SphereEx

SphereEx-Console User Manual

V0.1

2022.04

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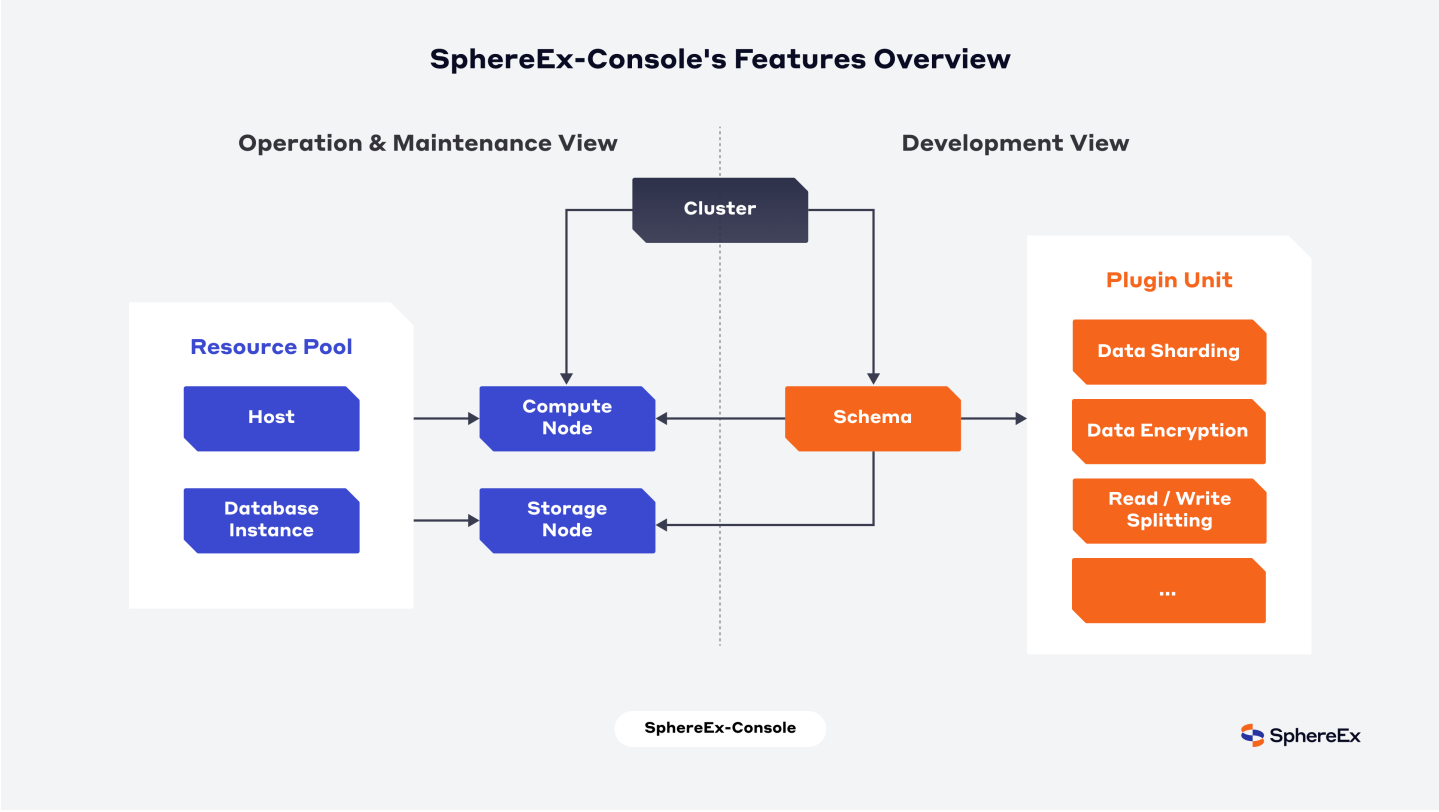
1 Product Instructions

1.1 What is SphereEx-Console?

The SphereEx Enterprise Data Service Platform was created by leveraging ShardnginSphere's open source kernel and enhancing it with enterprise level features. It can provide enterprises with enhanced data service capabilities, including but not limited to data sharding, data security, etc.

SphereEx-Console is a visual operation platform applied to the management and control of SphereEx Enterprise Data Service Platform, providing a more user-friendly experience. At the same time, a comprehensive solution with ShardingSphere as the core is built, packaging of multiple functions such as resource layer, instance layer and application layer, to provide users with a one-stop solution.

The functions overview of SphereEx-Console is as follows:



1.2 Keywords

- Host

Deploys and installs actual physical resources such as compute nodes and storage nodes.

- Database instance

The database instance is a database service.

- Compute node

A compute node refers to a ShardingSphere service.

- Storage node

Corresponding to a database under a database instance, which is responsible for data storage.

- Cluster

A distributed cluster composed of multiple compute nodes and storage nodes, which is the unit of user management.

- Logical database

A logical database corresponds to a schema in ShardingSphere, and is managed at the cluster level. A cluster can have multiple logical databases with different names.

- Plugin

ShardingSphere is designed with pluggable architecture. Functions can be provided in the form of plugins, including but not limited to data sharding, read/write splitting, etc.

1.3 Architecture Overview

SphereEx-Console is based on B/S architecture. Accessed through web browser. Its logical structure diagram is as follows:

