the DMS database. For details about the database user password, see the "Type B (EI Enterprise Intelligence)" sheet in [Huawei Cloud Stack 8.3.1 Account List](#). Set **Product Name** in column A to **DWS**, then search for **DMS Database Node** to obtain the value.

**su - dbadmin**

**gsql -Udbadmin -W Database\_user\_password**

**Step 4** Query the cluster ID, cluster name, and number of records in key table **DMS\_META\_CLUSTER** and record them locally.

```
SELECT CLUSTER_ID,CLUSTER_NAME FROM DMS_META_CLUSTER;
```

```
DMS=# select CLUSTER_ID,CLUSTER_NAME from DMS_META_CLUSTER;
+-----+-----+
| CLUSTER_ID | CLUSTER_NAME |
+-----+-----+
| 2489daf4-ff16-4a11-8332-0019012018 |
| 3271edcb-c7a6-45d4-92d4-041901-Bigdata_2018 |
| 481fb9df-2c7f-4a81-86b1-bec59aff869-f78d-40a6 |
| 59aff869-f78d-40a6-92d4-041901-Bigdata_2018 |
+-----+-----+
(4 rows)
```

----End

## Unified Backup Using ManageOne

Data on the GaussDB(DWS) management side can be backed up to a third-party SFTP server using ManageOne Maintenance Portal in a unified manner, including full backup and incremental backup. Select a backup mode based on the backup policy when creating a backup task. For details, see "Maintenance Guide > O&M Guide > Backup and Restoration > Backing Up Data" in [Huawei Cloud Stack 8.3.1 Product Documentation](#).

### NOTICE

- Log in to ManageOne Maintenance Portal, choose **Routine O&M > Backup Management > Backup Configuration**, click **Back Up Selected**, and set **System Name** to **CloudDB**. You can select four groups of backup objects listed in [Table 5-2](#).

System Name	Subsystem Name	Cluster	Area	Transmission Protocol	Backup Type
CloudDB	ConsoleFramework-GA...			SFTP	Full,Incremental
CloudDB	IAM-GlobalDB			SFTP	Full,Incremental
CloudDB	S-DWS-ECF-MySQL			SFTP	Full,Incremental
CloudDB	S-DWS-ECFDB-MySQL			SFTP	Full,Incremental
CloudDB	S-DWS-dms-GaussDB			SFTP	Full,Incremental

- If the backup fails, rectify the fault by following the instructions provided in "Failed to Back Up CloudDB Through ManageOne" in [Huawei Cloud Stack 8.3.1 Product Documentation](#).

## Manually Backing Up the GaussDB Database of DMS (DBMHA Mode)

### Step 1 Determine the primary GaussDB node.

- Log in to the DWS-Gauss-DB01 node.
- Check whether the database is normal and whether the local node is the primary node. In the command output shown in the following figure, check whether **LOCAL\_ROLE** is **Primary**.

**su - dbadmin**

**querydb**

- If yes, the current node is the primary node. Go to [Step 2](#).
- If not, the current node is not the primary node. Log in to the **DWS-Gauss-DB02** node.

```
[root@DWS-Gauss-DB01 ~]# su - dbadmin
Last login: Fri Mar 18 17:46:59 CST 2022
[dbadmin@DWS-Gauss-DB01 ~]$ querydb
Ha state:
 LOCAL_ROLE : Primary
 STATIC_CONNECTIONS : 1
 DB_STATE : Normal
 DETAIL_INFORMATION : Normal

Senders info:
 SENDER_PID : 1553856
 LOCAL_ROLE : Primary
 PEER_ROLE : Standby
 PEER_STATE : Normal
 STATE : streaming
 SENDER_SENT_LOCATION : 55/BF4341B8
 SENDER_WRITE_LOCATION : 55/BF4341B8
 SENDER_FLUSH_LOCATION : 55/BF4341B8
 SENDER_REPLAY_LOCATION: 55/BF4341B8
 RECEIVER_RECEIVED_LOCATION: 55/BF4341B8
 RECEIVER_WRITE_LOCATION: 55/BF4341B8
 RECEIVER_FLUSH_LOCATION: 55/BF4341B8
 RECEIVER_REPLAY_LOCATION: 55/BF4326C8
 SYNC_PERCENT : 99%
 SYNC_STATE : async
 SYNC_PRIORITY : 0
 CHANNEL : 172.75.7.4:15210 -->172.75.7.5:46247

Receiver info:
 No information
```

#### NOTE

- **LOCAL\_ROLE** indicates the role of the node in primary/standby mode. If the value is **Primary**, the node is the primary node. If the value is **Standby**, the node is the standby node.
- **DB\_STATE** indicates the database status. If the value is **Normal**, the database is normal. Otherwise, the database is abnormal.

**Step 2** Perform manual backup. Log in to the primary node, switch to user **dbadmin**, and run the following command to perform a full backup:

**su - dbadmin**

```
python /opt/gaussdb/dbmha/backup_restore/CloudDB_backup.py full
echo $?
```

If **0** is returned after you run the **echo \$?** command, the backup is successful.

```
[dbadmin@DWS-Gauss-DB01 ~]$ python /opt/gaussdb/dbmha/backup_restore/CloudDB_backup.py full
[dbadmin@DWS-Gauss-DB01 ~]$ echo $?
0
```

#### NOTE

**full** indicates a full backup, and **incr** indicates an incremental backup. Before performing an incremental backup, ensure that a full backup has been performed.

**Step 3** Go to the directory where the backup file is stored and view the data package that is manually backed up.

**cd /opt/backup/DB/**

**ll -t**

**----End**

## Manually Backing Up the MySQL Database

You are advised to use ManageOne to back up the MySQL database. If you need to manually back up the MySQL database, perform the following steps. The

following describes how to back up the DWS-Controller database. The methods for backing up the ECF-Common and ECF-Clustermanager databases are similar.

- Step 1** Log in to ManageOne Maintenance Portal as the system administrator. In the **Common Links** navigation tree, click **Service OM** and select a region to go to the **Service OM** page.
- Step 2** Choose **Services > Resource > Compute Resource** from the main menu.
- Step 3** Click the VM tab, enter a keyword in the search box to search for the VM name, for example, **DWS-DB**, and record the IP address of the VM.
- Step 4** Log in to the DWS-DB01 node as user **opsadmin** and run the **su - root** command to switch to user **root**.
- For details about the default password of user **opsadmin**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS** for **Product Name** in column A and search for **DWS-DB-01**.
  - For details about the default password of user **root**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-DB-01**.
- Step 5** Back up database **rms**.

For details about the database IP address and port number, see [Querying MySQL Database Information](#). For details about the password, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS** for **Product Name** in column A, then search for the password.

```
su - mysql
/data/mysql/base/bin/mysqldump --defaults-file=/data/mysql/etc/my.cnf -
uroot -P7306 -hlocalhost -pRootPassword --flush-logs --master-data=2 --
single-transaction --set-gtid-purged=OFF --databases rms > /tmp/
dws_rms_backup.sql
```

----End

## 5.1.3 Data Restoration

### Prerequisites

You have obtained the IP addresses of the VM nodes where all backup object databases in [Table 5-4](#) are located. You can log in to Service OM, choose **Services > Compute Resource > VMs**, and search for the VM node names to view the IP addresses.

## Restoring the MySQL Database Using the Unified Backup File on ManageOne

### NOTE

**Table 5-4** lists the data restoration objects on the GaussDB(DWS) management side, including the MySQL and GaussDB databases.

- The following uses S-DWS-DWSController-MySQL as an example to describe how to restore the MySQL database. The methods for restoring other backup objects are similar.
- S-DWS-dms-GaussDB is a GaussDB database. For details about how to restore it, see [Restoring the DMS Database Using the Unified Backup File on ManageOne](#).

**Table 5-4** Backup objects

Backup Objects	Description	Database Name	VM Node Name
S-DWS-DWSController-MySQL	DWS-Controller MySQL database on the management side	rms	DWS-DB01 DWS-DB02
S-DWS-ECFDB-MySQL	ECF-Common MySQL database on the management side	event, insight, monitor	ECF-Common-DB01 ECF-Common-DB02
S-DWS-ECF-MySQL	ECF-Clustermanager MySQL database on the management side	ecf_cm	ECF-CM-DB01 ECF-CM-DB02
S-DWS-dms-GaussDB	DMS GaussDB database on the management side	dms	DWS-Gauss-DB01 DWS-Gauss-DB02
S-DataArtsInsight-MySQL	DataArtsInsight database on the management side	dataartsinsight	DataArtsInsight-DB01 DataArtsInsight-DB02

**Step 1** Ensure that the database backup tasks of all backup objects in **Table 5-4** have been configured using the unified backup function of ManageOne and the tasks are successfully executed.

The following describes how to restore the S-DWS-DWSController-MySQL backup object.

**Step 2** Obtain the backup file and upload it to the DWS-DB node.

### NOTE

You can use WinSCP to log in to the SFTP backup server based on the backup path, username, and password configured in the backup task, download the backup file to the local PC, and manually upload it to the DWS-DB node. To facilitate subsequent operations, upload the backup file to both the primary and standby DWS-DB nodes.

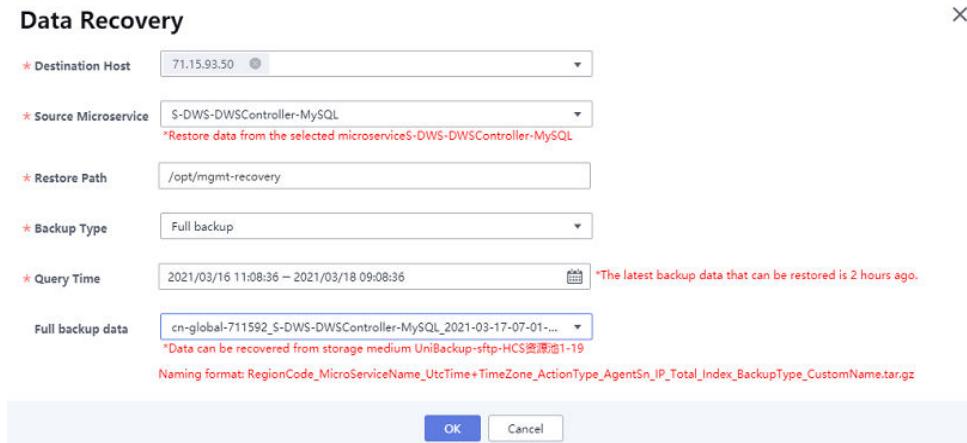
You can also perform the following steps to copy the backup file to the DWS-DB node on CloudScope.

1. Open a browser, enter <https://CloudScopeLite domain name> in the address box, and press **Enter** to access CloudScope.  
Log in to CloudScope using the obtained account that has the permission to access CloudBCM. For details about the username and password, contact the system administrator.
2. On the top navigation bar, choose **Services > Change Management > CloudBCM**.
3. In the navigation tree on the left, choose **Backup Mgmt > Backup Center**.  
On the **Cloud Service View** page, choose **Cloud > CloudDB > EI-DB > S-DWS-DWSController-MySQL**.

4. On the **Backup and Restore** tab, verify that the access status of GaussDB(DWS) is **Accessed**. Select a backup task that has been successfully executed and click **Data Recovery**.
  - In the **Destination Host** drop-down list, select the IP address of the associated DWS-DB node.
  - Set **Restore Path** to the backup file restoration path. Retain the default value, for example, **/opt/mgmt-recovery**.
  - Query the latest backup data based on the backup type and backup time. Select **Full backup**, and then select the latest backup file from the **Full backup data** drop-down list.

### NOTE

If the backup type of the data to be restored is incremental backup, select **Incr backup** for **Backup Type** and select the backup files generated by the corresponding backup tasks for **Full backup data** and **Incr backup data**.



- Click **OK**. After the task is successfully executed, the system automatically copies the backup file to the DWS-DB node.

**Step 3** Log in to the primary DWS-DB node as user **opsadmin** and run the **su - root** command to switch to user **root**.

- For details about the default password of user **opsadmin**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS** for **Product Name** in column A and search for **DWS-DB-01**.
- For details about the default password of user **root**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-DB-01**.

#### DBMHA mode

**Step 4** Run the following command to restore the database file:

- Full restoration:

```
python /data/dbmha/backup_restore/CloudDB_restore.py -p3306 -f/opt/mgmt-recovery/XXX.tar.gz
```

- f**: a mandatory parameter indicating the compressed database backup file.
- p**: indicates the port of the temporary database instance. Use a port that is not occupied. In the following commands, **3306** is used as an example.

- Incremental restoration:

Use the **-i** parameter to specify the incremental backup data for restoration.

For example, **/opt/mgmt-recovery/YYY.tar.gz** is the incremental backup data file (based on the full backup data in **/opt/mgmt-recovery/XXX.tar.gz**).

```
python /data/dbmha/backup_restore/CloudDB_restore.py -p3306 -f/opt/mgmt-recovery/XXX.tar.gz -i /opt/mgmt-recovery/YYY.tar.gz
```

The following error information may be displayed during the restoration. You can ignore it, because a database has been created using the temporary port.

```
Begin restore,please wait!
extract full backup started ...
extract full backup tar to:
/data/mysql/DWS-DB02_8.28.1.25_20220301154602_3306
write my.cnf to:
/data/mysql/DWS-DB02_8.28.1.25_20220301154602_3306/my.cnf
starting mysqld, cmd: su - mysql -c 'nohup /data/mysql/base/bin/mysqld_safe --defaults-file=/data/mysql/
```

```
DWS-DB02_8.28.1.25_20220301154602_3306/my.cnf >/dev/null 2>&1 &
checking mysql by select ...
pid use port[3306] not found
Warning: loop 0, mysql socket not found in port 3306
pid use port[3306] not found
Warning: loop 1, mysql socket not found in port 3306
pid use port[3306] not found
Warning: loop 2, mysql socket not found in port 3306
pid use port[3306] not found
Warning: loop 3, mysql socket not found in port 3306
pid use port[3306] not found
Warning: loop 4, mysql socket not found in port 3306
Restore database is failure, select check failed, please check it.
```

Record the value of **--defaults-file** in the command output and run the following command:

```
setsid /data/mysql/base/bin/mysqld_safe --defaults-file=/data/mysql/
host-10-28-10.28.1.1_20220308195346_3306/my.cnf --plugin-dir=/data/mysql/
base/lib/plugin --user=mysql
```

The command execution takes a long time. Please wait.

After the command is executed, run the following command to check whether you can log in to the temporary database instance:

```
mysql -P3306 -hDWS-DB_IP_address -uecf -pecfUserPassword
```

To obtain the default password, search for **ecf** on the "Type A (Background)" sheet in the [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 5** After the temporary database is created, run the following commands to export the SQL file:

```
su - mysql
```

```
/data/mysql/base/bin/mysqldump --defaults-file=/data/mysql/etc/my.cnf -
uroot -P7306 -hlocalhost -pRootPassword --flush-logs --master-data=2 --
single-transaction --set-gtid-purged=OFF --databases rms > /tmp/
dws_rms_811.sql
```

To obtain the default password, search for **root** on the "Type A (Background)" sheet in the [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 6** Run the **su - root** command to switch to user **root** and run the following commands to restore the database file:

```
mysql -P7306 -uroot -pRootPassword -S /data/mysql/tmp/mysql.sock
source /tmp/dws_rms_811.sql;
```

To obtain the default password, search for **root** on the "Type A (Background)" sheet in the [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 7** After the data is restored, run the following command to stop the temporary database: **mysql\_port** indicates the port number of the temporary database instance.

```
ps -ef | grep mysql_port | grep -v grep | awk '{ print "kill -9 " $2 }' | sh
```

### Non-DBMHA mode

**Step 8** Run the **ip -a** command to check whether the DWS-DB-01 node has a floating IP address. If yes, the node is the primary node. In this case, go to Step 9. If no, run the following command to manually trigger an primary/standby database switchover:

```
su - mysql
```

```
python /usr/local/bin/MHA_SwitchOverManual.py
```

After the primary/standby switchover is successful, connect to the database of the standby DWS-DB node. The current node to which you have logged in is the standby node. Disable the primary/standby synchronization to reserve the database before the restoration for rollback.

```
mysql --defaults-file=/data/mysql/etc/my.cnf -uroot -hlocalhost -P7306 -pRootPassword
```

```
stop slave;
```

To obtain the default password, search for **root** on the "Type A (Background)" sheet in the [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 9** Log in to the primary DWS-DB node as user **opsadmin**, run the **su - root** command to switch to user **root**, and run the following commands to restore the database file.

- Full restoration:

```
python /usr/local/CloudAgent/plugins/CloudBasicComponentMgmt/ \
clouddb_backup/CloudDB_restore_mysql.py -p 3306 -f /opt/mgmt-recovery/ \
XXX.tar.gz
```

- **-f** (mandatory): specifies the full path of the full backup package.
- **-p**: specifies the port number of the temporary database instance. Use an idle port, for example, **3306**.

- Incremental restoration: Use the **-i** parameter to specify incremental backup data for restoration.

For example, */opt/mgmt-recovery/YYY.tar.gz* is the incremental backup data file (based on the full backup data in */opt/mgmt-recovery/XXX.tar.gz*).

```
python /usr/local/CloudAgent/plugins/CloudBasicComponentMgmt/ \
clouddb_backup/CloudDB_restore_mysql.py -p 3306 -f /opt/mgmt-recovery/ \
XXX.tar.gz -i /opt/mgmt-recovery/YYY.tar.gz
```

- **-f** (mandatory): specifies the full path of the full backup package.
- **-i** (optional): specifies the full path of the incremental backup package. Use commas (,) to separate multiple incremental packages.
- **-p**: specifies the port number of the temporary database instance. Use an idle port, for example, **3306**.

#### NOTE

If there are multiple incremental packages, use commas (,) to separate them. For example:

```
python /usr/local/CloudAgent/plugins/CloudBasicComponentMgmt/ \
clouddb_backup/CloudDB_restore_mysql.py -p 3306 -f /opt/mgmt-recovery/ \
XXX.tar.gz -i /opt/mgmt-recovery/YYY.tar.gz,/opt/mgmt-recovery/ZZZ.tar.gz
```

**Step 10** Connect to database **rms** after data restoration and check whether the restored data meets the expectation.

1. Connect to database **rms**. For details about the password, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS** for **Product Name** in column A, and search for **ecf**.

```
su - mysql
```

```
mysql -P3306 -hP_address_of_the_current_DWS-DB_node -uecf -pPassword
use rms;
```

2. Check whether the cluster ID, cluster name, and number of records in key table **rds\_cluster** are the same as those queried in [Backup Preparations](#). If they are the same, the restored data meets the expectation.

```
SELECT id,name FROM rds_cluster;
```

mysql> select id,name from rds_cluster;	
id	name
1ec9b21e-4ca	ta_2018
2489daf4-ff1	18
3271edcb-c7a	ta_2018
481fb9df-2c7	18
4a8186b1-be0	
59aff869-f78	
b6b91c96-ba5	
c06764df-f22	
cc396f36-9fa	
cee30f6d-1a3	

10 rows in set (0.00 sec)

- Step 11** After the temporary database is created, run the following commands to export the SQL file:

```
su - mysql
```

```
/data/mysql/base/bin/mysqldump --defaults-file=/data/mysql/etc/my.cnf -
uroot -hlocalhost -P3306 -ppassword_of_user_root --hex-blob --opt --routines --
triggers --single-transaction --set-gtid-purged=OFF --master-data=2 --
databases rms > /backup/mysqldump_0312.sql
```

To obtain the default password, search for **root** on the "Type A (Background)" sheet in the [Huawei Cloud Stack 8.3.1 Account List](#).

- Step 12** Restore data on the primary DWS-DB node.

```
mysql --defaults-file=/data/mysql/etc/my.cnf -uroot -hlocalhost -P7306 -
pRootPassword
```

```
source /backup/mysqldump_0312.sql;
```

Wait until the data is successfully restored.

To obtain the default password, search for **root** on the "Type A (Background)" sheet in the [Huawei Cloud Stack 8.3.1 Account List](#).

- Step 13** Log in to the standby DWS-DB node as user **opsadmin** and run the **su - root** command to switch to user **root**. Restart the primary/standby synchronization.

```
mysql --defaults-file=/data/mysql/etc/my.cnf -uroot -hlocalhost -P7306 -
pRootPassword
```

```
start slave;
```

To obtain the default password, search for **root** on the "Type A (Background)" sheet in the [Huawei Cloud Stack 8.3.1 Account List](#).

- Step 14** Connect to database **rms** on the primary and standby DWS-DB nodes. If the connection is successful, the data is restored successfully. For details about the password, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS for Product Name** in column A, and search for **ecf**.

```
mysql -P7306 -hIP_address_of_the_current_DWS-DB_node -uecf -pPassword
use rms;
```

```
mysql: [Warning] Using a password on the command line interface can be insecure.
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 123127
Server version: 5.7.22-log Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> use rms;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> █
```

- Step 15** Stop the process of port 3306.

```
ps -ef|grep 3306
```

```
kill -9 ProcessID
```

- Step 16** Repeat [Step 2](#) to [Step 14](#) to restore the S-DWS-ECF-MySQL and S-DWS-ECFDB-MySQL databases.

#### NOTE

In the **mysql** commands in the preceding steps, change the node IP address to the actual IP address of the VM node and change the database name to the actual database name. For details, see [Table 5-4](#).

----End

## Restoring the DMS Database Using the Unified Backup File on ManageOne

- Step 1** Determine the primary DWS-Gauss-DB node.

1. Log in to any DWS-Gauss-DB node as user **opsadmin** and run the **su - root** command to switch to user **root**. For details about how to obtain the IP address of the DWS-Gauss-DB node, see [Prerequisites](#).
  - For details about the default password of user **opsadmin**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-Gauss-DB**.
  - For details about the default password of user **root**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-Gauss-DB**.

2. Run the following command to check whether the database status is normal and whether the local node is the primary node. (In Huawei Cloud Stack 8.1.1 and later versions, the DBMHA mode is used at newly deployed sites. Run the query command suitable for your database mode.)
3. If the following command is executed successfully, the GaussDB database is in DBMHA mode. In the command output shown in the following figure, check whether **LOCAL\_ROLE** is **Primary**.

```
su - dbadmin
```

```
querydb
```

```
[dbadmin@DWS-Gauss-DB01 ~]$ querydb
Ha state:
 LOCAL_ROLE : Primary
 STATIC_CONNECTIONS : 1
 DB_STATE : Normal
 DETAIL_INFORMATION : Normal

Senders info:
 SENDER_PID : 29680
 LOCAL_ROLE : Primary
 PEER_ROLE : Standby
 PEER_STATE : Normal
 STATE : streaming
 SENDER_SENT_LOCATION : 1B/D61CAE08
 SENDER_WRITE_LOCATION : 1B/D61CAE08
 SENDER_FLUSH_LOCATION : 1B/D61CAE08
 SENDER_REPLY_LOCATION : 1B/D61CAE08
 RECEIVER_RECEIVED_LOCATION : 1B/D61CAE08
 RECEIVER_WRITE_LOCATION : 1B/D61CAE08
 RECEIVER_FLUSH_LOCATION : 1B/D61CAE08
 RECEIVER_REPLY_LOCATION : 1B/D61CAD40
 SYNC_PERCENT : 99%
 SYNC_STATE : async
 SYNC_PRIORITY : 0
 CHANNEL : 8.28.1.27:15210 -->8.28.1.28:50279

Receiver info:
 No information
```

- If yes, the current node is the primary node. Go to [Step 2](#).
- If not, the current node is not the primary node. Log in to the DWS-Gauss-DB02 node by referring to [Step 1](#).

#### NOTE

- **LOCAL\_ROLE** indicates the role of the node in primary/standby mode. If the value is **Primary**, the node is the primary node. If the value is **Standby**, the node is the standby node.
- **DB\_STATE** indicates the database status. If the value is **Normal**, the database is normal. Otherwise, the database is abnormal.

4. If the following command is executed successfully, the GaussDB database is not in DBMHA mode. In the command output, check whether **LOCAL\_ROLE** is **Primary**.

```
service gaussdb query
```

- If yes, the current node is the primary node. Go to [Step 2](#).
- If not, the current node is not the primary node. Log in to the DWS-Gauss-DB02 node by referring to [Step 1](#).

**Step 2** Obtain the DMS database backup file and upload it to the primary DWS-Gauss-DB node. For details, see [Step 2](#).

 NOTE

Note that the selected backup object is S-DWS-dms-GaussDB.

**Step 3** Stop the standby database service.

1. Log in to the standby DWS-Gauss-DB node as user **opsadmin** and run the **su - root** command to switch to user **root**.
  - For details about the default password of user **opsadmin**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-Gauss-DB**.
  - For details about the default password of user **root**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-Gauss-DB**.
2. If the current database instance is not in DBMHA mode, run the following command to stop the HA service for the standby database:  
**source /etc/profile**  
**haStopAll -a**
3. If the current database instance is in DBMHA mode, run the following command to stop the HA service for the standby database:  
**source /etc/profile**  
**escape\_ha**
4. Repeat [Step 3.1~Step 3.2](#) or [Step 3.3](#) to log in to the primary DWS-Gauss-DB node and stop the primary database.

**Step 4** Restore a database.

1. If the current database instance is not in DBMHA mode, run the following command on the primary DWS-Gauss-DB node to restore the data to the new instance:
  - Full restoration:  
**python /usr/local/CloudAgent/plugins/CloudBasicComponentMgmt/clouddb\_backup/CloudDB\_restore\_gaussdb.py -f /opt/mgmt-recovery/XXX.tar.gz**
    - If "Restore success." is displayed, the restoration is successful.  
  
root@DBGaussCore02:~# python /usr/local/CloudAgent/plugins/CloudBasicComponentMgmt/clouddb\_backup/CloudDB\_restore\_gaussdb.py -f /opt/mgmt-recovery/DB/bj-region-1\_DBS-Core02\_2023-03-14\_17\_48\_51+0800\_imt\_058138a-98d0-43ee-8721-af8b6091a32e-9.36.22.144\_1\_1\_1011\_9.tar.gz  
Restore success.  
[root@DBGaussCore02 ~]#
    - If the restoration fails, contact technical support.
  - Incremental restoration: Use the **-i** parameter to specify incremental backup data for restoration.  
For example, */opt/mgmt-recovery/YYY.tar.gz* is the incremental backup data file (based on the full backup data in */opt/mgmt-recovery/XXX.tar.gz*).  
**python /usr/local/CloudAgent/plugins/CloudBasicComponentMgmt/clouddb\_backup/CloudDB\_restore\_gaussdb.py -f /opt/mgmt-recovery/XXX.tar.gz -i /opt/mgmt-recovery/YYY.tar.gz**

### NOTE

If there are multiple incremental packages, use commas (,) to separate them. For example:

```
python /usr/local/CloudAgent/plugins/CloudBasicComponentMgmt/
clouddb_backup/CloudDB_restore_gaussdb.py -f /opt/mgmt-recovery/
XXX.tar.gz -i /opt/mgmt-recovery/YYY.tar.gz,/opt/mgmt-recovery/ZZZ.tar.gz
```

- If "Restore success." is displayed, the restoration is successful.

```
[root@0B5GaussCore02 DB]# python /usr/local/CloudAgent/plugins/CloudBasicComponentMgmt/clouddb_backup/CloudDB_restore_gaussdb.py -f /opt/backup/0B/bj-region-1_OBS-Core02_2021-03-14-17-48-51+0800_fat_d5elf3ba-986d-43ee-a721-af6b609fa32e_9_30_22_144_1_1_full_9.tar.gz
Restore success.
[root@0B5GaussCore02 DB]#
```

- If the restoration fails, contact technical support.

2. If the current database instance is in DBMHA mode, run the following command on the primary DWS-Gauss-DB node to restore the data to the new instance:

```
python /opt/gaussdb/dbmha/backup_restore/CloudDB_restore.py -f /opt/
backup/DB/gaussdb_900_xxxx_full_xxxxxxx.tar.gz
```

If the message "Restore success." is displayed, the temporary database instance is restored successfully.

**Step 5** Use gsql to connect to the temporary instance on the primary DWS-Gauss-DB node and check whether the restoration meets the expectation.

1. Connect to the temporary instance.

**su - dbadmin**

**gsql -h 127.0.0.1 -p <port> -U dbadmin -W Database\_user\_password**

*port* indicates the port number of the temporary instance. The default value is **7777**. For details about the database user password, see the "Type B (EI Enterprise Intelligence)" sheet in [Huawei Cloud Stack 8.3.1 Account List](#). Set **Product Name** in column A to **DWS**, then search for **DMS Database Node** to obtain the value.

2. Check whether the restored DMS metadata contains the metadata of all existing clusters.

DMS source data table:

DMS\_META\_CLUSTER,DMS\_META\_HOST,DMS\_META\_INSTANCE,DMS\_META\_COLLECTION\_CONFIG,DMS\_META\_HOST\_NETIF,DMS\_META\_HOST\_DISK,DMS\_META\_HOST\_DISKFS,DMS\_META\_AGEING

View the mapping between the cluster name and ID:

```
SELECT * FROM DMS_META_CLUSTER;
```

Check whether the metadata contains all clusters:

```
SELECT DISTINCT CLUSTER_ID FROM xxx;
```

3. If requirements are not met, select the backup file again by referring to [Step 4.1](#).

**Step 6** Check the gauss process.

```
ps -ef | grep gauss | grep -v grep
```

```
[root@0B5GaussCore02 DB]# ps -ef | grep gauss
dbadmin 116186 1 0 20:18 ? 00:00:00 /opt/gaussdb/dbprogram/bin/gaussdb -D /opt/gaussdb/restoregaussdb_7777
dbadmin 116316 116186 0 20:18 ? 00:00:00 gaussdb: logger process
dbadmin 116508 116186 0 20:18 ? 00:00:00 gaussdb: checkpointer process
dbadmin 116599 116186 0 20:18 ? 00:00:00 gaussdb: writer process
dbadmin 116516 116186 0 20:18 ? 00:00:00 gaussdb: stats collector process
dbadmin 116925 116186 0 20:18 ? 00:00:00 gaussdb: wal writer process
dbadmin 116926 116186 0 20:18 ? 00:00:00 gaussdb: autovacuum launcher process
dbadmin 116927 116186 0 20:18 ? 00:00:00 gaussdb: archiver process last was 00000002.history
dbadmin 117114 117110 0 20:18 ? 00:00:00 gaussdb: auditor process
root 117485 0 0269 0 20:19 pts/0 00:00:00 /bin/bash -c for i in `seq 3` ; do /opt/gaussdb/ha/tools/dbMonitorAlarm.sh & sleep 20 ; done
root 117485 0 0269 0 20:19 pts/0 00:00:00 grep --color=auto gauss
```

**Step 7** Stop the gauss process.

```
su - dbadmin
```

```
gs_ctl stop -D {gauss_dir}
```

*gauss\_dir* indicates the gauss service directory obtained in **Step 6**: /opt/gaussdb/  
restoregaussdb\_7777

```
[dbadmin@DBSGaussCore02 ~]$ gs_ctl stop -D /opt/gaussdb/restoregaussdb_7777
waiting for server to shut down..... done
server stopped
```

**Step 8** Back up the data of the original instance.

```
cd /opt/gaussdb/data
```

```
mv db ..\db_bak
```

**Step 9** Switch to user **root** and move the data of the new database instance restored in  
**Step 4.1** to the original database instance.

```
exit
```

```
cd /opt/gaussdb
```

```
mv restoregaussdb_7777 data/db
```

```
chown -R dbadmin: /opt/gaussdb/data/db/*
```

**Step 10** Edit the **postgresql.conf** configuration file.

```
vim /opt/gaussdb/data/db/postgresql.conf
```

1. Comment out the following configuration items at the end of the configuration file:

- listen\_addresses
- port
- archive\_command
- log\_directory

```
#listen_addresses = 'localhost,9.30.22.144'
#port = 7777
#archive_command = 'cp -P --remove-destination %p /opt/gaussdb/restoregaussdb_7777/archlog/%f'
#log_directory = '/opt/gaussdb/restoregaussdb_7777/pg_log'
```

2. Uncomment the configuration items except the items listed in **Step 10.1** in the configuration file:

- listen\_addresses

```
listen_addresses = '9.30.22.142,localhost'
#
```

- port

```
port = 8635
```

- archive\_command

```
(change requires restart)
archive_command = 'cp -P --remove-destination %p \"$GAUSSHOME\"/archive/%f'
```

- log\_directory

```
log_directory = '/var/log/postgresql'
```

- replconninfo1

```
The meaning of nodedomain is the node in local domain or remote domain, 0 local,1 remote
#nodedomain1=0
replconninfo1 = 'localhost=9.30.22.144 localport=15210 remotehost=9.30.22.143 remoteport=15210'
#nodedomain2=0
#replconninfo2 = ''
#nodedomain3=0
#replconninfo3 = ''
#nodedomain4=0
#replconninfo4 = ''
#nodedomain5=0
#replconninfo5 = ''
#nodedomain6=0
#replconninfo6 = ''
```

3. Save the modification and exit.

```
:wq!
```

**Step 11** Start the primary database service.

```
su - dbadmin
```

```
gs_ctl start -M primary
```

**Step 12** Test the database connection. For details about the database user password, see the "Type B (EI Enterprise Intelligence)" sheet in [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS** for **Product Name** in column A, then search for **DMS Database Node** to obtain the value.

```
gsql -Udbadmin -W Database_user_password
```

```
[dbadmin@DBSGaussCore02 ~]$ gsql -Udbadmin
gsql (9.2.4)
SSL connection (cipher: AES256-SHA, bits: 256)
Type "help" for help.

CORE=# \q
[dbadmin@DBSGaussCore02 ~]$
```

Run the **\q** command to exit the database CLI.

**Step 13** Run the **logout** command to switch to root **user**.

**Step 14** Run the following command as user **root** to start HA on the primary node.

```
haStartAll -a
```

```
[root@DBSGaussCore02 opsadmin]# haStartAll -a
[INFO] reg ha successful
[INFO] start ha successful
[root@DBSGaussCore02 opsadmin]# ip a
```

**Step 15** Start the HA service on the standby node. The synchronization relationship between the active and standby nodes will be automatically rebuilt.

1. Log in to the standby DWS-Gauss-DB node as user **opsadmin** and run the **su - root** command to switch to user **root**.
  - For details about the default password of user **opsadmin**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-Gauss-DB**.

- For details about the default password of user **root**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-Gauss-DB**.
- 2. Start the HA service on the standby node.

**haStartAll -a**

```
[root@DBSGaussCore01 scriptlog]# haStartAll -a
[INFO] reg ha successful
[INFO] start ha successful
```

- 3. Switch to user **dbadmin**.

**su - dbadmin**

- 4. Check the automatic rebuild progress. If the progress is 100%, the rebuild is complete.

**gs\_ctl querybuild**

```
[dbadmin@DBSGaussCore01 ~]$ gs_ctl querybuild
Ha state:
 LOCAL_ROLE : Standby
 STATIC_CONNECTIONS : 1
 DB_STATE : Building
 DETAIL_INFORMATION : 0%
[dbadmin@DBSGaussCore01 ~]$ gs_ctl querybuild
Ha state:
 LOCAL_ROLE : Standby
 STATIC_CONNECTIONS : 1
 DB_STATE : Build Completed
 DETAIL_INFORMATION : 100%
```

----End

## Manually Restoring the DMS Database in DBMHA Mode

- Step 1** Obtain GaussDB node information. Log in to any DWS-Gauss-DB node as user **opsadmin** and run the **su - root** command to switch to user **root**. For details about how to obtain the IP address of the DWS-Gauss-DB node, see [Prerequisites](#).
- For details about the default password of user **opsadmin**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-Gauss-DB**.
  - For details about the default password of user **root**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS Product Name** in column A and search for **DWS-Gauss-DB**.

- Step 2** Log in to the DWS-Gauss-DB01 node and check whether the node is the primary node. Run the following command to check whether the value of **LOCAL\_ROLE** is **Primary**:

**su - dbadmin**

**querydb**

```
[dbadmin@DWS-Gauss-DB01 ~]$ querydb
Ha state:
 LOCAL_ROLE : Primary
 STATIC_CONNECTIONS : 1
 DB_STATE : Normal
 DETAIL_INFORMATION : Normal

Senders info:
 SENDER_PID : 29680
 LOCAL_ROLE : Primary
 PEER_ROLE : Standby
 PEER_STATE : Normal
 STATE : streaming
 SENDER_SENT_LOCATION: 1B/D61CAE08
 SENDER_WRITE_LOCATION: 1B/D61CAE08
 SENDER_FLUSH_LOCATION: 1B/D61CAE08
 SENDER_REPLAY_LOCATION: 1B/D61CAE08
 RECEIVER_RECEIVED_LOCATION: 1B/D61CAE08
 RECEIVER_WRITE_LOCATION: 1B/D61CAE08
 RECEIVER_FLUSH_LOCATION: 1B/D61CAE08
 RECEIVER_REPLAY_LOCATION: 1B/D61CAD40
 SYNC_PERCENT : 99%
 SYNC_STATE : async
 SYNC_PRIORITY : 0
 CHANNEL : 8.28.1.27:15210 -->8.28.1.28:50279

Receiver info:
 No information
```

- If yes, the current node is the primary node. Go to [Step 3](#).
- If not, the current node is not the primary node. Log in to the DWS-Gauss-DB02 node by referring to [Step 1](#).

**Step 3** Before restoring the database, find backup file **192.168.1.1\_xxx\_20220101.tar.gz** based on the backup time in the **/opt/backup/DB** local backup directory of the primary database node.

**Step 4** Log in to the standby database node, switch to user **root**, and run the following command to stop the HA service:

```
source /etc/profile
```

```
escape_ha
```

After the command is successfully executed, log in to the primary node and run the preceding commands to stop the HA service of the primary database.

**Step 5** Log in to the primary database node and run the following command as user **root** to restore data on the node. If the message "Restore success." is displayed, the temporary database instance is restored successfully.

```
python /opt/gaussdb/dbmha/backup_restore/CloudDB_restore.py -f /opt/backup/DB/192.168.1.1_xxx_20220101.tar.gz
```

```
[root@DWS-Gauss-DB01 ~]# python /opt/gaussdb/dbmha/backup_restore/CloudDB_restore.py -f /opt/backup/DB/8.28.1.27_AAA_20220318.tar.gz
Restore success.
```

**Step 6** Run the following command to check the Gauss service process and obtain **gauss\_dir**, that is, the content in bold in the following command output:

```
ps -ef | grep gauss | grep -v grep
```

```
dbadmin 2696420 1 0 11:36 ? 00:00:00 /opt/gaussdb/dbprogram/bin/gaussdb -D /opt/gaussdb/
restoregaussdb_7777
```

**Step 7** After the temporary DB instance is restored, the service can connect to the temporary DB instance. Integrate old and new data as required, and then stop the restored temporary DB instance. The original database and port number remain

unchanged. The following commands are used to stop the restored temporary database instance:

```
su - dbadmin
gs_ctl stop -D {gauss_dir}
```

**Step 8** After data is restored, run the following command on the primary database node and then the standby node as user **root** to start the HA service:

```
attach_ha
```

**Step 9** Run the following command on the primary database node as user **dbadmin** to check the database status:

```
dbstatus
```

**Step 10** On the primary database node, run the following command as user **dbadmin** and enter the password as prompted to test the database connection:

```
gsql -U dbadmin
```

If =# is displayed, the connection is successful.