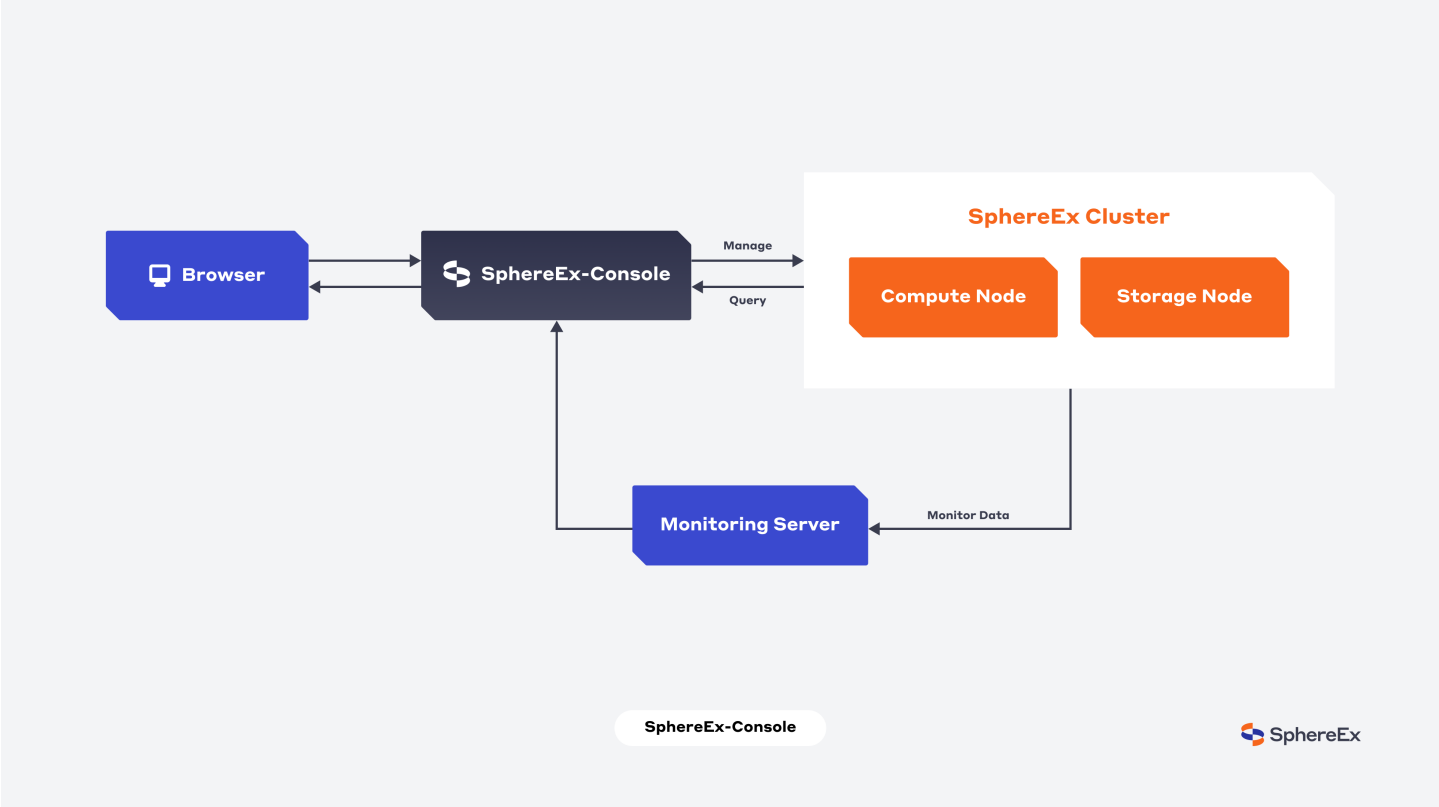


Fig. 1: Architecture

Users log into the system through the browser, and manage the cluster of SphereEx Enterprise Data Service Platform in SphereEx-Console. The monitoring data queried by SphereEx console comes from the data exported from the host and compute node in the cluster to the Prometheus server.

1.4 Advantages

Easy to use

It improves the user experience and avoids configuration errors. Users do not need to operate the SphereEx Enterprise Data Service Platform through configuration and commands, which greatly improves the ease of use and achieves the "zero" bottleneck of the platform.

Comprehensive

Evolving the management capabilities of the open source version, it provides a unified solution for the management and control of the SphereEx Enterprise Data Service Platform from basic resources to plugin capabilities.

Visual monitoring

With its data visualization & management dashboard, SphereEx Enterprise Data Service Platform's clusters, instances and hosts monitoring data are visible online and in real time.

1.5 Functions

Level 1 Module	Level 2 Module	Description
Resource	Host	Manage physical hosts.
	Database Instance	Manage database instances.
Cluster	Cluster	Create and manage clusters.
	Compute Node	Create and manage compute nodes.
	Storage Node	Create and manage storage nodes.
	Schema	Create and manage logical databases.
Plugin	Data Sharding	Manage data sharding.
Monitoring	Host	Display host monitoring information.
	Compute Node	Display the monitoring information of the compute node.

1.6 Scenarios

SphereEx-Console is mainly used for the operation and maintenance control of SphereEx Enterprise Data Service Platform. It can support common operation scenarios of maintainers and developers in the Internet, finance and government industries.

2 Quick Start

2.1 Operating Environment

SphereEx-Console is based on Java and needs to run in an environment that supports Java. Generally, operating systems can run SphereEx-Console as long as they supports Java. Additionally, the monitoring of SphereEx-Console is based on the Prometheus system, so if you need to use the monitoring function, you need to run Prometheus.

Version
JDK 1.8 +
Prometheus 2.8.1 +

2.2 Obtain and Install

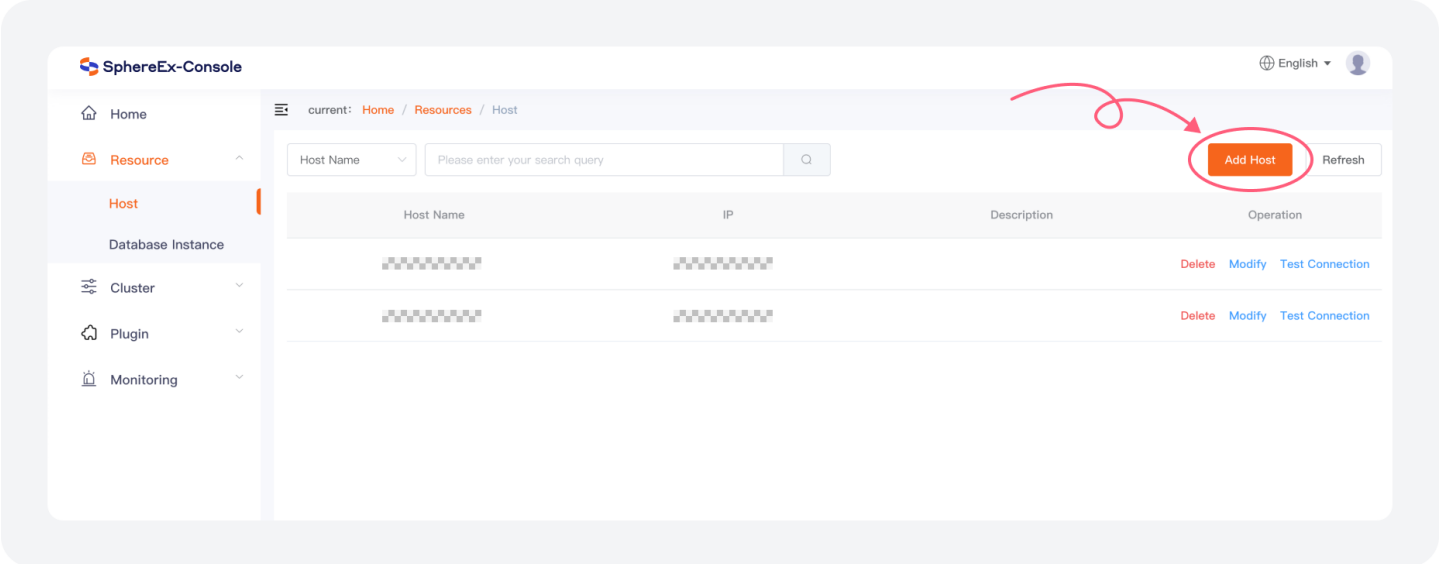
Contact Us to get the SphereEx-Console software package sphereex-console-{x.x.x}-SNAPSHOT-bin-distribution.tar.gz to local. After decompression, enter the directory of SphereEx-Console and run the start script under bin to start SphereEx-Console.

```
bin/start.sh
```

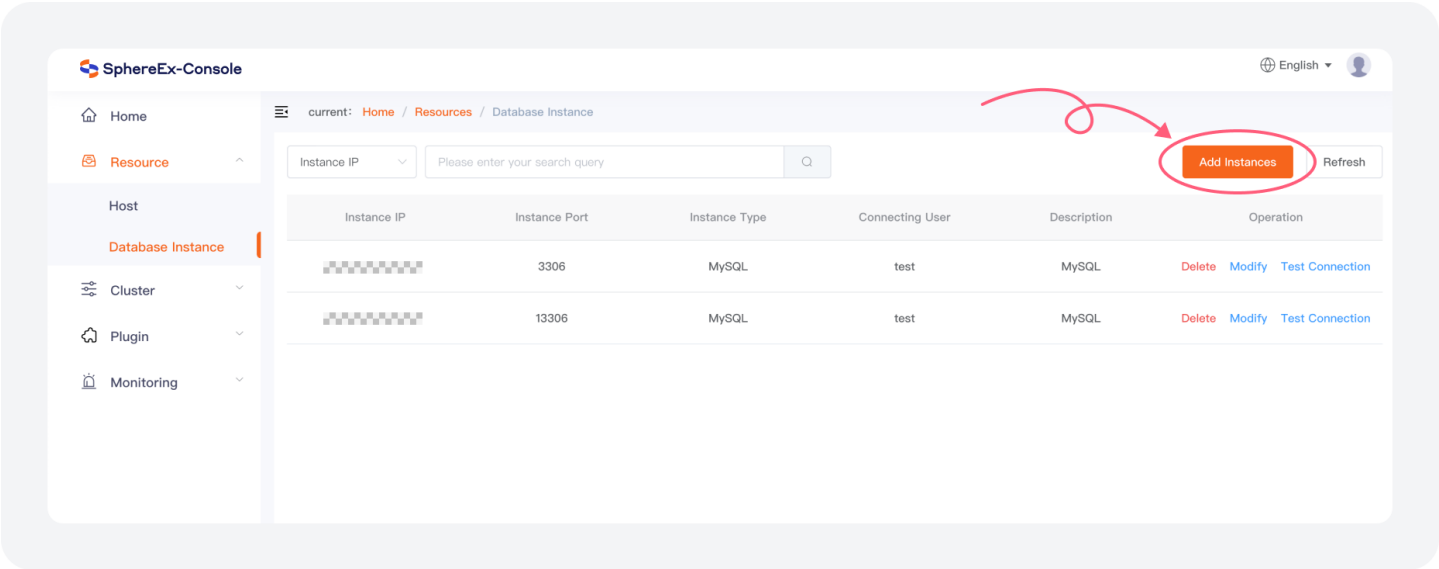
Open the browser to access the address http://localhost:8807. The default login user is admin/admin.

2.3 Sample Scenario

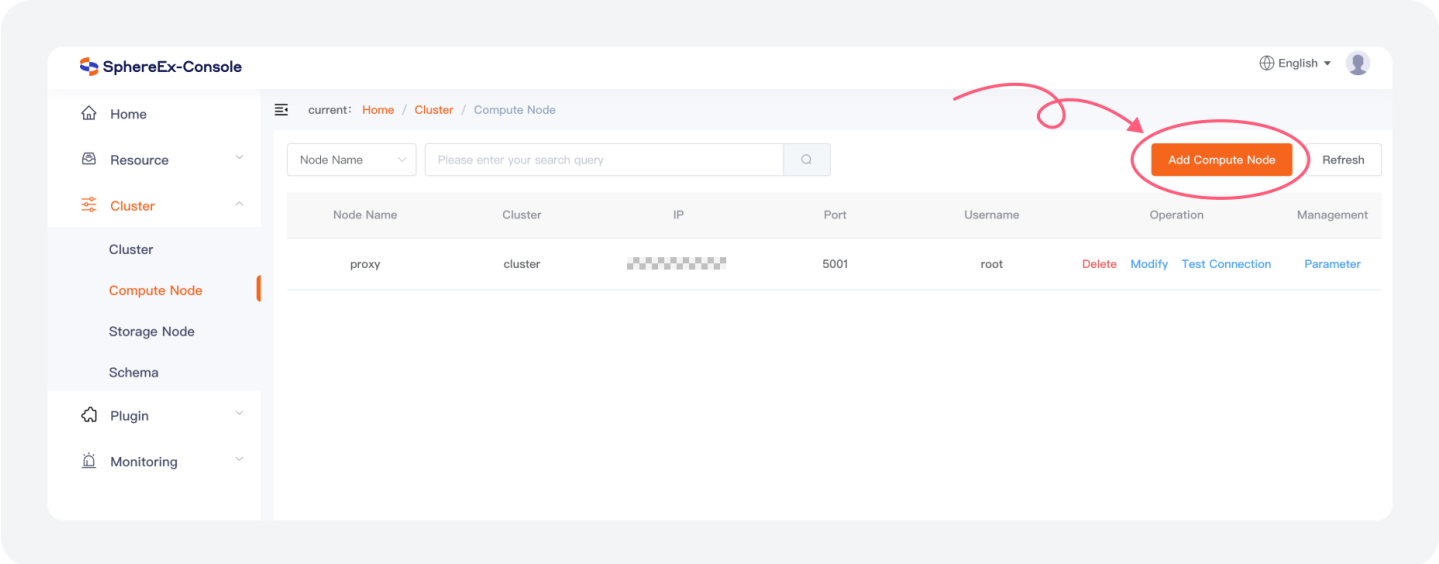
1. Add host.
    a. Choose **Resource > Host** and click **Add Host**.
    b. Enter host data in the pop-up interface.
    c. Click **OK** to add new host information.



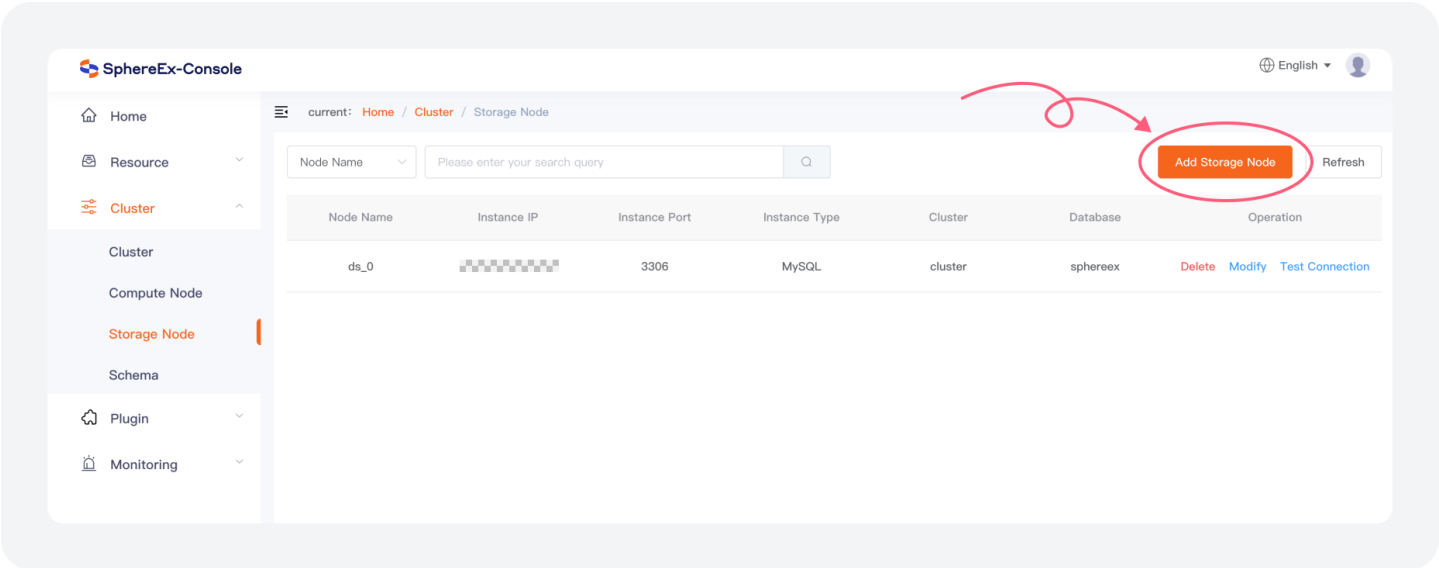
2. Add database instances.
   a. Choose **Resource > Database Instance** and click **Add Instances**.
   b. Enter the corresponding data in the pop-up interface, such as IP: 127.0.0.1, port: 3306, type: MySQL, connected user: root, password: 123456.
   c. After clicking **OK**, the corresponding registration data will be added to the database instance list.
   d. Click **Test Connection** to test whether the database instance can be successfully connected.