----End

## Restoring Data Using a Manually Backed Up MySQL Database File

If you need to manually restore the database, perform the following steps to back up the data on the GaussDB(DWS) management side. The following uses the database of the DWS-Controller component as an example. The methods for restoring the databases of the ECF-Common and ECF-Clustermanager components are similar.

**Step 1** Prepare the backup SQL file in advance and upload it to the **/tmp** directory on the DWS-DB node. For details about the backup method, see [Manually Backing Up the MySQL Database](#).

**Step 2** Log in to the primary DWS-DB node as user **opsadmin** and run the **su - root** command to switch to user **root**.

- For details about the default password of user **opsadmin**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS** for **Product Name** in column A and search for **DWS-DB**.
- For details about the default password of user **root**, see the **Type A (Background)** sheet of [Huawei Cloud Stack 8.3.1 Account List](#). Select **DWS** for **Product Name** in column A and search for **DWS-DB**.

**Step 3** Connect to the GaussDB(DWS) database.

```
su - mysql
```

```
mysql --defaults-file=/data/mysql/etc/my.cnf -uroot -h Active_DWS-DB_node_IP_address -P7306 -pRootPassword
```

To obtain the default password, search for **root** on the "Type A (Background)" sheet in the [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 4** Restore the database.

```
source /tmp/dws_rms_backup.sql;
----End
```

## 5.2 Tenant Side

### 5.2.1 Backup and Restoration on the Tenant Side

OBS snapshots are recommended for backup and restoration on the tenant side. For details, see section "Managing Snapshots" in *Data Warehouse Service (DWS) 8.1.3.331 User Guide (for Huawei Cloud Stack 8.3.1)* in [Data Warehouse Service \(DWS\) 8.1.3.331 User Guide \(for Huawei Cloud Stack 8.3.1\)](#).

In addition, tenants can use **GaussRoach.py** to manually back up and restore data to OBS, XBSA, and local disks. For details, see [GaussRoach.py](#).



The schema-level fine-grained physical backup function is for restricted commercial use. To use this function, contact technical support.

### 5.2.2 GaussRoach.py

#### 5.2.2.1 Roach Introduction

Roach is a tool provided by GaussDB(DWS) for data backup and disaster recovery. Roach is a backup tool of the distributed architecture. It can back up the cluster topology, components, data, and configuration information of GaussDB(DWS) to the corresponding backup media and restore GaussDB(DWS) data from the backup media.

#### 5.2.2.2 Functions

Roach is mainly used for physical backup and restoration. It also has the logical backup and restoration capabilities:

- Physical backup and restoration are applicable to an entire cluster. A cluster can be restored from a backup set, and cluster-level incremental backup is supported. Currently, schema-level fine-grained physical backup is supported.
- Logical backup and restoration are applicable to a single table, database, or schema, or to multiple tables. However, logical backup does not support the incremental mode.
- Physical backup is three to five times faster than logical backup.
- Because of its slow performance, the logical backup function will not be developed further in the future. Therefore, we do not recommend using the logical backup function for production purposes.

Roach supports the following backup media:

- Disk: Data is backed up to a local disk.
- XBSA media: storage media that uses the XBSA 1.1 protocol.

- OBS: Data is backed up to the OBS server. OBS is the default backup media and is mainly used in the cloud environment. OBS operations are performed on the management plane.

The following table lists the functions supported by Roach. For details, see the corresponding examples in the command reference.

**Table 5-5 Functions supported by Roach**

Type	Function	Description
Physical backup and restoration	Backing up a cluster to a local disk	<ul style="list-style-type: none"><li>● The backup set is stored in the specified local disk path. The prerequisite is that the disk partition has sufficient space to store the backup set.</li></ul>
	Restoring a cluster from a local disk	<ul style="list-style-type: none"><li>● There is no end-to-end delivery solution for the local disk backup mode, so it is not recommended in the production environment.</li></ul>
	Backing up a cluster to an XBSA media server	<ul style="list-style-type: none"><li>● Supported XBSA backup architectures: NBU Client deployment on each node in a cluster or outside the cluster. The non-intrusive XBSA deployment architecture applies to scenarios when a cluster system does not have the NetBackup software version.</li></ul>
	Restoring a cluster from an XBSA media server	<ul style="list-style-type: none"><li>● The XBSA Policy name must be specified in the backup and restoration command.</li><li>● Backup sets are directly uploaded to tapes or disks on the remote XBSA server without being written to disks.</li><li>● The Huawei Kunpeng environment can only use the XBSA non-intrusive deployment, because the NetBackup software does not have a Huawei Kunpeng compatible version.</li></ul>
	Backing up a cluster to the OBS server	<ul style="list-style-type: none"><li>● It is mainly used by GaussDB(DWS) on the cloud. Operations are usually initiated from the GaussDB(DWS) management plane.</li></ul>
	Restoring a cluster from the OBS server	<ul style="list-style-type: none"><li>● The OBS server address and bucket name must be specified in the backup and restoration command.</li><li>● Backup sets are directly uploaded to the remote OBS server without being stored on disks.</li></ul>

Type	Function	Description
	Incrementally backing up a cluster	<ul style="list-style-type: none"> <li>Only cluster-level backup supports incremental backup and restoration.</li> <li>Cumulative increment and differential increment backup and restoration are supported.</li> </ul>
	Incrementally restoring a cluster	<ul style="list-style-type: none"> <li>Data can be restored based on incremental backup sets. Roach performs full restoration, stops the cluster, clears all data files in the cluster, and then performs incremental restoration on each backup chain in sequence.</li> </ul>
	Restoring data to a new cluster	<ul style="list-style-type: none"> <li>This function uses the backup set to restore the cluster on a new cluster. The command must contain parameters related to the restoration of the new cluster.</li> <li>The topology of the new cluster must be the same as that of the original cluster.</li> <li>Currently, only XBSA media and OBS support this function.</li> </ul>
	Resuming a full backup	<ul style="list-style-type: none"> <li>This function corresponds to the <b>--resume-backup</b> parameter.</li> <li>The backup media can be DISK, XBSA, or OBS.</li> <li>Currently, only cluster full backup supports resumable backup. Incremental backup and cluster restoration are not resumable.</li> </ul>

Type	Function	Description
	<p>Schema-level fine-grained physical backup</p> <p><b>NOTE</b></p> <p>This function is commercially used under some restrictions. To use this function, contact technical support.</p>	<ul style="list-style-type: none"><li>• DDL operations cannot be performed during fine-grained physical backup. Otherwise, the backup may fail or tables involved in DDL operations may fail to be restored.</li><li>• Fine-grained physical backup does not support restoration to a transaction consistency point. The service side must ensure that the data is not modified during the backup.</li><li>• Fine-grained physical backup does not support the incremental mode.</li><li>• One or more schemas can be backed up.</li><li>• Only some tables can be restored from the schema backup set. The entire schema backup set cannot be restored.</li><li>• Only table definitions, views depending on tables, and table data files can be backed up. Dependent objects, such as indexes and functions, cannot be commented.</li><li>• The tables to be restored can be from different schemas but cannot be from different databases.</li><li>• You can restore data to the original table or to a specified target table.</li><li>• The DISK/XBSA media supports schema backup sets for cluster DR.</li><li>• Fine-grained restoration does not support tables in absolute or relative tablespace.</li></ul>

Type	Function	Description
	Restoring some tables from a cluster backup set  <b>NOTE</b> This function is commercially used under some restrictions. To use this function, contact technical support.	<ul style="list-style-type: none"><li>Some tables can be restored from a full or incremental backup set of the cluster.</li><li>This function is available only when the <b>--physical-fine-grained</b> parameter is specified for cluster backup. Otherwise, the generated backup sets do not support fine-grained restoration.</li><li>The tables to be restored can be from different schemas but cannot be from different databases.</li><li>You can restore data to the original table or to a specified target table.</li><li>This function is only available for disks or XBSA protocol media.</li><li>Fine-grained restoration does not support tables in an absolute or relative tablespace.</li><li>Row-store and column-store partitioned tables cannot be restored using incremental backup sets.</li></ul>
Logical backup and restoration	Backing up a table to a local disk or an XBSA media server	<ul style="list-style-type: none"><li>Currently, table-level backup supports only disk and XBSA backup media. OBS is not supported.</li><li>A logical backup set can only restore tables in the local cluster.</li><li>Only tables created by users can be backed up. System tables cannot be backed up.</li><li>Only schemas created by users can be backed up. System schemas cannot be backed up.</li></ul>
	Backing up tables to a local disk or an XBSA media server	
	Backing a single table to a local disk or an XBSA media server	
	Backing a single schema to a local disk or an XBSA media server	
	Restoring a single table from a local disk or an XBSA media server	
	Restoring tables from a local disk or an XBSA media server	

Type	Function	Description
	Restoring a single database from a local disk or an XBSA media server	
	Restoring a single schema from a local disk or an XBSA media server	
Auxiliary functions	Stopping a backup	This function corresponds to the <b>stop</b> command, and is used to stop a running backup task.
	Deleting a backup set	Deletes an existing backup set. This command corresponds to the <b>delete</b> command.
	Validating a backup set	<ul style="list-style-type: none"><li>This function corresponds to the <b>validate</b> command, and is used to verify an existing backup set. The verification method is CRC32 or file length verification.</li><li>Backup sets can be validated only for disk backups. Other backup media are stored on a remote server and the integrity is ensured by the server.</li><li>Full, incremental, and single-table backup set validation is supported. Multi-table backup set verification is not supported.</li><li>The function can be embedded in the backup and restore commands. The <b>--validation-type</b> parameter is carried in the <b>backup</b> and <b>restore</b> commands. In this way, the backup set is validated after the backup is complete, or the integrity of the backup set is validated before the restoration command is executed.</li><li>Fine-grained physical backup and restoration cannot contain the <b>--validation-type</b> parameter.</li></ul>
	Viewing a backup set	This function corresponds to the <b>show</b> command, and is used to show the summary of all backup sets or the details of a backup set.
	Displaying the backup or restoration progress	This function corresponds to the <b>show-progress</b> command and is used to query the backup or restoration progress.

Type	Function	Description
	Backup file compression	<ul style="list-style-type: none"><li>You can specify the compression algorithm and level for backup by specifying the <b>--compression-type</b> and <b>--compression-level</b> parameters. This optimizes backup performance and backup set storage space usage.</li><li>Currently, the supported compression algorithms are <b>zlib</b> and <b>lz4</b>. You can also set the compression algorithm to no compression.</li><li>If no compression is specified, GaussDB(DWS) 8.0 and later versions use the <b>lz4</b> compression algorithm by default, and the compression level is 1. Earlier versions use the <b>zlib</b> compression algorithm by default, and the compression level is 6.</li></ul>
	Multi-process concurrent backup or restoration	<ul style="list-style-type: none"><li>This function corresponds to the <b>--parallel-process</b> parameter, and is used to start multiple Roach subprocesses to concurrently back up data instances.</li><li>The default number of concurrent nodes is the number of CNs and primary DNs on a single node, which is adaptive.</li></ul>
	Generating cluster topology information XML	This function corresponds to the <b>generate</b> command, and is used to restore the backup set to a new cluster. You need to install a new cluster with the same topology as the cluster during backup. This requires an XML configuration file for cluster installation. This command can be used to generate such an XML file.
	Backup resource control	<ul style="list-style-type: none"><li>CPU resource control corresponds to the <b>--cpu-relinquish-size</b> and <b>--cpu-relinquish-time</b> parameters.</li><li>Memory resource control corresponds to the <b>--max-memory-usage</b> parameter.</li><li>I/O resource control is not supported in the current version.</li></ul>

### 5.2.2.3 Restrictions

The restrictions on using Roach include two parts: the common restrictions described in the previous sections, and some additional restrictions on using Roach in CLI mode in this section.

- Only cluster administrators are allowed to run Roach commands.
- The CLI parameters of Roach are case-sensitive, but the parameter values are case-insensitive (except for the path and the string identified as the name).
- Except the **stop** command and the command for restoring data to a new cluster, other commands such as **restore**, **show**, **delete**, **validate**, **generate**, and **incremental backup** can be executed only on the node where the **backup** command is executed. Otherwise, undefined behavior may occur.
- When a Roach command is being executed, all nodes in the cluster cannot initiate Roach operations other than the **stop**, **show**, and **show-progress** commands. Otherwise, undefined behavior may occur.
- You are not advised to set the **--media-destination** and **--meta-destination** parameters to the cluster installation path or instance path. Otherwise, the backup set will be deleted when the cluster is uninstalled.
- After the cluster is restored, you can only run the **start** command of Roach to start the cluster. Do not run the **cm\_ctl** command to start the cluster. Otherwise, there may be no data on the standby DN.
- When performing logical restoration on a single table or multiple tables, you are advised to use the **--clean** parameter to automatically delete (truncate) table data. Otherwise, the table data may have a duplicate.
- When performing logical restoration on a single table or multiple tables, you are advised to use the **--create** parameter to automatically create table definitions. Otherwise, if some tables have been dropped, table data cannot be restored due to the lack of table definitions.
- Scale-out will change the topology of the incremental backup. Therefore, continuous incremental backup is not supported after scale-out. You need to perform full backup again after cluster scale-out or logical cluster scale-out.

The following lists the restrictions on functions that are not supported in some scenarios.

- If the backup media is OBS, using logical backups for restoration is not supported.
- If the backup media is OBS or XBSA, backup sets cannot be validated.
- Logical backup does not support the incremental mode.
- Logical backup does not support verification of backup sets.
- When you restore data to a new cluster, the topologies of the two clusters must be the same.
- When data is restored to a new cluster, the **pg\_hba.conf** and **pg\_ident.conf** files of each instance are not synchronized with those of the original cluster. Therefore, you need to manually configure these two files of each instance.

Physical fine grained backup and restoration involves schema-level fine-grained backup and cluster-level full/incremental backup with fine-grained parameters. The restrictions are as follows:

- A table with a primary key cannot be restored to a new table in a schema with the same name.
- Physical fine-grained backup and restoration support only object names that start with a letter or underscore (\_) and contain digits, uppercase letters, lowercase letters, and underscores (\_).

## 5.2.2.4 CLI Reference

### 5.2.2.4.1 backup

#### Function

The **backup** command is used for cluster-level or table-level backup.

#### Precautions

The path for storing backup sets is specified by the **--media-destination** parameter. For backup to a local disk, before selecting such a path, plan the remaining disk space of the corresponding partition to ensure there is sufficient space for the backup set generated each time. Later, each backup generates a backup set in this path, storing the compressed files (in the format \*.rch) of each instance on the local node. Use a full backup as an example. If the compression ratio is 1:1, the size of the generated backup set is approximately equal to the disk space occupied by all CN and primary DN instances on the node. Note that data of standby DNs is not backed up. Other instances can be ignored because they have a small amount of data.

#### Syntax

```
python3 GaussRoach.py
-t backup
--agent-port <agent-port>
--master-port <master-port>
--media-type <media-type>
--media-destination <media-destination-path>
--metadata-destination <metadata-path>
[--bucket-name <bucketname>]
[--buffer-block-size <block-size>]
[--buffer-size <buffer-size>]
[--cluster-unique-id <value>]
[--compression-type <compression-type>]
[--compression-level <compression-level>]
[--contrib-config <configuration-file>]
[--cpu-relinquish-size <cpu-relinquish-size-value>]
[--cpu-relinquish-time <cpu-relinquish-time-value>]
[--dbname <database-name>]
[--enable-logging <true/false>]
[--failure-retry-count <count>]
[--filesplit-size <file-split-size>]
[--log-filecount <log-file-count>]
[--log-filename <log-file-size>]
[--logging]
[--logging-level <logging-level>]
[--logging-path <logging-path>]
[--logical]
[--max-memory-usage <maximum-number-of-bytes>]
[--metadata-file-wait-time <wait-time>]
[--master-ip <xx.xx.xx.xx>]
[--obs-server-ip <address>]
[--parallel-process <process-count>]
[--cpu-cores <number-of-available-cpu-cores>]
[--pre-disk-space]
[--prior-backup-key <prior-full-backup-key>]
[--reader-thread-count <number-of-threads>]
[--reader-thread-file-count <number-of-thread-files>]
[--reader-thread-file-size <filesize>]
[--resource-retry-count <count>]
[--resume-backup]
```

```
[--retry-wait-time <time>]
[--table-list <tablelist-filename>]
[--schema-list <schemalist-filename>]
[--tablename <table-name>]
[--schemaname <schema-name>]
[--username <user-name>]
[--validate-prior-backups <priorbackup-validation-type>]
[--validation-type <validation-type>]
[--verbose]
[--nbu-on-remote]
[--client-port <client-port>]
[--nbu-media-list <media-list-filename>]
[--master-timeout <timeout-value>]
[--physical-fine-grained]
[--backup-mode <full backup mode>]
[--max-backup-io-speed <write threshold to Media In MB/s>]
```

## Parameter Description

List of CLI parameters for the **backup** command

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-t	N/A	String	Roach supports multiple functions. Setting this parameter to <b>backup</b> , which indicates the function of invoking a backup.	<ul style="list-style-type: none"><li>• -t backup</li><li>• -t stop</li><li>• -t validate</li><li>• -t delete</li><li>• -t restore</li><li>• -t show</li><li>• -t show-progress</li><li>• -t generate</li><li>• -t genstack</li><li>• -t getobject</li><li>• -t start</li><li>• -t clean</li><li>• -t config</li><li>• -t version</li><li>• -t help</li></ul>	N/A	-t backup

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--agent-port	N/A	Integer	<p>Specifies the port in which the Roach agent is running. This port is used for communication between the <b>gs_roach</b> and <b>gaussdb</b> processes.</p> <p><b>NOTE</b> Use this parameter for logical backup.</p>	N/A	N/A	--agent-port 6812
--master-port	N/A	Integer	<p>Specifies the port for executing the Roach primary agent process. This port is used for the communication between the <b>gs_roach</b> process on each node and the <b>gs_roach</b> process on the active node.</p>	N/A	N/A	--master-port 6812
--media-type	N/A	String	<p>Specifies the media type for backup.</p> <ul style="list-style-type: none"> <li>• XBSA</li> <li>• Disk</li> <li>• OBS</li> </ul>	<ul style="list-style-type: none"> <li>• Disk</li> <li>• Media that use the XBSA protocol</li> <li>• OBS</li> </ul>	N/A	For disk: --media-type <i>Disk</i> XBSA media: --media-type <i>XBSA</i> For OBS: --media-type <i>OBS</i>

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--media-destination	N/A	String	<p>Specifies the backup destination for the chosen media.</p> <ul style="list-style-type: none"> <li>● <b>Disk</b></li> <li>● XBSA media: sample policy</li> <li>● <b>OBS</b>: absolute path</li> </ul> <p><b>NOTE</b> The <b>--media-destination</b> path cannot contain spaces.</p>	N/A	N/A	For disk: <b>--media-destination / data1/ userA/ backup</b> XBSA media: <b>--media-destination</b> <i>Sample policy</i> For OBS: <b>--media-destination / data1/ userA/ backup</b>
--metadata-destination	N/A	String	<p>Specifies the metadata file location.</p> <p><b>NOTE</b> The <b>--metadata-destination</b> path cannot contain spaces.</p>	N/A	N/A	<b>--metadata-destination / data1/ userA/ meta</b>
--bucket-name	N/A	String	Specifies the OBS bucket name.	N/A	N/A	<b>--bucket-name rdsbucket.resouce.user4444</b>

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--buffer-block-size	N/A	Integer	Specifies the individual buffer block size.	524288–268435456 (in bytes) The minimum value of OBS backup is 5242880 (bytes).	The value is 2097152 (bytes), and that for OBS backup is 67108864 (bytes).	--buffer-block-size 2097152
--buffer-size	N/A	Integer	Specifies the size of the buffer.	256–16384 (in MB)	256 (in MB)	--buffer-size 10000
--cluster-unique-id	N/A	String	Specifies the cluster ID for the cluster backup.	N/A	N/A	--cluster-unique-id dws-xlnobs_9732b696-4b6d-4844-a40c-d1f6355aca02

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--compression-type	N/A	Integer	Compression algorithm. <b>1:</b> zlib <b>2:</b> LZ4	1, 2	2	--compression-type 1

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
			<p><b>NOTE</b></p> <ul style="list-style-type: none"><li>If the compression algorithm and level are not specified, versions earlier than GaussDB(DWS) 8.0 use the <b>zlib</b> compression algorithm by default, and the compression level is 6. In GaussDB A 8.0 and later versions, the LZ4 compression algorithm is used by default, and the compression level is 1.</li><li>If only the compression level is specified and the compression algorithm is not specified, the zlib compression algorithm is used by default to ensure forward compatibility.</li><li>If only the compression type is specified and the compression level is not specified, level 6 compression is used for zlib and level 1 compression is used for LZ4 by default.</li></ul>			

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--compression-level	N/A	Integer	<p>Specifies the compression level.</p> <p><b>0:</b> fast backup and no compression</p> <p><b>9:</b> slow backup and maximum compression</p> <p><b>NOTE</b> A smaller value indicates faster compression. A larger value indicates better compression.</p> <p>Compression is not supported by table level backup.</p>	0-9	6	--compression-level 5
--contrib-config	N/A	String	<p>Specifies the configuration file for the HDFS hook function. The configuration file must be located in \${GAUSSHOME}/bin.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>Users can specify the configuration file for the HDFS hook function. The configuration file contains the parameters required for calling HDFS backup APIs.</li> <li>When using customized library, ensure that this points to the location of the new library (.so).</li> </ul>	N/A	N/A	--contrib-config roach_contrib.conf

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--cpu-relinquish-size	N/A	Integer	Specifies the size of data after which is processed, Roach must switch CPU to the low-usage mode for the number of seconds specified in <b>--cpu-relinquish-time</b> .	1–10000 (in GB)	N/A	--cpu-relinquish-size 10 GB
--cpu-relinquish-time	N/A	Integer	<p>Specifies the CPU relinquish time. During this period, Roach must switch to the low CPU usage mode.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>To reduce the CPU usage, set the CPU relinquish time to greater than or equal to 60 seconds.</li> <li>If no value is specified with, the parameter is ignored during execution.</li> </ul>	0–3600 (in seconds)	N/A	--cpu-relinquish-time 1000

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--dbname	N/A	String	<p>Specifies the database name.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>If the database name is not specified during logical backup, <b>postgres</b> is used by default.</li> <li>This parameter is mandatory for fine-grained physical backup.</li> </ul>	N/A	postgres	--dbname <i>DBNew01</i>
--enable-logging	N/A	Boolean	<p>Enables/disables logging.</p> <p>This parameter is recommended instead of --logging.</p>	<ul style="list-style-type: none"> <li>True</li> <li>False</li> </ul>	True	--enable-logging <i>True</i>
--failure-retry-count	N/A	Integer	Specifies the number of times Roach will retry in the case of a failure. This parameter is not supported by the latest version.	0-256	0	-

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--filesplit-size	N/A	Integer	<p>Size of a compressed file generated during backup.</p> <p><b>0:</b> Use the default size for a single backup file.</p> <p><b>1024:</b> The maximum size of a backup file is 1024 GB.</p> <p><b>NOTE</b> User must specify the backup file size, which is in multiples of 4.</p>	0–1024 (in GB)	4 (in GB)	--filesplit-size 40
--log-filecount	N/A	Integer	Specifies the maximum number of log files.	5–1024	50	--log-filecount 5
--log-filesize	N/A	Integer	Specifies the maximum log file size.	5–20 (in MB)	5 (in MB)	--log-filesize 5
--logging	N/A	Boolean	<p>Specifies whether to record log files.</p> <p>The value is <b>true</b> if the parameter is specified in the command.</p> <p>Otherwise, it is <b>false</b>.</p> <p>This parameter will no longer be used in the future. You are advised to use <b>--enable-logging</b>.</p>	N/A	False	--logging

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--logging-level	N/A	String	<p>Specifies the logging level, which determines the information to be logged.</p> <ul style="list-style-type: none"> <li>• <b>FATAL:</b> Records faults that cause unrecoverable system interruption. This is the most severe level.</li> <li>• <b>ERROR:</b> Records backup failures.</li> <li>• <b>WARNING:</b> An exception occurs. In this case, the system may continue to process tasks.</li> <li>• <b>INFO:</b> Records generated notes.</li> <li>• <b>DEBUG:</b> Records debugging details.</li> <li>• <b>DEBUG2:</b> Records more detailed debugging information, which is not displayed. This is the least severe level.</li> </ul>	<ul style="list-style-type: none"> <li>• FATAL</li> <li>• ERROR</li> <li>• WARNING</li> <li>• INFO</li> <li>• DEBUG</li> <li>• DEBUG2</li> </ul>	INFO	--logging-level <i>info</i>

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--logging-path	N/A	String	Specifies the path for logging.	N/A	\$GAUSSLOG/roach/controller	--logging-path \$GAUSSLOG/roach/controller
--logical	N/A	N/A	This parameter is used to logically back up or restore multiple tables. It must be used with --table-list. If this parameter is specified, tables are logically backed up or restored. If it is not, tables are physically backed up or restored.	N/A	N/A	--logical
--max-memory-usage	N/A	Unsigned integer	Specifies the maximum number of bytes that can be used by Roach.  <b>NOTE</b> By default, Roach can use the maximum memory that the system can provide.	2–256 (in GB)	N/A	--max-memory-usage 2
--metadata-file-wait-time	N/A	Integer	Specifies wait time for reading the metadata file.	60–3600 (in seconds)	60 (seconds)	--metadata-file-wait-time 100

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--master-ip	N/A	IP address	Enter the IP address of the cluster where the current node is located, that is, the IP address specified for the current node in the cluster configuration file.	x.x.x.x	N/A	--master-ip x.x.x.x
--obs-server-ip	N/A	String	Specifies the domain name of the OBS server. Note that it is not an IP address.	N/A	N/A	--obs-server-ip obs.xxx.com
--parallel-process	N/A	Integer	Specifies the number of child processes to be used by Roach. <b>NOTE</b> Parallel processing is not supported for table level backup/restore.	1 - 32	The value equals to the number of DNs on the current node.	--parallel-process 10
--cpu-cores	N/A	Integer	Specifies the number of CPU cores that can be used when Roach starts multiple threads concurrently.	The value ranges from 1 to 1024 and cannot be greater than the total number of logical CPU cores.	1/2 of the total number of logical CPU cores on the node	--cpu-cores 10
--pre-disk-space	N/A	Boolean	Checks available disk space to perform an operation. The value is <b>true</b> if the parameter is specified in the command. Otherwise, it is <b>false</b> .	N/A	False	--pre-disk-space

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--prior-backup-key	N/A	String	Indicates that backup is performed based on the previous backup set, which can be a full backup set or an incremental backup set.	N/A	N/A	--prior-backup-key 20170117_041504
--reader-thread-count	N/A	Integer	Specifies the number of reader threads for processing.	0-128	The default value is 1.	--reader-thread-count 8
--reader-thread-file-count	N/A	Integer	Specifies the number of buffer files for each reader thread.	0 - 256	N/A	--reader-thread-file-count 2
--reader-thread-file-size	N/A	Integer	Specifies the buffer file size (in bytes) for each buffer file of the reader threads.	1 - 65535 (in bytes)	N/A	--reader-thread-file-size 16384

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--resource-retry-count	N/A	Integer	<p>Specifies the number of times Roach will retry upon a resource allocation failure. For a value <math>n</math>, Roach will retry <math>n-1</math> times. The value <b>0</b> indicates no retry.</p> <p><b>NOTE</b> This parameter is applicable to any GaussDB(DWS) tool operations when the system resource allocation fails. The system resources include heap memory, threads, and APIs of the file system and database.</p>	0-256	3	--resource-retry-count 2
--retry-wait-time	N/A	Integer	<p>Specifies the retry interval of Roach after a system resource operation fails. Generally, this parameter is used together with <b>--resource-retry-count</b>.</p>	1-3600 (in seconds)	10 (in seconds)	--retry-wait-time 1200

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--table-list	N/A	String	<p>Absolute path of input file name containing the list of tables to be backed up. Each line of the file must contain a single entry in the format <code>&lt;schema name&gt;.TableName</code>. Default schema is <b>public</b>.</p> <p><b>NOTE</b> This parameter cannot be used together with <b>tablename</b>.</p>	N/A	N/A	--table-list / home/roach/bklist.txt
--tablename	N/A	String	<p>Specifies the name of the table to take the logical backup.</p> <p><b>NOTE</b> User can only specify one table at a time to take a backup. To back up multiple tables, use tablelist. The table name must be provided during the backup.</p>	N/A	N/A	--tablename Student
--validate-prior-backups	N/A	String	<p>Specifies if the prior backups are to be validated and the preferred validation type:</p> <ul style="list-style-type: none"> <li><b>Force:</b> Validation will be mandatorily executed.</li> <li><b>Optimistic:</b> Validation will be executed if it is not already validated.</li> </ul>	<ul style="list-style-type: none"> <li>Force</li> <li>Optimistic</li> </ul>	Optimistic	--validate-prior-backups Force

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--username	-U	String	Specifies the name of the user installing the cluster.	N/A	N/A	--username <i>cluster_user</i>
--validation-type	N/A	String	Specifies whether the validation will be done based on CRC-32 or file size. <ul style="list-style-type: none"> <li>• Full (CRC-based validation)</li> <li>• Partial (file size-based validation)</li> </ul>	<ul style="list-style-type: none"> <li>• Full</li> <li>• Partial</li> </ul>	Full	--validation-type Full
--verbose	N/A	Boolean	Specifies whether <b>verbose</b> is used to display detailed information.  The value is <b>true</b> if the parameter is specified in the command. Otherwise, it is <b>false</b> .	N/A	False	--verbose
--with-serverlog	N/A	Boolean	Specifies whether to back up the log files of CNs; primary, standby, and secondary DNs; and GTMs.  The value is <b>true</b> if the parameter is specified in the command. Otherwise, it is <b>false</b> .	N/A	False	--with-serverlog

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--resume-backup	N/A	Boolean	<p>Resumes the full backup.</p> <p>If you do not want to perform a full backup again when the full backup with a large amount of data fails, add this parameter before the full backup so that the full backup can resume.</p> <p><b>NOTE</b></p> <p>This parameter is used only for full backup. The backup media can be disk, XBSA media, or OBS.</p>	N/A	False	--resume-backup
--nbu-on-remote	N/A	Boolean	Specifies that the XBSA media cluster is not deployed in the cluster when the XBSA media is used for backup. The XBSA media client is deployed on the XBSA media server.	N/A	False	--nbu-on-remote
--client-port	N/A	Integer	Indicates the communication port between Roach and the roach_client on the XBSA server.	N/A	N/A	--client-port 7816
--nbu-media-list	N/A	String	Indicates the IP address list of the XBSA media server. In this file, each IP address occupies a line.	N/A	N/A	--nbu-media-list /home/roach/mediaлист.txt

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--schema-name	N/A	String	Specifies the name of the schema used for fine-grained physical or logical backup.	N/A	public	--schema-name <i>s1</i>
--schema-list	N/A	String	Specifies the schema list for fine-grained physical backup.	N/A	N/A	--schema-list /home/roach/schema_list.txt
--master-timeout	N/A	Integer	Specifies the timeout period for the Roach master process to accept connection requests from its agent process. The backup operation will be terminated when the timeout period expires.	600–3600 (in seconds)	600	--master-timeout 600

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--physical-fine-grained	N/A	Boolean	If this parameter is specified, backup sets can be used for physical fine-grained restoration.  When <b>-t</b> is set to <b>restore</b> , this parameter is used to distinguish cluster-level full restoration, for which data will not be cleared and the cluster will not be stopped. The list of tables to be restored ( <b>--table-list</b> ) can be read for multi-table restoration.  When <b>-t</b> is set to <b>backup</b> , this parameter is used to specify the backup sets for <b>physical fine-grained</b> restoration. If this parameter is specified, the mapping between tables and physical file lists is generated so that backup sets can be used for fine-grained restoration of tables.	N/A	False	--physical-fine-grained

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-- backup-mode	N/A	Integer	<p>Specifies the full backup mode. The value can be <b>0</b> or <b>1</b>.</p> <p><b>0:</b> indicates that the full backup is performed in one phase.</p> <p><b>1:</b> indicates that a full backup consists of two phases: full backup and incremental backup. In the full backup phase, Xlogs and DDL files pending for delayed deletion in column-store files are not backed up, other column-store files and row-store files are backed up. In the incremental backup phase, an incremental backup is performed on top of the previous backup to ensure the consistency of the entire backup set. The two backup phases generate one backup set.</p>	0, 1	0	-- backup-mode 0 -- backup-mode 1

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--max-backup-io-speed	N/A	Integer	<p>Specifies the upper limit of the speed at which data is written to the media on each node. The value is [0, 2048] and the unit is MB/s.</p> <p>To dynamically specify the speed limit, manually configure the <b>\$GAUSSHOME/bin/io_limit.conf</b> configuration file.</p> <p>For example:</p> <p>Set the write speed of the current node to 5 MB/s.</p> <pre>echo "5"&gt;&gt; \$GAUSSHOME/bin/io_limit.conf</pre> <p><b>NOTE</b></p> <p>To configure the write speed of all nodes, you need to send the configuration files to all nodes in the cluster.</p> <p>You can specify a command line parameter to make it take effect on all nodes.</p> <p>The file takes effect only on the node where the file is located.</p>	0-2048 (MB/s)	No limit	--max-backup-io-speed 5

## Usage Guide

- Before running all Roach commands, run the following command to start environment variables: This step is not repeated before other Roach operations in the following part.

```
source ${BIGDATA_HOME}/mppdb/mppdbgs_profile
```

- Before running the backup command, run the following command to check the cluster running status. The backup can be performed only when **cluster\_state** is **Normal**.

```
gs_om -t status
```

```

cluster_state : Normal
redistributing : No
balanced : Yes

```

## Examples

### NOTE

GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

- Backing up a cluster to an XBSA media (intrusive deployment)

XBSA has two deployment architectures. The original architecture is known as intrusive deployment, which only supports some systems and cannot be installed in a cluster because no installation package is available for the Huawei Kunpeng environment, so customers cannot use XBSA for backup. XBSA non-intrusive deployment is thus added to accommodate more scenarios. This deployment is recommended. The command formats of the non-intrusive deployment are different. For details, see "Backing up a cluster to an XBSA media (non-intrusive deployment)" in this section.

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type
XBSA_media --media-destination <XBSA_media_policy_name> --metadata-destination
<metadata_path>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-destination
samplepolicy --media-type XBSA_media --metadata-destination /data1/userA/metadata --physical-
fine-grained
```

Mandatory parameters:

- master-port
- media-type: The value must be an XBSA media.
- media-destination
- metadata-destination

### NOTE

- To use an XBSA media for backup, you need to configure the XBSA media environment in advance. In the intrusive deployment of an XBSA media, a media client must be installed on each cluster node.
- GaussDB(DWS) backup involves multiple concurrent tasks. Therefore, you are advised to evaluate the maximum number of concurrent tasks supported by the media server during deployment to prevent backup instability caused by too many writes.
- To enable a cluster-level backup set to be used for fine-grained restoration of some tables in the future, the backup command must contain the **--physical-fine-grained** parameter.
- Backing up a cluster to XBSA media (intrusive deployment)

Start the **roach\_client** process on each XBSA media server. For details, see [roach\\_client](#). Then run the following commands:

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type
XBSA_media --media-destination <XBSA_media_policy_name> --metadata-destination
<metadata_path> --nbu-on-remote --nbu-media-list <XBSA_media_media_list_filename> --client-
port <client_port>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-destination
samplepolicy --media-type XBSA_media --metadata-destination /data1/userA/metadata --nbu-on-
remote --nbu-media-list /home/userA/medialist.txt --client-port 9000
```

Mandatory parameters:

- --master-port
  - --media-type: The value must be the XBSA media.
  - --media-destination
  - --metadata-destination
  - --nbu-on-remote
  - --nbu-media-list
  - --client-port
- Back up a cluster to a disk.

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type DISK
--media-destination <media_destination_path> --metadata-destination <metadata_path>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-type DISK --media-
destination /data1/userA/media --metadata-destination /data1/userA/metadata
```

Mandatory parameters:

- --master-port
- --media-type: The value must be **DISK**.
- --media-destination
- --metadata-destination

#### NOTE

Plan the disk space before backing up data to a local disk. The disk path specified by **--media-destination** must have sufficient storage space for storing backup sets.

- Backing up a cluster to OBS

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type OBS
--media-destination <media_destination_path> --metadata-destination <metadata_path> --obs-
server-ip <obs-server-ip> --bucket-name <rds-bucket-name> --cluster-unique-id <cluster-id>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-type OBS --media-
destination /data1/userA/media --metadata-destination /data1/userA/metadata --obs-server-ip
x.x.x.x --bucket-name rdsbucket.resource.user4444 --cluster-unique-id dws-
xlnobs_9732b696-4b6d-4844-a40c-d1f6355aca02
```

Mandatory parameters:

- --master-port
- --media-type: The value must be **OBS**.

- --media-destination
- --metadata-destination
- --obs-server-ip
- --bucket-name
- --cluster-unique-id

 **NOTE**

Before backing up a cluster to OBS, copy the **obs\_server\_key** file to the **\$GAUSSHOME/bin/** directory of each node in the cluster. The format of the **obs\_server\_key** file content is as follows:

```
S3_ACCESS_KEY_ID=xxx
S3_SECRET_ACCESS_KEY=yyy
```

- Logically backing up a single table to an XBSA media (intrusive deployment)  
The following example shows the intrusive deployment of an XBSA media. If the XBSA media uses the non-intrusive deployment, three more parameters are added to the command: **--XBSA\_media-on-remote**, **--XBSA\_media-media-list**, and **--client-port**. These parameters are used in the same way as backing up a cluster to an XBSA media.  
In addition, the entire database or schema can be logically backed up. The method is similar. You only need to specify the **--dbname** or **--schemaname** parameter.

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type nbu
--media-destination <policy_name> --metadata-destination <metadata_path> --agent-port
<agent_port> --dbname <database_name> --tablename <table_name>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-type nbu --media-
destination samplepolicy --metadata-destination /data1/userA/metadata --agent-port 7000 --
dbname db1 --tablename table2
```

Mandatory parameters:

- --master-port
- --media-type: The value must be an XBSA media.
- --media-destination
- --metadata-destination
- --agent-port
- --tablename: If **--dbname** is not specified, the table is stored in the **postgres** database by default.

- Logically backing up a table to a local disk

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type DISK
--media-destination <media_destination_path> --metadata-destination <metadata_path> --agent-
port <agent_port> --dbname <database_name> --tablename <table_name>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-type DISK --media-
destination /data1/userA/backup --metadata-destination /data1/userA/metadata --agent-port
7000 --dbname db1 --tablename table2
```

Mandatory parameters:

- --master-port

- --media-type: The value must be **DISK**.
- --media-destination
- --metadata-destination
- --agent-port
- --tablename: If **--dbname** is not specified, the table is stored in the **postgres** database by default.
- Logically backing up tables to an XBSA media (intrusive deployment)

The following example shows the intrusive deployment of an XBSA media. If the XBSA media uses the non-intrusive deployment, three more parameters are added to the command: **--XBSA\_media-on-remote**, **--XBSA\_media-media-list**, and **--client-port**. These parameters are used in the same way as backing up a cluster to an XBSA media.