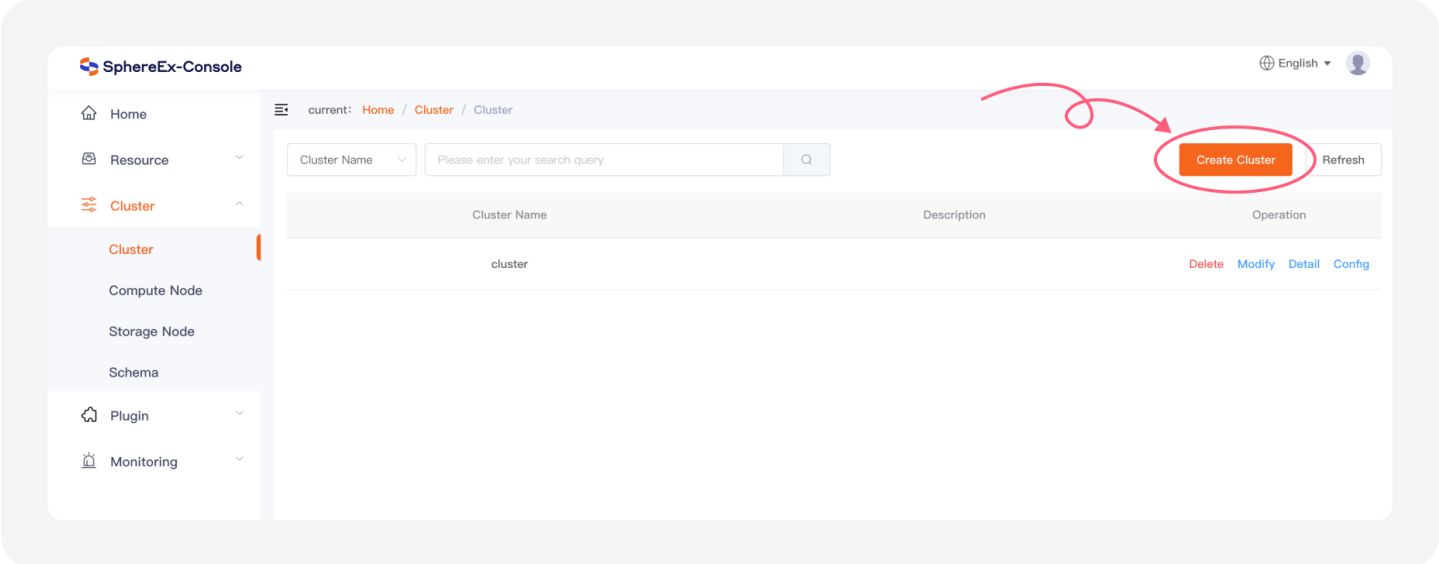
3. Add compute node.
   a. Choose **Cluster > Compute Node**, and click **Add Compute Node**.
   b. In the pop-up interface, enter the relevant information of the corresponding compute node.
   c. Click **OK** to add compute node data.
   d. Click **Test Connection** to test whether the compute node can be successfully connected.



4. Add storage node.
   a. Choose **Cluster > Storage Node**, and click **Add Storage Node**.
   b. In the pop-up interface, enter the relevant information of the corresponding storage node.
   c. Click **OK** to add storage node data.
   d. Click **Test Connection** to test whether the storage node can be successfully connected.



5. Create cluster.
   a. Choose **Cluster > Cluster**, and click **Create Cluster**.
   b. In the pop-up interface, enter the relevant information of the corresponding cluster.
   c. Click **OK** to add a cluster.



d. Click **Config** to configure the compute nodes and storage nodes of the cluster.

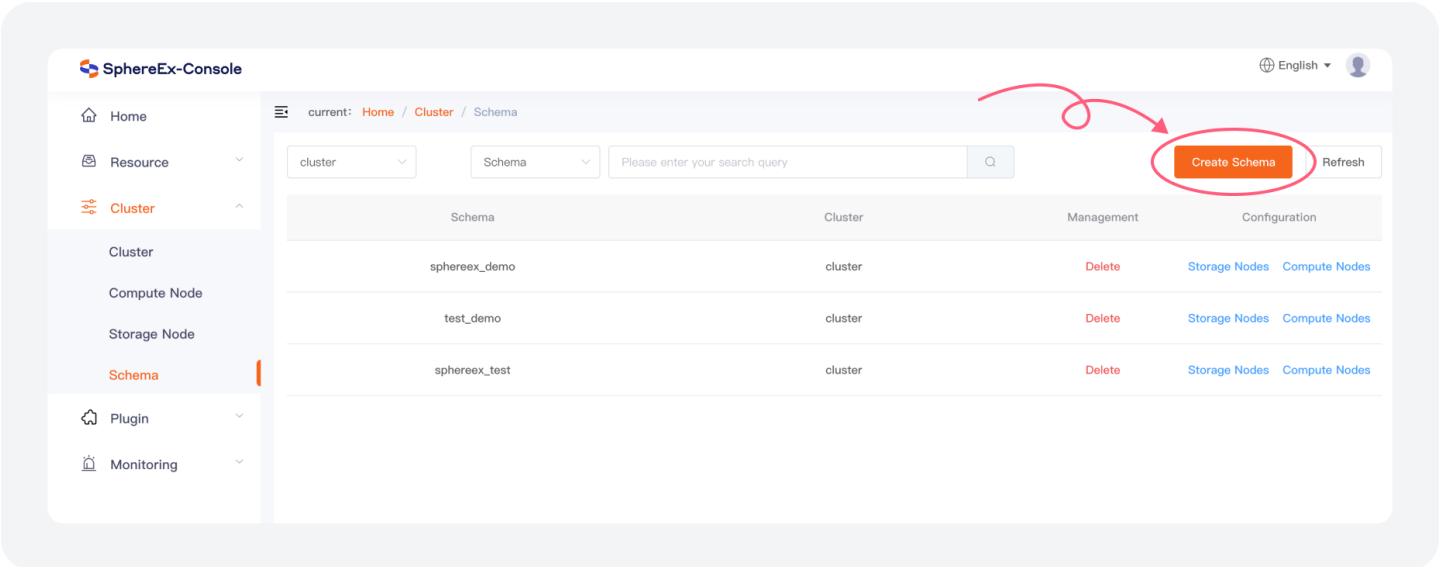
e. Click the **Detail** button to view the relevant information of compute nodes, storage nodes and logical databases in the cluster.

6. Create a logical database.

   a. Choose **Cluster > Schema**, and click **Create Schema**.

   b. In the pop-up interface, enter the name of the logical database and select the storage node required by the logical database. Note: All compute nodes are selected and cannot be modified.

   c. Click storage node and compute node to view the storage node and compute node information applied to the logical database respectively.

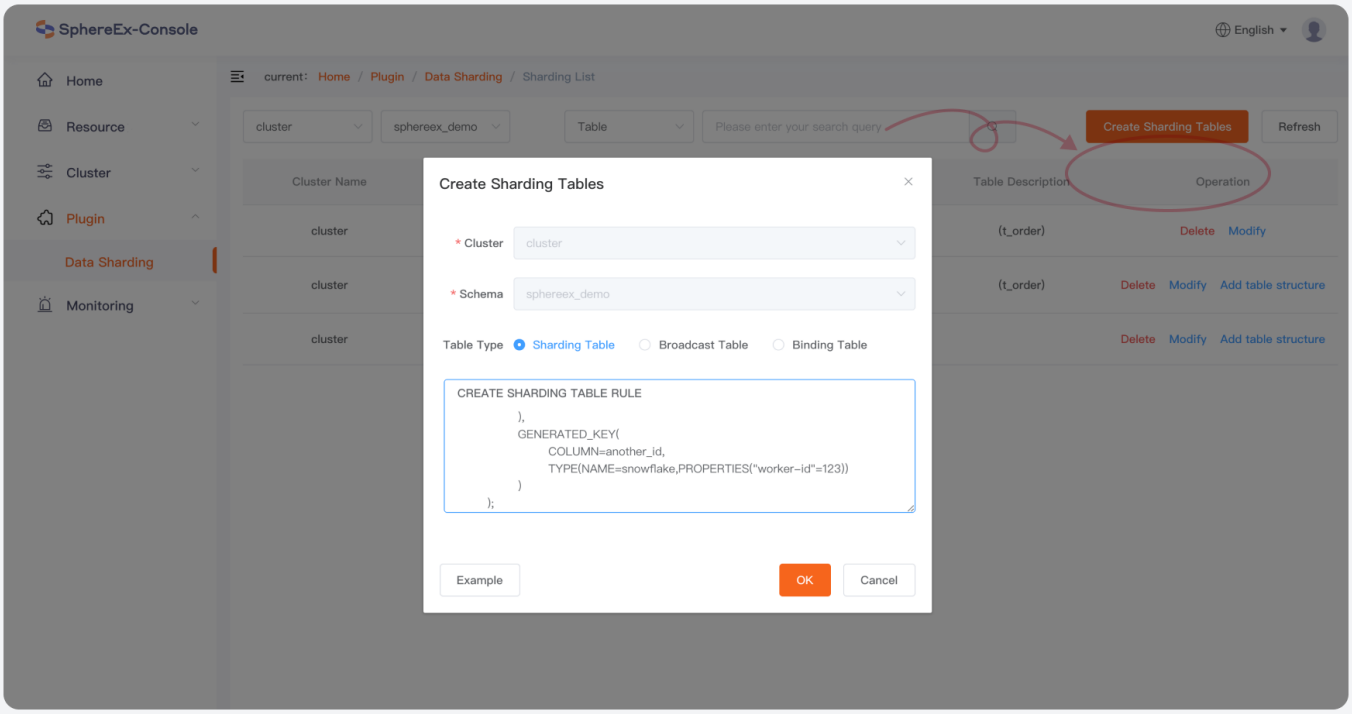


7. Plugin - Data Sharding

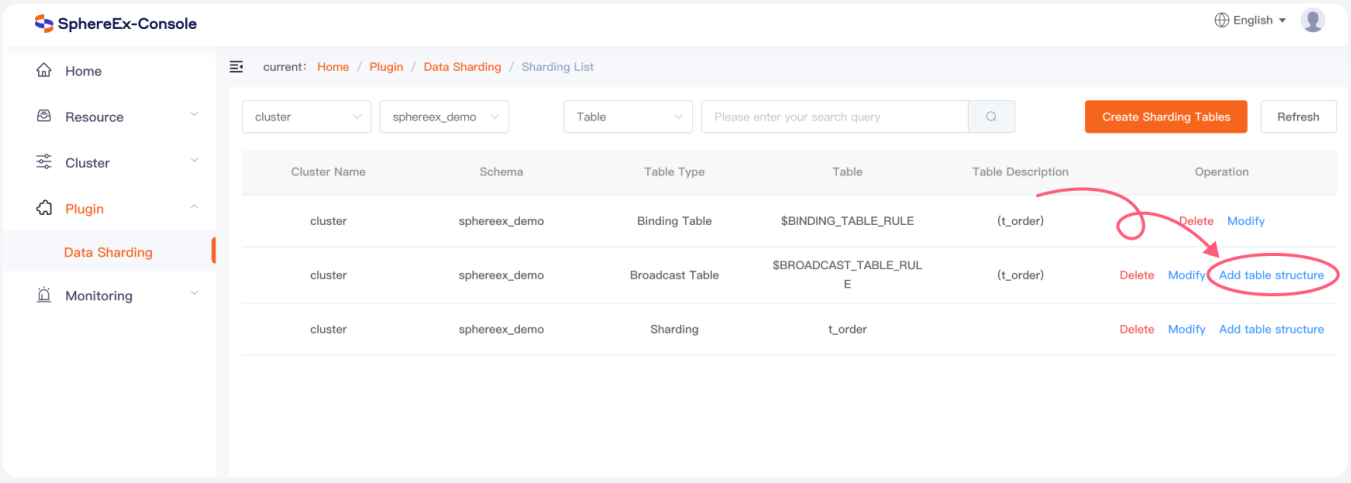
   a. In the **Plugin > Data Sharding** menu, data sharding is currently available, and more plugin features will be added and supported in the future.

   b. After selecting the corresponding cluster and the corresponding logical database under the cluster, click **Create Sharding Tables** to create sharding table and broadcast table using DistSQL under the corresponding logical database.

   c. After creation, you can also use DistSQL to modify table rules.



d. After creating the sharding rule, you can click **Add table structure** to create the actual database table using the normal table creation statement.



3 Operation Guide

3.1 Home

3.1.1 Resource Overview

You can view the used and unused status of the following resources: - Number of hosts - Number of database instances

3.1.2 Component Overview

You can view the used and unused status of the following components: - Number of clusters - Number of compute nodes - Number of storage nodes - Number of schema

3.2 Resource

3.2.1 Host

3.2.1.1 Add Host

Scenarios

When users need to monitor the host where the application service is located, they can monitor and manage single or multiple hosts in a unified manner by registering the host, and learn about indicators related to the service host.

Note

Ensure that the host address is true and valid, which can be determined by Test Connection activity.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Resource > Host**.
3. In the upper-right corner, click the **Add Host** button.
4. Fill in the host information. Refer to the table below for specific parameters.

Parameters	Description
Host Name	Required field, cannot exceed 50 characters.
IP	Required field, normal IP address, such as 127.0.0.1.
Description	Optional, cannot exceed 500 characters.
Monitor Port	Optional. The normal port address is 1-65535, such as 3306, which will be used for host monitoring later.
Username	Optional, no more than 50 characters.
Password	Optional, no more than 50 characters.
Test Connection	Use Ping mechanism to detect whether the host is available online.

5. Click **OK** to complete the host registration.

Post-processing

1. After adding data successfully, close the pop-up window and refresh the list data.
2. If you receive a prompt stating that the user data already exists, please add it again.

3.2.1.2 Delete Host

Scenarios

When the user no longer carries out unified monitoring and management on single or multiple hosts, you can delete them in host. After deletion, you won't be able to view the relevant hosts in monitoring.