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type nbu
--media-destination <nbu_policy_name> --metadata-destination <metadata_path> --agent-port
<agent_port> --logical --table-list <table_list> --dbname <database_name>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-type nbu --media-
destination samplepolicy --metadata-destination /data1/userA/metadata --agent-port 7000 --
logical --table-list /home/userA/tplist --dbname db1
```

Mandatory parameters:

- --master-port
- --media-type: The value must be an XBSA media.
- --media-destination
- --metadata-destination
- --agent-port
- --logical
- --table-list: If **--dbname** is not specified, all tables in the list are stored in the **postgres** database by default.

#### NOTE

- When you perform logical backup on multiple tables, if any table name in **--table-list** is incorrect, the backup task will exit upon failure immediately.
- The system will continue to back up tables even if an invalid table is detected. You are only notified about failed tables by a message upon completion of the backup task.
- The content format of the table list file is as follows:

```
s1.t1
s1.t2
s2.t3
t4
s3.t5
```

**s1**, **s2**, and **s3** indicate schema names. **t1** to **t5** indicate table names. If only the table name is specified, the default schema is public.

- Logically backing up multiple tables to a local disk

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type DISK
--media-destination <media_destination_path> --metadata-destination <metadata_path> --agent-
port <agent_port> --logical --table-list <table_list> --dbname <database_name>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-type DISK --media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --agent-port 7000 --logical --table-list /home/userA/tblist --dbname db1
```

Mandatory parameters:

- --master-port
- --media-type: The value must be **DISK**.
- --media-destination
- --metadata-destination
- --agent-port
- --logical
- --table-list: If **--dbname** is not specified, all tables in the list are stored in the **postgres** database by default.

- Incrementally backing up a cluster

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type DISK --media-destination <media_destination_path> --metadata-destination <metadata_path> --prior-backup-key <backup_key>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-type DISK --media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --prior-backup-key 20120320_085435
```

Mandatory parameters:

- --master-port
- --media-type
- --media-destination
- --metadata-destination
- --prior-backup-key

#### NOTE

- Currently, only cluster-level physical backup supports the incremental mode.
- This example describes only the scenario where the backup media is **DISK**. Other backup media also support incremental backup. Methods of using other backup media are similar.
- The cumulative incremental backup or differential incremental backup depends on the value of **--prior-backup-key**. If the value is the backup key of an incremental backup, the backup is a differential incremental backup.

- Resuming a full backup

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type DISK --media-destination <media_destination_path> --metadata-destination <metadata_path> --resume-backup
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-type DISK --media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --resume-backup
```

Mandatory parameters:

- --master-port
- --media-type: The value can be DISK, XBSA media, or OBS.

- --media-destination
- --metadata-destination
- --resume-backup

#### NOTE

- Only cluster full backup supports resumable backup. Incremental clusters do not support resumable execution.
  - Currently, resumable backup is supported if the backup media is disk, XBSA, or OBS.
  - The parameters of the resumable data backup command initiated again must be the same as those of the backup command initiated for the first time. Otherwise, undefined behavior may occur.
  - If the backup fails, the residual backup files will not be deleted. When you run this command again, the backup continues with the previous progress.
  - If you want to perform a new backup instead of continuing the previous backup after the backup fails, you must run the stop command with the **--resume-backup** parameter to clear the flag files and residual backup files related to resumable backup.
- Physically backing up a single schema to a local disk

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type DISK
--media-destination <media_destination_path> --metadata-destination <metadata_path> --
dbname <database_name> --schemaname <schema_name> --physical-fine-grained
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-type DISK --media-
destination /data1/userA/backup --metadata-destination /data1/userA/metadata --dbname db1 --
schemaname s2 --physical-fine-grained
```

Mandatory parameters:

- --master-port
- --media-type
- --media-destination
- --metadata-destination
- --dbname
- --schemaname
- --physical-fine-grained

- Physically backing up multiple schemas to a local disk

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type DISK
--media-destination <media_destination_path> --metadata-destination <metadata_path> --
dbname <database_name> --schema-list <schema_list_filename> --physical-fine-grained
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-type DISK --media-
destination /data1/userA/backup --metadata-destination /data1/userA/metadata --dbname db1 --
schema-list /data1/userA/schema_list --physical-fine-grained
```

Mandatory parameters:

- --master-port
- --media-type
- --media-destination
- --metadata-destination

- --dbname
- --schema-list: name of a multi-schema list file. The format of the list is one schema name in each line.
- --physical-fine-grained

## Helpful Links

[restore](#)

### 5.2.2.4.2 stop

#### Function

The **stop** command is used to stop the currently running backup operation.

#### Syntax

```
python3 $GPHOME/script/GaussRoach.py
-t stop
[-F]
[--logging-path <logging-path>]
[--stop-timeout <timeout-value>]
```

## Parameter Description

Table 5-6 List of CLI parameters for the **stop** command

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-t	N/A	String	Roach supports multiple functions. Setting this parameter to <b>stop</b> stops backup.	<ul style="list-style-type: none"><li>• -t back up</li><li>• -t stop</li><li>• -t validate</li><li>• -t delete</li><li>• -t restore</li><li>• -t show</li><li>• -t generate</li><li>• -t genstack</li><li>• -t getobject</li><li>• -t start</li><li>• -t clean</li><li>• -t config</li><li>• -t version</li><li>• -t help</li></ul>	N/A	-t stop

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-F	-	String	(Optional) This parameter is reserved for compatibility with earlier versions. In the current version, the backup operation is forcibly stopped regardless of whether the parameter is carried or not.	N/A	N/A	stop -F
--logging-path	N/A	String	Specifies the path for logging.	N/A	\$GAUSS LOG/ roach/ controller	--logging-path \$GAUSSLOG/ roach/ controller
--keep-resume-meta	N/A	Boolean	Retains the resumption information or documents.	N/A	N/A	--keep-resume-meta
--stop-timeout	N/A	String	Specifies the timeout period for a stop operation. The stop operation will be terminated when the timeout period expires.	30-57600 (in seconds)	N/A	--stop-timeout 1500

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--resume-backup	N/A	Boolean	<p>Deletes the flag file generated during resumable data backup. If the backup command contains this parameter but the stop command does not, the next backup will continue with the previous progress. Otherwise, a new backup will be performed.</p> <p><b>NOTE</b>            If this parameter is specified, the <b>--metadata-destination</b> parameter must be specified too. If you want to stop the full backup and not resume this process next time, you also need to add the <b>--cluster-unique-id</b> parameter to the command line. Otherwise, resumption files may exist.</p>	N/A	N/A	--resume-backup

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--metadata-destination	N/A	String	If you want to stop the full backup (including the resumption parameters) and not resume the previous full backup process, add the <b>--metadata-destination</b> parameter.	N/A	Custom	--metadata-destination / data/ metadata
--cluster-unique-id	N/A	String	If you want to stop the OBS full backup (including the resumption parameters) and not resume the previous full backup process, add the <b>--cluster-unique-id</b> parameter to the command.	N/A	Custom	--cluster-unique-id abcd

## Usage Guide

- The **stop** command is used to stop the current backup operation. It stops all processes and cleans up all temporary files.
- The **stop** command can be executed on any node in the cluster.
- If no backup operation is performed, the **stop** command exits with an error.
- You can also run the **python3 GaussRoach.py -t stop -F** command to stop a backup. **-F** does not make any difference here.
- If a backup command contains the **--resume-backup** parameter, the backup can be resumed. If a backup is stopped and the **--keep-resume-meta** parameter is not added to the stop command, some resumption information will be cleared and the previous backup progress cannot be resumed.

## Example

### NOTE

GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

Stop a backup.

```
python3 $GPHOME/script/GaussRoach.py -t stop
```

Stopping backup.

HINT: The backup process might have already stopped.

Stopping gs\_roach process

Successfully stopped gs\_roach process

Stopping the backup process in database

Successfully stopped the backup process in database

Cleaning temp files after backup or restore.

Successfully cleaned temp files after backup or restore.

Waiting python backup process, stop timeout is 600 seconds.

Successfully stopped backup.

Successfully remove /data1/ha\_install\_2/app/bin/roach\_nodes.done.common.

Roach operation stop completed.

Create a backup with the **--resume-backup** parameter. (If this backup is stopped, its previous progress can be resumed.)

```
python3 $GPHOME/script/GaussRoach.py -t stop --resume-backup
```

Stop a backup. (The previous backup can be resumed.)

```
python3 $GPHOME/script/GaussRoach.py -t stop --keep-resume-meta
```

### System Response

```
sparrow@BLR1000014692:~/db/bin/script> python3 GaussRoach.py -t stop --keep-resume-meta
```

Stopping backup.

HINT: The backup process might have already stopped.

Stopping gs\_roach process

Successfully stopped gs\_roach process

The stop backup command with keep-resume-meta means to keep the resume backup info, no need deal to kernal side, return now

Waiting python backup process, stop timeout is 600 seconds.

Successfully stopped backup.

Roach operation stop completed.

Stop a backup. (Do not resume the progress next time. Clear the resumption information or files.)

```
python3 $GPHOME/script/GaussRoach.py -t stop --resume-backup --metadata-destination /data/metadata
--cluster-unique-id abcd
```

### System Response

```
sparrow@BLR1000014692:~/db/bin/script> python3 GaussRoach.py -t stop --resume-backup --metadata-
destination /data/metadata --cluster-unique-id abcd
```

Stopping backup.

HINT: The backup process might have already stopped.

Stopping gs\_roach process

Successfully stopped gs\_roach process

Stopping the backup process in database

Successfully stopped the backup process in database

Cleaning temp files after backup or restore.

Successfully cleaned temp files after backup or restore.

Waiting python backup process, stop timeout is 600 seconds.

Successfully stopped backup.

Successfully remove /data1/ha\_install\_2/app/bin/roach\_nodes.done.common.

Roach operation stop completed.

## Helpful Links

[backup](#)

### 5.2.2.4.3 validate

#### Function

The **validate** command is used to validate all the backup files and to identify if any of these files are corrupted. Validation can be performed after the cluster backup is complete or prior to cluster restoration.

#### Syntax

```
python3 GaussRoach.py
-t validate
--agent-port <agent-port>
--backup-key <backup-key>
--master-port <master-port>
--media-type <media-type>
--media-destination <media-destination-path>
--metadata-destination <metadata-path>
--tablename <table-name>
--validation-type <validation-type>
[--dbname <database-name>]
[--logging]
[--logging-level <logging-level>]
[--logging-path <logging-path>]
[--master-ip <xx.xx.xx.xx>]
[--master-timeout <timeout-value>]
```

## Parameter Description

**Table 5-7** List of CLI parameters for the **validate** command

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-t	N/A	String	Roach supports multiple functions. Setting this parameter to <b>validate</b> validates backup.	<ul style="list-style-type: none"><li>● -t backup</li><li>● -t stop</li><li>● -t validate</li><li>● -t delete</li><li>● -t restore</li><li>● -t show</li><li>● -t generate</li><li>● -t genstack</li><li>● -t getobject</li><li>● -t start</li><li>● -t clean</li><li>● -t config</li><li>● -t version</li><li>● -t help</li></ul>	N/A	-t validate
--agent-port	N/A	Integer	For table validation. It specifies the port in which the Roach agent must run.	1024 - 65535	6812	--agent-port 8808

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--backup-key	-c	String	Backup key of a backup set.	N/A	N/A	--backup-key 20150315_16103
--master-port	N/A	Integer	Specifies the port for executing the Roach primary agent process.	1024-65535	N/A	--master-port 6812
--media-type	N/A	String	Specifies the media type. This command supports only <b>DISK</b> (local disk).	DISK	XBSA media	--media-type <i>Disk</i>
--media-destination	N/A	String	Specifies the destination for the chosen media.	N/A	N/A	--media-destination /data1/userA/backup
--metadata-destination	N/A	String	Specifies the path for storing the metadata generated during backup.	N/A	N/A	--metadata-destination /data1/userA/meta
--tablename	N/A	String	Specifies the table to be backed up. <b>NOTE</b> User can only specify one table at a time to take a backup.	N/A	N/A	--tablename <i>Students</i>

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--validation-type	N/A	String	<p>Specifies whether the validation will be done based on CRC-32 or file size.</p> <ul style="list-style-type: none"> <li>• Full (CRC-based validation)</li> <li>• Partial (file size-based validation)</li> </ul> <p><b>NOTE</b> This parameter cannot be used together with fine-grained physical backup and restoration.</p>	<ul style="list-style-type: none"> <li>• Full</li> <li>• Partial</li> </ul>	Full	--validation-type Full
--dbname	-d	String	<p>Specifies the database name.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• If the database name is not specified during logical backup, <b>postgres</b> is used by default.</li> <li>• This parameter is mandatory for fine-grained physical backup.</li> </ul>	N/A	postgres	--dbname DBNew01

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--enable-logging	N/A	Boolean	Enables/disables login to log files. This parameter is recommended instead of --logging.	<ul style="list-style-type: none"> <li>• True</li> <li>• False</li> </ul>	True	--enable-logging <i>True</i>
--logging	N/A	Boolean	Enables or disables the log file recording function. The value is <b>true</b> if --logging is specified in the command, else it is <b>false</b> . This parameter will no longer be used in the future. You are advised to use --enable-logging.	N/A	False	--logging

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--logging-level	N/A	String	<p>Specifies the logging level, which determines the information to be logged.</p> <ul style="list-style-type: none"> <li>• <b>FATAL:</b> Records unrecoverable faults that cause the system suspension. This is the most severe level.</li> <li>• <b>ERROR:</b> Records major errors.</li> <li>• <b>WARNING:</b> Records exceptions. In this case, the system may continue to process tasks.</li> <li>• <b>INFO:</b> Records generated notes.</li> <li>• <b>DEBUG:</b> Records debugging details.</li> <li>• <b>DEBUG2:</b> Records more detailed debugging information, which is not displayed. This is the</li> </ul>	<ul style="list-style-type: none"> <li>• FATAL</li> <li>• ERROR</li> <li>• WARNING</li> <li>• INFO</li> <li>• DEBUG</li> <li>• DEBUG2</li> </ul>	INFO	--logging-level <i>info</i>

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
			least severe level.			
--logging-path	N/A	String	Specifies the path for logging.	N/A	\$GAUSSLOG/roach/controller	--logging-path \$GAUSSL0G/roach/controller
--master-ip	N/A	IP address	Enter the IP address of the cluster where the current node is located, that is, the IP address specified for the current node in the cluster configuration file.	x.x.x.x	N/A	--master-ip x.x.x.x
--master-timeout	N/A	Integer	Specifies the timeout period for the Roach master process to accept connection requests from its agent process. The validation operation will be terminated when the timeout period expires.	600 - 3600 (in seconds)	600	--master-timeout 600

## Usage Guide

- To validate the backup, specify **media type**, **media destination**, **master port**, **validation type** (for cluster backup validation), and **backup key**. Otherwise, Roach will display errors.

 NOTE

- If **validation type** is **full**, perform validation based on CRC-32.
- If **validation type** is **partial**, perform validation based on the file size.
- The **--physical-fine-grained** parameter is not required for validating a fine-grained physical backup set.
- The backup validation command can be used only when the backup media is **DISK**. Backup files backed up to the XBSA/OBS server cannot be validated.
- The backup validation command does not support the validation of logical multi-table backup sets.

## Examples

 NOTE

GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

- Validating a cluster backup set

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t validate --master-port <master_port> --media-type <media_type> --media-destination <media_destination_path> --metadata-destination <metadata_path> --backup-key <backup_key> --validation-type <validation_type>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t validate --master-port 6000 --media-type DISK --media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --backup-key 20120320_085435 --validation-type Partial
```

Mandatory parameters:

- **--master-port**
- **--media-type**: The value must be **DISK**.
- **--media-destination**
- **--metadata-destination**
- **--validation-type**
- **--backup-key**

- Validating a single-table logical backup set

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t validate --master-port <master_port> --media-type <media_type> --media-destination <media_destination_path> --metadata-destination <metadata_path> --agent-port <agent-port> --tablename <table_name> --dbname <database_name> --backup-key <backup_key> --validation-type <validation_type>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t validate --master-port 6000 --media-type DISK --media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --agent-port 7000 --dbname db1 --tablename table2 --backup-key 20120320_085435 --validation-type Partial
```

Mandatory parameters:

- **--master-port**
- **--media-type**: The value must be **DISK**.
- **--media-destination**
- **--metadata-destination**

- --agent-port
  - --tablename: If **--dbname** is not specified, the table is stored in the **postgres** database by default.
  - --validation-type
  - --backup-key
- Embedded validation of full restoration commands

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port <master_port> --media-type <media_type> --media-destination <media_destination_path> --metadata-destination <metadata_path> --backup-key <backup_key> --validation-type <validation_type>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port 6000 --media-type DISK --media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --backup-key 20120320_085435 --validation-type Partial
```

Mandatory parameters:

- --clean
- --master-port
- --media-type: The value must be **DISK**.
- --media-destination
- --metadata-destination
- --validation-type
- --backup-key

#### NOTE

- This command validates the backup set. If the validation fails, the restoration is not performed.
- The preceding example shows the embedded validation scenario for full cluster restoration. The usage of other embedded validation scenarios is similar.
- Fine-grained physical backup sets do not support embedded validation.

## Helpful Links

[backup](#)

### 5.2.2.4.4 delete

## Function

The **delete** command is used to delete a backup set from a disk. This command can be used with the **cascade** option to delete all related backups for a specific backup set.

#### NOTICE

To ensure data security, exercise caution when running this command.

## Syntax

```
python3 GaussRoach.py
-t delete
--backup-key <backup-key>
--master-port <master-port>
--media-type <media-type>
--media-destination <media-destination-path>
--metadata-destination <metadata-path>
[--cascade]
[--nbu-on-remote]
[--client-port <client-port>]
[--nbu-media-list <media-list-filename>]
[--master-timeout <timeout-value>]
```

## Parameter Description

Table 5-8 List of CLI parameters for the **delete** command

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-t	N/A	String	Roach supports multiple functions. Setting this parameter to <b>delete</b> deletes backup.	<ul style="list-style-type: none"><li>• -t backup</li><li>• -t stop</li><li>• -t validate</li><li>• -t delete</li><li>• -t restore</li><li>• -t show</li><li>• -t generate</li><li>• -t genstack</li><li>• -t getobject</li><li>• -t start</li><li>• -t clean</li><li>• -t config</li><li>• -t version</li><li>• -t help</li></ul>	N/A	-t delete

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--backup-key	-c	String	Specifies the backup key used for restoring data from XBSA media or disks.	N/A	N/A	--backup-key 20150315-16103
--master-port	N/A	Integer	Specifies the port for executing the Roach primary agent process.	1024-65535	N/A	--master-port 6812
--media-type	N/A	String	Specifies the media type. <ul style="list-style-type: none"> <li>• XBSA media</li> <li>• Disk</li> </ul>	<ul style="list-style-type: none"> <li>• XBSA</li> <li>• Disk</li> </ul>	N/A	--media-type <i>Disk</i>
--media-destination	N/A	String	Specifies the destination for the chosen media. <b>NOTE</b> The --media-destination path cannot contain spaces.	N/A	N/A	--media-destination /home/cam/backup

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--metadata-destination	N/A	String	Specifies the metadata file location. <b>NOTE</b> The --metadata-destination path cannot contain spaces.	N/A	N/A	--metadata-destination/home/username
--cascade	N/A	N/A	Specifies that all the related backups of the backup set will also be deleted. The value is <b>true</b> if --cascade is specified in the command, else it is <b>false</b> .	N/A	N/A	--cascade

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-- <i>XBSA_media-on-remote</i>	N/A	Boolean	Specifies that the XBSA media cluster is not deployed in the cluster when the XBSA media is used for backup. The XBSA media client is deployed on the XBSA media server.	N/A	False	-- <i>XBSA_media-on-remote</i>
--client-port	N/A	Integer	Specifies the communication port between Roach and the roach_client on the NBU server.	N/A	N/A	--client-port 7816
-- <i>XBSA_media-media-list</i>	N/A	String	Specifies the IP address list of the XBSA media server. In this file, each IP address occupies a line.	N/A	N/A	-- <i>XBSA_media-media-list /home/roach/mediaлист.txt</i>

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--master-timeout	N/A	Integer	Specifies the timeout period for the Roach master process to accept connection requests from its agent process. The deletion operation will be terminated when the timeout period expires.	600 - 3600 (in seconds)	600	--master-timeout 600

## Usage Guide

- If a full backup contains incremental backups, you can only use **--cascade** to delete all descendent backups.
- The deletion of XBSA backup sets depends on the version of the NetBackup software. For example, NetBackup 7.5 does not support the deletion of backup sets from the server through the XBSA interface. NetBackup 8.1.2 supports the deletion of backup sets from the server.

## Examples

### NOTE

GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

- Delete a backup file from a disk.  

```
python3 $GPHOME/script/GaussRoach.py -t delete --media-type DISK --master-port 6000 --media-destination /data1/userA/backup --metadata-destination /data1/userA/meta --backup-key 20120320_085435
```
- Deleting backup files from an XBSA media (intrusive deployment)  

The following example uses the intrusive deployment. If the non-intrusive deployment is used, add three more parameters: **--nbu-on-remote**, **--nbu-media-list**, and **--client-port**. The method is similar to backing up a cluster to an XBSA media.

```
python3 $GPHOME/script/GaussRoach.py -t delete --media-type XBSA_media --master-port 6000 --
media-destination nbu_policy --metadata-destination /data1/userA/meta --backup-key
20120320_085435
```

## Helpful Links

None

### 5.2.2.4.5 restore

#### Function

The **restore** command is used to restore cluster or table data from a disk, an XBSA media, or OBS.

#### Syntax

```
python3 GaussRoach.py
-t restore
--agent-port <agent-port>
--backup-key <backup-key>
--master-port <master-port>
--media-type <media-type>
--media-destination <media-destination-path>
--metadata-destination <metadata-path>
[--bucket-name <bucketname>]
[--buffer-size <buffer-size>]
[--buffer-block-size <block-size>]
[--clean]
[--cluster-unique-id <value>]
[--compression-type <compression-type>]
[--compression-level <compression-level>]
[--continue]
[--contrib-config <configuration-file>]
[--cpu-relinquish-size <cpu-relinquish-size-value>]
[--cpu-relinquish-time <cpu-relinquish-time-value>]
[--dbname <database-name>]
[--enable-logging <true/false>]
[--failure-retry-count <count>]
[--getdata-waittime-afterthreshold <wait-time>]
[--logging]
[--logging-level <logging-level>]
[--logging-path <logging-path>]
[--logical]
[--log-filecount <maximum-log-file-count>]
[--log-filename <maximum-log-file-size>]
[--max-memory-usage <maximum-number-of-bytes>]
[--metadata-file-wait-time <wait time>]
[--obs-server-ip <address>]
[--parallel-process <process-count>]
[--cpu-cores <number-of-available-cpu-cores>]
[--pre-disk-space]
[--resource-retry-count <count>]
[--master-ip <xx.xx.xx.xx>]
[--restore-buffer-threshold <buffer-percentage>]
[--restore-new-cluster [--restore-configs]]
[--table-list <file-name>]
[--retry-wait-time <time>]
[--tablename <table-name>]
[--schemaname <schema-name>]
[--username <user-name>]
[--validation-type <validation-type>]
[--verbose]
--XBSA_media-on-remote
[--client-port <client-port>]
--XBSA_media-media-list <media-list-filename>
```

```
[--master-timeout <timeout-value>]
[--physical-fine-grained]
[--restore-target-list <file-name>]
[--fine-rebuild]
```

## Parameter Description

List of CLI parameters for the **restore** command

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-t	N/A	String	Roach supports multiple functions. Setting this parameter to <b>restore</b> restores backup.	<ul style="list-style-type: none"> <li>• -t backup</li> <li>• -t stop</li> <li>• -t validate</li> <li>• -t delete</li> <li>• -t restore</li> <li>• -t show</li> <li>• -t generate</li> <li>• -t genstack</li> <li>• -t getobject</li> <li>• -t start</li> <li>• -t clean</li> <li>• -t config</li> <li>• -t version</li> <li>• -t help</li> </ul>	N/A	-t restore
--agent-port	N/A	Integer	Specifies the port in which the Roach agent is running. <b>NOTE</b> Use this parameter for table-level backup.	1024 - 65535	N/A	--agent-port 6812

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--backup-key	N/A	String	Specifies the backup key for restoring.	N/A	N/A	--backup-key 20150315-16103
--master-port	N/A	Integer	Specifies the port for executing the Roach primary agent process.	1024 - 65535	6812	--master-port 8808
--media-type	N/A	String	Specifies the media type. <ul style="list-style-type: none"> <li>● XBSA media</li> <li>● Disk</li> <li>● OBS</li> </ul>	<ul style="list-style-type: none"> <li>● Disk</li> <li>● XBSA media</li> <li>● OBS</li> </ul>	XBSA	For disk: --media-type <i>Disk</i> For XBSA media: --media-type XBSA For OBS: --media-type OBS
--media-destination	N/A	String	Specifies the destination path for the chosen media. <ul style="list-style-type: none"> <li>● XBSA media Accord to XBSA media policies.</li> <li>● Disk/OBS: absolute path</li> </ul>	<ul style="list-style-type: none"> <li>● Disk</li> <li>● XBSA media</li> <li>● OBS</li> </ul>	N/A	XBSA media: --media-destination <i>Samplepolicy</i> For disk/OBS: --media-destination / <i>data1/userA/backup</i>

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--metadata-destination	N/A	String	Specifies the metadata file location.	N/A	N/A	--metadata-destination / <i>data1</i> / <i>userA</i> / <i>meta</i>
--bucket-name	N/A	String	Specifies the OBS bucket name.	N/A	N/A	--bucket-name <i>rdsbucket</i> . <i>resource</i> . <i>user4444</i>
--buffer-block-size	N/A	Integer	Specifies the individual buffer block size.	524288- 268435456 (in bytes) The minimum value of OBS backup is 5242880 (bytes).	The value is 2097152 (bytes), and that for OBS backup is 67108864 (bytes).	--buffer-block-size 2097152
--buffer-size	N/A	Integer	Specifies the size of the buffer.	256 - 16384 (in MB)	256 (in MB)	--buffer-size 10000

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--clean	N/A	Boolean	<p>Cleans data before a restore operation. The value is <b>true</b> if the parameter is specified in the command. Otherwise, it is <b>false</b>.</p> <p>This parameter can be used with commands for restoring a cluster, a single table, or multiple tables. If it is used together with the cluster-level restoration command, the cluster is stopped and the data files in all instances are cleared. If it is used together with the restoration command of fine-grained objects such as tables, the data of these objects is truncated before restoration.</p>	N/A	False	--clean
--cluster-unique-id	N/A	String	Specifies the cluster ID for the cluster backup.	N/A	N/A	--cluster-unique-id <i>dws-xlnobs_9732b696-4b6d-4844-a40cd1f6355aca02</i>

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--compression-type	N/A	Integer	Compression algorithm. <b>1:</b> zlib <b>2:</b> LZ4	1, 2	2	--compression-type 1

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
			<p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>If the compression algorithm and level are not specified, versions earlier than GaussDB(DWS) 8.0.0 use the <b>zlib</b> compression algorithm by default, and the compression level is 6. In 8.0.0 and later versions, the LZ4 compression algorithm is used by default, and the compression level is 1.</li> <li>If only the compression level is specified and the compression algorithm is not specified, the zlib compression algorithm is used by default to ensure forward compatibility.</li> <li>If only the compression type is specified and the compression level is not specified, level 6 compression is used for zlib and level 1 compression is used for LZ4 by default.</li> </ul>			

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--compression-level	N/A	Integer	<p>Specifies the compression level.</p> <p><b>0:</b> fast backup and no compression</p> <p><b>9:</b> slow backup and maximum compression</p> <p><b>NOTE</b> A smaller value indicates faster compression. A larger value indicates better compression. Compression is not supported by table level backup.</p>	0 - 9	6	--compression-level 5

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--continue	N/A	Boolean	<p>Specifies to continue with restore operation even if population of data fails.</p> <p>The value is <b>true</b> if the parameter is specified in the command. Otherwise, it is <b>false</b>.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• This parameter can be used only for table restore operation.</li> <li>• If Roach encounters errors such as file is not present/invalid file permission/ invalid directory permission, while it tries to access the backup (CSV) file, then it ignores these errors and proceeds with the restore operation.</li> </ul>	N/A	False	--continue

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--contrib-config	NA	String	<p>Specifies the configuration file for the HDFS hook function. The configuration file must be located in \${GAUSSHOME}/bin.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>Users can specify the configuration file for the HDFS hook function. The configuration file contains the parameters required for calling HDFS backup APIs.</li> <li>When using customized library, ensure that this points to the location of the new library (.so).</li> </ul>	N/A	N/A	--contrib-config roach_contrib.conf
--cpu-relinquish-size	N/A	Integer	Specifies relinquish size value, so that the CPU is relinquished after processing the relinquish size.	1 - 10000 (in GB)	N/A	--cpu-relinquish-size 10 GB
--cpu-relinquish-time	N/A	Integer	<p>Specifies the CPU relinquish time.</p> <p><b>NOTE</b></p> <p>To reduce the CPU usage, set the CPU relinquish time to greater than or equal to 60 seconds.</p>	0 - 3600 (in seconds)	N/A	--cpu-relinquish-time 1000

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--dbname	-d	String	<p>Specifies the database name.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>If the database name is not specified during logical backup, <b>postgres</b> is used by default.</li> <li>This parameter is mandatory for fine-grained physical backup.</li> </ul>	N/A	postgres	--dbname <i>DBNew01</i>
--enable-logging	N/A	Boolean	<p>Enables/disables login to log files.</p> <p>This parameter is recommended instead of --logging.</p>	<ul style="list-style-type: none"> <li>True</li> <li>False</li> </ul>	True	--enable-logging <i>True</i>
--failure-retry-count	N/A	Integer	Number of retry times after a Roach tool failure. This parameter is not supported by the latest version.	0–256	0	-
--getdata-waittime -afterthreshold	N/A	Integer	<p>Specifies the wait time, in microseconds, after the buffer threshold.</p> <p><b>NOTE</b></p> <p>This can be specified only for the table restore operation from an XBSA media.</p>	0–18000000000 (in microsecond)	0	--getdata-waittime -afterthreshold <i>2000</i>

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--logging	N/A	Boolean	<p>Enables or disables the log file recording function.</p> <p>The value is <b>true</b> if the parameter is specified in the command.</p> <p>Otherwise, it is <b>false</b>.</p> <p>This parameter will no longer be used in the future. You are advised to use <b>--enable-logging</b>.</p>	N/A	False	--logging

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--logging-level	N/A	String	<p>Specifies the logging level, which determines the information to be logged.</p> <ul style="list-style-type: none"> <li>• <b>FATAL:</b> Records unrecoverable faults that cause the system suspension. This is the most severe level.</li> <li>• <b>ERROR:</b> Records major errors.</li> <li>• <b>WARNING:</b> Records exceptions. In this case, the system may continue to process tasks.</li> <li>• <b>INFO:</b> Records generated notes.</li> <li>• <b>DEBUG:</b> Records debugging details.</li> <li>• <b>DEBUG2:</b> Records more detailed debugging information, which is not displayed. This is the least severe level.</li> </ul>	<ul style="list-style-type: none"> <li>• FATAL</li> <li>• ERROR</li> <li>• WARNING</li> <li>• INFO</li> <li>• DEBUG</li> <li>• DEBUG2</li> </ul>	INFO	--logging-level <i>info</i>
--logging-path	N/A	String	Specifies the path on disk that is used for logging.	N/A	\$GAUSSLOG/ roach/ controller	--logging-path \$GAUSSL OG/ roach/ controller

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--logical	N/A	N/A	This parameter is used to logically back up or restore multiple tables. It must be used with <b>--table-list</b> . If this parameter is specified, tables are logically backed up or restored. If it is not, tables are physically backed up or restored.	N/A	N/A	--logical
--log-filecount	N/A	Integer	Specifies the maximum number of log files.	5~1024	50	--log-filecount 5
--log-filesize	N/A	Integer	Specifies the maximum log file size.	5~20MB	5 (in MB)	--log-filesize 5
--max-memory-usage	N/A	Unsigned integer	Specifies the maximum number of bytes that can be used by Roach. The value <b>0</b> indicates that no quota is specified. That is, you can use any amount of memory for Roach.	<ul style="list-style-type: none"> <li>• 0</li> <li>• 2 - 256 (in GB)</li> </ul>	2 - 256	--max-memory-usage 2
--metadata-file-wait-time	N/A	Integer	Specifies wait time for reading the metadata file.	60 - 3600 (in seconds)	60 (in seconds)	--metadata-file-wait-time 100
--obs-server-ip	N/A	String	Specifies the domain name of the OBS server. Note that it is not an IP address.	N/A	N/A	--obs-server-ip obs.xxx.com

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--parallel-process	N/A	Integer	<p>Number of concurrent restoration tasks.</p> <p><b>NOTE</b> Parallel processing is not supported for table level backup/restore.</p>	1–32	1	--parallel-process 10
--cpu-cores	N/A	Integer	Specifies the number of CPU cores that can be used when Roach starts multiple threads concurrently.	The value ranges from 1 to 1024 and cannot be greater than the total number of logical CPU cores.	1/2 of the total number of logical CPU cores on the node	--cpu-cores 10
--pre-disk-space	N/A	Boolean	<p>Checks available disk space to perform an operation.</p> <p>The value is <b>true</b> if the parameter is specified in the command. Otherwise, it is <b>false</b>.</p>	N/A	False	--pre-disk-space

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--resource-retry-count	NA	Integer	<p>Specifies the number of times Roach will retry upon a resource allocation failure.</p> <p>For a value <i>n</i>, Roach will retry <i>n-1</i> times. The value <b>0</b> indicates no retry.</p> <p><b>NOTE</b> This parameter is applicable to any Roach tool operations when the system resource allocation fails. The system resources include heap memory, threads, and APIs of the file system and database.</p>	0–256	3	--resource-retry-count 2
--master-ip	N/A	IP address	Enter the IP address of the cluster where the current node is located, that is, the IP address specified for the current node in the cluster configuration file.	x.x.x.x	N/A	--master-ip x.x.x.x
--restore-buffer-threshold	N/A	Integer	Specifies the available buffer percentage before starting the restore operation.	1–100 (in percent)	100	--restore-buffer-threshold 10

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--restore-configs	N/A	String	Specifies whether to restore the default configuration items of the old cluster to the destination cluster. This parameter is used when backups are restored to a new cluster. This parameter can be used only with <b>--restore-new-cluster</b> .	-	-	--restore-new-cluster --restore-configs
--restore-new-cluster	N/A	Boolean	<p>Specifies that the cluster is restored to a different host. This parameter is valid only when media type is XBSA or OBS.</p> <p>The value is <b>true</b> if the parameter is specified in the command. Otherwise, it is <b>false</b>.</p> <p><b>NOTE</b>  When <b>--restore-new-cluster</b> is used, the <b>start</b> command after the restore operation must contain the <b>--restore-new-cluster -X</b> option, as shown in the following:  <b>GaussRoach.py -t start --restore-new-cluster-X &lt;xml path of the new cluster&gt;</b></p>	N/A	N/A	--restore-new-cluster

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--retry-wait-time	N/A	Integer	Specifies the retry interval of Roach after a system resource operation fails. Generally, this parameter is used together with --resource-retry-count.	1–3600 (in seconds)	10 (in seconds )	--retry-wait-time 1200
--table-list	N/A	String	Specifies the file that summarizes the names of the tables to take the logical backup.	N/A	N/A	--table-list /home/roack/bklist.txt
--tablename	N/A	String	Specifies the name of the table to take the logical backup. <b>NOTE</b> User can only specify one table at a time to take a backup.	N/A	N/A	--tablename Students
--username	-U	String	Specifies the name of the user installing the cluster.	N/A	N/A	--username cluster_user
--validation-type	NA	String	Specifies whether the validation will be done based on CRC-32 or file size. <ul style="list-style-type: none"> <li>● Full (CRC-based validation)</li> <li>● Partial (file size-based validation)</li> </ul>	<ul style="list-style-type: none"> <li>● Full</li> <li>● Partial</li> </ul>	Full	--validation-type Full

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--verbose	N/A	Boolean	Specifies whether <b>verbose</b> is used to display detailed information.  The value is <b>true</b> if the parameter is specified in the command. Otherwise, it is <b>false</b> .	N/A	False	--verbose
--XBSA_media-on-remote	N/A	Boolean	Specifies that the XBSA media cluster is not deployed in the cluster when the XBSA media is used for backup. The XBSA media client is deployed on the XBSA media server.	N/A	False	--XBSA_media-on-remote
--client-port	N/A	Integer	Specifies the communication port between Roach and the roach_client on the XBSA media server.	N/A	N/A	--client-port 7816
--nbu-media-list	N/A	String	Specifies the IP address list of the XBSA media server. In this file, each IP address occupies a line.	N/A	N/A	--nbu-media-list /home/roach/medialist.txt
--schemame	N/A	String	Name of the schema to be restored by a logical backup	N/A	public	--schemame s1

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--master-timeout	N/A	Integer	Specifies the timeout period for the Roach master process to accept connection requests from its agent process. The restoration operation will be terminated when the timeout period expires.	600 - 3600 (in seconds)	600	--master-timeout 600

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--physical-fine-grained	N/A	Boolean	If this parameter is specified, backup sets can be used for physical fine-grained restoration.  When <b>-t</b> is set to <b>restore</b> , this parameter is used to distinguish cluster-level full restoration, for which data will not be cleared and the cluster will not be stopped. The list of tables to be restored ( <b>--table-list</b> ) can be read for multi-table restoration.  When <b>-t</b> is set to <b>backup</b> , this parameter is used to specify the backup sets for physical fine-grained restoration. If this parameter is specified, the mapping between tables and physical file lists is generated so that backup sets can be used for fine-grained restoration of tables.	N/A	False	--physical-fine-grained

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--restore-target-list	N/A	String	Specifies the list of target tables corresponding to --table-list during physical fine-grained restoration. To restore data to the original tables, --restore-target-list and --table-list can point to the same file.	N/A	N/A	--restore-target-list /home/roack/newlist.txt
--fine-rebuild	N/A	Boolean	This parameter is used to specify a schema backup set for cluster DR.	N/A	False	--fine-rebuild

## Usage Guide

- For cluster-level restoration, the **restore** command must be used together with the **start** command. Otherwise, the cluster is unavailable after the restoration is complete. This requirement does not apply to table-level restoration.
- The restoration operation will clear the original cluster or table data. If the restoration fails, the data cannot be restored. Therefore, exercise caution when performing the restoration operation.

## Examples



GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

- Restoring a cluster from an XBSA media (intrusive Deployment)

The following example shows the intrusive deployment of an XBSA media. If the XBSA media uses the non-intrusive deployment, three more parameters are added to the command: --XBSA\_media-on-remote, --XBSA\_media-media-list, and --client-port. These parameters are used in the same way as backing up a cluster to an XBSA media.

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port <master_port> --media-type nbu --media-destination <nbu_policy_name> --metadata-destination <metadata_path> --backup-key <backup_key>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port 6000 --media-type nbu --
media-destination samplepolicy --metadata-destination /data1/userA/metadata --backup-key
20120320_085435
python3 $GPHOME/script/GaussRoach.py -t start
```

Mandatory parameters:

- --clean
- --master-port
- --media-type: The value must be an XBSA media.
- --media-destination
- --metadata-destination
- --backup-key

 NOTE

- If the local metadata is lost or damaged and cannot be restored using XBSA, you can clear the metadata path or specify a metadata destination path that does not exist (administrator must have read and write permissions), and perform the restoration again. Roach will download the correct metadata from the XBSA server for restoration.
- To restore data from XBSA to a new cluster, you need to add the **--old-cluster-hostname** parameter to the **restore** command and enter the host name of any node in the original cluster. Roach uses the host name to download correct metadata from the XBSA server to obtain the mapping between two cluster nodes.
- Restoring a cluster from a disk

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port <master_port> --media-type DISK --media-destination <media_destination_path> --metadata-destination <metadata_path> --backup-key <backup_key>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port 6000 --media-type DISK --
media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --backup-
key 20120320_085435
python3 $GPHOME/script/GaussRoach.py -t start
```

Mandatory parameters:

- --clean
- --master-port
- --media-type: The value must be **DISK**.
- --media-destination
- --metadata-destination
- --backup-key

- Restoring a cluster from OBS

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port <master_port> --media-type OBS --media-destination <media_destination_path> --metadata-destination <metadata_path> --obs-server-ip <obs-server-ip> --bucket-name <rds-bucket-name> --cluster-unique-id <cluster-id> --backup-key <backup_key>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port 6000 --media-type OBS --
media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --obs-
server-ip x.x.x.x --bucket-name rdsbucket.resource.user4444 --cluster-unique-id dws-
xlnobs_9732b696-4b6d-4844-a40c-d1f6355aca02 --backup-key 20120320_085435
python3 $GPHOME/script/GaussRoach.py -t start
```

Mandatory parameters:

- --clean
- --master-port
- --media-type: The value must be **OBS**.
- --media-destination
- --metadata-destination
- --obs-server-ip
- --bucket-name
- --cluster-unique-id
- --backup-key

 NOTE

Before restoring a cluster from OBS, copy the **obs\_server\_key** file to the **\$GAUSSHOME/bin/** directory of each node in the cluster.