Note

Before deleting, please confirm that the host no longer needs unified monitoring and management. Deleting a host has no impact on the cluster, schema, compute node and storage node.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Resource > Host**.
3. Select the targeted host and click the **Delete** button on the right.
4. A prompt dialog box **Tips** will pop up, to confirm whether to delete the host.
5. Click **OK**, to permanently delete the Host.

3.2.1.3 Modify Host

Scenarios

When the relevant information of the service host changes, such as host name and IP address, users can modify the relevant information of the host in host.

Note

Ensure that the modified IP address is consistent with the service host, otherwise the monitoring will be affected.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Resource > Host**.
3. Select the targeted host and click the **Modify** button on the right.
4. The **Modify Host** dialog box will pop up; fill in the required and optional contents according to the dialog box prompts.

Parameters	Description
Host Name	Required field, cannot exceed 50 characters.
IP	Required field, normal IP address, such as 127.0.0.1.
Description	Optional, cannot exceed 500 characters.
Monitor Port	Optional. The normal port address is 1-65535, such as 3306, which will be used for host monitoring later.

5. Click **OK** to complete the modification of the host.

3.2.1.4 Test Connection

Scenarios

The test connection function allows users to check whether the service host is alive or not.

Note

Ensure that the IP address of the service host is true and valid.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Resource > Host**.
3. Select the targeted host and click the **Test Connection** button on the right.
4. If the **Connection successful** message appears, it indicates that the host is online.

Post-processing

If a **Connection failed** message appears, please check whether the configured IP address is correct.

3.2.2 Database Instance

3.2.2.1 Add Instances

Scenarios

Users needing to manage multiple database instances can uniformly maintain and manage multiple database instances by registering instances.

Note

Ensure that the registered instance IP, port, user name and password are correct, otherwise the test connection fails.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Resource > Database Instance**.
3. In the upper-right corner of the console, click **Add Instances**.
4. Fill in the instance information. See the table below for specific parameters.

Parameters	Description
Instance IP	Required field, normal IP address, such as 127.0.0.1.
Instance Port	Required field, normal port address 1-65535, such as 3306.
Description	Optional, cannot exceed 500 characters.
Instance Type	Required field. You need to select MySQL.
Connecting User	Required field, cannot exceed 50 characters.
Password	Optional, cannot exceed 50 characters.
Test Connection	Use the database connection mechanism to check whether the data can be connected normally.

5. Click **OK** to complete the host registration.

Post-processing

1. After adding data successfully, close the pop-up window and refresh the list data automatically.
2. If you receive a prompt stating that the user data already exists, please add it again.

3.2.2.2 Delete Instances

Scenarios

When single or multiple instances are not under management, you can delete them.

Note

Before deleting, please confirm whether the deleted instance have registered storage nodes.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Resource > Database Instance**.
3. Select the targeted database and click the **Delete** button on the right.
4. A prompt dialog box **Tips** will pop up, to confirm whether to delete the instance.
5. Click **OK** to permanently delete the instance.

3.2.2.3 Modify Instances

Scenarios

When the database instance information changes, such as IP, port, type, user name, etc., users can update the instance through the modification function.

Note

Ensure that the modified content is consistent with the actual changed information.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Resource > Database Instance**.
3. Select the targeted database, and click the **Modify** button on the right.
4. A **Modify Instances** dialog box will pop up, fill in the required and optional contents according to the prompted dialog box.

Parameters	Description
Instance IP	Required field, normal IP address, such as 127.0.0.1.
Instance Port	Required field, normal port address 1 ~ 65535, such as 3306.
Description	Optional, cannot exceed 500 characters.
Instance Type	Required field. You need to select MySQL.
Connecting User	Optional, cannot exceed 50 characters.
Password	Used to check whether the data can be connected normally.

5. Click **OK** to finish modifying the instance.

3.2.2.4 Test Connection

Scenarios

The test connection function allows users to check whether the database is alive or not.

Note

Ensure that the registered instance IP, port, type, user name and password are correct.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Resource > Database Instance**.
3. Select the targeted database and click the **Test Connection** button on the right.
4. If the message **Detection successful** appears, it indicates that the database instance is online.

Post-processing

If the message **Connection failed** appears, it means that the database instance connection is abnormal. Please check that the registered instance IP, port, type, user name and password are correct.

3.3 Cluster

3.3.1 Cluster

3.3.1.1 Create Cluster

Scenarios

When multiple compute nodes and storage nodes are required in the actual application scenario, you can create a cluster through cluster to manage and maintain the compute nodes and storage nodes.

Notes

- Compute nodes have been registered, and a compute node can only belong to one cluster.
- Storage nodes are registered, and a storage node can belong to only one cluster.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Cluster**.
3. In the upper-right corner of the console, and click **Create Cluster**.
4. Fill in the cluster information. See the table below for specific parameters.

Parameters	Description
Cluster Name	Required field, cannot exceed 50 characters.
Description	Optional, cannot exceed 500 characters.

5. Click **OK** to finish creating the cluster.

3.3.1.2 Delete Cluster

Scenarios

When the user no longer manages and maintains the cluster, the cluster can be deleted.

Note

A cluster in use cannot be deleted. You need to delete the compute node and storage node associated with the cluster before operation.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Cluster**.
3. Select the targeted cluster and click the **Delete** button on the right.
4. A prompt dialog box **Tips** will pop up, to confirm whether to delete the cluster.
5. Click **OK** to permanently delete the cluster.

3.3.1.3 Modify Cluster

Scenarios

A cluster can be modified to change the cluster name or cluster description.

Note

Modify according to the actual changes.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Cluster**.
3. Select the targeted cluster and click the **Modify** button on the right.
4. A **Modify Cluster** dialog box will appear. Fill in the required and optional contents according to the dialog box prompts.

Parameters	Description
Cluster Name	Required field, cannot 50 characters.
Description	Optional, cannot exceed 500 characters.

5. Click **OK** to finish modifying the cluster.

3.3.1.4 View Cluster & Component Info

Scenarios

Users can use the view information function to confirm which node information is associated with the cluster.

Note

You need to complete the cluster configuration before you can see the relevant contents.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Cluster**.
3. Select the targeted cluster and click the **Detail** button on the right.

4. The **Cluster & Component Info** dialog box will pop up, providing the compute node, storage node and shema information.

3.3.1.5 Configure a Cluster

Scenarios

For the compute node and storage node associated with the cluster, you can select the specified compute node and storage node to bind with the cluster through the configuration function.

Requirements

- Compute node created
- Storage node created

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Cluster**.
3. Select the targeted cluster and click the **Config** button on the right.
4. The **Configure a Cluster** dialog box will pop up, to allow you to configure the compute node and storage node.

3.3.2 Compute Node

3.3.2.1 Add Compute Node

Scenarios

Users needing to manage the compute node uniformly, can register the compute node in the compute node. After the node is registered, you can monitor and manage the node.

Note

Ensure that the IP and port of the compute node are correct, otherwise the monitoring will be affected.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Compute Node**.
3. In the upper-right corner of the console, click **Add Compute Node**.
4. Fill in the compute node information. Refer to the table below for specific parameters.

Parameters	Description
IP	Required field, normal IP address, such as 127.0.0.1.
Port	Required field, normal port address 1-65535, such as 3306.
Username	Required field, cannot exceed 50 characters.
Password	Optional, cannot exceed 50 characters.
Node Name	Required field, cannot exceed 50 characters.
Test Connection	Check node availability.

5. Click **OK** to complete the registration of the compute node.

Post-processing

1. After adding data successfully, close the **Add Compute Node** window, and refresh the list data.
2. If you receive a prompt stating that the user data already exists, please add it again.

3.3.2.2 Delete Compute Node

Scenarios

When the user no longer manages, maintains or monitors a compute node, the node can be deleted through the delete function in compute node.

Note

You cannot delete a node that has been associated with a cluster. If you want to delete it, you need to disassociate the cluster in advance.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Compute Node**.
3. Select the targeted compute node and click the **Delete** button on the right.
4. A prompt dialog box **Tips** pops up, you need to confirm whether to delete the compute node.
5. Click **OK** to permanently delete the compute node.

3.3.2.3 Modify Compute Node

Scenarios

When the compute node information needs to be changed, users can change the registered node information such as IP, port, user name, password, etc., through the modification function in compute node.

Note

Ensure that the changed content is consistent with the actual node information.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Compute Node**.
3. Select the targeted compute node and click the **Modify** button on the right.
4. The **Modify Compute Node** dialog box will pop up, fill in the required and optional contents according to the dialog box prompts.

Parameters	Description
IP	Required field, normal IP address, such as 127.0.0.1.
Port	Required field, normal port address 1-65535, such as 3306
Username	Required field, cannot exceed 50 characters.
Password	Optional, cannot exceed 50 characters.
Node Name	Required field, cannot exceed 50 characters.
Test Connection	Check node availability.

5. Click **OK** to finish modifying the compute node.

3.3.2.4 Test Connection

Scenarios

The test connection function in compute node can be used to check whether a compute node is alive or not.

Note

Ensure that the IP, port, user name and password of the node are correct.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Compute Node**.
3. Select the targeted compute node and click the **Test Connection** button on the right.
4. If the **Connection successful** appears, it indicates that the compute node is online.

Post-processing

If the **Connection failed** appears, it indicates that the connection of the compute node is abnormal. Please check whether the added IP and port are correct when registering the compute node.

3.3.2.5 Parameter

Scenarios

The execution parameter information of a compute node can be viewed through the parameter function in compute node.

Note

Ensure that the registration information of the compute node is correct, otherwise it cannot be viewed.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Compute Node**.
3. Select the targeted compute node and click the **Parameter** button on the right.
4. In the pop-up dialog box **Node Parameters**, you can view the parameter name and parameter value of the compute node.

3.3.3 Storage Node

3.3.3.1 Add Storage Node

Scenarios

When a compute node needs to be associated with a data source, you can register a storage node through storage node for associating compute nodes.

Prerequites

First, you need to register an instance in database instance.

Note

Chinese names are not recommended. Creating a schema does not support Chinese storage node names.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Storage Node**.

3. In the upper-right corner of the console, click **Add Storage Node**.
4. Fill in the storage node information. Refer to the the following table for specific parameters.

Parameters	Description
Instance	Optional. Pulls data from the database instance list. After selection, the instance IP, instance port and instance type will be automatically filled.
Instance IP	Required field, normal IP address, such as 127.0.0.1.
Instance Port	Required field, normal port address 1-65535, such as 3306.
Instance Type	Required field. You need to select MySQL.
Node Name	Required field, cannot exceed 50 characters.
Username	Required field, cannot exceed 50 characters.
Password	Optional, cannot exceed 50 characters.
Database	Required field, cannot exceed 50 characters.
Parameter Extensions (&-sparated)	Optional, cannot exceed 500 characters.
URL Connection String	Automatic splicing generation.
Test Connection	Check node availability.

5. Click **OK** to complete the registration of the storage node.

Post-processing

1. After adding data successfully, close the **Add Storage Node** window and refresh the list data.
2. If you receive a prompt stating that the user data already exists, please add it again.

3.3.3.2 Delete Storage Node

Scenarios

When the compute node no longer needs to specify a single or multiple storage nodes, users can delete the storage node through the delete function in storage node.

Notes

- You cannot delete a node that has been associated with a cluster. If you want to delete it, you need to disassociate the cluster first.
- Deleting a storage node has no impact on the actual database.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Storage Node**.
3. Select the targeted storage node and click the **Delete** button on the right.
4. A prompt dialog box **Tips** will pop up, confirm whether to delete the storage node.
5. Click **OK** to permanently delete the storage node.

3.3.3.3 Modify Storage Node

Scenarios

When the storage node information changes, users can update the changed node information through the modify function in storage node.

Note

Ensure that the information to be changed is correct.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Storage Node**.
3. Select the targeted storage node and click the **Modify** button on the right.
4. The **Modify Storage Node** dialog box will pop up, fill in the required and optional contents according to the dialog box prompts.

Parameters	Description
Instance	Optional. Pulls data from the database instance list. After selection, the instance IP, instance port and instance type will be automatically filled.
Instance IP	Required field, normal IP address, such as 127.0.0.1.
Instance Port	Required field, normal port address 1 ~ 65535, such as 3306.
Instance Type	Required field. You need to select MySQL.
Node Name	Required field, cannot exceed 50 characters.
Username	Required field, cannot exceed 50 characters.
Password	Optiona, cannot exceed 50 characters.
Database	Required field, cannot exceed 50 characters.
Parameter Extensions (&-sparated)	Optiona, cannot exceed 500 characters.
URL Connection String	Automatic splicing generation.
Test Connection	Check node availability.

5. Click **OK** to finish modifying the storage node.

3.3.3.4 Test Connection

Scenarios

Users can confirm whether a storage node is alive or not, through the test connection function in storage node.

Note

Ensure that the configured IP, port, type, user name, password and database information are correct.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Storage Node**.
3. Select the targeted storage node and click the **Test Connection** button on the right.
4. If the **Connection successful** appears, it indicates that the storage node is online.

Post-processing

If the **Connection failed** prompt appears, it indicates that the connection of the storage node is abnormal. Please check whether the IP, port, type, user name, password and database information filled in when registering the storage node are correct.

3.3.4 Schema

3.3.4.1 Create Schema

Scenarios

When operations on schemas are made, it allows operations on real data sources. Users can create schemas and associate them with real data sources in schema.

Requirements

- Finish creating the cluster and complete the configuration.
- Make sure the selection cluster has compute nodes.

Notes

- Chinese names of schemas are not supported.
- Chinese storage node names are not supported.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Schema**.
3. Click the **Create Schema** button on the top right conner.
4. Fill in the schema information, see the table below for specific parameters.

Parameters	Description
Schema	Required field, cannot exceed 50 characters
Cluster	Automatic filling of list cluster items
Compute Nodes	Not operable, only for display
Storage Nodes	Can be added from optional node selections

5. Click **OK** to complete the creation of Schema.

Post-processing

If the Schema creation failed, please check if you are using Chinese names of schemas or Chinese storage node names, and make sure the selected storage node is available.

3.3.4.2 Delete Schema

Scenarios

When the schema is no longer in use by the user, it can be deleted via the delete function in the schema, which will not delete the data source.

Note

When a schema is deleted, it cannot be recovered, but has to be recreated.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Schema**.
3. Select the targeted schema, and click the **Delete** button on the right.
4. A **Tips** dialog box will pop up, to confirm the deletion of the schema.
5. Click **OK** to delete the schema permanently.

3.3.4.3 Manage Storage Nodes

Scenarios

When the storage node associated with a schema changes, the user can update the storage node through the storage node function in schema.