- Restoring a single table from the logical backup set of an XBSA media (intrusive deployment)

The following example shows the intrusive deployment of an XBSA media. If the XBSA media uses the non-intrusive deployment, three more parameters are added to the command: **--XBSA\_media-on-remote**, **--XBSA\_media-media-list**, and **--client-port**. These parameters are used in the same way as backing up a cluster to an XBSA media.

In addition, this function supports logical restoration of an entire database or schema, restoration of a specified schema from the backup set of a database or schema, and restoration of multiple specified tables. You only need to specify the **--dbname** or **--schemaname** parameter.

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --create --master-port <master_port> --media-type nbu --media-destination <policy_name> --metadata-destination <metadata_path> --agent-port <agent_port> --dbname <database_name> --tablename <table_name> --backup-key <backup_key>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --create --master-port 6000 --media-type nbu --media-destination samplepolicy --metadata-destination /data1/userA/metadata --agent-port 7000 --dbname db1 --tablename table2 --backup-key 20120320_085435
```

Mandatory parameters:

- --clean: automatically cleans table data before table restoration.
- --create: automatically creates a table definition when a table is deleted.
- --master-port
- --media-type: The value must be an XBSA media.
- --media-destination
- --metadata-destination
- --agent-port
- --tablename: If **--dbname** is not specified, the table is stored in the **postgres** database by default.
- --backup-key

- Restoring a single table from a disk logical backup set

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --create --master-port <master_port> --media-type DISK --media-destination <media_destination_path> --metadata-destination <metadata_path> --agent-port <agent_port> --dbname <database_name> --tablename <table_name> --backup-key <backup_key>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --create --master-port 6000 --media-type DISK --media-destination /data1/userA/backup --metadata-destination /data1/userA/metadata --agent-port 7000 --dbname db1 --tablename table2 --backup-key 20120320_085435
```

Mandatory parameters:

- --clean
  - --create
  - --master-port
  - --media-type: The value must be **DISK**.
  - --media-destination
  - --metadata-destination
  - --agent-port
  - --tablename: If **--dbname** is not specified, the table is stored in the **postgres** database by default.
  - --backup-key
- Restoring tables from the logical backup set of an XBSA media (intrusive deployment)

The following example shows the intrusive deployment of an XBSA media. If the XBSA media uses the non-intrusive deployment, three more parameters are added to the command: **--XBSA\_media-on-remote**, **--XBSA\_media-media-list**, and **--client-port**. These parameters are used in the same way as backing up a cluster to an XBSA media.

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --create --master-port <master_port> --media-type nbu --media-destination <XBSA_media_policy_name> --metadata-destination <metadata_path> --agent-port <agent_port> --logical --table-list <table_list> --dbname <database_name> --backup-key <backup_key>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --create --master-port 6000 --media-type nbu --media-destination samplepolicy --metadata-destination /data1/userA/metadata --agent-port 7000 --logical --table-list /data1/userA/tblist --dbname db1 --backup-key 20120320_085435
```

Mandatory parameters:

- --clean
- --create
- --master-port
- --media-type: The value must be an XBSA media.
- --media-destination
- --metadata-destination
- --agent-port
- --logical
- --table-list: If **--dbname** is not specified, all tables in the list are stored in the **postgres** database by default.

- --backup-key
- Restoring multiple tables from a disk logical backup set

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --create --master-port <master_port> --media-type DISK --media-destination <media_destination_path> --metadata-destination <metadata_path> --agent-port <agent_port> --logical --table-list <table_list> --dbname <database_name> --backup-key <backup_key>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --create --master-port 6000 --media-type DISK --media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --agent-port 7000 --logical --table-list /home/userA/tblist --dbname db1 --backup-key 20120320_085435
```

Mandatory parameters:

- --clean
- --create
- --master-port
- --media-type: The value must be **DISK**.
- --media-destination
- --metadata-destination
- --agent-port
- --logical
- --table-list: If **--dbname** is not specified, all tables in the list are stored in the **postgres** database by default.
- --backup-key

- Incrementally restoring a cluster

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port <master_port> --media-type DISK --media-destination <media_destination_path> --metadata-destination <metadata_path> --backup-key <backup_key>
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port 6000 --media-type DISK --media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --backup-key 20120320_085435
python3 $GPHOME/script/GaussRoach.py -t start
```

Mandatory parameters:

- --clean
- --master-port
- --media-type
- --media-destination
- --metadata-destination
- --backup-key

### NOTE

- This example describes only the scenario where the backup media is **DISK**. Other backup media also support incremental backup. Methods of using other backup media are similar.
- During incremental restoration, Roach automatically sorts out the entire incremental backup chain based on the value of **--backup-key**. It performs a full restoration and then restores all incremental backup sets on the chain in sequence until the backup set corresponding to **--backup-key** ends.
- Restoring a cluster to a new cluster

Command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port <master_port> --media-type DISK --media-destination <media_destination_path> --metadata-destination <metadata_path> --backup-key <backup_key> --restore-new-cluster --restore-configs
```

Command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port 6000 --media-type DISK --media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --backup-key 20120320_085435 --restore-new-cluster --restore-configs
python3 $GPHOME/script/GaussRoach.py -t start --restore-new-cluster -X /home/userA/cluster.xml
```

Mandatory parameters:

- **--clean**
- **--master-port**
- **--media-type**
- **--media-destination**
- **--metadata-destination**
- **--backup-key**
- **--restore-new-cluster**
- **--restore-configs**: updates the port and path information in **postgresql.conf** to that of the new cluster.

### NOTE

**Prerequisites and precautions for restoring a backup cluster to a new cluster are as follows:**

- The topology of the new cluster is the same as that of the backup cluster, including the number of nodes, number of CNs/DNs on each node, and DN rings between nodes.
- The platform and operating system of the new cluster must be similar to those of the cluster to be backed up. Cross-OS or cross-platform (x86/Huawei Kunpeng) backup and restoration are not supported.
- If the backup media is **DISK**, you need to manually copy the files in the cluster to be backed up to the new cluster. The nodes in the original cluster must be mapped to the nodes in the target cluster. The backup content must be copied to each node. Ensure that the ID of the new cluster node is the same as that of the original node where the backup file is located.
- Ensure that the new and backup clusters have the same user names.
- After the new cluster is restored, you must specify the **--restore-new-cluster** parameter and the **-X** parameter as the XML configuration file for the new cluster when running the **start** command of Roach to start the new cluster.
- Restoring some tables from a cluster backup set

This function is available only when the **--physical-fine-grained** parameter is specified for the full and incremental cluster backup. Otherwise, the

generated backup sets cannot be used for fine-grained restoration of some tables.

Backup command format:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port <master_port> --media-type
<media_type> --media-destination <media_destination_path> --metadata-destination
<metadata_path> --physical-fine-grained
```

Backup command example:

```
python3 $GPHOME/script/GaussRoach.py -t backup --master-port 6000 --media-type DISK --media-
destination /data1/userA/media --metadata-destination /data1/userA/metadata --physical-fine-
grained
```

Mandatory backup parameters:

- --master-port
- --media-type
- --media-destination
- --metadata-destination
- --physical-fine-grained

Restoration command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port <master_port> --media-
type <media_type> --media-destination <media_destination_path> --metadata-destination
<metadata_path> --backup-key <backup_key> --physical-fine-grained --dbname <database_name>
--table-list <backup_table_list> --restore-target-list <target_table_list>
```

Restoration command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port 6000 --media-type DISK --
media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --backup-
key 20120320_085435 --physical-fine-grained --dbname db1 --table-list /home/userA/table_list.txt
--restore-target-list /home/userA/target_list.txt
```

Mandatory restoration parameters:

- --clean
- --master-port
- --media-type
- --media-destination
- --metadata-destination
- --backup-key
- --physical-fine-grained
- --dbname
- --table-list
- --restore-target-list

### NOTE

- The preceding example assumes that the backup media is DISK. This function can also be used to back up a cluster using XBSA (non-intrusive deployment). The usage method is similar.
- This function is also available for incremental backup of a cluster. The usage method is similar.
- Such fine-grained physical restoration will not stop or restart clusters.
- Note: The **--clean** parameter is used to clean the table data before performing the restoration. Before running this command, ensure that the table data specified by **--restore-target-list** is no longer needed.
- The sequence of tables in **--restore-target-list** must be the same as that of **--table-list**. To restore data to the original tables, **--restore-target-list** and **--table-list** can point to the same file.
- In the preceding two table lists, each line identifies a table to be restored. The format is *schema name.table name*.

```
s1.t1
s1.t2
s2.t3
```

**s1** and **s2** indicate schema names. **t1** to **t3** indicate table names.

- Restoring some tables from the schema-level fine-grained physical backup set  
Restoration command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port <master_port> --media-type <media_type> --media-destination <media_destination_path> --metadata-destination <metadata_path> --backup-key <backup_key> --physical-fine-grained --dbname <database_name> --table-list <backup_table_list> --restore-target-list <target_table_list>
```

Restoration command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --clean --master-port 6000 --media-type DISK --media-destination /data1/userA/media --metadata-destination /data1/userA/metadata --backup-key 20120320_085435 --physical-fine-grained --dbname db1 --table-list /home/userA/table_list.txt --restore-target-list /home/userA/target_list.txt
```

Mandatory restoration parameters:

- **--clean**
- **--master-port**
- **--media-type**
- **--media-destination**
- **--metadata-destination**
- **--backup-key**
- **--physical-fine-grained**
- **--dbname**
- **--table-list**
- **--restore-target-list**

 NOTE

- The preceding example assumes that the backup media is DISK. This function can also be used to back up a cluster using XBSA (non-intrusive deployment). The usage method is similar.
- Use the same method to perform fine-grained restoration from a single-schema physical backup set and from a multi-schema physical backup set.
- Such fine-grained physical restoration will not stop or restart clusters.
- Note: The **--clean** parameter is used to clean the table data before performing the restoration. Before running this command, ensure that the table data specified by **--restore-target-list** is no longer needed.
- The sequence of tables in **--restore-target-list** must be the same as that of **--table-list**. To restore data to the original tables, **--restore-target-list** and **--table-list** can point to the same file.
- In the preceding two table lists, each line identifies a table to be restored. The format is *schema name.table name*.

```
s1.t1
s1.t2
s2.t3
```

**s1** and **s2** indicate schema names. **t1** to **t3** indicate table names.

- Performing DR from the schema-level fine-grained physical backup set  
Restoration command format:

```
python3 $GPHOME/script/GaussRoach.py -t restore --master-port <master_port> --media-type
<media_type> --media-destination <media_destination_path> --metadata-destination
<metadata_path> --backup-key <backup_key> --dbname <database_name> --restore-new-cluster --
physical-fine-grained --fine-rebuild
```

Restoration command example:

```
python3 $GPHOME/script/GaussRoach.py -t restore --master-port 6000 --media-type DISK --media-
destination /data1/userA/media --metadata-destination /data1/userA/metadata --backup-key
20120320_085435 --dbname db1 --restore-new-cluster --physical-fine-grained --fine-rebuild
```

Mandatory restoration parameters:

- **--master-port**
- **--media-type**
- **--media-destination**
- **--metadata-destination**
- **--backup-key**
- **--fine-rebuild**
- **--restore-new-cluster**

### NOTE

- The preceding example assumes that the backup media is DISK. This function can also be used to back up a cluster using XBSA (non-intrusive deployment). The usage method is similar.
- If the backup media is DISK and data is restored to a new cluster, nodes in the source cluster must be mapped to nodes in the target cluster in one-to-one mode, and backup set data must be replicated to each node.
- When the schema backup set is used for cluster disaster recovery, you need to create a homogeneous cluster.
- When a schema backup set is used for cluster DR, indexes cannot be restored. You need to manually rebuild the backup set.
- Before backing up schemas, you need to run the **gs\_backup** command to back up other **conf** files for DR, such as **pg\_hba**.
- If the schema backup set is restored to the original cluster, you can directly replace the **conf** file in the **gs\_backup** backup set. If the schema backup set is restored to a new cluster, you need to manually reconfigure the GUC parameters based on the file differences.
- When the schema backup set is used for cluster DR, the **--physical-fine-grained** parameter is optional. If **--clean**, **--restore-target-list**, and **--table-list** are not specified, all data in the schema backup set is restored by default.

## Helpful Links

[backup](#)

### 5.2.2.4.6 Backup Set Information Display

## Function

The **show** command is used to show information about all backup sets in the cluster.

## Syntax

```
python3 GaussRoach.py
-t show
--all-backups
--backup-key <backup-key>
--master-port <master-port>
--media-destination <media-destination-path>
--metadata-destination <metadata-path>
[--no-display]
[--output-file <output-file-name>]
[--overwrite]
[--related-backup-keys]
```

## Parameter Description

Table 5-9 List of CLI parameters for the **show** command

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-t	N/A	String	Roach supports multiple functions. Setting this parameter to <b>show</b> shows catalog information.	<ul style="list-style-type: none"><li>• -t backup</li><li>• -t stop</li><li>• -t validate</li><li>• -t delete</li><li>• -t restore</li><li>• -t show</li><li>• -t generate</li><li>• -t genstack</li><li>• -t getobj ect</li><li>• -t start</li><li>• -t clean</li><li>• -t config</li><li>• -t versio n</li><li>• -t help</li></ul>	N/A	-t show

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--all-backups	N/A	Boolean	Displays all the backup files.  The value is <b>true</b> if the parameter is specified in the command. Otherwise, it is <b>false</b> .	N/A	False	--all-backups
--backup-key	N/A	String	Specifies the backup key used for restoring data from XBSA media or disks.	N/A	N/A	--backup-key 20161025_194540
--master-port	N/A	Integer	Specifies the port for the Roach master process execution.	1024 - 65535	6812	--master-port 8808
--media-destination	N/A	String	Specifies the destination for the chosen media.	N/A	N/A	--media-destination /data1/userA/backup
--metadata-destination	N/A	String	Specifies the metadata file location.	N/A	N/A	--metadata-destination /data1/userA/meta

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--no-display	N/A	Boolean	Specifies that do not display the command output of <b>show</b> on the console. This parameter can be used with <b>--output-file</b> to redirect output. The value is <b>True</b> if <b>--no-display</b> is specified in the command, else it is <b>False</b> .	N/A	False	--no-display
--output-file	N/A	String	Specifies the absolute output file path with the file name, for the output of the show command.	N/A	False	--output-file /home/catalog.txt
--overwrite	N/A	Boolean	Specifies that output files can be overwritten forcibly. The value is <b>True</b> if <b>--overwrite</b> is specified in the command, else it is <b>False</b> .	N/A	False	--overwrite

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--related-backup-keys	N/A	Boolean	Displays all related backups of the provided backup key. The value is <b>True</b> if <b>--related-backup-keys</b> is specified in the command, else it is <b>False</b> .	N/A	False	--related-backup-keys

## Usage Guide

You can use this command to show brief information about all backup sets or detailed information about a specified backup key.

## Examples



GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

- View all backup information of a cluster.  

```
python3 $GPHOME/script/GaussRoach.py -t show --all-backups --metadata-destination /data1/userA/metadata
```
- View details about a specified backup set.  

```
python3 $GPHOME/script/GaussRoach.py -t show --backup-key 20120320_085435 --metadata-destination /data1/userA/metadata
```

 NOTE

The following table describes the parameters in the **show** command output:

- **BKP TYPE:** backup set type  
The values are as follows:
  - **FULL:** full cluster backup
  - **INCREMENTAL:** incremental cluster backup
  - **LOGICAL:** logical backup, including a single table, multiple tables, databases, and schemas
  - **FINE\_SCHEMA:** schema-level fine-grained physical backup
- **STATUS:** backup set status  
The values are as follows:
  - **UNVERIFIED:** indicates that the backup is successful but has not been verified.
  - **VALIDATED:** indicates that the backup is successful and is validated.
  - **UNKNOWN:** indicates that the backup set status fails to be obtained.
  - **IN PROGRESS:** indicates that a backup is being performed.
  - **CORRUPTED:** indicates that the backup set fails to pass the verification or an exception occurs during the deletion.
  - **DELETED:** indicates that a backup is deleted.
  - **FAILED:** indicates that the backup failed.
  - **NA:** indicates that the backup is invalid or that the backup verification failed.
- **BARRIER TIME:** indicates the synchronization time in which a transaction is committed. It is applicable to cluster backup.
- **DELETION TIME:** indicates the time at which a backup was deleted.
- **VALIDATION TIME:** indicates the time at which the last validation was performed.
- **TLI:** indicates the timeline on which a backup was performed.
- **BKP PRIOR KEY:** indicates that the incremental backup is generated based on this backup key.
- **BACKUP LEVEL:** indicates the level of backup. **0** indicates full backup and **1** indicates incremental backup. **NA** indicates the logical backup of one or more tables.
- **SUPPORT FINE RESTORE:** specifies whether to support fine-grained physical restoration. This field is displayed only for cluster-level and fine-grained physical backup sets. The value can be **YES** or **NO**.
- **FINE GRAINED DB LIST, FINE GRAINED SCHEMA LIST, FINE GRAINED TABLE LIST:** specifies paths of the object list in the fine-grained physical backup set. Each object is listed in a row in the inventory file. For example, the schema inventory format is **db.schema**, and the table inventory format is **db.schema.table**. This field is displayed only for fine-grained physical backup sets.

## Helpful Links

[restore](#)

### 5.2.2.4.7 show-progress

## Function

The **show-progress** command is used to query the specified backup or restoration progress of a cluster. Currently, only the progress of cluster backup and physical fine-grained backup and restoration can be queried.

## Syntax

```
python3 $GPHOME/script/GaussRoach.py
-t show-progress
--backup-key <backup-key>
--metadata-destination <metadata-path>
[--media-type <media-type>]
[--cluster-unique-id <value>]
```

## Parameter Description

**Table 5-10** List of CLI parameters for the **show** command

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-t	N/A	String	Setting this parameter to <b>show-progress</b> , which can be used to query the backup and restoration progress.	<ul style="list-style-type: none"> <li>-t show-progress</li> </ul>	N/A	-t show-progress
--backup-key	N/A	String	Specifies the backup key used for backup and restoration (from OBS/XBSA media/disks).	N/A	N/A	--backup-key 20161025_194540
--media-type	N/A	String	Specifies the media type required by the backup and restoration <b>NOTE</b> <ul style="list-style-type: none"> <li>This parameter is optional. If it is not specified, the default value <b>DISK</b> is used.</li> </ul>	<ul style="list-style-type: none"> <li>OBS</li> <li>XBSA media</li> <li>DISK</li> </ul>	DISK	--media-type DISK

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--metadata-destination	N/A	String	Specifies the metadata file location.	N/A	N/A	--metadata-destination /data1/userA/meta
--cluster-unique-id	N/A	String	Specifies the cluster ID of a cluster backup and restoration. <b>NOTE</b> <ul style="list-style-type: none"><li>This parameter must be specified only when the --media-type OBS is used.</li></ul>	N/A	N/A	--cluster-unique-id dws-xlnobs_9732b696-4b6d-4844-a40c-d1f6355aca02

## Usage Guide

You can run this command to query the backup and restoration progress.

## Examples



GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

- View the progress of a specified backup set.

```
python3 $GPHOME/script/GaussRoach.py -t show-progress --backup-key 20161025_194540 --
metadata-destination /data1/userA/metadata
```

 NOTE

The following table describes the parameters in the **show-progress** command output:

- **priorKey**: indicates the backup set is generated based on the specified backup key.
- **actionType**: indicates the current operation type of the backup set.

The values are as follows:

- **Backup**: indicates the backup phase.
- **Restore**: indicates the restoration phase.
- **progress**: indicates the backup or restoration progress.
- **currentStep**: indicates the step that is being executed.
- **unrestoreKeys**: indicates the list of keys that have not been restored. This field is reserved.
- **failedStep**: indicates the step where the backup or restoration fails.
- **errorMsg**: indicates the error information about a backup or restoration failure. If the backup or restoration is successful, success information is displayed.
- **errorCode**: indicates the backup or restoration error code. This field is reserved.
- **actionStartTime**: indicates the start time of the current operation.
- **actionEndTime**: indicates the end time of the current operation.
- **updateTime**: indicates the time when the operation progress is refreshed.

#### 5.2.2.4.8 generate

The **generate** command is used to generate the cluster topology information in XML format. The XML file can be used as the configuration file for installing new clusters with the same structure.

#### Syntax

```
python3 GaussRoach.py
-t generate
--backup-key <backup-key>
--backup-topology xml
--master-port <master-port>
--media-destination <media-destination-path>
--metadata-destination <metadata-path>
[--generate-force]
[--log-filecount <log-file-count>]
[--log-filename <log-file-size>]
[--logging]
[--logging-level <logging-level>]
[--logging-path <logging-path>]
[--media-type <media-type>]
[--output-file <output-file-name>]
```

## Parameter Description

Table 5-11 List of CLI parameters for the **generate** command

Long	Short	Data Type	Description	Value Range	Default Value	Example
-t	-t	String	Roach supports multiple functions. Setting this parameter to <b>generate</b> generates topology information and a cluster layout.	<ul style="list-style-type: none"><li>• -t backup</li><li>• -t stop</li><li>• -t validate</li><li>• -t delete</li><li>• -t restore</li><li>• -t show</li><li>• -t generate</li><li>• -t genstack</li><li>• -t getobject</li><li>• -t start</li><li>• -t clean</li><li>• -t config</li><li>• -t version</li><li>• -t help</li></ul>	N/A	-t generate
--backup-key	N/A	String	Specifies the backup key for restoration from a disk.	N/A	N/A	--backup-key 20150315_16103

Long	Short	Data Type	Description	Value Range	Default Value	Example
--backup-topology	N/A	String	Helps generate topology information at the time of backup. The information is generated in XML format.	N/A	N/A	--backup-topology xml
--master-port	N/A	Integer	Specifies the port for executing the Roach primary agent process.	N/A	N/A	--master-port 6000
--media-destination	N/A	String	Backup destination path of the selected media. <b>NOTE</b> This option supports only disk.	N/A	N/A	--media-destination /data1/userA/backup
--metadata-destination	N/A	String	Specifies the metadata file location.	N/A	N/A	--metadata-destination /data1/userA/meta
--enable-logging	N/A	Boolean	Enables/disables login to log files. This parameter is recommended instead of --logging.	<ul style="list-style-type: none"> <li>• True</li> <li>• False</li> </ul>	True	--enable-logging True
--generate-force	N/A	Boolean	Specifies that the output file will be forcefully overwritten. The value is <b>True</b> if --generate-force is specified in the command, else it is <b>False</b> .	N/A	False	--generate-force

Long	Short	Data Type	Description	Value Range	Default Value	Example
--log-filecount	N/A	Integer	Specifies the maximum number of log files.	5 - 1024	50	--log-filecount 5
--log-filesize	N/A	Integer	Specifies the maximum log file size.	5 - 20 (in MB)	5 (in MB)	--log-filesize 5
--logging	N/A	Boolean	<p>Enables/disables login to log files. The value is <b>True</b> if <b>--logging</b> is specified in the command, else it is <b>False</b>.</p> <p>This parameter will no longer be used in the future. You are advised to use <b>--enable-logging</b>.</p>	N/A	False	--logging

Long	Short	Data Type	Description	Value Range	Default Value	Example
--logging-level	N/A	String	<p>Specifies the logging level, which determines the information to be logged.</p> <p><b>FATAL:</b> Records faults that cause the system to stop working and cannot be recovered. This is the most severe level.</p> <p><b>ERROR:</b> Records major errors.</p> <p><b>WARNING:</b> Records exceptions. In this case, the system may continue processing tasks.</p> <p><b>INFO:</b> Records generated notes.</p> <p><b>DEBUG:</b> Records debugging details.</p> <p><b>DEBUG2:</b> Records more detailed debugging information, which is not displayed. This is the least severe level.</p>	<ul style="list-style-type: none"> <li>• FATAL</li> <li>• ERROR</li> <li>• WARNING</li> <li>• INFO</li> <li>• DEBUG</li> <li>• DEBUG2</li> </ul>	INFO	--logging-level <i>info</i>
--logging-path	N/A	String	Specifies the path for logging.	N/A	\$GAUSSLOG/roach/controller	--logging-path \$GAUSSLOG/roach/controller

Long	Short	Data Type	Description	Value Range	Default Value	Example
--media-type	N/A	String	Specifies the media type for backup. <b>NOTE</b> This option supports only disk.	N/A	Disk	--media-type <i>Disk</i>
--output-file	N/A	String	Specifies the output file name. This can be an absolute or relative file name path.	N/A	N/A	--output-file <i>/home/userA/clusterConfig.xml</i>

## Usage Guide

- To generate the topology information, the user must provide **backup key**, **master port**, **media destination**, **metadata destination**, and **media type** parameters.
- The optional parameter **--output-file** specifies the name of the generated XML file. If this parameter is not specified, the XML file will be stored in the current directory in the **clusterTopology\_<backup\_key>.xml** format.

### NOTE

- The **--media-type** parameter in the **generate** command can only be set to **DISK**, regardless of the backup media type.
- The **generate** command applies only to cluster-level backup.

## Examples

### NOTE

GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

Generate cluster topology information.

```
python3 $GPHOME/script/GaussRoach.py -t generate --backup-topology xml --master-port 6000 --media-type DISK --media-destination /data1/userA/restore --metadata-destination /data1/userA/metadata --output-file /home/userA/clusterConfig.xml --backup-key 20120320_085435
```

## System Response

```
GenXML operation successful!
Output: /home/userA/clusterConfig.xml
Performing post generate cleanup activities...
Cleanup completed
sparrow@node141:~/db/bin/script>
```

## Helpful Links

[backup](#)

### 5.2.2.4.9 genstack

#### Function

The **genstack** command is used to generate the call stack information and print it to the log file. This command is mainly used for fault locating.

#### Syntax



GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

```
python3 GaussRoach.py
-t genstack
```

#### Parameter Description

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-t	-t	String	Roach supports multiple functions. Setting this parameter to <b>genstack</b> generates stacks.	<ul style="list-style-type: none"><li>• -t backup</li><li>• -t stop</li><li>• -t validate</li><li>• -t delete</li><li>• -t restore</li><li>• -t show</li><li>• -t generate</li><li>• -t genstack</li><li>• -t getobject</li><li>• -t start</li><li>• -t clean</li><li>• -t config</li><li>• -t version</li><li>• -t help</li></ul>	N/A	-t genstack

#### Usage Guide

None

## Examples

Generate and trace a call stack.

```
python3 $GPHOME/script/GaussRoach.py -t genstack
```

## System Response

```
Generating stack trace for all gs_roach processes into logfile
Parsing the configuration file.
List of nodes for stack trace generation: ['node121', 'node141', 'node200']
Successfully generated stack trace
Performing post genstack cleanup activities...
Parsing the configuration file.
Cleanup completed
>
```

### 5.2.2.4.10 start

#### Function

The **start** command is used to start the cluster after the restore operation.

#### Syntax

```
python3 GaussRoach.py
-t start
[--logging-path] <logging-path>
[--parallel-jobs] <jobs-count>
[--restore-new-cluster]
[-X <XML path of the new cluster>]
```

## Parameter Description

**Table 5-12** List of CLI parameters for the **start** command

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-t	N/A	String	Roach supports multiple functions. Specifying this parameter with value <b>start</b> starts the cluster.	<ul style="list-style-type: none"><li>• -t backup</li><li>• -t stop</li><li>• -t validate</li><li>• -t delete</li><li>• -t restore</li><li>• -t show</li><li>• -t generate</li><li>• -t genstack</li><li>• -t getobject</li><li>• -t start</li><li>• -t clean</li><li>• -t config</li><li>• -t version</li><li>• -t help</li></ul>	N/A	-t start
--logging-path	N/A	String	Specifies the path for logging.	N/A	\$GAUSSLOG/roach/controller	--logging-path \$GAUSSLOG/roach/controller
--parallel-jobs	N/A	Integer	Specifies the number of parallel processes for performing the backup or restore operation.	1–32	5	--parallel-jobs 6

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--restore-new-cluster	N/A	Boolean	<p>Specifies that the cluster is restored to a different host.</p> <p>The value is <b>true</b> if the parameter is specified in the command. Otherwise, it is <b>false</b>.</p> <p><b>NOTE</b> This parameter is valid only when <b>media type</b> is <b>disk</b>.</p>	N/A	False	--restore-new-cluster
-X	-X	String	<p>Specifies the XML path of the new cluster.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>This parameter is applicable only for restore to different set of nodes from a disk feature.</li> <li>The parameter is case sensitive and must be provided in upper case.</li> </ul>	Absolute path	N/A	-X / home/ userA/ new.xml

## Usage Guide

The **start** command can be used to start the cluster after it is restored.

 **NOTE**

- After the cluster is restored, you cannot manually invoke the **cm\_ctl** command to start the cluster. Instead, you can only use the **start** command of Roach.
- The **start** command starts all data instances except the CM in sequence, synchronizes data from the primary DN to the standby DN, and then runs the **cm\_ctl start** command to start the CM.

## Examples

 **NOTE**

GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

- Start a cluster after restoration.  
`python3 $GPHOME/script/GaussRoach.py -t start`
- Restore the cluster to a new cluster and start the new cluster.  
`python3 $GPHOME/script/GaussRoach.py -t start --restore-new-cluster -X <XML path of the new cluster>`

## System Response

```
sparrow@node200:~/db/bin> python3 $GPHOME/script/GaussRoach.py -t start
Begin to parse config file...
Begin stop cluster...
End stop cluster.
Begin step:start cluster...
Begin start GTM...
End start GTM
Begin start coordinator...
End start coordinator
Begin start datanode Master...
End start datanode Master
Begin build datanode Standby...
End build datanode Standby
Begin start cluster...
Start primary instance sucessfully, wait for standby instances...

.
Start standby instances successfully.

cluster_state : Normal
node_count : 2
Coordinator State
 normal : 2
 abnormal : 0
GTM State
 primary : 1
 standby : 1
 abnormal : 0
 down : 0
GTM State
 primary : 2
 standby : 2
 secondary : 2
 building : 0
 abnormal : 0
 down : 0
End start cluster.
End step:start cluster...
```

## Helpful Links

[restore](#)

### 5.2.2.4.11 clean

#### Function

The **clean** command is used to clean all instance data files in a cluster before restoration. Currently, this command is not recommended. You are advised to embed the **--clean** parameter in the **restore** command to clean the files.

#### Syntax

```
python3 GaussRoach.py
-t clean
```

```
[--logging-path <logging-path>]
[--restore-new-cluster]
```

## Parameter Description

**Table 5-13** List of CLI parameters for the **clean** command

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-t	N/A	String	Roach supports multiple functions. Setting this parameter to <b>clean</b> cleans a cluster before restoration.	<ul style="list-style-type: none"><li>• -t backup</li><li>• -t stop</li><li>• -t validate</li><li>• -t delete</li><li>• -t restore</li><li>• -t show</li><li>• -t generate</li><li>• -t genstack</li><li>• -t getobject</li><li>• -t start</li><li>• -t clean</li><li>• -t config</li><li>• -t version</li><li>• -t help</li></ul>	N/A	-t clean
--logging-path	N/A	String	Specifies the path for logging.	N/A	\$GAUSSLOG/roach/controller \$GAUSSLOG/roach/controller	--logging-path \$GAUSSLOG/roach/controller

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
--restore-new-cluster	N/A	Boolean	<p>Specifies that the cluster is restored to a different host. The value is <b>true</b> if the parameter is specified in the command. Otherwise, it is <b>false</b>.</p> <p><b>NOTE</b> This parameter is valid only when <b>media type</b> is <b>disk</b>.</p>	N/A	False	--restore-new-cluster

## Usage Guide

- User can use the **clean** command to clean the cluster database before restore operation.
- Ensure a valid backup exists prior to performing a clean operation.
- When performing a clean and restore, ensure that the backup has been validated.

### NOTE

- Currently, this method is not recommended. You are advised to embed the **--clean** parameter in the **restore** command to achieve the same effect.
- The **clean** command stops the cluster and then deletes the physical files of all data instances in the cluster to prepare for cluster restoration. After this command is executed, the cluster cannot be manually started.

## Examples

### NOTE

GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

Clean the cluster database before the restoration.

```
python3 $GPHOME/script/GaussRoach.py -t clean
```

Clear the cluster database before restoring a cluster to different node groups.

```
python3 $GPHOME/script/GaussRoach.py -t clean --restore-new-cluster
```

## System Response

```
Begin to parse config file...
Begin step:clean cluster...
```

```
Begin stop cluster...
End stop cluster.
Begin clean data before restore...
End clean data before restore
End step:clean cluster
```

## Helpful Links

[restore](#)

### 5.2.2.4.12 config

#### Function

The **config** command is used to update the configuration settings for Roach. This command is used to enable or disable the Xlog archive mode.

#### Syntax

```
python3 GaussRoach.py
-t config
[--archive <true-false> -p] [-f] [-c]
```

## Parameter Description

Table 5-14 List of CLI parameters for the **config** command

Long	Short	Data Type	Description	Value Range	Default Value	Example
-t	-t	String	Roach supports multiple functions. Setting this parameter to <b>config</b> updates Roach configuration.	<ul style="list-style-type: none"><li>• -t backup</li><li>• -t stop</li><li>• -t validate</li><li>• -t delete</li><li>• -t restore</li><li>• -t show</li><li>• -t generate</li><li>• -t genstack</li><li>• -t getobject</li><li>• -t start</li><li>• -t clean</li><li>• -t config</li><li>• -t version</li><li>• -t help</li></ul>	N/A	-t config
--archive	N/A	N/A	Enables and disables the archive mode for the cluster.  Archive mode is enabled if value is set to true.  Archive mode is disabled if value is set to false.  Add -p to load the updated parameters.	<ul style="list-style-type: none"><li>• True</li><li>• False</li></ul>	N/A	--archive <i>true</i> -p

Long	Short	Data Type	Description	Value Range	Default Value	Example
-f	N/A	N/A	Absolute path of the Roach configuration file. The Roach configuration file is applied to each node.	-	N/A	-f
-c	N/A	N/A	Absolute path of the temporary Roach configuration file. If this parameter is used, a temporary configuration file is generated in the directory specified by this parameter.	-	N/A	-c

## Usage Guide

- In earlier versions, you need to run the **config** command to enable the Xlog archive mode before cluster backup and run the **config** command to disable the Xlog archive mode after cluster backup.
- In 8.0.0 or later, you do not need to enable or disable the archive mode for Roach.

## Examples



GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

- Run the following command to enable the archive mode:  
`python3 $GPHOME/script/GaussRoach.py -t config --archive true -p`
- Run the following command to disable the archive mode:  
`python3 $GPHOME/script/GaussRoach.py -t config --archive false -p`

## Helpful Links

None

### 5.2.2.4.13 Version

#### Function

The **version** command is used to display the version number of the Roach tool.

#### Syntax

```
python3 GaussRoach.py
--version | -v
```

#### Parameter Description

Long Option	Short Option	Data Type	Description	Value Range	Default Value	Example
-t	-t	String	Roach supports multiple functions. Setting this parameter to <b>version</b> shows the Roach version.	<ul style="list-style-type: none"><li>• -t backup</li><li>• -t stop</li><li>• -t validate</li><li>• -t delete</li><li>• -t restore</li><li>• -t show</li><li>• -t generate</li><li>• -t genstack</li><li>• -t getobject</li><li>• -t start</li><li>• -t clean</li><li>• -t config</li><li>• -t version</li><li>• -t help</li></ul>	N/A	-t version

## Usage Guide

None

## Examples



GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

Query the version number of Roach.

```
python3 $GPHOME/script/GaussRoach.py --version
```

## System Response

```
champ@BLR1000014692:~/db/bin/script> python3 $GPHOME/script/GaussRoach.py --version
Roach 8.1.3
```



The version number in the command output is only an example.

## Helpful Links

None

### 5.2.2.4.14 help

## Function

The **help** command is used to provide the help information for the commands supported by the Roach tool.

## Syntax



GaussRoach.py must be executed in the cluster sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).

```
python3 GaussRoach.py
--help | -h
```

## Parameter Description

None

## Usage Guide

None

## Examples

View the help information of Roach.

```
python3 $GPHOME/script/GaussRoach.py --help
```

## System Response

```
python3 $GPHOME/script/GaussRoach.py --help
```

GaussRoach.py is a utility to backup GaussDB to disk, XBSA media or OBS and restore GaussDB from disk, XBSA media or OBS.

Usage:

```
python3 GaussRoach.py -h | --help
python3 GaussRoach.py -v | --version
python3 GaussRoach.py -t config [-f confFile] [-c confFile] [-p] [--archive ARCHIVEMODE] [--logging-path
filepath] [--cluster-timeout timeout]
python3 GaussRoach.py -t clean [-D] [--logging-path filepath][--restore-new-cluster] [--cluster-timeout
timeout]
python3 GaussRoach.py -t start [--logging-path filepath] [--parallel-jobs] [--restore-new-cluster -X
CONFIGXMLPATH] [--cluster-timeout timeout] [--standby-build-timeout timeout]
python3 GaussRoach.py -t backup [options]
python3 GaussRoach.py -t restore [options]
python3 GaussRoach.py -t stop [-F] [--stop-timeout] [--logging-path filepath]
python3 GaussRoach.py -t delete [options]
python3 GaussRoach.py -t backup [--tablename tablename] [options]
python3 GaussRoach.py -t restore [--tablename tablename] [options]
python3 GaussRoach.py -t show [options]
python3 GaussRoach.py -t show-progress [options]
python3 GaussRoach.py -t validate [options]
python3 GaussRoach.py -t generate [options]
python3 GaussRoach.py -t genstack
python3 GaussRoach.py -t getobject [options]
```

Common options:

-t	The operation for GaussRoach followed by backup, clean, config, delete, generate, genstack, restore, show, show-progress, start, stop and validate.
-h --help	Show this help, then exit.
-v --version	Display the current roach version.
--master-port <master port>	The port in which master roach should be started.
--media-type <media type>	Mention type of media either disk, XBSA media or OBS
--media-destination <media destination>	The path or policy that should be used for backup/restore as per media-type.
--buffer-size <size>	The buffer size that should be used. In MB, range is (256~16384)
--buffer-block-size<size>(524288~268435456)	The buffer block size that should be used. In byte, range is
--parallel-process <count>	The number of process that should be used. Range is (1~32)
--logging-level <logging level> level is warning.	[FATAL ERROR WARNING INFO DEBUG DEBUG2]. Default logging
--logging	Enable logging into log file, will be disabled by default. Use --enable-logging instead.
--enable-logging <True/False>	Enable logging into log file. Default is True.
--log-filename <size>	The maximum log file size. Range is (5~20).
--log-filecount <count>(5~1024).	The maximum number of log files that should be created. Range is
--logging-path <path-name>	The location where log files must be created.
--verbose	Gives details about the command being executed.
--failure-retry-count <count>(0~256).	The number of times it should retry in case of failure. Range is
--retry-wait-time <time>	Time it should wait before retrying after failure. Range is (1~3600).
--cpu-relinquish-time <time> time in seconds. Range is (0~3600).	CPU is relinquished for the specified relinquish time. Relinquish
--cpu-relinquish-size <size>(1~10000).	CPU is relinquished after processing the relinquish size. Range is
--metadata-destination <path-name>	The path where the metadata file is to be kept in backup.
--metadata-file-wait-time <time>	Wait time for reading metadata file. Range is (60~3600).
--max-memory-usage <value> Range 2~256.	Maximum allowed memory usage (in GB) for Roach process.
--pre-disk-space	Checks availability of Disk Space before Backup and Restore.
--resource-retry-count	The number of times it should retry for library APIs like fopen, pthread.
--master-ip	The ip on which master roach should be started.
--obs-server-ip <address>	OBS server ip address or domain name address.
--bucket-name <bucketname>	OBS bucket name.
--cluster-unique-id <value>	Used to indicate the unique identifier of the cluster.
Options for config	
-f	The path of gs_roach config file that will be distributed to every host.

-c	The path of gs_roach template config file that will be created.
-p	Config environment parameter and archive GUC parameter.
--archive <true/false>	Decide whether start archive or stop archive. Default is true.
Options for start	
-X	The path of the Config XML file used for cluster setup.
--logging-path	The location where log files must be created.
--parallel-jobs	The number of parallel jobs to be performed for complete sync of standby data nodes from primary data nodes.
--restore-new-cluster	To perform start for restore data to new cluster.
--cluster-timeout	The timeout value for cm_ctl start/stop.
--standby-build-timeout	The timeout value for standby instance build.
Options for clean	
--logging-path	The location where log files must be created.
--restore-new-cluster	To perform clean for restore data to new cluster.
--cluster-timeout	The timeout value for cm_ctl start/stop.
Options for backup	
-r --conf-location <path-name>	Path for the gs_roach.conf file.
-d --dbname <dbname>	The name of the database.
-U --username <username>	User name for the cluster.
--compression-level <level>	The compression level that should be used for backup.
--filesplit-size <size>	Approximate file size after which the file will be split.
--contrib-config <configFile>	Path of config file having contrib module info (eg, for HDFS).
--validation-type <value>	Validate the contents of backup. Values "partial" or "full".
--prior-backup-key	Previous full/incremental backup key to be considered as the base for incremental backup.
--validate-prior-backups <value>	Validate all prior backups (if any). One of the two values i.e. "Force" (mandatorily run validate), "Optimistic" (if not validated, it will run validate).
"Force" (mandatorily run validate), "Optimistic"	(if not validated, it will run validate).
--reader-thread-count	Number of reader threads for processing. Range is (1~65535).
--reader-thread-file-count	Number of buffer files for each reader thread. Range is (1~65535).
--reader-thread-file-size (1~65535)	Buffer file size for each buffer file of reader thread. Range is (1~65535).
Option for table, multiple tables, schema, database logical backup and logical restore	
--tablename <table name>	Table name for the backup.
--table-list <file path>	The file having the list of tables for performing backup/restore.
--dbname <db-name>	The name of the database.
--schemaname <schema-name>	The name of the schema
--agent-port <agent port>	The port in which master roach should be started for performing backup/restore.
Option for table, multiple tables, schema, database restore	
--getdata-waittime-afterthreshold <time>	Wait time after buffer threshold. In micro seconds.
--clean	For restore, clean each table's data before performing restore.
--continue	Continue each table's restore on failure.
--create	Create table before performing each table restore.
--agent-port <agent port>	The port in which master roach should be started for performing backup/restore.
Options for Restore	
--restore-buffer-threshold <buffer-threshold>	The percentage of buffer that should be available before restoring the next file.
--backup-key <backup key>	The key used for restore.
--clean	For cluster restore, performs clean up activity internally.
--restore-new-cluster	Restore data to new cluster.
--restore-configs	Few config files are restored from backup with changed values for IP,
Port, Hostname and Path from current cluster.	
--validation-type <value>	Validate the backup before doing restore. Values "partial" or "full".
--contrib-config	Path of config file having contrib module info (eg, for HDFS).
--old-cluster-hostname	Using anyone of hostname in old cluster when restoring to new cluster.
--table-list <file-name>	Absolute path of input file name which contains list of tables(separated by new line) to be restored from DB backup.
--dbname <db-name>	To restore database to a specified db name.
Options for Show	
--all-backups	Show complete backup catalogue information. Default action if no

option given.	
--backup-key <backup_key>	Show restore path up to a given backup key.
--output-file <file path>	Absolute file path with filename, where output of the show
operation will be stored.	
--no-display	To suppress the output on console, and redirect to the output file
silently.	
--overwrite	To overwrite the existing file.
--related-backup-keys	To show all related backups of the provided backup key.
Options for Stop	
-F	Forcefully stop the backup operation.
--stop-timeout	Time after which the stop operation will exit.
Options for Validate	
[options]	Similar options as 'restore'...
Options for Generate	
--backup-topology	Currently only the value "xml" supported, anything else will give
error.	
--output-file	File path for output (Topology) XML file. The dir should be existing and
writeable. This is an	
--media-type <media type>	Optional parameter, by default type is "DISK", specifying "XBSA
media" type will report an error (it is not supported).	
--media-destination <media destination>	The path for the disk backup used to generate the Topology
XML.	
--generate-force	Optional parameter, to forcefully overwrite the output file if it already
exists.	
Options for Delete	
--cascade	To delete all descendant backups of the provided backup key.
Options for Getobject	
--restore-count	To get the number of recovery executions.
### Refer user manual for more details ###	

## Helpful Links

None

### 5.2.2.4.15 Options List for Roach Operations

The following table lists the parameters of each Roach operation.

**Table 5-15** Functions and parameters of Roach

Parameter	Back up	Rest ore	Vali dat e	Gene rate	Del ete	Gen stac k	Sho w	Stop	Sho w-pro gress
agent-port	✓	✓	✓	-	-	-	-	-	-
all-backups	-	-	-	-	-	-	✓	-	-
backup-key	-	✓	✓	✓	✓	-	✓	-	✓
buffer-block-size	✓	✓	✓	-	-	-	-	-	-
buffer-size	✓	✓	-	-	-	-	-	-	-

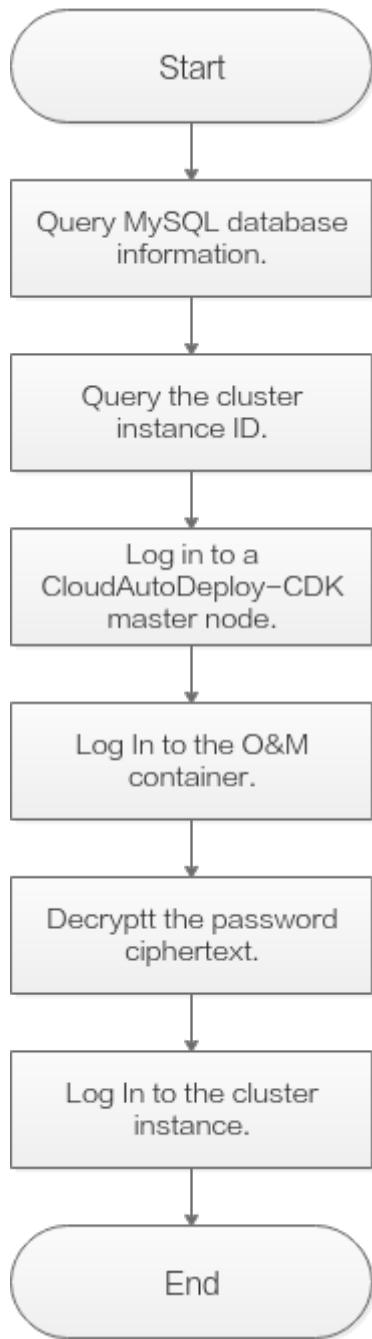
Parameter	Back up	Restore	Validate	Generate	Delete	Gen stack	Show	Stop	Show-progress
clean	-	✓	-	-	-	-	-	-	-
compression-level	✓	-	-	-	-	-	-	-	-
continue	-	✓	-	-	-	-	-	-	-
contrib-config	✓	✓	-	-	-	-	-	-	-
cpu-relinquish-size	✓	✓	-	-	-	-	-	-	-
cpu-relinquish-time	✓	✓	-	-	-	-	-	-	-
dbname	✓	✓	✓	-	-	-	-	-	-
failure-retry-count	✓	✓	✓	-	-	-	-	-	-
filesplit-size	✓	-	-	-	-	-	-	-	-
getdata-waittime-afterthreshold	-	✓	-	-	-	-	-	-	-
log-filecount	✓	✓	✓	-	-	-	-	-	-
log-filename	✓	✓	✓	-	-	-	-	-	-
logging	✓	✓	✓	-	-	-	-	-	-
logging-level	✓	✓	✓	-	-	-	-	-	-
logging-path	✓	✓	✓	-	-	-	-	✓	-
master-ip	✓	✓	✓	-	-	-	-	-	-
master-port	✓	✓	✓	-	✓	-	-	-	-
max-memory-usage	✓	✓	✓	-	-	-	-	-	-
media-destination	✓	✓	✓	✓	✓	-	-	-	-
media-type	✓	✓	✓	✓	✓	-	-	-	✓
metadata-destination	✓	✓	✓	✓	✓	-	✓	-	✓

Parameter	Back up	Restore	Validate	Generate	Delete	Gen stack	Show	Stop	Show-progress
parallel-process	✓	✓	✓	-	-	-	-	-	-
pre-disk-space	✓	✓	-	-	-	-	-	-	-
resource-retry-count	✓	✓	✓	-	-	-	-	-	-
restore-buffer-threshold	-	✓	-	-	-	-	-	-	-
restore-configs	-	✓	-	-	-	-	-	-	-
restore-new-cluster	-	✓	-	-	-	-	-	-	-
retry-wait-time	✓	✓	✓	-	-	-	-	-	-
stop-timeout	-	-	-	-	-	-	-	✓	-
tablename	✓	✓	✓	-	-	-	-	-	-
table-list	✓	✓	-	-	-	-	-	-	-
username	✓	-	-	-	-	-	-	-	-
validation-type	✓	✓	✓	-	-	-	-	-	-
verbose	✓	✓	-	-	-	-	-	-	-

#### 5.2.2.4.16 Logging In to a Node in the Tenant Cluster

This section describes how to use O&M pods to log in to cluster nodes for troubleshooting on the tenant side. The following figure shows the login process.

**Figure 5-1** Login process



## Querying MySQL Database Information

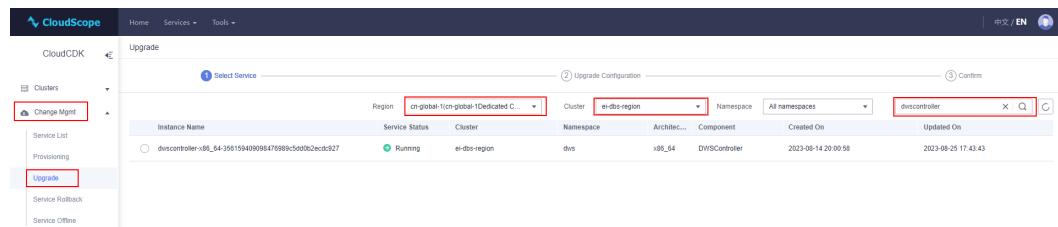
**Step 1** Log in to CloudScope using a browser as a system administrator.

- URL: [https://Address\\_for\\_accessing\\_CloudScope](https://Address_for_accessing_CloudScope), for example, <https://cloudscope.demo.com>
- For details about the URL for accessing CloudScope, see the COP information on the "Portal" sheet of the deployment parameter table exported from HCC Turnkey during Auto Change Platform installation.
- Default account: **op\_cdk\_sso**

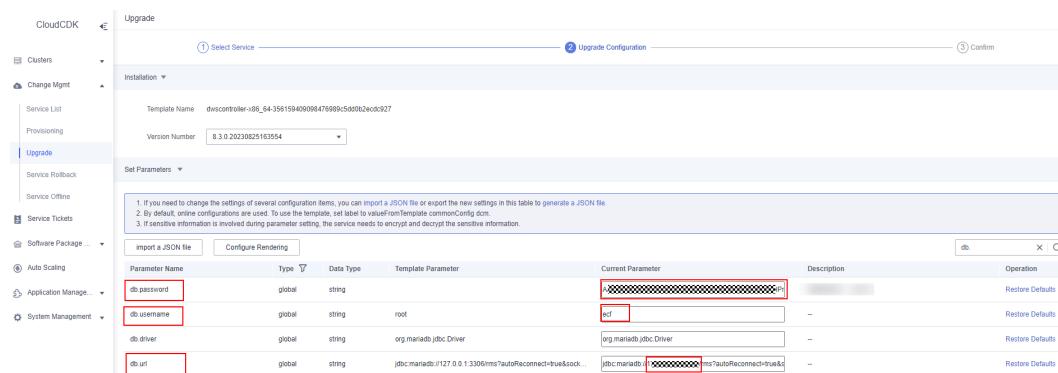
- To obtain the default password of the account, search for the default password of the account on the "CloudScopeLite" sheet of [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 2** Choose **Services > Change Mgmt > CloudAutoDeploy-CDK**.

**Step 3** In the navigation pane on the left, choose **Change Magmt & > Upgrade**, select the corresponding region, and select the cluster **ei-dbs-region**. Search for **dwscontroller** in the search box, select the corresponding dwscontroller, and click **Next**.



**Step 4** Enter the keyword **db.** in the search box on the right and record the password ciphertext corresponding to **db.password**, username corresponding to **db.username**, and database IP address and port number corresponding to **db.url**.



**Step 5** After the recording is complete, click **Home** in the upper left corner to exit the current page to prevent misoperations.

----End

## Querying the Cluster Instance ID

**Step 1** Log in to CloudScope using a browser as a system administrator.

- URL: [https://Address\\_for\\_accessing\\_CloudScope](https://Address_for_accessing_CloudScope), for example, <https://cloudscope.demo.com>
- For details about the URL for accessing CloudScope, see the COP information on the "Portal" sheet of the deployment parameter table exported from HCC Turnkey during Auto Change Platform installation.
- Default account: **op\_cdk\_sso**
- To obtain the default password of the account, search for the default password of the account on the "CloudScopeLite" sheet of [Huawei Cloud Stack 8.3.1 Account List](#).

- Step 2** In the **Common Links** area, click **Service CM**. Select your region and then access the **Service CM** page.
- Step 3** Choose **Service List > Data Warehouse Service** to switch to the corresponding namespace.
- Step 4** Choose **Sre OM Management > Clusters** on the left, click the cluster name to go to the node list page, and record the ID of a CN whose name contains **cn**.

Node ID	Node Name	Node Status	Recent Task Status	Latest Task Time
oce3249a-979f-496d-a20b-8fffa3e23c4	auto-default--ypr0G8Z9NrgzPQJc1O2LR1MIVSs-dws-c...	Normal	--	--
45890065-2042-45f7-8572-5839000c3271	auto-default--ypr0G8Z9NrgzPQJc1O2LR1MIVSs-dws-c...	Normal	--	--
5602290e2-2960-4833-89a1-254968526106	auto-default--ypr0G8Z9NrgzPQJc1O2LR1MIVSs-dws-c...	Normal	--	--

----End

## Logging In to the CloudAutoDeploy-CDK Master Node

- Step 1** Log in to ManageOne Maintenance Portal via <https://ManageOne Maintenance Portal URL:31943>. Alternatively, log in to the unified portal and choose **OperationCenter**.

- Password login: Enter the username and password of the account.
  - Default account: **bss\_admin**



For ManageOne upgraded from 8.2.0 or earlier, the default username is **admin**.  
For ManageOne 8.2.1 or later, the default username is **bss\_admin**.

- Preset password: See the preset password of the ManageOne Maintenance Portal account on the "Type A (Portal)" sheet in [Huawei Cloud Stack 8.3.1 Account List](#).
- Login using a USB key: Insert a USB key with preset user certificates, select the required device and certificate, and enter the PIN.

Log in to ManageOne Maintenance Portal.

- Step 2** In the **Cloud O&M Management** navigation pane, click **Service\_OM**. The Service OM page is displayed.

- Step 3** On the Service OM console page, click **VM**.

- Step 4** Query the IP address of the CloudAutoDeploy-CDK node. In the search box in the upper right corner, enter the keyword **EICCommon-Region-Master** to search for VMs. Generally, three VMs are available. You can record the IP address of any one of them.

- Step 5** Log in to the CloudAutoDeploy-CDK master node as user **opsadmin** using a remote login tool, and then switch to user **root**. The IP address is obtained in [Step 4](#).

**su - root**

- Default password of user **opsadmin**: Search for **EICommon-Region-Master-01** in the "Type A (Background)" sheet of [Huawei Cloud Stack 8.3.1 Account List](#).
- Default password of user **root**: Search for **EICommon-Region-Master-01** in the "Type A (Background)" sheet of [Huawei Cloud Stack 8.3.1 Account List](#).

----End

## Logging In to the O&M Container

**Step 1** Run the following command on the CloudAutoDeploy-CDK master node to query the O&M pod names:

**kubectl get pod -n ecf**

Information similar to the following is displayed. Find the pod whose name starts with **dwsmaintaintool**. Any pod whose **STATUS** is **Running** can be used as an O&M pod.

NAME	READY	STATUS	RESTARTS	AGE
dbsevent-5995495644-6px4m	1/1	Running	0	47m
dbsevent-5995495644-hrt8l	1/1	Running	0	47m
dbsisight-79f5fdfc4d-8qcmp	1/1	Running	0	2d2h
dbsisight-79f5fdfc4d-kntp6	1/1	Running	0	2d2h
dbsmonitor-577696776c-j5cpt	1/1	Running	0	2d2h
dbsmonitor-577696776c-kwbzj	1/1	Running	0	2d2h
<b>dwsmaintaintool-6849847c4b-9mxgf</b>	1/1	Running	0	2d1h
<b>dwsmaintaintool-6849847c4b-mdqz6</b>	1/1	Running	0	2d1h
ecfclustermanager-85987598fd-pst2k	1/1	Running	0	40m
ecfclustermanager-85987598fd-x5jn9	1/1	Running	0	40m

**Step 2** Log in to an O&M pod.

**kubectl exec -it Pod\_name -n ecf bash**

Replace *Pod\_name* with the name of a pod queried in **Step 1** whose **STATUS** is **Running**. The following shows an example.

**kubectl exec -it dwsmaintaintool-ff99697f6-vtkcb -n ecf bash**

----End

## Decrypting the Password Ciphertext

**Step 1** Run the following command on the O&M container to go to the **/opt/cloud/3rdComponent/opsTool** directory:

**cd /opt/cloud/3rdComponent/opsTool**

**Step 2** Start the tool.

**java -jar SccTool.jar**

**Step 3** Enter **3 {Password ciphertext}** as prompted to decrypt the password. For example, enter the ciphertext of the database user password queried in GeoGenius.

**3 {Password ciphertext}**

Press **Enter** to obtain the plaintext of the decrypted password.

```
international Encrypt, please input 1 and '' and password's plaintext
international Encrypt password in file, please input 2 and '' and absolute path of file
wcc,international,sm business Decrypt, please input 3 and '' and password's ciphertext
wcc,international,sm business Decrypt password in file, please input 4 and '' and absolute path of file
sm business Encrypt, please input 5 and '' and password's plaintext
sm business Encrypt password in file, please input 6 and '' and absolute path of file
wcc Encrypt,please input 7 and '' and password's plaintext
wcc Encrypt password in file, please input 8 and '' and absolute path of file
wcc Decrypt and international Encrypt, please input 9 and '' and password's plaintext
wcc Decrypt and sm business Encrypt, please input 10 and '' and password's plaintext
international Decrypt and WCC Encrypt, please input 11 and '' and password's plaintext
sm business Decrypt and WCC Encrypt, please input 12 and '' and password's plaintext
international Decrypt and sm business Encrypt,please input 13 and '' and password's plaintext
sm business Decrypt and international Encrypt,please input 14 and '' and password's plaintext
3 BBBBAAUAAAAAAAHA/AB7D4eU5PI+eBRegOVoLXN1cG3aR3DcPBBa3XUXe88j+1QX4A8A*****AAAQtW
zuJ9vpKV88oI
```

**Decrypt result:**  
[REDACTED]

**Step 4** Press CTRL+C to exit the tool.

----End

## Logging In to a Cluster Instance

**Step 1** Run the following command in the `/opt/cloud/3rdComponent/opsTool` directory of the O&M container to log in to the cluster instance: Obtain the username, host IP address, and port number from [Querying MySQL Database Information](#). Cluster instance ID is obtained from [Querying the Cluster Instance ID](#).

```
sh connectTool.sh -u Username -drms -h Host_IP -p Port_number -n Instance_ID -t Standalone
```

After the command is executed, enter the password as prompted. Obtain the password from [Decryption the Password Ciphertext](#).

```
[service@dwsmaintool-78bd4b8b55-b5f6g opsTool]$ sh connectTool.sh -u ***** -drms -h ***** -p ***** -n 68***** -t Standalone
Start connect DB server and query result.....

Password:

Query result complete.

host is 192.168.0.239

start connect instance server.....

spawn /bin/m -f /opt/cloud/3rdComponent/opsTool/tmp19605/connect_20230224033436_28179.exp >/dev/null 2>&1

spawn /bin/sh -i /opt/cloud/3rdComponent/opsTool/tmp19605/ssh_key Mike@***** -o StrictHostKeyChecking=no -o UserKnownHostsFile=/dev/null

Warning: Permanently added '*****' (ED25519) to the list of known hosts.

Authorized users only. All activities may be monitored and reported.

Enter passphrase for key '/opt/cloud/3rdComponent/opsTool/tmp19605/ssh_key':

Authorized users only. All activities may be monitored and reported.

Last login: Fri Feb 24 03:31:27 2023 from *****

Authorized users only. All activities may be monitored and reported.

[Mike@host-***** ~]# su

Password:

[root@host-***** Mike]#
```

**Step 2** Switch to user **Ruby** and log in to the cluster sandbox.

**su - Ruby**

**ssh `hostname -i`**



It takes some time to log in to the sandbox using **ssh \$HOSTNAME**. Use **ssh `hostname -i`** or **ssh ip** instead.

**Step 3** If you need to log in to another node in the cluster, run the following commands to query the IP address of the node (*node\_ip* in the command output). Then run the corresponding command to enter the sandbox.

**gs\_om -t status --detail**

**ssh node\_ip**

**Step 4** Perform O&M operations by referring to cases in this document.

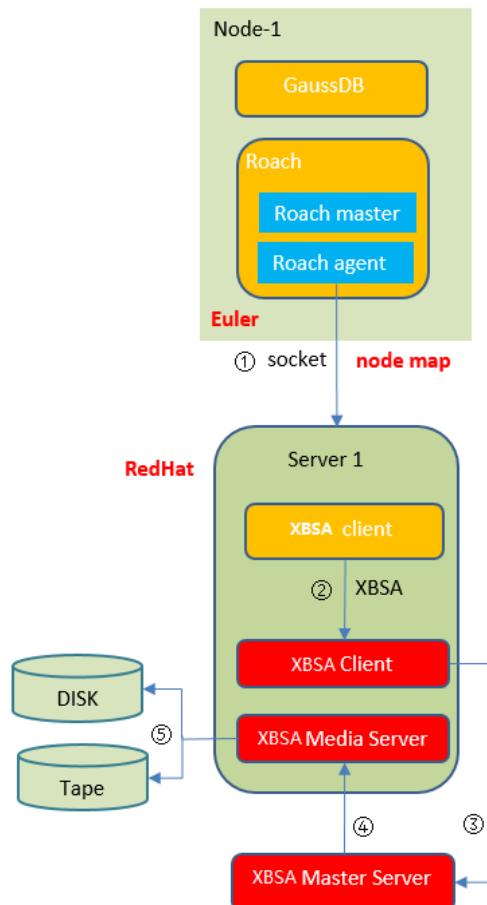
----End

### 5.2.2.5 roach\_client

#### Context

roach\_client is a component deployed on the XBSA media server not in the cluster. It is used in XBSA non-intrusive deployment for backup. In this scenario, the XBSA client is no longer deployed on each node of the database cluster. Instead, the roach\_client component is deployed on each XBSA media server to exchange data with the Roach process on each node in the cluster. In this way, the cluster data is backed up to the corresponding storage media on the remote XBSA server. The following figure shows the XBSA non-intrusive deployment architecture. The advantage is that the XBSA client software does not need to be installed in the cluster. Therefore, the operating system where the database cluster is located does not need to be compatible with the XBSA software version, so there is no dependency on the third-party software XBSA.

To perform Roach operations on the database cluster, you need to start roach\_client on each XBSA media.



## Syntax

```
roach_client [OPTION]
```

The **-H** parameter is mandatory and **option** is optional.

Before starting roach\_client, ensure that the roach\_client version is consistent with the database version. Both roach\_client and the database must be upgraded to the same version. You can view the specific version through the **-V** parameter.

Before using XBSA to perform non-intrusive backup, you need to add the host names and IP addresses of all Roach clients to the **/etc/hosts** file on the database nodes in a cluster.

## Parameter Description

- **-p ip:port**  
Set the roach\_client's IP address and port to be listened to.  
Value range of the IP address: The IP address must be valid.  
Default value: **127.0.0.1**  
Value range of the listening port is a positive integer ranging from **1024** to **65535**. This port is used to communicate with gs\_roach.  
Default value of **port**: **8098**
- **-l log\_file**  
Set the log file. This feature adds the function of automatic log splitting. After the **-R** parameter is set, roach\_client generates a new file based on the set value to prevent a single log file from being too large.  
Generation rule: By default, roach\_client identifies only files with the **.log** extension name and generates new log files.  
For example, if **-l** is set to **roach\_client.log** and **-R** is set to 20 MB, a **roach\_client-2020-09-17\_115425.log** file will be created when the size of **roach\_client.log** reaches 20 MB.  
If the log file name specified by **-l** does not end with **.log**, for example, **roach\_client.log.txt**, the name of the new log file is **roach\_client.log-2020-09-19\_122739.txt**.  
When roach\_client is started, it checks whether the log file specified by **-l** exists. If the log file exists, a new log file is generated based on the current date and time, and the original log file is not overwritten.
- **-H address\_string**  
Set the hosts that can be connected to the roach\_client. This parameter must be the CIDR format and it supports the Linux system only. If multiple network segments need to be configured, use commas (,) to separate them. For example, **-H 10.10.0.0/24, 10.10.5.0/24**.
- **-R size**  
Set the maximum size of a single GDS log file specified by **-l**.  
Value range: 1 MB < size < 100 TB. The value must be a positive integer with the unit specified. The unit can be KB, MB, or GB. If KB is used, the value must be greater than 1024 KB.  
Default value: 16 MB

- -D  
Daemon roach\_client, which is only supported by the Linux OS
- -V  
Display the version information of the roach\_client compilation.
- -h  
Show help information.
- -N  
Alias of **hostname**.
- --enable-ssl  
Use the SSL authentication mode to communicate with clusters.
- --ssl-dir Cert\_file  
Before using the SSL authentication mode, specify the path for storing the authentication certificates.
- --debug-level  
Sets the debug log level of the roach\_client to control the output of roach\_client debug logs.

**Value range: 0, 1, and 2**

- 0: Only the import and export related file lists are printed, with small log volume. You are advised to use this command when the system is in the normal state.
- 1: All the log information is printed, including the connection information, session switch information, and statistics on each node. You are advised to set the parameter to this value only during troubleshooting.
- 2: Detailed interaction logs and their status are printed to generate a huge number of debug logs to help identify the fault causes. You are advised to set the parameter to this value only during troubleshooting.

**Default value: 0**

## Example

In this example, the IP address is **192.168.0.90** and the listening port is **5000**. This example shows how to run the roach\_client in daemon mode and save logs in the **roach\_client.log** file.

```
roach_client -p 192.168.0.90:5000 -H 10.10.0.1/24 -D -l roach_client.log
```

 **NOTE**

- A roach\_client can provide services for only one cluster at a time.
- For security purpose, specify the IP address and the listening port through **-p**.

# 6 Service Monitoring

## 6.1 Viewing Basic Information and Components of a Cluster

### Scenario

On ManageOne Maintenance Portal, tenant administrators can view basic information about a GaussDB(DWS) cluster and node information about related ECSs and BMSSs.

### Viewing Basic Information

- Step 1** On ManageOne Maintenance Portal, choose **Monitor > Resource Monitoring > Cloud Resources**. On the displayed page, click **All Resources > Cloud Services**.
- Step 2** In the navigation pane on the left, choose **Type > Data Warehouse Service**. Click the cluster name to go to the **Summary** page of the cluster and click **View Details** to view the basic information and component list.

Basic Information						
Name		Original ID	dd3742a9-1a21-42ea-b96f-4e05993e02f1	Running Status		VDC Name
createTime	2021-09-18 15:57:44	flavorType	physical324xlarge.S	Tenant Name	renyanfen	Project ID
datastoreVersi...	8.1.2	Resource Pool ...	OpenStack_cr-dwsglobal-1	totalVolume(G...)	53643	Region Name
Project Name	cn-dwsglobal-1_renyanfen	ResourcePool T...	FUSION_CLOUD	Virtual Private ...	vpc_4cpqjliw47xd533379by23d13d9	Security Group
Subnet	subnet-efyf	Source System	DWS_cr-dwsglobal-1			
Tag	<a href="#">Associate with Tag</a>					

**Table 6-1** Basic information

Parameter	Description
Name	Cluster name when a cluster is created
Original ID	Cluster ID
Running Status	Cluster status
VDC Name	VDC to which a cluster belongs
createTime	Time when a cluster is created
flavorType	Node flavors of a cluster
Tenant Name	Name of the tenant to which the cluster belongs
Project ID	ID of the project to which a cluster belongs
datastoreVersion	Cluster version information
Resource Pool Name	Name of the resource pool to which a cluster belongs
totalVolume(GB)	Storage capacity supported by a cluster
Region Name	Name of the region where a cluster is located
Project Name	Name of the project to which a cluster belongs
ResourcePool Type	OpenStack resource pool type
Virtual Private Cloud	Name of the VPC used by the cluster.
Security Group	Security group used by the cluster
Subnet	Subnet where the cluster is located
Source System	Indicates the system from which the basic information is collected.
Tag	Tag used by the cluster

**Step 3** In the **Component List** area in the lower part of the page, you can query the basic information about the ECS or BMS nodes in a cluster, including OSs, specifications, and CPU usage.



You can also click to set other options to be displayed.

- Step 4** To view an ECS or BMS node, click the node name to go to the resource monitoring page of the corresponding ECS or BMS.

----End

## 6.2 Viewing Monitoring Metrics of a Cluster

### Scenario

ManageOne is a unified O&M platform for HUAWEI CLOUD Stack. It provides layer-based capabilities for monitoring OSs, middleware, databases, and services, and implements end-to-end fault discovery. Huawei Cloud Stack efficiently gathers performance metrics and operational statuses of monitored hosts. It promptly triggers alerts for any irregular metrics and sends this information to O&M staff, guaranteeing consistent service availability.

### Monitoring Metric Overview

The monitoring items of GaussDB(DWS) cover the management side, tenant side, and cluster databases.

- Management side: Node monitoring and microservice monitoring are included. For details, see [Viewing the Node Metrics on the Management Side](#) and [Viewing the Status of Microservice Pods on the Management Side](#).
- Tenant side: Cluster monitoring and node monitoring are included. [Monitoring Metrics on the Tenant Side](#) shows the monitoring metrics.
- Cluster database monitoring: In Huawei Cloud Stack 8.1.1 and later versions, DMS is supported to collect fine-grained database metrics of clusters on the tenant side for monitoring. For details about related metrics, see "Database Monitoring" in Data Warehouse Service (DWS) 8.1.3.331 User Guide (for Huawei Cloud Stack 8.3.1) in [Data Warehouse Service \(DWS\) 8.1.3.331 Usage Guide \(for Huawei Cloud Stack 8.3.1\)](#).

### Viewing Monitoring Metrics

- Step 1** On ManageOne Maintenance Portal, choose **Monitor > Resource Monitoring > Cloud Resources**. On the displayed page, click **All Resources > Cloud Services**.
- Step 2** In the navigation pane on the left, choose **Type > Data Warehouse Service**. Click the cluster name to go to the **Resource Details** page of the cluster.
- Step 3** Click **Monitoring** on the left to view GaussDB(DWS) cluster metrics. For details about the metrics that can be viewed, see [Monitoring Metrics on the Tenant Side](#).

 NOTE

For details about DWS node-level monitoring, see section "Monitoring a Cluster" in the Data Warehouse Service (DWS) 8.1.3.331 User Guide (for Huawei Cloud Stack 8.3.1) in the [Data Warehouse Service \(DWS\) 8.1.3.331 Usage Guide \(for Huawei Cloud Stack 8.3.1\)](#).

----End

## 6.3 Cluster Monitoring Metrics

### Monitoring Metrics on the Tenant Side

**Table 6-2** GaussDB(DWS) monitoring metrics

Object & Dimension	Metric ID	Metric Name	Description	Value Range	Monitoring Period (Raw Data)
Object: data warehouse cluster Dimension: <b>datatostore_id</b>	dws001_shared_buffer_hit_ratio	Shared Memory Hit Ratio	Ratio of requested data that already exists in the cache. It the ratio of the amount of data that already exists in the cache to the total amount of requested data. A higher cache hit ratio means higher cache usage of the system, fewer times that data needs to be read from the disk or network, and faster system response speed. Unit: Percent	0% to 100%	4 min

Object & Dimension	Metric ID	Metric Name	Description	Value Range	Monitoring Period (Raw Data)
	dws002_in_memory_sort_ratio	In-Memory Sort Ratio	Ratio of the extra memory space used by the sorting algorithm to the memory space occupied by the sorted data. In a merge sort, for example, the size of the merge buffer is often proportional to the size of the sorted data, so the in-memory ratio is usually between 10% and 50%. Unit: Percent	0% to 100%	4 min
	dws003_physical_reads	File Reads	Total number of database file reads	> 0	4 min
	dws004_physical_writes	File Writes	Total number of database file writes	> 0	4 min
	dws005_physical_reads_per_second	File Reads per Second	Number of database file reads per second	$\geq 0$	4 min
	dws006_physical_writes_per_second	File Writes per Second	Number of database file writes per second	$\geq 0$	4 min
	dws007_db_size	Data volume	Total data volume of the database. The unit is MB.	0 to 36,000 MB	4 min
	dws008_active_sql_count	Active SQL Count	Number of active SQLs in the database	$\geq 0$	4 min
	dws009_session_count	Session Count	Number of sessions that access the database	$\geq 0$	4 min

Object & Dimension	Metric ID	Metric Name	Description	Value Range	Monitoring Period (Raw Data)
Object: data warehouse node Dimension: <b>dws_instance_id</b>	dws010_cpu_usage	CPU Usage	CPU usage of each node in a cluster. The unit is percentage.	0% to 100%	1 min
	dws011_memory_usage	Memory Usage	Memory usage of each node in a cluster. The unit is percentage.	0% to 100%	1 min
	dws012_iops	IOPS	Number of I/O requests processed by each node in a cluster per second	≥ 0	1 min
	dws013_bytes_in	Network Input Throughput	Data input to each node in a cluster per second over the network. The unit is bytes/s.	≥ 0 bytes/s	1 min
	dws014_bytes_out	Network Output Throughput	Data sent to the network per second from each node in a cluster. The unit is byte/s.	≥ 0 bytes/s	1 min
	dws015_disk_usage	Disk Usage	Disk usage of each node in a cluster. The unit is percentage.	0% to 100%	1 min
	dws016_disk_total_size	Total Disk Size	Total disk space of each node in a cluster. The unit is GB.	100 to 2000 GB	1 min
	dws017_disk_used_size	Used Disk Space	Used disk space of each node in a cluster. The unit is GB.	0 to 3600 GB	1 min
	dws018_disk_read_throughput	Disk Read Throughput	Data volume read from each disk in a cluster per second. The unit is byte/s.	≥ 0 bytes/s	1 min

Object & Dimension	Metric ID	Metric Name	Description	Value Range	Monitoring Period (Raw Data)
	dws019_disk_write_throughput	Disk Write Throughput	Data volume written to each disk in a cluster per second. The unit is byte/s.	$\geq 0$ bytes/s	1 min
	dws020_average_disk_sec_per_read	Average Time per Disk Read	Average time used for each disk read. The unit is second.	> 0s	1 min
	dws021_average_disk_sec_per_write	Average Time per Disk Write	Average time used for each disk write. The unit is second.	> 0s	1 min
	dws022_average_disk_queue_length	Average Disk Queue Length	Average I/O queue length of a disk	$\geq 0$	1 min

## 6.4 Viewing the Node Metrics on the Management Side

### Scenario

A system administrator can use the **Monitor** function on ManageOne Maintenance Portal to monitor the GaussDB(DWS) nodes on the management side, including the node summary, resource details, topology views, current alarms, monitoring views, and components.

### Prerequisites

You have logged in to ManageOne Maintenance Portal.

### Viewing the Summary

**Step 1** Choose **Monitor > Resource Monitoring** from the main menu.

**Step 2** In the upper part of the page, choose **All Resources > Compute**. In the navigation tree on the left, click the VM name.

**Step 3** View the summary.

In the search box on the right, search for the VM name. Click the VM name to go to the **Summary** page. **Basic Information**, **Alarm**, and **Component Status** are displayed.

**Table 6-3** lists the VMs on the GaussDB(DWS) management side.

**Step 4** View resource details.

1. Click **View Details** in the **Basic Information** area. Basic information, component list, and NIC information about the VM are displayed.
2. Click the **Resource Relationship** tab to view resource relationships.
3. Click the **Modification Records** tab to view the resource modification records.

**Step 5** View the topology.

1. In the navigation pane on the left, choose **Topology View**.
2. View the topology details.
  - View the logical relationships between the current resource and other resources at each layer.
  - View the resource name, status, and ID in the pop-up window when moving your cursor over a resource icon.
  - View which resources at each layer are affected when the resource running status is abnormal.
  - Double-click a resource icon to go to the **Topology** page. Only details of some resources can be viewed.

**Step 6** View the current alarms. In the navigation pane on the left, click **Current Alarms**. The alarm information about the VM is displayed.

Click **More** on the right to go to the alarm list page of ManageOne.

**Step 7** View the monitoring view. In the navigation pane on the left, choose **Monitoring**. Metrics of the VM are displayed.**Step 8** View the component list. In the navigation pane on the left, click **Components** to view the NICs and management disks of the VM.