Note

Ensure that the data source to be changed is consistent.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Schema**.
3. Select the targeted schema, and click the **Storage Nodes** button on the right.
4. A **Storage Node** dialog box will pop up. Please confirm and select related storage nodes.
5. Click **OK** to complete the update of the storage node.

3.3.4.4 Manage Compute Node

Scenarios

When the compute node associated with a schema changes, users can update the compute node through the compute node function in schema.

Note

Ensure that the data source to be changed is consistent.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Cluster > Schema**.
3. Select the targeted schema, and click the **Compute Nodes** button on the right.
4. A **Compute Node** dialog box will pop up. Please confirm and select the related compute node.
5. Click **OK** to complete the update of the compute node.

3.4 Plugin

3.4.1 Data Sharding

3.4.1.1 Create Sharding Tables

Scenarios

When users' actual usage scenarios require database sharding, they can create sharding rules in data sharding to enable sharding of the real data source.

Notes

- Chinese names of sharding tables are not supported.
- Creating more than one sharding table at a time is not supported.

Requirements

- Require existing clusters.

- Require existing schema.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Plugin > Data Sharding**.
3. Click on the **Create Sharding Tables** on the top right corner.
4. Fill in the sharding information, see the table below for specific parameters.

Parameters	Description
Cluster	Filling by the filter list
Schema	Filling by the filter list
Table Type	Required field, select one from the table types: Sharding Table, Broadcast Table, Binding Table.
Table Statements	Required field, fill in the table statements
Example	Examples of sharding table statements

5. Click **OK** to complete the creation of sharding tables.

3.4.1.2 Delete Sharding Tables

Scenarios

When a sharding table is no longer required in the schema, it can be deleted via the deletion function in schema.

Notes

- Deleting a sharding table in the schema does not delete it in the actual database.
- Repeated creations of sharding tables will not affect the actual database.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Plugin > Data Sharding**.
3. Select the targeted sharding table, and click **Delete** on the right.
4. A **Tips** dialog box will pop up to confirm whether to delete the sharding table.
5. Click **OK** to delete the sharding table permanently.

3.4.1.3 Modify Sharding Tables

Scenarios

When users' actual usage scenarios require changes to the sharding tables database, they can change sharding rules of a specific table through the modify function in data sharding.

Note

Ensure that the table to be changed is consistent with the actual table before the modification.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Plugin > Data Sharding**.
3. Select the targeted sharding table, and click **Modify** on the right.
4. A **Modify Sharding Tables** dialog box will pop up, and users will be prompted to fill in the mandatory and fillable fields.

Parameters	Description
Cluster	Cannot be modified, filling by the filter list
Schema	Cannot be modified, filling by the filter list
Table Type	Cannot be modified
	Required field, complete the amendment of table statements
Example	Examples of table statements

5. Click **OK** to complete change to the sharding table.

3.4.1.4 Add Table Structure

Scenarios

When users complete the creation of sharding table rules, they can create table structures accordingly.

Note

- The table structure to be created is aligned with the association rules.
- Adding sharding table structure to a broadcast table type is not supported; the table structure must be added according to the corresponding table type.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Plugin > Data Sharding**.
3. Select the targeted sharding table, and click **Add Table Structure** on the right.
4. An **Add Table Structure** dialog box will pop up, and users will be prompted to fill in the mandatory and fillable fields.

Parameters	Description
Cluster	Cannot be modified, filling by the filter list
Schema	Cannot be modified, filling by the filter list
Table Type	Cannot be modified
Table Statements	Required field, fill in the table structure statement
Examples	Examples of table structure statements

5. Click **OK** to complete the adding of a table structure.

3.5 Monitoring

3.5.1 Instructions for Use

3.5.1.1 Configuration Description

The configuration file of SphereEx-Console is in the conf directory. The Application.properties file is the system configuration file, users.yaml is the user profile, logback.xml is the log configuration file.

application.properties

General Configuration: - server.port: Run port - jwt.secret: JWT authentication key - jwt.expiration: JWT authentication timeout - prometheus.server.address: Prometheus address

users.yaml

Modify users.yaml file to add, delete and disable users.

3.5.1.2 How to Enable Monitoring?

The host monitoring function needs to pass through Prometheus' node_ exporter, and the agent module of SphereEx Enterprise Data Service Platform realizes compute node monitoring.

Requirements

Before enabling the monitoring function:

- Please confirm that node_exporter is running on the monitoring host.
  a. The user downloads the corresponding node_ exporter component according to the actual operating system, download address: https://prometheus.io/download/ .
  b. Unzip node_ exporter installation package, execute command ./node_exporter to start.
- Please ensure that the agent function is enabled on the compute node. Refer to https://shardingsphere.apache.org/document/current/en/features/observability/use-norms for relevant operations.

Procedure

1. Install and start Prometheus. Assume that the operation address is 192.168.1.100 and port 9090.
2. Configure monitoring objectives.

Caution: Modify the Prometheus configuration file prometheus.yml, add the host, compute node IP and port in the static_configs.targets under scrape_configs node. You need to use the actual IP address of the host and compute node, not 127.0.0.1, localhost and other local addresses.

Suppose the access address of node_exporter of the monitoring host is 192.168.1.100:9100, and the running address of the Prometheus plugin in the agent module of the compute node is 192.168.1.100:9000.

```
static_configs:
  - targets: ["192.168.1.100:9100", "192.168.1.100:9000"]
```

3. Configure the Prometheus address in application.properties. prometheus.server.address=http://192.168.1.100:9090

3.5.2 Host

Scenarios

When users monitor the host on which application service resides, they can learn information about various metrics related to the service host.

Requirements

- The monitored host has node_exporter installed to collect host monitoring data, and the Prometheus service needs to be configured to collect the host monitoring data.
- The node_exporter monitoring port is required for host management.
- The application.properties file of SphereEx-Console has configured the Prometheus server address.
- Prometheus service has started.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Monitoring > Host**.
3. Click on the **Monitor** button of the targeted server to enter the monitoring interface.
4. The first drop down option in the top right corner of the monitoring screen allows you to limit the monitored data to a specified time range. The second drop down option allows you to specify the length of interval for calculating the variation of oscillograms.

3.5.3 Compute Node

Scenarios

Allows users to monitor the compute node service, and obtain metrics information related to the compute node.

Requirements

- The agent of the monitored compute node has Prometheus monitoring enabled, and the monitoring data of the compute node needs to be collected in the configuration file of the Prometheus service using the IP value of the compute node and the Prometheus monitoring port enabled in the agent.
- The compute node information is configured and the compute node is available.
- The Prometheus server address is configured in SphereEx-Console’s configuration file application.properties.
- Prometheus service has started.

Procedure

1. Login to the SphereEx-Console.
2. In the upper-left corner of the console, select **Monitoring > Compute Node**.
3. Click on the **Monitor** button in the list of compute nodes.
4. The first drop down option in the top right corner of the monitoring screen allows you to limit the monitored data to a specified time range, and the second drop down option allows you to speficy the length of interval for calculating the rate of graph changes.

4 FAQ

Monitoring data can be viewed in Prometheus. What to do in case SphereEx-Console does not have monitoring data?

1. Please confirm the Prometheus address in configuration file conf/application.properties is correct and can be accessed normally.
2. Ensure that the correct monitoring port is filled in when registering the host.
3. Ensure that Prometheus monitoring is enabled on the compute node agent.

How to deal with when multiple duplicate data occurs in SphereEx-Console monitoring?

Please check whether there are multiple jobs collecting the same monitoring address data configuration in Prometheus service.