----End

## VMs on the Management Side

**Table 6-3** VMs on the GaussDB(DWS) management side

Service/ Compon ent	VM Name	Description
EIComm on	EICommon-Region- Master-01	Master nodes in the CloudAutoDeploy-CDK cluster in the Region zone
	EICommon-Region- Master-02	

<b>Service/ Compon- ent</b>	<b>VM Name</b>	<b>Description</b>
	EICCommon-Region-Master-03	
CloudAutoDeploy-CDK cluster	ECF_Region_Node-01	Data nodes in the CloudAutoDeploy-CDK cluster in the Region zone
	ECF_Region_Node-02	
	...	
	ECF_Region_Node-xx	
	DWS_Region_Node	GaussDB(DWS) node in the Region zone
	DWS_DMS_Region_Node-01	DMS node in the Region zone
	DWS_DMS_Region_Node-02	
	DWS_Autopilot_Region_Node-01	Autopilot node in the Region zone
	DWS_Autopilot_Region_Node-02	
ECF	DWS_SqlEditor_Region_Node-01	SqlEditor node in the Region zone
	DWS_SqlEditor_Region_Node-02	
	ECF-Common-DB01	ECF database node
	ECF-Common-DB02	
DWS	ECF-CM-DB01	ClusterManager database node
	ECF-CM-DB02	
	DWS-Gauss-DB01	GaussDB database node of DMS
	DWS-Gauss-DB02	
	DWS-DB01	MySQL database node of GaussDB(DWS)
	DWS-DB02	
	DWS-Mysql-DB01	Autopilot database node
	DWS-Mysql-DB02	
	DWS-Mysql-SQL-DB01	Database node of the SqlEditor
	DWS-Mysql-SQL-DB02	

## 6.5 Viewing the Status of Microservice Pods on the Management Side

The management side of GaussDB(DWS) consists of microservices that are deployed in a container-based CloudAutoDeploy-CDK cluster using HCC Turnkey. These microservices are randomly distributed on each VM node in the cluster.

Microservices include the following components: dwscontroller, dms-monitoring, dms-collection, ecfclustermanager, dbsmonitor, dbsinsight, dbsevent, and dwsmaintaintool. **Table 6-4** describes the functions of the components and the names of the host machines where the components are located.

### Microservices on the GaussDB(DWS) Management Side

**Table 6-4** Microservices on the management side

Pod Namespace	Microservice Name	Description	VM Node (CDK Cluster)
dws	dwscontroller	Background component. Tasks submitted by tenants on the console, such as cluster creation, management, and scale-out as well as snapshot creation, are processed in this component and the results are returned to the console.	ECF_Region_Node-01 ECF_Region_Node-02 ... ECF_Region_Node-xx DWS_Region_Node DWS_DMS_Region_Node-01
	dms-monitoring	Database management component, which is used to monitor fine-grained metrics of the GaussDB(DWS) database, including SQL diagnosis, performance metrics, cluster nodes, and data skew.	DWS_DMS_Region_Node-02
	dms-collection	Database metric collection component that collects monitoring metrics of GaussDB(DWS) databases.	
ecf	ecfclustermanager	Cluster lifecycle management component, which has similar functions as dwscontroller but is mainly used for other EI cloud services.	

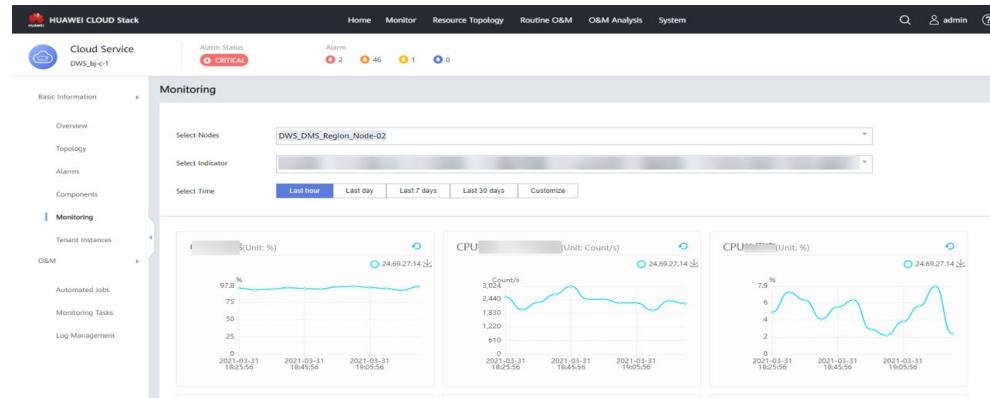
Pod Namespace	Microservice Name	Description	VM Node (CDK Cluster)
	dbsmonitor	Tenant cluster status monitoring component, which monitors alarms and abnormal status of tenants in the service zone.	
	dbsinsight	Component used for communicating with Service OM.	
	dbsevent	Event processing component, which processes cluster monitoring, events, and alarms, as well as forwards them to upper-layer systems, such as ManageOne.	
	dwsmaintaintool	O&M component used by SRE personnel for tenant cluster login and database login.	

## Prerequisites

You have logged in to ManageOne Maintenance Portal.

## Viewing the Container Status

- Step 1** Choose **Monitor > Resource Monitoring** from the main menu.
- Step 2** Choose **All Resources > Cloud Services** from the main menu. In the navigation pane, choose **Cloud Services** and enter **dws** in the search box.  
In the result list, click **DWS\_xxx** to go to the resource monitoring page.
- Step 3** In the navigation pane on the left, choose **Monitoring**. You can filter the nodes, indicators, and time segments to be monitored:
  - Indicator: Select a VM monitoring indicator.
  - Time: Select a monitoring time period. You can select a custom time period.



----End

## 6.6 Configuring Threshold Alarms

When an alarm service needs to be provided for a specific event of a monitored object, administrators can define alarm generation and clearance conditions by setting alarm thresholds. Alarms are generated or cleared only when the performance alarm thresholds are configured for the monitoring metrics included in the performance monitoring task.

### NOTE

When alarms are generated or cleared is related to the collection period of the performance monitoring task. Alarms are generated or cleared only after the performance metrics are collected.

### Prerequisites

- You have the performance data query and monitoring configuration management permissions.
- You have logged in to ManageOne Maintenance Portal.

### Procedure

- Step 1** Choose **Monitor > Monitoring Configuration** from the main menu.
- Step 2** In the navigation pane on the left, choose **Performance Threshold Maintenance**.
- Step 3** On the displayed page, click **Create** to add an alarm threshold.
- Step 4** In the **Basic Information** area, enter the name of the alarm threshold and set **Resource Type** to **Cloud Resource-DWS** and **Resource Subtype** to **Data warehouses**.

### Basic Information

* Name	
* Resource Type	Cloud Resource-DWS
* Resource Subtype	Data Warehouses
Remarks	

**Step 5** In the **Alarm Policy** area, click **Add** and set the conditions for generating and clearing alarms as prompted.

#### NOTE

If an alarm policy is no longer used, click **Delete** in the **Operation** column.

**Step 6** In the **Associated Resources** area, select the monitored objects associated with the alarm threshold.

- **Select objects by scope:** All resources in the selected range are associated. If resource objects in the selected scope are added or deleted, the monitored objects in your monitoring task will be automatically updated.
  - a. Click  on the left of **Select objects by scope**.
  - b. Click the **Logical Position** or **VDC** tab.
  - c. In the **Selectable** area, select a region or VDC name and click   
If you want to select all, click .
- **Select specific objects:** Only the selected resource objects are associated.
  - a. Click  on the left of **Select specific objects**.
  - b. Click the **Logical Position** or **VDC** tab.
  - c. Click  on the right of a region or first-level VDC, select a filtering dimension, and select a specific resource in the **Optional Resources** area.

**Step 7** Click **OK**.

----End

### Follow-up Procedure

Administrators can choose **Monitor > Resource Monitoring > Tenant Resources**. On the displayed page, choose **All Resources > Cloud Services**, then select the corresponding GaussDB(DWS) cluster to view the performance data.



# 7 Security Management

## 7.1 Account Management

### 7.1.1 Account List

DWS-related security accounts. For details, see [Huawei Cloud Stack 8.3.1 Account List](#).

- Some man-machine accounts can be changed on the ManageOne password platform. For details about the accounts that can be changed, see the Type A (Background) sheet in the [Huawei Cloud Stack 8.3.1 Account List](#).
- For details, see Security Management > Account Management > Changing Account Passwords in [Huawei Cloud Stack 8.3.1 O&M Guide](#).

### 7.1.2 Changing the Password of an OS User

#### Scenario

You are advised to periodically change the user login password of the cluster node OS to improve system O&M security. For details about internal system accounts, see [Huawei Cloud Stack 8.3.1 Account List](#).

#### Procedure

**Step 1** Log in to the OS of the node whose password is to be changed as a user who has the remote login permission.

**Step 2** Enter the password of the **root** user to switch to the **root** user.

**sudo su - root**

**TMOUT=0**

**Step 3** Change the password.

**passwd** *Username*

Example:

### passwd root

The following information is displayed:

Changing password for user root.  
New password:

Enter another password if the following information is displayed:  
BAD PASSWORD: ...

If the following information is displayed, the password meets the requirements.  
Enter the password again.

Retype new password:

**Step 4** The password is successfully changed if the following information is displayed:  
passwd: all authentication tokens updated successfully.

----End

## 7.2 Certificate Management

### 7.2.1 Certificate List

For details about DWS-related security certificates, see [Huawei Cloud Stack 8.3.1 Certificate List](#).

### 7.2.2 Replacing a Certificate

Certificates of the following microservices can be replaced: DBSMonitor, DBSInsight, DBSEvent, DWSCController, clustermanager, dms-monitoring and dms-collection.

#### Prerequisites

You have obtained a new certificate. Visit the [Public Key Infrastructure](#) website, choose **Product Help > Operation instructions**, and obtain a new certificate by referring to the operation guide.

#### Procedure

**Step 1** Log in to CloudScope using a browser as a system administrator.

- URL: [https://Address\\_for\\_accessing\\_CloudScope](https://Address_for_accessing_CloudScope), for example, <https://cloudscope.demo.com>
- For details about the URL for accessing CloudScope, see the COP information on the "Portal" sheet of the deployment parameter table exported from HCC Turnkey during Auto Change Platform installation.
- Default account: **op\_cdk\_sso**
- To obtain the default password of the account, search for the default password of the account on the "CloudScopeLite" sheet of [Huawei Cloud Stack 8.3.1 Account List](#).

**Step 2** In the top navigation pane, choose **Services > Change Mgmt > CloudAutoDeploy-CDK**.

**Step 3** In the navigation pane on the left, choose **Change Mgmt > Upgrade**, select the microservice whose certificate needs to be replaced, for example, **dbsevent**, and click **Next**. (The operations for **dbsmonitor** and **dbsinsight** are similar.) Search for **keystore**. On the search result page, you can see the following parameters:

CloudCDK

Cluster Management

Change Mgmt

Service List

Provisioning

**Upgrade**

Service Rollback

Service Offline

Service Tickets

Software Package

Auto Scaling

Application Manage.

System Management

Upgrade

① Select Service

② Upgrade Configuration

③ Confirm

Installation ▾

Template Name: dbevent-09\_54-0e512cfa93b04741bae2c3d413a778

Version Number: 8.3.0.20210205093601

Set Parameters ▾

If you need to change the settings of several configuration items, you can import a JSON file or export the new settings in this table to generate a JSON file.  
2. By default, offline configurations are used. To use the template, set later to valueFromTemplate commonConfig done.  
3. If sensitive information is involved during parameter setting, the service needs to **encrypt** and **decrypt** the sensitive information.  
4. When the input parameter type is boolean, integer, string, float, please add the input parameter type declaration in the blueprint.yaml file in the service package, such as type: integer

Import a JSON file Configure Rendering keystore x

Parameter Name	Type	Data Type	Template Parameter	Current Parameter	Description	Operation
server.ssl.keystore.password	global	string		AAAAAgAAAAAAAEEuAAAAQAAAQcBRE-Ak3DqMg9n	-	Restore Defaults
keystore.secret.name	global	string	moosesecret-event	eventserver.cdk-service-cert	[REDACTED]	Restore Defaults

Previous Next

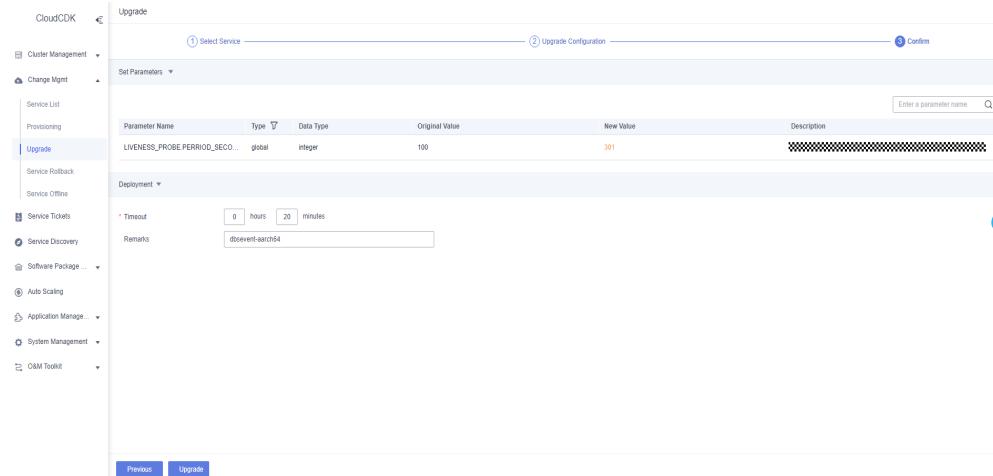
**Step 4** Copy the value `eventserver.cdk-service-cert` of `keystore.secret.name`. Choose **Cluster Management > Secret** on the left and select the cluster to which the secret belongs. Generally, the cluster name contains `dbs` or `ei-common`. Filter the namespace `ecf` or `dws`. The copied secret is displayed on the page.

**Step 5** In the secret list, find the secret corresponding to the copied secret name, click **Update**. In the Update dialog box, select a new certificate, and click **Save**.

The screenshot shows a modal dialog titled "Update cloud service certificate". The dialog has fields for "Namespace" (set to "devs"), "Name" (set to "autopilot cdn-service-cert"), "Microservice" (set to "Autopilot"), and "Target Certificate" (set to "dev.jks"). There are "OK" and "Cancel" buttons at the bottom. The background shows a cluster management interface with a sidebar containing "Cluster Management" and various service discovery and management icons.

**Step 6** Return to the **Change Mgmt** page, select the microservice whose certificate has been updated, and click **Next**.

**Step 7** Increase the value of **LIVENESS\_PROBE.PERIOD\_SECONDS** by 1, click **Next**, and click **Upgrade**.



----End

## 7.3 Security Hardening Item List

For details about GaussDB(DWS) security hardening items, see the [HUAWEI CLOUD Stack 8.3.1 Security Hardening Item List](#).

# 8 Forbidden and High-Risk Operations

## 8.1 High-Risk Operations

During system O&M, you must strictly follow the operation guide when performing the risky operations listed in the following tables. Otherwise, potential risks may arise, affecting proper system running.

High-risk operations are classified into [Table 8-1](#), [Table 8-2](#), and [Table 8-3](#).

**Table 8-1** Common high-risk operations

Operation Object	Object Type	Operation Description	Risk Level	Workaround
Database	Query commands	Performs queries without the <b>WHERE</b> clause.	Low	<ol style="list-style-type: none"> <li>1. Adopt database permission control. Only the SRE /Ops/TL team is allowed to modify the database. No one can delete database data.</li> <li>2. Create a read-only database or a read-only account, and use only the read-only account to locate faults and query the database.</li> <li>3. The tenant sandbox checks sensitive statements and displays a message indicating risks or forbids operations.</li> <li>4. The SRE/TL must evaluate the risks of modifying database parameters and submit a change request.</li> </ol>
	Database table modification	DML operations such as INSERT, UPDATE, and DELETE	High	
		DDL operations such as CREATE, DROP, and ADD	High	
		Uses <b>SELECT * FROM xx FOR UPDATE</b> to view or edit data.	High	
	Database modification	Modifies database parameters.	High	
		Deletes data objects from a database.	High	
		Performs active/standby switchovers.	High	
		Adds data objects.	Medium	
		Adds users and modifies usernames and passwords for a database.	High	

Operation Object	Object Type	Operation Description	Risk Level	Workaround
OS	Operations on files and directories	Deletes the entire directory and all files by running <b>rm</b> .	High	<ol style="list-style-type: none"> <li>Non-O&amp;M personnel cannot log in to the system through the O&amp;M container management permission.</li> <li>The O&amp;M container prompts risky commands. Exercise caution when performing this operation.</li> <li>Do not perform the following operations independently. If the following operations need to be performed, they must be approved by the TL/SRE and performed by the OPS or SRE. One person performs the operations and the other supervises the operations. <ul style="list-style-type: none"> <li>a. Delete or move a file or directory.</li> <li>b. Start or stop the system or service processes without permission, including containers and processes in the containers.</li> <li>c. Modify OS parameters or other configurations.</li> </ul> </li> </ol>
		Moves files or directories by running <b>mv</b> .	High	
		Changes the owner and permissions of a file or directory by running <b>chmod</b> and <b>chown</b> .	High	
		Directly compresses files by running commands such as <b>gzip</b> , <b>bzip2</b> , and <b>compress</b> .	High	
		Specifies a file when running <b>grep</b> , <b>tar cvzf</b> , <b>find</b> , or <b>ls</b> . Asterisks (*) are not allowed.	Medium	
	Process operations	Stops and starts processes.	High	<ol style="list-style-type: none"> <li>The change guide and test report for modifications are required. The SRE or Ops is responsible for the operations, and the operations must be supervised.</li> </ol>
		Modifies process startup parameters, such as adding environment variables.	High	
	OS parameters	Stops the OS by running <b>shutdown</b> .	High	
		Restarts the OS by running <b>reboot</b> .	High	

Operation Object	Object Type	Operation Description	Risk Level	Workaround
		Adds, deletes, and modifies IP addresses, routes, or host names.	High	
		Modifies firewall rules.	High	
		Modifies the <b>etc/host</b> file.	High	
		Modifies DNS parameters.	High	
		Modifies NTP parameters.	High	
		Mounts hard disks.	High	
		Stops or restarts NICs.	High	

Operation Object	Object Type	Operation Description	Risk Level	Workaround
		<p>Modifies OS kernel parameters.</p> <p>For example:</p> <ol style="list-style-type: none"> <li>1. Change the maximum number of processes used by each user, modify I/O parameters, and change the maximum memory space occupied by the file system.</li> <li>2. Modify the maximum number of file handles, maximum shared memory, and core file size.</li> <li>3. Modify the core file size.</li> </ol>	High	
		Formats the running OS partition.	High	
		Modifies network services such as SSH and SFTP.	High	
	Account operations	Changes the password of user <b>root</b> or the default service user.	High	
		Deletes and adds users.	High	

Operation Object	Object Type	Operation Description	Risk Level	Workaround
	Docker & K8s	Deletes all pods of a service at the same time by running <b>kubectl delete pods</b> . This operation is not allowed.	High	

**Table 8-2** High-risk operations on the GaussDB(DWS) management plane

Operation Object	Object Type	Operation Description	Risk Level	Workaround
Console	Global Console	Modifies Tomcat configuration files, for example, <b>server.xml</b> .	Low	<ol style="list-style-type: none"> <li>Provide a formal test report and a change guide for each change. Risky operations must be clearly described in the change guide, and rollback measures must be provided.</li> <li>The SRE or Ops is responsible for change operations. One person is responsible for the change and the other is responsible for supervision.</li> <li>If API and parameter changes are involved, the TL/SRE needs to review the changes before the change and evaluate the risks.</li> </ol>
		Modifies the IAM domain name or IP address.	High	
		Modifies the endpoint on Service OM and the association between the region and the service.	High	
		Adjusts the console framework, third-party dependency components (such as JSON parsing and encryption/decryption components), and console functions during the console upgrade or patch installation.	High	

Operation Object	Object Type	Operation Description	Risk Level	Workaround
	Region Console	Modifies Tomcat configuration files, for example, <b>server.xml</b> .	High	
		Modifies the IAM domain name or IP address.	High	
		Adjusts the console framework, third-party dependency components (such as JSON parsing and encryption/decryption components), and console functions during the console upgrade or patch installation.	High	
Service API	Billing and operations	Modifies the Service OM SDR configurations.	Medium	
		Connects to or changes the SDR API.	High	
	Access control system	Modifies the IAM endpoint address.	High	
		Modifies the LB/Nginx floating IP address.	High	
	O&M interconnection	Modifies the domain names, IP addresses, and interconnection parameters of peripheral systems, such as ManageOne and CTS.	High	

Operation Object	Object Type	Operation Description	Risk Level	Workaround
	Dependent services	Performs operations on the API gateway, such as API modification and removal, flow control policy adjustment, and access control adjustment.	High	
		SDK compatibility	Medium	
		Changes the IP address.	High	
Service function/component changes	Version update	Modify peripheral interfaces of a version.	High	
		Modify APIs of a version.	High	
		Modify the method of referencing third-party APIs for a service.	High	
	Taking components offline	Replace third-party components of a service.	High	
		Take components offline.	High	

**Table 8-3** High-risk operations on the GaussDB(DWS) tenant plane

Operation Object	Object Type	Operation Description	Risk Level	Workaround
User data	User data	Adds tenant data.	Low	1. Ensure that no one is allowed to perform operations on user data or modify any directory or file in the user cluster. Otherwise, the security red lines are breached. 2. The O&M container notifies users of risky operations. 3. Security protection is added to the code for deleting user clusters and data. For example, forcible backup is performed before resizing. 4. Any cluster upgrade or repair operation must be approved by the SRE/TL, performed by the SRE/OPS, and supervised by another person.
		Deletes tenant data.	High	
		Modifies tenant data.	High	
Cluster	Cluster	Replaces and rebuilds nodes in a tenant cluster.	High	1. Ensure that no one is allowed to perform operations on user data or modify any directory or file in the user cluster. Otherwise, the security red lines are breached. 2. The O&M container notifies users of risky operations. 3. Security protection is added to the code for deleting user clusters and data. For example, forcible backup is performed before resizing. 4. Any cluster upgrade or repair operation must be approved by the SRE/TL, performed by the SRE/OPS, and supervised by another person.
		Installs other software in a tenant cluster.	High	
		Restarts a tenant cluster.	High	
		Deletes a tenant cluster.	High	
		Stops a tenant cluster.	Medium	
		Deletes the directory of a tenant host.	High	
		Deletes files from a tenant host.	High	
		Changes the name of a tenant host.	High	
		Changes the password of a tenant host.	High	

# 9 Other O&M Operations

## 9.1 Manually Deleting BMS Logical Cluster Nodes

## Scenario

This section describes how to manually delete BMS logical cluster nodes.

## Procedure

- Step 1** Log in to database **rms** on the management side. For details, see [Logging In to the rms Database on the Management Side](#).

**Step 2** Run the following SQL statement to view the password ciphertext of the tenant cluster. **id** indicates the cluster ID, which can be viewed on the GaussDB(DWS) console.

Information similar to the following is displayed. Record the ciphertext.

```

mysql [rmb] > select dbAdminPwd from rds_cluster where Id='[REDACTED]' ;
+-----+
| dbAdminPwd |
+-----+
| [REDACTED] |
+-----+
1 row in set (0.001 sec)


```

- ### **Step 3** Decrypt the password of the cluster database user.

1. Run the following command on database **rms** to return to the O&M pod:  
`\q`
  2. Go to the **cd /opt/cloud/3rdComponent/opsTool** directory.  
**cd /opt/cloud/3rdComponent/opsTool**
  3. Start the encryption tool.  
**java -jar AESTool.jar**
  4. Enter **2 password** and press **Enter**. In the preceding command, *password* indicates the password ciphertext obtained in **Step 2**. Record the value of **Decrypt result** in the command output.

```
[service@dsasaintain01:7b48f4ff74-n7pf 3rdComponents]$ cd /opt/Cloud/3rdComponent/opsTool
[service@dsasaintain01:7b48f4ff74-n7pf opsTool]$ java -jar AESTool.jar
This tool can run in two modes:
SLF4J: Defaulted to no-operation (NOP) logger implementation
SLF4J: See http://www.slf4j.org/codes.html#staticLoggerBinder for further details.

Encrypt,please input 1 and `` and password's plaintext [and `` and encodedKey's ciphertext]
Decrypt,please input 2 and `` and password's ciphertext [and `` and encodedKey's ciphertext]
Encrypt,please input 3 and `` and absolute path of file [and `` and encodedKey's ciphertext]
Decrypt password in file,Please input 4 and `` and absolute path of file [and `` and encodedKey's ciphertext]
End,please input 0 and `` and arbitrary character
>>> 1
[REDACTED]@host-172-20-128-8 ~]# su - Ruby
[REDACTED]@host-172-20-128-8 Ruby]# cd /opt/Cloud/3rdComponent/opsTool
[REDACTED]@host-172-20-128-8 Ruby]# java -jar AESTool.jar
TWkzZGJlZDMyQUBhZC1hZAB3a8B[REDACTED]@10.80.74.101:5432[EyS]1CGU1XNUDE07h2xHzY2MgQ2MhNjG2MjE1N]E2NTM1MjdyDkD0HrY2NqY2Mkdz0MmNyY2Mz3ElkzNTH0kzHf]RdJ1u2HTYHdJz20m3o
[REDACTED]@host-172-20-128-8 Ruby]# Encrypt result:
[REDACTED]@host-172-20-128-8 Ruby]# Encrypt,please input 1 and `` and password's plaintext [and `` and encodedKey's ciphertext]
```

- Press **Ctrl+C** to exit the Java program.

**Step 4** Save the database password.

- Log in to the first node of the cluster and enter the sandbox. For details, see [Logging In to a Node in the Tenant Cluster](#).
- Go to the **cd /DWS/manager/** directory.  
**cd /DWS/manager/**
- Enter the Python interactive shell.  
**python**
- Encrypt the password using Python base64. The following figure shows the encrypted password.

```
>>> import base64
>>> dbAdminPwd = base64.b64encode('acEhKkMP2SsuxXY~').encode()
>>> print dbAdminPwd
YWNFaEtrTVAYu3N1eFhZfg==
```

```
[Mike@host-172-20-128-8 ~]# su
Password:
[root@host-172-20-128-8 Mike]# su - Ruby
Last login: Wed Sep 15 08:40:57 UTC 2021 on pts/1
[Ruby@host-172-20-128-8 ~]# ssh `hostname -i`

Authorized users only. All activities may be monitored and reported.
Last login: Wed Sep 15 08:57:35 2021
[Ruby@host-172-20-128-8 ~]# cd /DWS/manager/
[Ruby@host-172-20-128-8 manager]# python
Python 2.7.5 (default, Mar 11 2020, 06:00:00)
[GCC 4.8.5 20150623 (EulerOS 4.8.5-28)] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> import base64
>>> dbAdminPwd = base64.b64encode('A[REDACTED]Z_').encode()
>>> print dbAdminPwd
Q[REDACTED]LaXw==
>>>
```

- Press **Ctrl+D** to exit the Python interactive shell and save the encrypted password to the local host.

**echo Encrypted\_password >tmptoken**

**Step 5** Delete nodes from a logical cluster.

```
gs_lcctl -t delete --elastic-group -h
host-172-16-45-230,host-172-16-12-90,host-172-16-28-182
```

The nodes following **-h** are the nodes to be deleted. If the following information is displayed, the nodes are successfully deleted.

```
[Ruby@host-172-16-52-156 manager]# gs_lcctl -t delete --elastic-group -h host-172-16-45-230,host-172-16-12-90,host-172-16-28-182
Checking whether the reentry command is consistent with the previous command.
Successfully checked whether the reentry command is consistent with the previous command.
Delete the logic cluster.
Last time end with: Drop lc node on database.
Reentering operation.
Completing the initialization before performing the delete.
Checking deleted nodes.
Successfully checked deleted nodes.
Checking the count of the nodegroup.
Successfully checked the count of the nodegroup.
Last time end with: Drop lc node on database.
Other may be operating the elastic_group now.
Checking if cluster is locked.
Successfully checked if cluster is locked.
Successfully completed the initialization.
Unlocking cluster.
Successfully unlocked cluster.
Locking cluster.
Successfully locked cluster.
Waiting for the cluster status to become normal.
.
The cluster status is normal.
Unlocking cluster.
Successfully unlocked cluster.
Deleting logical cluster nodes;
Successfully deleted logical cluster nodes;
Successfully delete the logic cluster or the nodes.
```

- Step 6** Delete nodes on the management side. Shut down the nodes to be deleted. After the nodes are shut down, check whether the database status is normal to make sure that the nodes are the target nodes to be deleted.

1. Check whether the cluster is normal.

**cm\_ctl query -CvL ALL**

```
[Ruby@host-172-16-52-156 manager]# cm_ctl query -CvL ALL
[CMServer State]
node instance state
-----.
2 host-172-16-12-243 1 Primary
3 host-172-16-56-223 2 Standby
[Cluster State]
cluster_state : Normal
redistributing : No
balanced : Yes
[logicCluster State]
logiccluster_name logiccluster_state redistributing balanced
[] Normal No Yes
elastic_group Normal No Yes
[Coordinator State]
node instance state
-----.
1 host-172-16-52-156 5001 Normal
2 host-172-16-12-243 5002 Normal
3 host-172-16-56-223 5003 Normal
[Central Coordinator State]
node instance state
-----.
1 host-172-16-52-156 5001 Normal
[GTM State]
node instance state sync_state
-----.
3 host-172-16-56-223 1001 P Primary Connection ok Sync
2 host-172-16-12-243 1002 S Standby Connection ok Sync
[Datanode State]
logiccluster_name | node instance state | node instance state | node instance state
-----.
lc1 | 1 host-172-16-52-156 6000 P Primary Normal | 2 host-172-16-12-243 6002 S Standby Normal | 3 host-172-16-56-223 3001 R Secondary Normal
lc1 | 1 host-172-16-52-156 6003 P Primary Normal | 3 host-172-16-56-223 6004 S Standby Normal | 2 host-172-16-12-243 3003 R Secondary Normal
lc1 | 2 host-172-16-12-243 6005 P Primary Normal | 3 host-172-16-56-223 6006 S Standby Normal | 1 host-172-16-52-156 3004 R Secondary Normal
lc1 | 2 host-172-16-12-243 6007 P Primary Normal | 3 host-172-16-56-223 6008 S Standby Normal | 3 host-172-16-12-243 3005 R Secondary Normal
lc1 | 3 host-172-16-52-156 6009 P Primary Normal | 1 host-172-16-52-156 6010 S Standby Normal | 2 host-172-16-12-243 3006 R Secondary Normal
lc1 | 3 host-172-16-56-223 6011 P Primary Normal | 2 host-172-16-12-243 6012 S Standby Normal | 1 host-172-16-52-156 3007 R Secondary Normal
```

2. Log in to ManageOne Maintenance Portal, go to the Service OM page, and choose **Services > Resource > Bare Metal Resource**. In the navigation pane on the left, choose **Bare Metal Resource > Availability Zones > AZ\_name > Bare Metal Server Instances**. Then choose **More > Power off** to power off the target BMSS.
  3. Check whether the cluster is normal.
- cm\_ctl query -CvL ALL**
4. On the CloudAutoDeploy-CDK page of CloudScope, select the corresponding region in the upper left corner. In the navigation pane on the left, choose **Change Mgmt > Upgrade** and select the corresponding cluster, for example, **ei-dbs-region**. Then search for **dwscontroller** in the search box, select the corresponding **dwscontroller**, and click **Next**.
  5. In the search box on the right, search for the **iam.url** and **bms.endpoint** parameters and record their values.
  6. Log in to database **rms** on the management side by referring to [Logging In to the rms Database on the Management Side](#) and run the following SQL statement to obtain the domain name and password of the resource tenant.

The password in the output needs to be decrypted by referring to [Step 3](#).

```
select domainname, pwd from rds_restantent where realdomainname='Resource_tenant_account'
```

7. Log in to the O&M pod by referring to [Logging In to the O&M Container](#) and run the following command to obtain the resource tenant token. Set *Resource\_tenant\_password* to the decrypted password in [Step 6.6](#) and *iam.url* to the value obtained in [Step 6.5](#), for example, <https://iam-cache-proxy.eihs.com:26335/v3>.

```
curl -i -s -H "Content-Type: application/json" -X POST -d '{"auth": {"identity": {"methods": ["password"]}, "password": {"user": {"name": "Resource_tenant_account"}, "password": "Resource_tenant_password"}, "domain": {"name": "Resource_tenant_domain_name"}}}, {"scope": {"project": {"id": "Project_ID"}}}}'} iam.url/v3/auth/tokens -k --tlsv1.2
```

```
Last login: Thu Nov 5 10:53:40 2020 from 170.25.1.12
Huawei's internal systems must only be used for conducting Huawei's business or for purposes authorized by Huawei management.
Use is subject to audit at any time by Huawei management.
[root@172-75-8-121 ~]# curl -i -s -H "Content-Type: application/json" -X POST -d '{"auth": {"identity": {"methods": ["password"]}, "password": {"user": {"name": "ch-global-1_op_svc_dws"}, "password": "@B#eLo0Q2sS45x9y"}, "domain": {"name": "op_svc_dws-490a5ac75344c1eb589a3c3ef2c031b"}}, "scope": {"project": {"id": "3d5f1506a6554154b4fc1baa2cc09a01"}}}' https://iam-cache-proxy.eihs.com:26335/v3/auth/tokens -k --tlsv1.2
HTTP/1.1 201 Created
Server: product only
Date: Thu, 05 Nov 2020 02:54:05 GMT
Content-Type: application/json; charset=utf-8
Transfer-Encoding: chunked
Connection: keep-alive
Keep-Alive: timeout=60
X-IAM-Trace-ID: IR-1604544845052-900
X-Subject-Token: MIEBwYJkGZIhcNQCoCID+CQACQExDTALBgkghkgBZQMEAegEwgjoBpkqhkig9w0BBwGgggJZBII0CVXsidG9rZW4iOnsiZXhwaxJclc19hdCt6ijIwMjatMTETMDZUMD6NTQ6MDuUy1MDAwWilsIm1ldGhvZHM0lSicFzc3dvcmQiXsw1Y2F0YWxvZyI6W10sInJvbGVzIjgbeyJuYw11Ijoiid6VfYWRtaW41LcJpzC1iJm1NDU1YTx0WM4YzQzNjM50dg4Mtk2YjE4MGQyYjVkiIn1dLCJwmqZWN0i1j7lmRvbWfbpi16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1Mz00YzFuyju40WEzYzNTzjJMDMXYiisIm1kIjoiYmNiYMa0Ti0MD1NDFlNjk2YmExMWNxMNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLW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MDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1ZWRfxX0i0iyMDiwlTExLTA1DVayjU00jA1j42ANTAwMfoiLCJic2VyljptInRvbWFpbIb16eyJuYw11Ijoi3Bfc3ZjX2R3c1800TBnWfHyzc1M208YzFLyjU40WEzYzNlZjJyjM0dMxYiIsIm1kIjoiYmNiYzM40TI0MD1NDFlNjk2YmExMWNhMTY3MGUyNDUiSwibmFtzSI61mNuLWdsb23hb0xxNzjZDq2NWMzWVwjYTQ5MjU5M2NiNWVlyjcoNWyZZjk0IiwiaQ0i0i1zZDVMtUwNe2NTU0MTU0YjRmYzF1yWEy24m0WeWMSJ9LcJpc3N1
```

## 9.2 Deleting Redundant AZs from the Console Page

In the HUAWEI CLOUD Stack environment where multiple AZs exist while GaussDB(DWS) resources exclusively occupy an AZ, delete redundant AZs on the background database to prevent tenants from selecting an incorrect AZ on the console page during cluster creation.

### Procedure

- Step 1** Log in to database **rms** on the management side. For details, see [Logging In to the rms Database on the Management Side](#).
- Step 2** Delete redundant AZs.

```
delete FROM rms.rds_availablezone WHERE code='az3.dc3';
delete FROM rms.rds_spec_region WHERE zone='az3.dc3';
```

----End

## 9.3 What Should I Do If Some Flavors Are Not Displayed After DWS Is Deployed?

After DWS is deployed, if some flavors (including dws.ki1.8xlarge.4 and dws.ki1.16xlarge.4) are not displayed on the ManageOne operation plane, system administrators can perform the following operations.

### Procedure

- Step 1** Log in to the database on the management side by referring to [Logging In to a Node in the Tenant Cluster](#).
- Step 2** Switch to the **rms** database and run the following SQL statement:

```
update rds_resspec set imgType='ARM' where id='07a039d3-fdbe-4375-8b26-2d52cad377bc';
update rds_resspec set imgType='ARM' where id='3594a138-f18f-4822-908e-edd08ee68e40';
update rds_resspec set imgType='ARM' where id='bd54c6ef-2e53-4160-aec1-64f3c79c3375';
update rds_resspec set imgType='X86' where id='2404d8d0-637f-4bc3-85bb-1e48a8166cb9';
update rds_resspec set imgType='X86' where id='719872e5-f55a-4b0a-ae9f-a9111679be73';
update rds_resspec set imgType='X86' where id='5edb0230-a803-4b75-9849-e5dfaf362a7';
update rds_resspec set imgType='X86' where id='b55ca438-59ee-4063-87e8-9bcff3f62cb5';
update rds_resspec set imgType='X86' where id='362d1b7e-5813-4d24-99a2-7eb63d35bb50';
update rds_resspec set imgType='X86' where id='8257248c-48f7-11e8-842f-0ed5f89f718b';
update rds_resspec set imgType='X86' where id='8c850c97-38f3-4b28-9667-12b2a645656f';
update rds_resspec set imgType='X86' where id='bb58b57a-ef01-4bc9-8f2e-23a1cc2b5b05';
update rds_resspec set imgType='X86' where id='fb8fe666-6734-4b11-bc6c-43d11db3c745';
update rds_resspecattr set value = 'dws.ki1.8xlarge.4' where specid = 'b38c59be-f0ba-4fe1-87cc-4dfbe7b7c6bc' and attrCode = 'flavor';
update rds_resspecattr set value = 'dws.ki1.16xlarge.4' where specid = '0933a181-f627-4e75-84d7-bbbc61d63618' and attrCode = 'flavor';
update rds_resspecattr set value = 'dws.ki1.4xlarge.4' where specid = '3594a138-f18f-4822-908e-edd08ee68e40' and attrCode = 'flavor';
update rds_resspecattr set value = 'dws.i3.12xlarge.6' where specid = '4f87c61d-d6d9-4caa-8e7f-5e2cb27092a5' and attrCode = 'flavor';
update rds_resspecattr set value = 'dws.i3.4xlarge.6' where specid = '127df30a-9594-415b-b14d-e202b8a40634' and attrCode = 'flavor';
```

```
update rds_resspecattr set value = 'dws.i3.8xlarge.6' where specid = '2f6f3a14-7e23-43f4-
aa96-86643cb976da' and attrCode = 'flavor';
```

----End

## 9.4 Configuring Hybrid Data Warehouses and Stream Data Warehouses

In the HCS scenario, configure the flavors of the hybrid data warehouses and stream data warehouses so that users can create tenant clusters with these flavors.

- Step 1** Log in to the Service CM, choose Data Warehouse Service, choose **Configuration Management > Spec Config**, and select the following flavors:

Flavor ID	Flavor	Data Warehouse
3a8530ee-e9e9-46d8-9b57-fd56fe51137f	dwsx2.h.xlarge.4.kc1	Hybrid
983f5009-3b3e-45b6-95af-9a76c770b53a	dwsx2.h.xlarge.4.c6	Hybrid
4d98dd62-c72c-448a-b444-b4d91da051c0	dwsx2.h.2xlarge.4.kc1	Hybrid
c72a46bb-c451-4a65-b5cb-d88fc3b6b4de	dwsx2.h.2xlarge.4.c6	Hybrid
8fa7c33f-5dcc-486b-90a5-c322b489139b	dwsx2.h.4xlarge.4.kc1	Hybrid
f526f231-0634-4437-afc3-c8328db5903c	dwsx2.h.4xlarge.4.c6	Hybrid
f18ea0f7-3188-4cb4-8445-9b52b188a643	dwsx2.h.8xlarge.4.kc1	Hybrid
6c4a4826-1b70-4eca-93d6-eef43f32a853	dwsx2.h.8xlarge.4.c6	Hybrid
e2de3faf-6845-4c59-adce-2de3fdf06747	dwsx2.h.12xlarge.4.kc1	Hybrid
c4ea6f12-db82-4ae2-ada1-e19461bae52d	dwsx2.h.16xlarge.4.c6	Hybrid
18ff550e-79f3-421a-b9d1-7814ff5ef1ab	dwsx2.rt.2xlarge.km1	Stream
7728b16c-9700-4e34-9d6d-98d3fa058f26	dwsx2.rt.2xlarge.m6	Stream

Flavor ID	Flavor	Data Warehouse
ddcc356d-fa0b-45e9-a273-7542a6a7e690	dwsx2.rt.8xlarge.m6	Stream
c0747c90-d7ef-4e6e-99fa-3a3959821c90	dwsx2.rt.12xlarge.m6	Stream
fdff1bbb-0ef6-4b9f-a9b4-67a8108b9988	dwsx2.rt.16xlarge.m6	Stream
ba743916-2f68-45df-a576-fa39d7127185	stream.physical.hd.24xlarge.6	Stream
3a131502-5d1f-499d-9d18-07a321abcb54	stream.physical.i6.24xlarge.8	Stream
d127970a-79b6-4c6e-9eac-96c76b8e906b	stream.physical.i6.26xlarge.8	Stream
1e511887-672d-406b-91bf-a31163c33709	stream.physical.fd.32xlarge.4	Stream
8f0ff6cc-33dd-4abd-bdae-cf1699436040	stream.physical.hi.32xlarge.6	Stream
f158ea97-46c0-4054-9dbe-c416b949f8f7	stream.physical.fi.32xlarge.4	Stream

----End

## 9.5 Monitoring and Rolling Back Partition Tables

- Step 1** On the ManageOne Maintenance Portal homepage, click the region where the current environment has been upgraded in the Service OM area in the Common Links list to switch to the Service OM homepage.
- Step 2** Click VMs in the Computing Resources area. On the VM list page that is displayed, search for DWS-Gauss-DB by VM name to find the DWS DMS database VM.
- Step 3** Log in to the DWS DMS database VM node as user opsadmin and determine that the current node is the active database node.
- Step 4** Switch to user root, switch to user dbadmin, and run the following command to log in to the DMS database (dbpasswd indicates the password of user dbadmin):

```
gsql -p 8635-W dbpasswd -U dbadmin -d dms
```

Run the select \* from PG\_PARTDEF; command in the database to check whether a partition table exists. If yes, run the **Step 5** command.

**Step 5** Go to the `/tmp` directory and create an SQL script as the `dbadmin` user. For details about the SQL content, see [SQL Script](#). `dbpasswd` indicates the login password of the `dbadmin` user.

```
su - dbadmin
```

```
cd /tmp
```

```
vi 8.2.1.sql
```

Paste the content of [SQL Script](#) and save it.

```
gsql -p 8635-W dbpasswd -U dbadmin -d dms -f 8.2.1.sql
```

Run the following command to log in to the DMS database:

```
gsql -p 8635-W dbpasswd -U dbadmin -d dms
```

Run the `select * from PG_PARTDEF;` command in the database. If no result is returned, the partition table has been rolled back.

----End

## 9.6 SQL Script

```
set statement_force_abort_timeout=0;
-- Deleting Table Partition Data
truncate table DMS_TBL_CFG_AUTO_INCREASE_PART;

CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_CPU_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
USAGE NUMERIC(16, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_CPU_CLUSTER_AGGREGATE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
RESULT NUMERIC(16, 2),
SKEWRESULT NUMERIC(16, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_CPU_USR_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
CPU_USAGE_USR NUMERIC(4, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_CPU_SYS_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
CPU_USAGE_SYS NUMERIC(4, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_CPU_IDLE_OLD
(
```

```
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
CPU_IDLE NUMERIC(4, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_CPU_IOWAIT_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
CPU_IOWAIT NUMERIC(4, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_MEM_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
MEM_USAGE NUMERIC(16, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_OPERATION_SYSTEM_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
TCP_RESEND_RATE NUMERIC(4, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_MEM_CLUSTER_AGGREGATE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
RESULT NUMERIC(16, 2),
SKEWRESULT NUMERIC(16, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_MEM_FREE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
MEM_FREE BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_DISKIO_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
DISK_NAME VARCHAR(128) NOT NULL,
KB_TOTAL_S NUMERIC(16, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DISK_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_MEM_BUFFERS_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
MEM_BUFFERS BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_MEM_CACHED_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
```

```
MEM_CACHED BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_DISKIO_CLUSTER_AGGREGATE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
DISK_NAME VARCHAR(128) NOT NULL,
RESULT NUMERIC(16, 2),
SKEWRESULT NUMERIC(16, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DISK_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_DISK_USED_PERCENTAGE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
DISK_FS_NAME VARCHAR(128) NOT NULL,
USED BIGINT,
TOTAL BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DISK_FS_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_DISK_TOTAL_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
DISK_FS_NAME VARCHAR(128) NOT NULL,
DISK_TOTAL BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DISK_FS_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_DISK_READ_RATE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
DISK_NAME VARCHAR(128) NOT NULL,
DISK_READ_RATE REAL,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DISK_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_NET_IF_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
INTERFACE_NAME VARCHAR(128) NOT NULL,
IO_RATE DOUBLE PRECISION,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, INTERFACE_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_DISK_WRITE_RATE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
DISK_NAME VARCHAR(128) NOT NULL,
DISK_WRITE_RATE REAL,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DISK_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_DISK_AWAIT_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
DISK_NAME VARCHAR(128) NOT NULL,
DISK_AWAIT REAL,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DISK_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_DISK_SVCTM_OLD
```

```
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 HOST_ID INT NOT NULL,
 DISK_NAME VARCHAR(128) NOT NULL,
 DISK_SVCTM REAL,
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DISK_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_DISK_UTIL_OLD
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 HOST_ID INT NOT NULL,
 DISK_NAME VARCHAR(128) NOT NULL,
 DISK_UTIL REAL,
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DISK_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_NET_IF_CLUSTER_AGGREGATE_OLD
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 HOST_ID INT NOT NULL,
 INTERFACE_NAME VARCHAR(128) NOT NULL,
 RESULT DOUBLE PRECISION,
 SKEWRESULT DOUBLE PRECISION,
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, INTERFACE_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_TPS_OLD
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 DB_NAME VARCHAR(128) NOT NULL,
 INST_NAME VARCHAR(128) NOT NULL,
 DELTA_XACT_TOTAL NUMERIC(16, 2),
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, DB_NAME, INST_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_DB_PROCESS_STATS_OLD
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 DB_NAME VARCHAR(128) NOT NULL,
 INST_NAME VARCHAR(128) NOT NULL,
 DELTA_XACT_COMMIT BIGINT,
 DELTA_XACT_ROLLBACK BIGINT,
 DELTA_DEADLOCKS BIGINT,
 DELTA_TUP_RETURNED BIGINT,
 DELTA_TUP_FETCHED BIGINT,
 DELTA_TUP_INSERTED BIGINT,
 DELTA_TUP_UPDATED BIGINT,
 DELTA_TUP_DELETED BIGINT,
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, DB_NAME, INST_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_NODE_SQL_COUNT_OLD
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 NODE_NAME VARCHAR(128) NOT NULL,
 USER_NAME VARCHAR(128) NOT NULL,
 DELTA_TOTAL_COUNT NUMERIC(16, 2),
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, NODE_NAME, USER_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_NET_IF_UP_OLD
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 HOST_ID INT NOT NULL,
 INTERFACE_NAME VARCHAR(128) NOT NULL,
 NET_UP BOOLEAN,
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, INTERFACE_NAME)
```

```

);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_NET_IF_RECV_PACKETS_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
INTERFACE_NAME VARCHAR(128) NOT NULL,
NET_RECV_PACKETS BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, INTERFACE_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_NET_IF_SEND_PACKETS_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
INTERFACE_NAME VARCHAR(128) NOT NULL,
NET_SEND_PACKETS BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, INTERFACE_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_NET_IF_RECV_DROP_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
INTERFACE_NAME VARCHAR(128) NOT NULL,
NET_RECV_DROP BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, INTERFACE_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_NET_IF_RECV_BYTES_S_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
INTERFACE_NAME VARCHAR(128) NOT NULL,
NET_RECV_BYTES BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, INTERFACE_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_HARDWARE_NET_IF_SEND_BYTES_S_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
INTERFACE_NAME VARCHAR(128) NOT NULL,
NET_SEND_BYTES BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, INTERFACE_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_CLUSTER_DISK_USAGE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
DISK_FS_NAME VARCHAR(128) NOT NULL,
CLUSTER_DISK_USAGE NUMERIC(16, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DISK_FS_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_CLUSTER_SQL_PROBE_SINGLE_OLD
(
CTIME BIGINT NOT NULL,
CLUSTER_ID VARCHAR(64) NOT NULL,
PROJECT_ID VARCHAR(64) NOT NULL,
PROBE_ID VARCHAR(64) NOT NULL,
CLUSTER_SQL_PROBE_TIME INT,
CLUSTER_SQL_PROBE_STATUS VARCHAR(64),
PRIMARY KEY (CTIME, CLUSTER_ID, PROJECT_ID, PROBE_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_CLUSTER_DISK_USAGE_CLUSTER_AGGREGATE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,

```

```
HOST_ID INT NOT NULL,
DISK_FS_NAME VARCHAR(128) NOT NULL,
RESULT NUMERIC(16, 2),
SKEWRESULT NUMERIC(16, 2),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DISK_FS_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_CLUSTER_STAT_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
CLUSTER_STAT VARCHAR(128),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_CLUSTER_READ_ONLY_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
CLUSTER_READ_ONLY VARCHAR(128),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_CLUSTER_INST_STAT_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
INST_ID INT NOT NULL,
INST_STAT VARCHAR(128),
INST_TYPE VARCHAR(128),
INST_ROLE VARCHAR(128),
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, INST_ID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_CLUSTER_DN_CPU_USAGE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
INST_NAME VARCHAR(128) NOT NULL,
INST_CPU REAL,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, INST_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_CLUSTER_DN_CPU_USAGE_AGGREGATE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
INST_NAME VARCHAR(128) NOT NULL,
RESULT REAL,
SKEWRESULT REAL,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, INST_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_CLUSTER_DB_SIZE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
DB_NAME VARCHAR(128) NOT NULL,
INST_NAME VARCHAR(128) NOT NULL,
CLUSTER_DB_SIZE BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, DB_NAME, INST_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_CLUSTER_SCHEMA_SIZE_OLD
(
CTIME BIGINT NOT NULL,
VIRTUAL_CLUSTER_ID INT NOT NULL,
HOST_ID INT NOT NULL,
DB_NAME VARCHAR(32) NOT NULL,
SCHEMA_NAME VARCHAR(32) NOT NULL,
CLUSTER_SCHEMA_SIZE BIGINT,
PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, HOST_ID, DB_NAME, SCHEMA_NAME)
);
```

```

CREATE TABLE IF NOT EXISTS DMS_TS_DB_QUERIES_OLD
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 DB_NAME VARCHAR(128) NOT NULL,
 INST_NAME VARCHAR(128) NOT NULL,
 PID VARCHAR(128) NOT NULL,
 QUERY_ID VARCHAR(128) NOT NULL,
 START_TIME BIGINT NOT NULL,
 WLM_STATUS TEXT,
 SYSTEM_QUERY BOOLEAN,
 RESOURCE_POOL VARCHAR(128),
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, DB_NAME, INST_NAME, PID, QUERY_ID, START_TIME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_CLUSTER_TRANSACTION_COUNT_OLD
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 DB_NAME VARCHAR(128) NOT NULL,
 INST_NAME VARCHAR(128) NOT NULL,
 CLUSTER_TRANSACTION_COUNT NUMERIC(16, 2),
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, DB_NAME, INST_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_DB_SESSIONS_OLD
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 DB_NAME VARCHAR(128) NOT NULL,
 INST_NAME VARCHAR(128) NOT NULL,
 PID VARCHAR(128) NOT NULL,
 STATE VARCHAR(128),
 APPLICATION_NAME VARCHAR(128),
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, DB_NAME, INST_NAME, PID)
);
CREATE TABLE IF NOT EXISTS DMS_TS_DATABASE_DB_SIZE_OLD
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 DB_NAME VARCHAR(128) NOT NULL,
 DATABASE_DB_SIZE BIGINT,
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, DB_NAME)
);
CREATE TABLE IF NOT EXISTS DMS_TS_WORKLOAD_QUEUE_OLD
(
 CTIME BIGINT NOT NULL,
 VIRTUAL_CLUSTER_ID INT NOT NULL,
 RESPOOL_NAME VARCHAR(128) NOT NULL,
 RESPOOL_CPU_USAGE DOUBLE PRECISION,
 RESPOOL_MEM_USAGE DOUBLE PRECISION,
 RESPOOL_DISK_USAGE DOUBLE PRECISION,
 RESPOOL_SIMPLE_QUERY INT,
 RESPOOL_COMPLEX_QUERY INT,
 PRIMARY KEY (CTIME, VIRTUAL_CLUSTER_ID, RESPOOL_NAME)
);

truncate table DMS_MTC_HARDWARE_CPU_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_HARDWARE_CPU%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_HARDWARE_CPU cascade;
ALTER TABLE IF EXISTS DMS_MTC_HARDWARE_CPU_OLD RENAME TO DMS_MTC_HARDWARE_CPU;

truncate table DMS_MTC_HARDWARE_DISKIO_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_HARDWARE_DISKIO%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_HARDWARE_DISKIO cascade;
ALTER TABLE IF EXISTS DMS_MTC_HARDWARE_DISKIO_OLD RENAME TO DMS_MTC_HARDWARE_DISKIO;

truncate table DMS_MTC_HARDWARE_DISK_FS_SIZE_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_HARDWARE_DISK_FS_SIZE%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_HARDWARE_DISK_FS_SIZE cascade;

```

```
ALTER TABLE IF EXISTS DMS_MTC_HARDWARE_DISK_FS_SIZE_OLD RENAME TO
DMS_MTC_HARDWARE_DISK_FS_SIZE;

truncate table DMS_MTC_HARDWARE_MEM_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_HARDWARE_MEM%
%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_HARDWARE_MEM cascade;
ALTER TABLE IF EXISTS DMS_MTC_HARDWARE_MEM_OLD RENAME TO DMS_MTC_HARDWARE_MEM;

truncate table DMS_MTC_HARDWARE_NET_IF_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_HARDWARE_NET_IF%
%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_HARDWARE_NET_IF cascade;
ALTER TABLE IF EXISTS DMS_MTC_HARDWARE_NET_IF_OLD RENAME TO DMS_MTC_HARDWARE_NET_IF;

truncate table DMS_MTC_CLUSTER_HOST_STAT_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_MTC_CLUSTER_HOST_STAT%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_MTC_CLUSTER_HOST_STAT cascade;
ALTER TABLE IF EXISTS DMS_MTC_CLUSTER_HOST_STAT_OLD RENAME TO
DMS_MTC_CLUSTER_HOST_STAT;

truncate table DMS_MTC_OPERATION_SYSTEM_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_MTC_OPERATION_SYSTEM%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_MTC_OPERATION_SYSTEM cascade;
ALTER TABLE IF EXISTS DMS_MTC_OPERATION_SYSTEM_OLD RENAME TO DMS_MTC_OPERATION_SYSTEM;

truncate table DMS_MTC_CLUSTER_INST_STAT_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_CLUSTER_INST_STAT%
%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_CLUSTER_INST_STAT cascade;
ALTER TABLE IF EXISTS DMS_MTC_CLUSTER_INST_STAT_OLD RENAME TO DMS_MTC_CLUSTER_INST_STAT;

truncate table DMS_MTC_CLUSTER_STAT_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_CLUSTER_STAT%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_CLUSTER_STAT cascade;
ALTER TABLE IF EXISTS DMS_MTC_CLUSTER_STAT_OLD RENAME TO DMS_MTC_CLUSTER_STAT;

truncate table DMS_MTC_DB_ABNORMAL_JOB_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_ABNORMAL_JOB%
%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_ABNORMAL_JOB cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_ABNORMAL_JOB_OLD RENAME TO DMS_MTC_DB_ABNORMAL_JOB;

truncate table DMS_MTC_DB_ACTIVE_STATS_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_ACTIVE_STATS%
%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_ACTIVE_STATS cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_ACTIVE_STATS_OLD RENAME TO DMS_MTC_DB_ACTIVE_STATS;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_INDEX_STATS%';
and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_INDEX_STATS cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_INDEX_STATS_OLD RENAME TO DMS_MTC_DB_INDEX_STATS;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_LOCK_STATS%';
and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_LOCK_STATS cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_LOCK_STATS_OLD RENAME TO DMS_MTC_DB_LOCK_STATS;

truncate table DMS_MTC_DB_PROCESS_STATS_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_PROCESS_STATS%
%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_PROCESS_STATS cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_PROCESS_STATS_OLD RENAME TO DMS_MTC_DB_PROCESS_STATS;

truncate table DMS_MTC_DB_QUERIES_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_QUERIES%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_QUERIES cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_QUERIES_OLD RENAME TO DMS_MTC_DB_QUERIES;

truncate table DMS_MTC_DB_QUERIES_COUNT_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_MTC_DB_QUERIES_COUNT%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_MTC_DB_QUERIES_COUNT cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_QUERIES_COUNT_OLD RENAME TO DMS_MTC_DB_QUERIES_COUNT;
```

```
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_RESPOOL%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_RESPOOL cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_RESPOOL_OLD RENAME TO DMS_MTC_DB_RESPOOL;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_MTC_DB_RESPOOL_EXCEPTIONS%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_MTC_DB_RESPOOL_EXCEPTIONS cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_RESPOOL_EXCEPTIONS_OLD RENAME TO
DMS_MTC_DB_RESPOOL_EXCEPTIONS;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_RESPOOL_RULES%
' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_RESPOOL_RULES cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_RESPOOL_RULES_OLD RENAME TO DMS_MTC_DB_RESPOOL_RULES;

truncate table DMS_MTC_DB_SESSIONS_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_SESSIONS%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_SESSIONS cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_SESSIONS_OLD RENAME TO DMS_MTC_DB_SESSIONS;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_TABLE_SIZE%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_TABLE_SIZE cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_TABLE_SIZE_OLD RENAME TO DMS_MTC_DB_TABLE_SIZE;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_TABLE_STATS%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_TABLE_STATS cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_TABLE_STATS_OLD RENAME TO DMS_MTC_DB_TABLE_STATS;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_TABLE_VACUUM%
' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_TABLE_VACUUM cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_TABLE_VACUUM_OLD RENAME TO DMS_MTC_DB_TABLE_VACUUM;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_MTC_DB_THREAD_WAITEVENT%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_MTC_DB_THREAD_WAITEVENT cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_THREAD_WAITEVENT_OLD RENAME TO
DMS_MTC_DB_THREAD_WAITEVENT;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_UNIQUE_SQL%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_UNIQUE_SQL cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_UNIQUE_SQL_OLD RENAME TO DMS_MTC_DB_UNIQUE_SQL;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_USER_TRANSACTIONS%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_USER_TRANSACTIONS cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_USER_TRANSACTIONS_OLD RENAME TO
DMS_MTC_DB_USER_TRANSACTIONS;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_MTC_DB_WORKLOAD_SQL_COUNT%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_MTC_DB_WORKLOAD_SQL_COUNT cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_WORKLOAD_SQL_COUNT_OLD RENAME TO
DMS_MTC_DB_WORKLOAD_SQL_COUNT;

truncate table DMS_MTC_INODE_STATUS_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_INODE_STATUS%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_INODE_STATUS cascade;
ALTER TABLE IF EXISTS DMS_MTC_INODE_STATUS_OLD RENAME TO DMS_MTC_INODE_STATUS;

truncate table DMS_MTC_INST_CN_AVAILABILITY_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_MTC_INST_CN_AVAILABILITY%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_MTC_INST_CN_AVAILABILITY cascade;
ALTER TABLE IF EXISTS DMS_MTC_INST_CN_AVAILABILITY_OLD RENAME TO
DMS_MTC_INST_CN_AVAILABILITY;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_MTC_INST_DN_COMM_STAT%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_MTC_INST_DN_COMM_STAT cascade;
```

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ALTER TABLE IF EXISTS DMS_MTC_INST_DN_COMM_STAT_OLD RENAME TO
DMS_MTC_INST_DN_COMM_STAT;

truncate table DMS_MTC_INST_RESOURCES_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_INST_RESOURCES%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_INST_RESOURCES cascade;
ALTER TABLE IF EXISTS DMS_MTC_INST_RESOURCES_OLD RENAME TO DMS_MTC_INST_RESOURCES;

truncate table DMS_MTC_INST_SIZE_STATS_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_INST_SIZE_STATS%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_INST_SIZE_STATS cascade;
ALTER TABLE IF EXISTS DMS_MTC_INST_SIZE_STATS_OLD RENAME TO DMS_MTC_INST_SIZE_STATS;

truncate table DMS_MTC_NODE_SQL_COUNT_OLD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_NODE_SQL_COUNT%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_NODE_SQL_COUNT cascade;
ALTER TABLE IF EXISTS DMS_MTC_NODE_SQL_COUNT_OLD RENAME TO DMS_MTC_NODE_SQL_COUNT;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_WORKLOAD_QUEUE%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_WORKLOAD_QUEUE cascade;
ALTER TABLE IF EXISTS DMS_MTC_WORKLOAD_QUEUE_OLD RENAME TO DMS_MTC_WORKLOAD_QUEUE;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_WORKLOAD_QUEUE_EXCEPTION_RULE%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_WORKLOAD_QUEUE_EXCEPTION_RULE cascade;
ALTER TABLE IF EXISTS DMS_MTC_WORKLOAD_QUEUE_EXCEPTION_RULE_OLD RENAME TO
DMS_MTC_WORKLOAD_QUEUE_EXCEPTION_RULE;

select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_WORKLOAD_QUEUE_USER%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_WORKLOAD_QUEUE_USER cascade;
ALTER TABLE IF EXISTS DMS_MTC_WORKLOAD_QUEUE_USER_OLD RENAME TO
DMS_MTC_WORKLOAD_QUEUE_USER;

---Because all views need to be re-created when a table is created--
-- name: view_dms_mtc.hardware_host_cpu; type: view; schema: public; owner: metricuser; tablespace: default
-- Host-Level CPU View
--
DROP VIEW IF EXISTS view_dms_mtc.hardware_host_cpu;
CREATE OR REPLACE VIEW view_dms_mtc.hardware_host_cpu
AS
SELECT c.ctime, c.virtual_cluster_id, a.cluster_id, c.host_id, b.host_name, c.cpu_name,
c.usr, c.nice, c.sys, c.iowait, c.irq, c.soft, c.steal, c.guest, c.idle, c.ht_possible, c.ht_enabled, c.run_count,
c.blocked_count
FROM dms_meta_cluster AS a, dms_meta_host AS b, dms_mtc.hardware_cpu AS c
WHERE a.virtual_cluster_id = c.virtual_cluster_id AND a.cluster_id = b.cluster_id AND b.host_id = c.host_id;
--
-- name: view_dms_mtc.hardware_host_mem; type: view; schema: public; owner: metricuser; tablespace: default
-- Host-Level_Memory View
--
DROP VIEW IF EXISTS view_dms_mtc.hardware_host_mem;
CREATE OR REPLACE VIEW view_dms_mtc.hardware_host_mem
AS
SELECT c.ctime, c.virtual_cluster_id,
a.cluster_id, c.host_id, b.host_name,
TRUNC(c.mem_total/1024/1024, 2) AS mem_total,
TRUNC(c.mem_free/1024/1024, 2) AS mem_free,
TRUNC(c.buffers/1024, 2) AS buffers,
TRUNC(c.cached/1024/1024, 2) AS cached,
TRUNC(c.swap_total/1024/1024, 2) AS swap_total,
TRUNC(c.swap_free/1024/1024, 2) AS swap_free, c.hardware_corrupted,
TRUNC(100 * (mem_total - mem_free - buffers - cached) / mem_total, 2) AS mem_usage
FROM dms_meta_cluster AS a, dms_meta_host AS b, dms_mtc.hardware_mem AS c

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```

WHERE a.virtual_cluster_id = c.virtual_cluster_id AND a.cluster_id = b.cluster_id AND b.host_id = c.host_id;

-- name: view_dms_mtc.hardware_fs_disksize; type: view; schema: public; owner: metricuser; tablespace: default
-- File system-level _disk_size view
--
DROP VIEW IF EXISTS view_dms_mtc.hardware_fs_disksize;
CREATE OR REPLACE VIEW view_dms_mtc.hardware_fs_disksize
AS
SELECT c.ctime, c.virtual_cluster_id, a.cluster_id,
c.host_id, b.host_name, b.disk_name, c.disk_fs_name,
TRUNC(c.total/1024/1024, 2) AS total,
TRUNC(c.used/1024/1024, 2) AS used,
TRUNC(c.available/1024/1024, 2) AS available,
TRUNC((c.used/c.total)*100, 2) AS used_percentage,
b.disk_type
FROM dms_meta_cluster AS a, dms_meta_host_diskfs AS b, dms_mtc.hardware_disk_fs_size AS c
WHERE a.virtual_cluster_id = c.virtual_cluster_id AND a.cluster_id = b.cluster_id AND b.host_id = c.host_id
AND b.file_system_name = c.disk_fs_name;

-- name: view_dms_mtc.hardware_disk_disksize; type: view; schema: public; owner: metricuser; tablespace: default
-- Disk-level _disk_size view
--
DROP VIEW IF EXISTS view_dms_mtc.hardware_disk_disksize;
CREATE OR REPLACE VIEW view_dms_mtc.hardware_disk_disksize
AS
SELECT ctime, virtual_cluster_id, cluster_id,
host_id, host_name, disk_name,
SUM(total) AS total, SUM(used) AS used,
SUM(available) AS available,
TRUNC((SUM(used)/SUM(total))*100, 2) AS used_percentage
FROM view_dms_mtc.hardware_fs_disksize
GROUP BY ctime, virtual_cluster_id, cluster_id, host_id, host_name, disk_name;

-- name: view_dms_mtc.hardware_host_disksize; type: view; schema: public; owner: metricuser; tablespace: default
-- Host-level _disk_size view
--
DROP VIEW IF EXISTS view_dms_mtc.hardware_host_disksize;
CREATE OR REPLACE VIEW view_dms_mtc.hardware_host_disksize
AS
SELECT ctime, virtual_cluster_id,
cluster_id, host_id, host_name,
SUM(total) AS total,
SUM(used) AS used,
SUM(available) AS available,
TRUNC((SUM(used)/SUM(total))*100, 2) AS used_percentage
FROM view_dms_mtc.hardware_fs_disksize
GROUP BY ctime, virtual_cluster_id, cluster_id, host_id, host_name;

-- name: view_dms_mtc.hardware_disk_diskio; type: view; schema: public; owner: metricuser; tablespace: default
-- Disk-level _disk_io view
--
DROP VIEW IF EXISTS view_dms_mtc.hardware_disk_diskio;
CREATE OR REPLACE VIEW view_dms_mtc.hardware_disk_diskio
AS
SELECT c.ctime, c.virtual_cluster_id, a.cluster_id,
c.host_id, b.host_name, c.disk_name, tps, kb_read_s,
kb_wrtn_s, kb_read, kb_wrtn, rrqm_s, wrqm_s, r_s, w_s,
rkb_s, wkb_s, avgqrq_sz, avgqu_sz, await, svctm,
TRUNC(util, 2) AS util
FROM dms_meta_cluster AS a, dms_meta_host_disk AS b, dms_mtc.hardware_diskio AS c
WHERE a.virtual_cluster_id = c.virtual_cluster_id AND a.cluster_id = b.cluster_id AND b.host_id = c.host_id

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AND b.disk_name = c.disk_name;

-- name: view_dms_mtc.hardware_host_diskio; type: view; schema: public; owner: metricuser; tablespace: default
-- Host-level _disk_io view
--
DROP VIEW IF EXISTS view_dms_mtc.hardware_host_diskio;
CREATE OR REPLACE VIEW view_dms_mtc.hardware_host_diskio
AS
SELECT ctime, virtual_cluster_id,
cluster_id, host_id, host_name,
AVG(tps) AS tps,
AVG(kb_read_s) AS kb_read_s,
AVG(kb_wrtn_s) AS kb_wrtn_s,
AVG(kb_read) AS kb_read,
AVG(kb_wrtn) AS kb_wrtn,
AVG(rrqm_s) AS rrrqm_s,
AVG(wrqm_s) AS wrqm_s,
AVG(r_s) AS r_s,
AVG(w_s) AS w_s,
AVG(rkb_s) AS rkb_s,
AVG(wkb_s) AS wkb_s,
TRUNC(AVG(AVGrq_sz), 2) AS avgrq_sz,
TRUNC(AVG(avgqu_sz), 2) AS avgqu_sz,
TRUNC(AVG(await), 2) AS await,
TRUNC(AVG(svctm), 2) AS svctm,
TRUNC(AVG(util), 2) AS util
FROM view_dms_mtc.hardware_diskio
GROUP BY ctime, virtual_cluster_id, cluster_id, host_id, host_name;

-- name: view_dms_mtc.hardware_network_netif; type: view; schema: public; owner: metricuser; tablespace: default
-- NIC-level _netif view
--
DROP VIEW IF EXISTS view_dms_mtc.hardware_network_netif;
CREATE OR REPLACE VIEW view_dms_mtc.hardware_network_netif
AS
SELECT c.ctime,
c.virtual_cluster_id,
a.cluster_id,
c.host_id,
b.host_name,
c.interface_name,
c.up,
c.speed,
c.recv_bytes,
c.recv_packets,
c.recv_errors,
c.recv_drop,
c.recv_fifo,
c.recv_frame,
c.recv_compressed,
c.recv_multicast,
c.send_bytes,
c.send_packets,
c.send_errors,
c.send_drop,
c.send_fifo,
c.send_collisions,
c.send_carrier,
c.send_compressed,
c.multi_q_possible,
c.multi_q_enabled,
c.multi_q_smp_affinity,
c.duplex,
c.io_rate
FROM dms_meta_cluster AS a,
```

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dms_meta_host_netif AS b,
dms_mtc.hardware.net_if AS c
WHERE a.virtual_cluster_id = c.virtual_cluster_id
AND a.cluster_id = b.cluster_id
AND b.host_id = c.host_id
AND b.interface_name = c.interface_name;

--
-- name: view_dms_mtc.hardware.host.netif; type: view; schema: public; owner: metricuser; tablespace: default
-- Host-level _netif view
--
DROP VIEW IF EXISTS view_dms_mtc.hardware.host.netif;
CREATE OR REPLACE VIEW view_dms_mtc.hardware.host.netif
AS
SELECT ctime, virtual_cluster_id,
cluster_id, host_id, host_name,
SUM(recv_bytes) AS recv_bytes,
SUM(recv_packets) AS recv_packets,
SUM(send_bytes) AS send_bytes,
SUM(send_packets) AS send_packets
FROM view_dms_mtc.hardware.network.netif
GROUP BY ctime, virtual_cluster_id, cluster_id, host_id, host_name;

--
-- name: view_dms_mtc.host.operation.system; type: view; schema: public; owner: metricuser; tablespace: default
-- Host-Level_OS View
--
DROP VIEW IF EXISTS view_dms_mtc.host.operation.system;
CREATE OR REPLACE VIEW view_dms_mtc.host.operation.system
AS
SELECT c.ctime, c.virtual_cluster_id,
a.cluster_id, c.host_id, b.host_name, c.tcp_resend_rate
FROM dms_meta_cluster AS a, dms_meta_host AS b, dms_mtc.operation_system AS c
WHERE a.virtual_cluster_id = c.virtual_cluster_id AND a.cluster_id = b.cluster_id AND b.host_id = c.host_id;

-- Database-level view

--
-- name: view_dms_mtc.cluster.stat; type: view; schema: public; owner: metricuser; tablespace: default
-- Cluster-level_cluster status view
--
DROP VIEW IF EXISTS view_dms_mtc.cluster.stat;
CREATE OR REPLACE VIEW view_dms_mtc.cluster.stat
AS
SELECT c.ctime, c.virtual_cluster_id,
a.cluster_id, c.host_id, b.host_name,
c.cluster_state, c.balanced, c.redistributing
FROM dms_meta_cluster AS a, dms_meta_host AS b, dms_mtc.cluster_stat AS c
WHERE a.virtual_cluster_id = c.virtual_cluster_id AND a.cluster_id = b.cluster_id AND b.host_id = c.host_id;

--
-- name: view_dms_mtc.cluster.host.stat; type: view; schema: public; owner: metricuser; tablespace: default
-- Cluster-level_cluster node status view
--
DROP VIEW IF EXISTS view_dms_mtc.cluster.host.stat;
CREATE OR REPLACE VIEW view_dms_mtc.cluster.host.stat
AS
SELECT b.ctime, b.virtual_cluster_id,
a.cluster_id, b.host_id, b.host_name, b.host_stat
FROM dms_meta_cluster AS a, dms_mtc.cluster.host.stat AS b
WHERE a.virtual_cluster_id = b.virtual_cluster_id;

--
-- name: view_dms_mtc.inst_cn_available_count; type: view; schema: public; owner: metricuser; tablespace: default
--
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-- Cluster-level_Available Cluster CN Quantity View
--
DROP VIEW IF EXISTS view_dms_mtc_inst_cn_available_count;
CREATE OR REPLACE VIEW view_dms_mtc_inst_cn_available_count
AS
SELECT a.ctime, a.virtual_cluster_id,
SUM(case
when a.cn_available = 'Yes' AND b.inst_stat = 'Normal'
then 0
else 1
END) AS cn_abnormal_count
FROM dms_mtc_inst_cn_availability AS a, dms_mtc_cluster_inst_stat AS b
WHERE a.ctime = b.ctime AND a.virtual_cluster_id = b.virtual_cluster_id
AND a.host_id = b.host_id AND a.cn_id = b.inst_id
GROUP BY a.ctime, a.virtual_cluster_id;

--
-- name: view_dms_mtc_cluster_inst_stat; type: view; schema: public; owner: metricuser; tablespace: default
-- Cluster-level_Cluster instance status view
--
DROP VIEW IF EXISTS view_dms_mtc_cluster_inst_stat;
CREATE OR REPLACE VIEW view_dms_mtc_cluster_inst_stat
AS
SELECT c.ctime, c.virtual_cluster_id,
a.cluster_id, c.host_id, c.host_name, b.inst_name, b.work_ip,
c.inst_type, c.inst_role, c.inst_stat, c.inst_stat_reason
FROM dms_meta_cluster AS a, dms_meta_instance AS b, dms_mtc_cluster_inst_stat AS c
WHERE a.cluster_id = b.cluster_id AND a.virtual_cluster_id = c.virtual_cluster_id
AND b.host_id = c.host_id AND b.inst_id = c.inst_id;

--
-- name: view_cluster_inst_stat; type: view; schema: public; owner: metricuser; tablespace: default
-- Cluster-level instance status view
--
DROP VIEW IF EXISTS view_cluster_inst_stat;
CREATE OR REPLACE VIEW view_cluster_inst_stat
AS
SELECT c.ctime, c.virtual_cluster_id,
a.cluster_id, c.host_id, c.host_name, b.inst_name,
c.inst_type, c.inst_role, c.inst_stat
FROM dms_meta_cluster AS a, dms_meta_instance AS b, dms_mtc_cluster_inst_stat AS c
WHERE a.cluster_id = b.cluster_id AND a.virtual_cluster_id = c.virtual_cluster_id AND c.host_id = b.host_id
AND c.inst_id = b.inst_id;

--
-- name: view_dms_mtc_inst_size_stats; type: view; schema: public; owner: metricuser; tablespace: default
-- Cluster-level instance size view
--
DROP VIEW IF EXISTS view_dms_mtc_inst_size_stats;
CREATE OR REPLACE VIEW view_dms_mtc_inst_size_stats
AS
SELECT c.ctime, c.virtual_cluster_id,
a.cluster_id, c.host_id, b.host_name, c.inst_name, c.inst_path,
TRUNC(c.inst_size/1024/1024/1024, 2) AS inst_size
FROM dms_meta_cluster AS a, dms_meta_host AS b, dms_mtc_inst_size_stats AS c
WHERE a.virtual_cluster_id = c.virtual_cluster_id AND b.host_id = c.host_id;

--
-- name: view_dms_mtc_inst_resources; type: view; schema: public; owner: metricuser; tablespace: default
-- Cluster_Instance Resource View
--
DROP VIEW IF EXISTS view_dms_mtc_inst_resources;
CREATE OR REPLACE VIEW view_dms_mtc_inst_resources
AS
SELECT c.ctime, c.virtual_cluster_id,
a.cluster_id, c.host_id, b.host_name,
c.inst_name, c.inst_cpu, c.inst_mem
FROM dms_meta_cluster AS a, dms_meta_host AS b, dms_mtc_inst_resources AS c
WHERE a.virtual_cluster_id = c.virtual_cluster_id AND b.host_id = c.host_id;
```

```

-- name: view_dms_mtc_db_process_stats; type: view; schema: public; owner: metricuser; tablespace: default
-- Cluster-level database status view
--
DROP VIEW IF EXISTS view_dms_mtc_db_process_stats;
CREATE OR REPLACE VIEW view_dms_mtc_db_process_stats
AS
SELECT b.ctime, b.virtual_cluster_id,
a.cluster_id, b.db_name, b.inst_name,
b.tup_returned, b.tup_fetched, b.tup_inserted, b.tup_updated,
b.tup_deleted, b.xact_commit, b.xact_rollback, b.deadlocks,
b.blks_read, b.blks_hit, b.blk_read_time, b.blk_write_time,
b.conflicts, b.temp_files, b.temp_bytes,
TRUNC(b.db_size/1024/1024/1024, 2) AS db_size
FROM dms_meta_cluster AS a, dms_mtc_db_process_stats AS b
WHERE a.virtual_cluster_id = b.virtual_cluster_id;

-- name: view_dms_mtc_db_active_stats; type: view; schema: public; owner: metricuser; tablespace: default
-- Cluster-level database active status view
--
DROP VIEW IF EXISTS view_dms_mtc_db_active_stats;
CREATE OR REPLACE VIEW view_dms_mtc_db_active_stats
AS
SELECT b.ctime, b.virtual_cluster_id, a.cluster_id, b.db_name, b.inst_name,
b.total_sessions_count, b.user_count, b.application_count, b.active_queries
FROM dms_meta_cluster AS a, dms_mtc_db_active_stats AS b
WHERE a.virtual_cluster_id = b.virtual_cluster_id;

-- name: view_dms_mtc_db_size; type: view; schema: public; owner: metricuser; tablespace: default
-- Cluster-Level Database Capacity View
--
DROP VIEW IF EXISTS view_dms_mtc_db_size;
CREATE OR REPLACE VIEW view_dms_mtc_db_size
AS
SELECT b.ctime, b.virtual_cluster_id, a.cluster_id, b.db_name,
TRUNC(b.db_size/1024/1024/1024, 2) AS db_size
FROM dms_meta_cluster AS a, dms_mtc_db_size AS b
WHERE a.virtual_cluster_id = b.virtual_cluster_id;

-- name: view_dms_mtc_db_sessions; type: view; schema: public; owner: metricuser; tablespace: default
-- Cluster-level session status view
--
DROP VIEW IF EXISTS view_dms_mtc_db_sessions;
CREATE OR REPLACE VIEW view_dms_mtc_db_sessions
AS
SELECT b.ctime, b.virtual_cluster_id,
a.cluster_id, b.db_name, b.inst_name, b.pid,
b.user_name, b.application_name, b.client_address,
b.client_hostname, b.client_port, b.backend_start,
b.elapsed_time, b.curr_xact_start, b.state_change, b.waiting,
b.state, b.resource_pool, b.query_elapsed_time, b.query_id, b.query_start, b.control_group
FROM dms_meta_cluster AS a, dms_mtc_db_sessions AS b
WHERE a.virtual_cluster_id = b.virtual_cluster_id;

-- name: view_dms_mtc_db_queries; type: view; schema: public; owner: metricuser; tablespace: default
-- Querying a Monitoring View at the Cluster Level
--
DROP VIEW IF EXISTS view_dms_mtc_db_queries;
CREATE OR REPLACE VIEW view_dms_mtc_db_queries
AS
SELECT b.ctime, b.virtual_cluster_id, a.cluster_id, b.db_name, b.inst_name,
b.pid, b.query_id, b.query_band, b.job_name, b.job_inst, b.user_name, b.application_name, b.waiting,
b.start_time,
b.block_time, b.duration, b.estimate_total_time, b.estimate_left_time, b.enqueue, b.resource_pool,
```

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b.control_group,
b.min_peak_memory, b.max_peak_memory, b.average_peak_memory, b.memory_skew_percent,
b.estimate_memory, b.spill_info,
b.min_spill_size, b.max_spill_size, b.average_spill_size, b.spill_skew_percent, b.min_dn_time, b.max_dn_time,
b.average_dn_time, b.dntime_skew_percent, b.min_cpu_time, b.max_cpu_time, b.total_cpu_time,
b.cpu_skew_percent, b.warning,b.average_peak_iops, b.iops_skew_percent, b.max_peak_iops,
b.min_peak_iops, b.query, b.query_plan, b.query_status, b.wlm_status, b.wlm_attrib
FROM dms_meta_cluster AS a, dms_mtc_db_queries AS b
WHERE a.virtual_cluster_id = b.virtual_cluster_id;

-- name: view_dms_mtc_db_queries_history; type: view; schema: public; owner: metricuser; tablespace: default
-- Querying Historical Monitoring Views at the Cluster Level
--
DROP VIEW IF EXISTS view_dms_mtc_db_queries_history;
CREATE OR REPLACE VIEW view_dms_mtc_db_queries_history
AS
SELECT b.ctime, b.virtual_cluster_id, a.cluster_id, b.db_name, b.schemaname, b.inst_name, b.user_name,
b.application_name,
b.client_address, b.client_hostname, b.client_port, b.query_band, b.job_name, b.job_instance, b.block_time,
b.start_time,
b.finish_time, b.duration, b.estimate_total_time, b.query_stat, b.abort_info, b.resource_pool, b.control_group,
b.min_peak_memory,
b.max_peak_memory, b.average_peak_memory, b.memory_skew_percent, b.spill_info, b.min_spill_size,
b.max_spill_size,
b.average_spill_size, b.spill_skew_percent, b.min_dn_time, b.max_dn_time, b.average_dn_time,
b.dntime_skew_percent, b.min_cpu_time,
b.max_cpu_time, b.total_cpu_time, b.cpu_skew_percent, b.min_peak_iops, b.max_peak_iops,
b.average_peak_iops, b.iops_skew_percent,
b.warning, b.query_id, b.query, b.query_plan, b.node_group
FROM dms_meta_cluster AS a, dms_mtc_db_queries_history AS b
WHERE a.virtual_cluster_id = b.virtual_cluster_id;

-- old views

-- name: dms_mtc_hardware_mem_view; type: view; schema: public; owner: metricuser; tablespace: default
--
DROP VIEW IF EXISTS dms_mtc_hardware_mem_view;
CREATE OR REPLACE VIEW dms_mtc_hardware_mem_view
AS
SELECT ctime,
virtual_cluster_id,
host_id,
TRUNC(mem_total/1024/1024, 2) AS mem_total,
TRUNC(mem_free/1024/1024, 2) AS mem_free,
TRUNC(buffers/1024, 2) AS buffers,
TRUNC(cached/1024/1024, 2) AS cached,
TRUNC(swap_total/1024/1024, 2) AS swap_total,
TRUNC(swap_free/1024/1024, 2) AS swap_free,
hardware_corrupted
FROM dms_mtc_hardware_mem;

-- name: dms_mtc_hardware_disk_fs_size_view; type: view; schema: public; owner: metricuser; tablespace: default
--
DROP VIEW IF EXISTS dms_mtc_hardware_disk_fs_size_view;
CREATE OR REPLACE VIEW dms_mtc_hardware_disk_fs_size_view
AS
SELECT ctime,
virtual_cluster_id,
host_id,
disk_fs_name,
TRUNC(total/1024/1024, 2) AS total,
TRUNC(used/1024/1024, 2) AS used,

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TRUNC(available/1024/1024, 2) AS available,
TRUNC(used/total*100, 2) AS used_percentage
FROM dms_mtc.hardware_disk_fs_size;

--
-- name: dms_mtc.hardware_diskio_view; type: view; schema: public; owner: metricuser; tablespace: default
--
DROP VIEW IF EXISTS dms_mtc.hardware_diskio_view;
CREATE OR REPLACE VIEW dms_mtc.hardware_diskio_view
AS
SELECT ctime, virtual_cluster_id, host_id, disk_name, TRUNC(tps, 2) AS tps, TRUNC(kb_read_s, 2) AS
kb_read_s,
TRUNC(kb_wrtn_s, 2) AS kb_wrtn_s, kb_read,kb_wrtn, TRUNC(rrqm_s, 2) AS rrqm_s, TRUNC(wrqm_s, 2) AS
wrqm_s,
TRUNC(r_s, 2) AS r_s, TRUNC(w_s, 2) AS w_s, TRUNC(rkb_s, 2) AS rkb_s,
TRUNC(wkb_s, 2) AS wkb_s, TRUNC(avgrq_sz, 2) AS avgrq_sz, TRUNC(avgqu_sz, 2) AS avgqu_sz,
TRUNC(await, 2) AS await, TRUNC(svctm, 2) AS svctm,TRUNC(util, 2) AS util
FROM dms_mtc.hardware_diskio;

--
-- name: dms_mtc.db_size_view; type: view; schema: public; owner: metricuser; tablespace: default
--
DROP VIEW IF EXISTS dms_mtc.db_size_view;
CREATE OR REPLACE VIEW dms_mtc.db_size_view
AS
SELECT ctime,
virtual_cluster_id,
db_name,
TRUNC(db_size/1024/1024/1024, 2) AS db_size
FROM dms_mtc.db_size;

--
-- name: dms_mtc.db_size_view; type: view; schema: public; owner: metricuser; tablespace: default
--
DROP VIEW IF EXISTS dms_mtc.db_process_stats_view;
CREATE OR REPLACE VIEW dms_mtc.db_process_stats_view
AS
SELECT ctime, virtual_cluster_id, db_name, inst_name, tup_returned, tup_fetched, tup_inserted, tup_updated,
tup_deleted, xact_commit, xact_rollback, deadlocks, blks_read, blks_hit, blk_read_time, blk_write_time,
conflicts, temp_files, temp_bytes, TRUNC(db_size/1024/1024/1024, 2) AS db_size
FROM dms_mtc.db_process_stats;

--
-- name: cluster_inst_stat_view; type: view; schema: public; owner: metricuser; tablespace: default
--
DROP VIEW IF EXISTS cluster_inst_stat_view;
CREATE OR REPLACE VIEW cluster_inst_stat_view
AS
SELECT metric.host_name,
metric.inst_id,
meta.inst_name,
metric.inst_type,
metric.inst_role,
metric.inst_stat
FROM dms_mtc.cluster_inst_stat AS metric, dms_meta_instance AS meta, dms_meta_cluster AS cmap
WHERE meta.cluster_id = cmap.cluster_id AND cmap.virtual_cluster_id = metric.virtual_cluster_id AND
metric.host_id = meta.host_id AND metric.inst_id = meta.inst_id;

--
-- name: db_status_summary_view; type: view; schema: public; owner: metricuser; tablespace: default
--
DROP VIEW IF EXISTS db_status_summary_view;
CREATE OR REPLACE VIEW db_status_summary_view
AS
SELECT virtual_cluster_id, db_name, SUM(total_sessions_count) AS total_sessions_count,SUM(user_count)
AS user_count,
SUM(application_count) AS application_count,SUM(active_queries) AS active_queries,
SUM(tup_returned) AS tup_returned,SUM(tup_fetched) AS tup_fetched,SUM(tup_inserted) AS tup_inserted,
SUM(tup_updated) AS tup_updated,SUM(tup_deleted) AS tup_deleted,SUM(xact_commit) AS xact_commit,

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SUM(xact_rollback) AS xact_rollback,SUM(deadlocks) AS deadlocks,SUM(blks_read) AS blks_read,
SUM(blks_hit) AS blks_hit,SUM(blk_read_time) AS blk_read_time,SUM(blk_write_time) AS blk_write_time,
SUM(conflicts) AS conflicts, SUM(temp_files) AS temp_files,SUM(temp_bytes) AS temp_bytes,SUM(db_size)
AS db_size
FROM (
SELECT a.virtual_cluster_id, a.db_name, SUM(a.total_sessions_count) AS total_sessions_count,
SUM(a.user_count) AS user_count,
SUM(a.application_count) AS application_count, SUM(a.active_queries) AS active_queries, 0 tup_returned, 0
tup_fetched,
0 tup_inserted, 0 tup_updated,0 tup_deleted, 0 xact_commit, 0 xact_rollback, 0 deadlocks, 0 blks_read, 0
blks_hit, 0 blk_read_time, 0 blk_write_time, 0 conflicts, 0 temp_files, 0 temp_bytes, 0 db_size
FROM dms_mtc_db_active_stats AS a
WHERE ctime = (SELECT max(ctime) AS ctime FROM dms_mtc_db_active_stats)
GROUP BY a.virtual_cluster_id, a.db_name
UNION ALL
SELECT b.virtual_cluster_id,b.db_name, 0 total_sessions_count, 0 user_count, 0 application_count, 0
active_queries, SUM(b.tup_returned) AS tup_returned, SUM(b.tup_fetched) AS tup_fetched,
SUM(b.tup_inserted) AS tup_inserted, SUM(b.tup_updated) AS tup_updated,SUM(b.tup_deleted) AS
tup_deleted, SUM(b.xact_commit) AS xact_commit, SUM(b.xact_rollback) AS xact_rollback,
SUM(b.deadlocks) AS deadlocks, SUM(b.blks_read) AS blks_read, SUM(b.blks_hit) AS blks_hit,
SUM(b.blk_read_time) AS blk_read_time, SUM(b.blk_write_time) AS blk_write_time, SUM(b.conflicts) AS
conflicts, SUM(b.temp_files) AS temp_files, SUM(b.temp_bytes) AS temp_bytes, 0 db_size
FROM dms_mtc_db_process_stats AS b
WHERE ctime = (SELECT max(ctime) AS ctime FROM dms_mtc_db_process_stats)
GROUP BY b.virtual_cluster_id, b.db_name
UNION ALL
SELECT c.virtual_cluster_id,c.db_name, 0 total_sessions_count, 0 user_count, 0 application_count, 0
active_queries, 0 tup_returned, 0 tup_fetched, 0 tup_inserted, 0 tup_updated,0 tup_deleted, 0 xact_commit,
0 xact_rollback, 0 deadlocks, 0 blks_read, 0 blks_hit, 0 blk_read_time, 0 blk_write_time, 0 conflicts, 0
temp_files, 0 temp_bytes, SUM(db_size) AS db_size
FROM dms_mtc_db_size c
WHERE ctime = (SELECT max(ctime) AS ctime FROM dms_mtc_db_size)
GROUP BY c.virtual_cluster_id, c.db_name
)
GROUP BY virtual_cluster_id, db_name;

-- name: host_io_status_summary_view; type: view; schema: public; owner: metricuser; tablespace: default
--
DROP VIEW IF EXISTS host_io_status_summary_view;
CREATE OR REPLACE VIEW host_io_status_summary_view
AS
SELECT a.virtual_cluster_id,
a.host_id, SUM(kb_read_s + kb_wrtn_s) AS total,
SUM(kb_read_s) AS read, SUM(kb_wrtn_s) AS write
FROM dms_mtc_hardware_diskio AS a,
(SELECT virtual_cluster_id, host_id, max(ctime) AS ctime FROM dms_mtc_hardware_diskio group by
virtual_cluster_id,host_id) AS b
WHERE a.virtual_cluster_id = b.virtual_cluster_id AND a.ctime = b.ctime AND a.host_id = b.host_id
GROUP BY a.virtual_cluster_id, a.host_id;

-- name: dms_mtc_hardware_netif_view; type: view; schema: public; owner: metricuser; tablespace: default
--
DROP VIEW IF EXISTS dms_mtc_hardware_netif_view;
CREATE OR REPLACE VIEW dms_mtc_hardware_netif_view
AS
SELECT a.virtual_cluster_id,
a.host_id, SUM(kb_read_s + kb_wrtn_s) AS total,
SUM(kb_read_s) AS read, SUM(kb_wrtn_s) AS write
FROM dms_mtc_hardware_diskio AS a,
(SELECT virtual_cluster_id, host_id, max(ctime) AS ctime FROM dms_mtc_hardware_diskio GROUP BY
virtual_cluster_id,host_id) AS b
WHERE a.virtual_cluster_id = b.virtual_cluster_id AND a.ctime = b.ctime AND a.host_id = b.host_id
GROUP BY a.virtual_cluster_id, a.host_id;

-- name: dms_mtc_hardware_disksize_view; type: view; schema: public; owner: metricuser; tablespace: default
--
```

```

--
DROP VIEW IF EXISTS dms_mtc.hardware_disksize_view;
CREATE OR REPLACE VIEW dms_mtc.hardware_disksize_view
AS
SELECT b.ctime, b.virtual_cluster_id, b.host_id, a.disk_name,
SUM(b.total) AS total, SUM(b.used) AS used,
SUM(b.available) AS available,
TRUNC((SUM(b.used)/SUM(b.total))*100, 2) AS used_percentage
FROM dms_meta_host_diskfs AS a, dms_mtc.hardware_disk_fs_size_view AS b
WHERE a.file_system_name = b.disk_fs_name AND a.host_id = b.host_id
AND b.ctime >= (select (cast(extract(epoch from current_timestamp) as bigint) - 3600) * 1000)
GROUP BY b.ctime, b.virtual_cluster_id, b.host_id, a.disk_name;

--
-- name: dms_mtc_cluster_host_and_disk_view; type: view; schema: public; owner: metricuser; tablespace: default
--
DROP VIEW IF EXISTS dms_mtc_cluster_host_and_disk_view;
CREATE OR REPLACE VIEW dms_mtc_cluster_host_and_disk_view
AS
SELECT a.host_id,
a.host_name, b.disk_name, a.ctime,
a.virtual_cluster_id
FROM dms_mtc_cluster_host_stat AS a, dms_meta_host_disk AS b
WHERE a.host_id = b.host_id;

-- Rollback Function
create or replace function merge_db_count(v_cid integer, c_time bigint, non_sys_count bigint, sys_count
integer, active_count integer)
returns integer as
$$
begin
update dms_mtc_db_queries_count
set nonsys_queries_count = nonsys_queries_count + non_sys_count,
sys_queries_count = sys_queries_count + sys_count,
active_queries_count = active_queries_count + active_count
where virtual_cluster_id = v_cid
and ctime = c_time;
if found then
return 1;
end if;
begin
insert into dms_mtc_db_queries_count (ctime, virtual_cluster_id, nonsys_queries_count, sys_queries_count,
active_queries_count)
values (c_time, v_cid, non_sys_count, sys_count, active_count);
return 1;
end;
end;
$$ language plpgsql;

insert into DMS_TS_CLUSTER_DB_SIZE_OLD select * from DMS_TS_CLUSTER_DB_SIZE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_CLUSTER_DB_SIZE%'
and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_CLUSTER_DB_SIZE cascade;
ALTER TABLE IF EXISTS DMS_TS_CLUSTER_DB_SIZE_OLD RENAME TO DMS_TS_CLUSTER_DB_SIZE;
insert into DMS_TS_CLUSTER_DISK_USAGE_OLD select * from DMS_TS_CLUSTER_DISK_USAGE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_CLUSTER_DISK_USAGE%'
and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_CLUSTER_DISK_USAGE cascade;
ALTER TABLE IF EXISTS DMS_TS_CLUSTER_DISK_USAGE_OLD RENAME TO DMS_TS_CLUSTER_DISK_USAGE;
insert into DMS_TS_CLUSTER_DISK_USAGE_CLUSTER_AGGREGATE_OLD select * from
DMS_TS_CLUSTER_DISK_USAGE_CLUSTER_AGGREGATE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_CLUSTER_DISK_USAGE_CLUSTER_AGGREGATE%' and query not ilike '%pg_stat_activity%';drop
table if exists DMS_TS_CLUSTER_DISK_USAGE_CLUSTER_AGGREGATE cascade;
ALTER TABLE IF EXISTS DMS_TS_CLUSTER_DISK_USAGE_CLUSTER_AGGREGATE_OLD RENAME TO
DMS_TS_CLUSTER_DISK_USAGE_CLUSTER_AGGREGATE;
insert into DMS_TS_CLUSTER_DN_CPU_USAGE_OLD select * from DMS_TS_CLUSTER_DN_CPU_USAGE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike

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'%DMS_TS_CLUSTER_DN_CPU_USAGE%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_CLUSTER_DN_CPU_USAGE cascade;
ALTER TABLE IF EXISTS DMS_TS_CLUSTER_DN_CPU_USAGE_OLD RENAME TO
DMS_TS_CLUSTER_DN_CPU_USAGE;
insert into DMS_TS_CLUSTER_DN_CPU_USAGE_AGGREGATE_OLD select * from
DMS_TS_CLUSTER_DN_CPU_USAGE_AGGREGATE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_CLUSTER_DN_CPU_USAGE_AGGREGATE%' and query not ilike '%pg_stat_activity%';drop table if
exists DMS_TS_CLUSTER_DN_CPU_USAGE_AGGREGATE cascade;
ALTER TABLE IF EXISTS DMS_TS_CLUSTER_DN_CPU_USAGE_AGGREGATE_OLD RENAME TO
DMS_TS_CLUSTER_DN_CPU_USAGE_AGGREGATE;
insert into DMS_TS_CLUSTER_INST_STAT_OLD select * from DMS_TS_CLUSTER_INST_STAT;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_CLUSTER_INST_STAT%
' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_CLUSTER_INST_STAT cascade;
ALTER TABLE IF EXISTS DMS_TS_CLUSTER_INST_STAT_OLD RENAME TO DMS_TS_CLUSTER_INST_STAT;
insert into DMS_TS_CLUSTER_READ_ONLY_OLD select * from DMS_TS_CLUSTER_READ_ONLY;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_CLUSTER_READ_ONLY%
' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_CLUSTER_READ_ONLY cascade;
ALTER TABLE IF EXISTS DMS_TS_CLUSTER_READ_ONLY_OLD RENAME TO DMS_TS_CLUSTER_READ_ONLY;
insert into DMS_TS_CLUSTER_SCHEMA_SIZE_OLD select * from DMS_TS_CLUSTER_SCHEMA_SIZE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_CLUSTER_SCHEMA_SIZE%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_CLUSTER_SCHEMA_SIZE cascade;
ALTER TABLE IF EXISTS DMS_TS_CLUSTER_SCHEMA_SIZE_OLD RENAME TO
DMS_TS_CLUSTER_SCHEMA_SIZE;
insert into DMS_TS_CLUSTER_SQL_PROBE_SINGLE_OLD select * from
DMS_TS_CLUSTER_SQL_PROBE_SINGLE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_CLUSTER_SQL_PROBE_SINGLE%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_CLUSTER_SQL_PROBE_SINGLE cascade;
ALTER TABLE IF EXISTS DMS_TS_CLUSTER_SQL_PROBE_SINGLE_OLD RENAME TO
DMS_TS_CLUSTER_SQL_PROBE_SINGLE;
insert into DMS_TS_CLUSTER_STAT_OLD select * from DMS_TS_CLUSTER_STAT;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_CLUSTER_STAT%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_CLUSTER_STAT cascade;
ALTER TABLE IF EXISTS DMS_TS_CLUSTER_STAT_OLD RENAME TO DMS_TS_CLUSTER_STAT;
insert into DMS_TS_CLUSTER_TRANSACTION_COUNT_OLD select * from
DMS_TS_CLUSTER_TRANSACTION_COUNT;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_CLUSTER_TRANSACTION_COUNT%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_CLUSTER_TRANSACTION_COUNT cascade;
ALTER TABLE IF EXISTS DMS_TS_CLUSTER_TRANSACTION_COUNT_OLD RENAME TO
DMS_TS_CLUSTER_TRANSACTION_COUNT;
insert into DMS_TS_DATABASE_DB_SIZE_OLD select * from DMS_TS_DATABASE_DB_SIZE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_DATABASE_DB_SIZE%'
and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_DATABASE_DB_SIZE cascade;
ALTER TABLE IF EXISTS DMS_TS_DATABASE_DB_SIZE_OLD RENAME TO DMS_TS_DATABASE_DB_SIZE;
insert into DMS_TS_DB_PROCESS_STATS_OLD select * from DMS_TS_DB_PROCESS_STATS;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_DB_PROCESS_STATS%
' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_DB_PROCESS_STATS cascade;
ALTER TABLE IF EXISTS DMS_TS_DB_PROCESS_STATS_OLD RENAME TO DMS_TS_DB_PROCESS_STATS;
insert into DMS_TS_DB_QUERIES_OLD select * from DMS_TS_DB_QUERIES;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_DB_QUERIES%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_DB_QUERIES cascade;
ALTER TABLE IF EXISTS DMS_TS_DB_QUERIES_OLD RENAME TO DMS_TS_DB_QUERIES;
insert into DMS_TS_DB_SESSIONS_OLD select * from DMS_TS_DB_SESSIONS;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_DB_SESSIONS%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_DB_SESSIONS cascade;
ALTER TABLE IF EXISTS DMS_TS_DB_SESSIONS_OLD RENAME TO DMS_TS_DB_SESSIONS;
insert into DMS_TS_HARDWARE_CPU_OLD select * from DMS_TS_HARDWARE_CPU;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_CPU%'
and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_CPU cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_CPU_OLD RENAME TO DMS_TS_HARDWARE_CPU;
insert into DMS_TS_HARDWARE_CPU_CLUSTER_AGGREGATE_OLD select * from
DMS_TS_HARDWARE_CPU_CLUSTER_AGGREGATE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_HARDWARE_CPU_CLUSTER_AGGREGATE%' and query not ilike '%pg_stat_activity%';drop table if
exists DMS_TS_HARDWARE_CPU_CLUSTER_AGGREGATE cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_CPU_CLUSTER_AGGREGATE_OLD RENAME TO
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DMS_TS_HARDWARE_CPU_CLUSTER_AGGREGATE;
insert into DMS_TS_HARDWARE_CPU_IDLE_OLD select * from DMS_TS_HARDWARE_CPU_IDLE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_CPU_IDLE%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_CPU_IDLE cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_CPU_IDLE_OLD RENAME TO DMS_TS_HARDWARE_CPU_IDLE;
insert into DMS_TS_HARDWARE_CPU_IOWAIT_OLD select * from DMS_TS_HARDWARE_CPU_IOWAIT;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_CPU_IOWAIT%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_CPU_IOWAIT cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_CPU_IOWAIT_OLD RENAME TO
DMS_TS_HARDWARE_CPU_IOWAIT;
insert into DMS_TS_HARDWARE_CPU_SYS_OLD select * from DMS_TS_HARDWARE_CPU_SYS;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_CPU_SYS%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_CPU_SYS cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_CPU_SYS_OLD RENAME TO DMS_TS_HARDWARE_CPU_SYS;
insert into DMS_TS_HARDWARE_CPU_USR_OLD select * from DMS_TS_HARDWARE_CPU_USR;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_CPU_USR%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_CPU_USR cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_CPU_USR_OLD RENAME TO DMS_TS_HARDWARE_CPU_USR;
insert into DMS_TS_HARDWARE_DISKIO_OLD select * from DMS_TS_HARDWARE_DISKIO;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_DISKIO%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_DISKIO cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_DISKIO_OLD RENAME TO DMS_TS_HARDWARE_DISKIO;
insert into DMS_TS_HARDWARE_DISKIO_CLUSTER_AGGREGATE_OLD select * from
DMS_TS_HARDWARE_DISKIO_CLUSTER_AGGREGATE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_DISKIO_CLUSTER_AGGREGATE%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_DISKIO_CLUSTER_AGGREGATE cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_DISKIO_CLUSTER_AGGREGATE_OLD RENAME TO
DMS_TS_HARDWARE_DISKIO_CLUSTER_AGGREGATE;
insert into DMS_TS_HARDWARE_DISK_AWAIT_OLD select * from DMS_TS_HARDWARE_DISK_AWAIT;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_DISK_AWAIT%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_DISK_AWAIT cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_DISK_AWAIT_OLD RENAME TO
DMS_TS_HARDWARE_DISK_AWAIT;
insert into DMS_TS_HARDWARE_DISK_READ_RATE_OLD select * from
DMS_TS_HARDWARE_DISK_READ_RATE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_DISK_READ_RATE%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_DISK_READ_RATE cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_DISK_READ_RATE_OLD RENAME TO
DMS_TS_HARDWARE_DISK_READ_RATE;
insert into DMS_TS_HARDWARE_DISK_SVCTM_OLD select * from DMS_TS_HARDWARE_DISK_SVCTM;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_DISK_SVCTM%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_DISK_SVCTM cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_DISK_SVCTM_OLD RENAME TO
DMS_TS_HARDWARE_DISK_SVCTM;
insert into DMS_TS_HARDWARE_DISK_TOTAL_OLD select * from DMS_TS_HARDWARE_DISK_TOTAL;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_DISK_TOTAL%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_DISK_TOTAL cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_DISK_TOTAL_OLD RENAME TO
DMS_TS_HARDWARE_DISK_TOTAL;
insert into DMS_TS_HARDWARE_DISK_USED_PERCENTAGE_OLD select * from
DMS_TS_HARDWARE_DISK_USED_PERCENTAGE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_DISK_USED_PERCENTAGE%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_DISK_USED_PERCENTAGE cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_DISK_USED_PERCENTAGE_OLD RENAME TO
DMS_TS_HARDWARE_DISK_USED_PERCENTAGE;
insert into DMS_TS_HARDWARE_DISK_UTIL_OLD select * from DMS_TS_HARDWARE_DISK_UTIL;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_DISK_UTIL%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_DISK_UTIL cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_DISK_UTIL_OLD RENAME TO DMS_TS_HARDWARE_DISK_UTIL;
insert into DMS_TS_HARDWARE_DISK_WRITE_RATE_OLD select * from
DMS_TS_HARDWARE_DISK_WRITE_RATE;
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select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_HARDWARE_DISK_WRITE_RATE%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_HARDWARE_DISK_WRITE_RATE cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_DISK_WRITE_RATE_OLD RENAME TO
DMS_TS_HARDWARE_DISK_WRITE_RATE;
insert into DMS_TS_HARDWARE_MEM_OLD select * from DMS_TS_HARDWARE_MEM;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_MEM%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_MEM cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_MEM_OLD RENAME TO DMS_TS_HARDWARE_MEM;
insert into DMS_TS_HARDWARE_MEM_BUFFERS_OLD select * from DMS_TS_HARDWARE_MEM_BUFFERS;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_HARDWARE_MEM_BUFFERS%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_HARDWARE_MEM_BUFFERS cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_MEM_BUFFERS_OLD RENAME TO
DMS_TS_HARDWARE_MEM_BUFFERS;
insert into DMS_TS_HARDWARE_MEM_CACHED_OLD select * from DMS_TS_HARDWARE_MEM_CACHED;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_HARDWARE_MEM_CACHED%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_HARDWARE_MEM_CACHED cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_MEM_CACHED_OLD RENAME TO
DMS_TS_HARDWARE_MEM_CACHED;
insert into DMS_TS_HARDWARE_MEM_CLUSTER_AGGREGATE_OLD select * from
DMS_TS_HARDWARE_MEM_CLUSTER_AGGREGATE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_HARDWARE_MEM_CLUSTER_AGGREGATE%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_HARDWARE_MEM_CLUSTER_AGGREGATE cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_MEM_CLUSTER_AGGREGATE_OLD RENAME TO
DMS_TS_HARDWARE_MEM_CLUSTER_AGGREGATE;
insert into DMS_TS_HARDWARE_MEM_FREE_OLD select * from DMS_TS_HARDWARE_MEM_FREE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_HARDWARE_MEM_FREE%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_HARDWARE_MEM_FREE cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_MEM_FREE_OLD RENAME TO
DMS_TS_HARDWARE_MEM_FREE;
insert into DMS_TS_HARDWARE_NET_IF_OLD select * from DMS_TS_HARDWARE_NET_IF;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_NET_IF%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_NET_IF cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_NET_IF_OLD RENAME TO DMS_TS_HARDWARE_NET_IF;
insert into DMS_TS_HARDWARE_NET_IF_CLUSTER_AGGREGATE_OLD select * from
DMS_TS_HARDWARE_NET_IF_CLUSTER_AGGREGATE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_HARDWARE_NET_IF_CLUSTER_AGGREGATE%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_HARDWARE_NET_IF_CLUSTER_AGGREGATE cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_NET_IF_CLUSTER_AGGREGATE_OLD RENAME TO
DMS_TS_HARDWARE_NET_IF_CLUSTER_AGGREGATE;
insert into DMS_TS_HARDWARE_NET_IF_RECV_BYTES_S_OLD select * from
DMS_TS_HARDWARE_NET_IF_RECV_BYTES_S;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_HARDWARE_NET_IF_RECV_BYTES_S%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_HARDWARE_NET_IF_RECV_BYTES_S cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_NET_IF_RECV_BYTES_S_OLD RENAME TO
DMS_TS_HARDWARE_NET_IF_RECV_BYTES_S;
insert into DMS_TS_HARDWARE_NET_IF_RECV_DROP_OLD select * from
DMS_TS_HARDWARE_NET_IF_RECV_DROP;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_HARDWARE_NET_IF_RECV_DROP%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_HARDWARE_NET_IF_RECV_DROP cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_NET_IF_RECV_DROP_OLD RENAME TO
DMS_TS_HARDWARE_NET_IF_RECV_DROP;
insert into DMS_TS_HARDWARE_NET_IF_RECV_PACKETS_OLD select * from
DMS_TS_HARDWARE_NET_IF_RECV_PACKETS;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_TS_HARDWARE_NET_IF_RECV_PACKETS%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_TS_HARDWARE_NET_IF_RECV_PACKETS cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_NET_IF_RECV_PACKETS_OLD RENAME TO
DMS_TS_HARDWARE_NET_IF_RECV_PACKETS;
insert into DMS_TS_HARDWARE_NET_IF_SEND_BYTES_S_OLD select * from
DMS_TS_HARDWARE_NET_IF_SEND_BYTES_S;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
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'%DMS_TS_HARDWARE_NET_IF_SEND_BYTES_S%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_NET_IF_SEND_BYTES_S cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_NET_IF_SEND_BYTES_S_OLD RENAME TO DMS_TS_HARDWARE_NET_IF_SEND_BYTES_S;
insert into DMS_TS_HARDWARE_NET_IF_SEND_PACKETS_OLD select * from DMS_TS_HARDWARE_NET_IF_SEND_PACKETS;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_NET_IF_SEND_PACKETS%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_NET_IF_SEND_PACKETS cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_NET_IF_SEND_PACKETS_OLD RENAME TO DMS_TS_HARDWARE_NET_IF_SEND_PACKETS;
insert into DMS_TS_HARDWARE_NET_UP_OLD select * from DMS_TS_HARDWARE_NET_UP;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_NET_UP%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_NET_UP cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_NET_UP_OLD RENAME TO DMS_TS_HARDWARE_NET_UP;
insert into DMS_TS_HARDWARE_OPERATION_SYSTEM_OLD select * from DMS_TS_HARDWARE_OPERATION_SYSTEM;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_HARDWARE_OPERATION_SYSTEM%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_HARDWARE_OPERATION_SYSTEM cascade;
ALTER TABLE IF EXISTS DMS_TS_HARDWARE_OPERATION_SYSTEM_OLD RENAME TO DMS_TS_HARDWARE_OPERATION_SYSTEM;
insert into DMS_TS_NODE_SQL_COUNT_OLD select * from DMS_TS_NODE_SQL_COUNT;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_NODE_SQL_COUNT%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_NODE_SQL_COUNT cascade;
ALTER TABLE IF EXISTS DMS_TS_NODE_SQL_COUNT_OLD RENAME TO DMS_TS_NODE_SQL_COUNT;
insert into DMS_TS_TPS_OLD select * from DMS_TS_TPS;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_TPS%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_TPS cascade;
ALTER TABLE IF EXISTS DMS_TS_TPS_OLD RENAME TO DMS_TS_TPS;
insert into DMS_TS_WORKLOAD_QUEUE_OLD select * from DMS_TS_WORKLOAD_QUEUE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_TS_WORKLOAD_QUEUE%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_TS_WORKLOAD_QUEUE cascade;
ALTER TABLE IF EXISTS DMS_TS_WORKLOAD_QUEUE_OLD RENAME TO DMS_TS_WORKLOAD_QUEUE;

-- Insert the data that needs to be retained or the data with a long storage period.
insert into DMS_SQL_PROBE_RECORD_OLD select * from DMS_SQL_PROBE_RECORD;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_SQL_PROBE_RECORD%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_SQL_PROBE_RECORD cascade;
ALTER TABLE IF EXISTS DMS_SQL_PROBE_RECORD_OLD RENAME TO DMS_SQL_PROBE_RECORD;

insert into DMS_MTC_SCHEMA_USAGE_OLD select * from DMS_MTC_SCHEMA_USAGE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_SCHEMA_USAGE%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_SCHEMA_USAGE cascade;
ALTER TABLE IF EXISTS DMS_MTC_SCHEMA_USAGE_OLD RENAME TO DMS_MTC_SCHEMA_USAGE;

insert into DMS_MTC_DN_STREAM_OLD select * from DMS_MTC_DN_STREAM;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DN_STREAM%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DN_STREAM cascade;
ALTER TABLE IF EXISTS DMS_MTC_DN_STREAM_OLD RENAME TO DMS_MTC_DN_STREAM;

insert into DMS_MTC_FILE_HANDLE_STATUS_OLD select * from DMS_MTC_FILE_HANDLE_STATUS;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_FILE_HANDLE_STATUS%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_FILE_HANDLE_STATUS cascade;
ALTER TABLE IF EXISTS DMS_MTC_FILE_HANDLE_STATUS_OLD RENAME TO DMS_MTC_FILE_HANDLE_STATUS;

insert into DMS_MTC_GSAR_NET_STAT_OLD select * from DMS_MTC_GSAR_NET_STAT;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_GSAR_NET_STAT%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_GSAR_NET_STAT cascade;
ALTER TABLE IF EXISTS DMS_MTC_GSAR_NET_STAT_OLD RENAME TO DMS_MTC_GSAR_NET_STAT;

insert into DMS_MTC_GSAR_TCP_STAT_OLD select * from DMS_MTC_GSAR_TCP_STAT;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_GSAR_TCP_STAT%' and query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_GSAR_TCP_STAT cascade;
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ALTER TABLE IF EXISTS DMS_MTC_GSAR_TCP_STAT_OLD RENAME TO DMS_MTC_GSAR_TCP_STAT;

insert into DMS_MTC_DB_SIZE_OLD select * from DMS_MTC_DB_SIZE;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike '%DMS_MTC_DB_SIZE%' and
query not ilike '%pg_stat_activity%';drop table if exists DMS_MTC_DB_SIZE cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_SIZE_OLD RENAME TO DMS_MTC_DB_SIZE;

insert into DMS_MTC_CLUSTER_SLOW_INST_OLD select * from DMS_MTC_CLUSTER_SLOW_INST;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_MTC_CLUSTER_SLOW_INST%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_MTC_CLUSTER_SLOW_INST cascade;
ALTER TABLE IF EXISTS DMS_MTC_CLUSTER_SLOW_INST_OLD RENAME TO
DMS_MTC_CLUSTER_SLOW_INST;

insert into DMS_MTC_DB_QUERIES_HISTORY_OLD
(ctime,virtual_cluster_id,db_name,schemaname,inst_name,user_name,application_name,client_address,client_
hostname,client_port,query_band,job_name,job_instance,block_time,start_time,finish_time,duration,estimate_
total_time,query_stat,abort_info,resource_pool,priority,control_group,min_peak_memory,max_peak_memory,a
verage_peak_memory,memory_skew_percent,spill_info,min_spill_size,max_spill_size,average_spill_size,spill_sk
ew_percent,min_dn_time,max_dn_time,average_dn_time,dntime_skew_percent,min_cpu_time,max_cpu_time,t
otal_cpu_time,cpu_skew_percent,min_peak_iops,max_peak_iops,average_peak_iops,iops_skew_percent,warnin
g,query_id,query,query_plan,node_group) select
ctime,virtual_cluster_id,db_name,schemaname,inst_name,user_name,application_name,client_address,client_
hostname,client_port,query_band,job_name,job_instance,block_time,start_time,finish_time,duration,estimate_
total_time,query_stat,abort_info,resource_pool,priority,control_group,min_peak_memory,max_peak_memory,a
verage_peak_memory,memory_skew_percent,spill_info,min_spill_size,max_spill_size,average_spill_size,spill_sk
ew_percent,min_dn_time,max_dn_time,average_dn_time,dntime_skew_percent,min_cpu_time,max_cpu_time,t
otal_cpu_time,cpu_skew_percent,min_peak_iops,max_peak_iops,average_peak_iops,iops_skew_percent,warnin
g,query_id,query,query_plan,node_group from DMS_MTC_DB_QUERIES_HISTORY;
select pg_terminate_backend(pid) from pg_stat_activity where query ilike
'%DMS_MTC_DB_QUERIES_HISTORY%' and query not ilike '%pg_stat_activity%';drop table if exists
DMS_MTC_DB_QUERIES_HISTORY cascade;
ALTER TABLE IF EXISTS DMS_MTC_DB_QUERIES_HISTORY_OLD RENAME TO
DMS_MTC_DB_QUERIES_HISTORY;
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