

Distributed Transactional Database

HotDB Server -

[Visualization of Cross-IDC DR Switching]

Function Manual

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Shanghai Hotpu Networks Technology Co., Ltd.

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1. Background

HotDB Server and management platform in v.2.5.3.1 and above support cross-IDC disaster recovery function. However, if there is an IDC-level failure, the user needs to manually switch after manual detection, judging and repair, which takes a high operation and maintenance cost. Therefore, we introduce the visualization of functions such as IDC switching, IDC switchback, IDC removal, IDC repair and disaster recovery drill, etc. in v.2.5.6 and above, so as to improve the reliability and usability of IDC operations.

2. Compute node cluster

2.1. Entry to switch the active center

2.1.1. When the master center is the current active center

When the master center is the current active center, the "switch the active center" entry button will be provided in the following two situations:

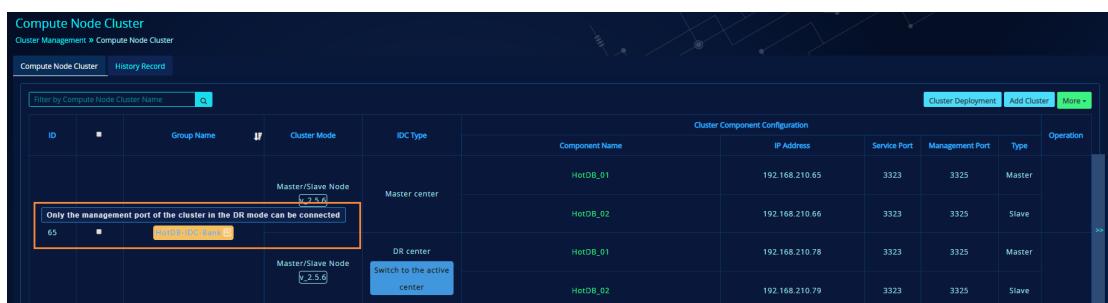
1. The service port and management port of the master center are both connected normally, and the management port of the DR center is connected normally.
2. Only the management port of the DR center can be connected.

- When the service port and management port of the master center are both connected normally, and the management port of the DR center is connected normally, the entry page to "switch the active center" will be shown as:



ID	Group Name	Cluster Mode	IDC Type	Component Name	IP Address	Service Port	Management Port	Type	Operation
65	HotDB-IDC-Bank	Master/Slave Node v_2.5.0	Master center	HotDB_01	192.168.210.65	3323	3325	Master	<button>Switch</button>
		Master/Slave Node v_2.5.0	DR center	HotDB_02	192.168.210.66	3323	3325	Slave	<button>Remove the IDC</button>
				HotDB_01	192.168.210.78	3323	3325	Master	
				HotDB_02	192.168.210.79	3323	3325	Slave	

- When only the management port of the DR center can be connected, the cluster name will be marked in orange and the entry page to "switch the active center" will be shown as:



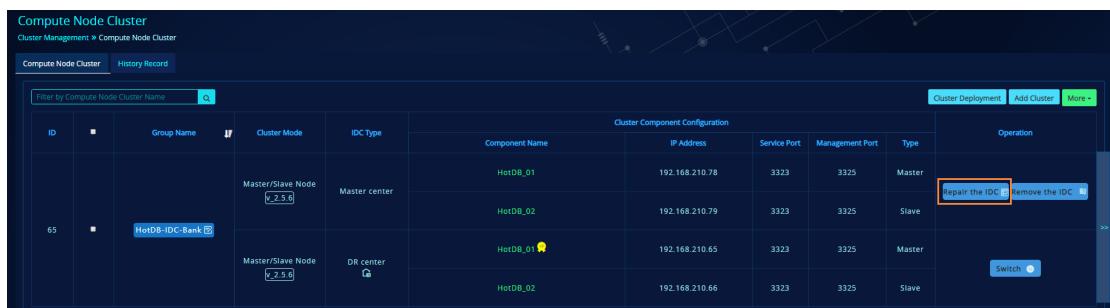
ID	Group Name	Cluster Mode	IDC Type	Component Name	IP Address	Service Port	Management Port	Type	Operation
65	HotDB-IDC-Bank	Master/Slave Node v_2.5.0	Master center	HotDB_01	192.168.210.65	3323	3325	Master	
		Master/Slave Node v_2.5.0	DR center	HotDB_02	192.168.210.66	3323	3325	Slave	
				HotDB_01	192.168.210.78	3323	3325	Master	
				HotDB_02	192.168.210.79	3323	3325	Slave	

2.1.2. When the DR center is the current active center

When the DR center is the current active center, the "switch the active center" entry button will not be provided.

2.2. Entry to IDC repair

When the DR center is the current active center and the service port and management port of the DR center are connected normally, the master center will be provided with the "repair the IDC" entry button:



ID	Group Name	Cluster Mode	IDC Type	Cluster Component Configuration					Operation
				Component Name	IP Address	Service Port	Management Port	Type	
65	HotDB-IDC-Bank	Master/Slave Node v.2.5.6	Master center	HotDB_01	192.168.210.78	3323	3325	Master	Repair the IDC Remove the IDC
				HotDB_02	192.168.210.79	3323	3325	Slave	Switch
		Master/Slave Node v.2.5.6	DR center	HotDB_01	192.168.210.65	3323	3325	Master	Switch
				HotDB_02	192.168.210.66	3323	3325	Slave	

2.3. Entry to IDC removal

- When the master center is the current active center, and the service port and management port of the master center are connected normally, the DR center will be provided with the "remove the IDC" entry button:



ID	Group Name	Cluster Mode	IDC Type	Cluster Component Configuration					Operation
				Component Name	IP Address	Service Port	Management Port	Type	
65	HotDB-IDC-Bank	Master/Slave Node v.2.5.6	Master center	HotDB_01	192.168.210.65	3323	3325	Master	Switch
				HotDB_02	192.168.210.66	3323	3325	Slave	Remove the IDC
		Master/Slave Node v.2.5.6	DR center	HotDB_01	192.168.210.78	3323	3325	Master	Switch
				HotDB_02	192.168.210.79	3323	3325	Slave	

- When the DR center is the current active center, and the service port and management port of the DR center are connected normally, the master center will be provided with the "remove the IDC" entry button:

Cluster Component Configuration									Operation
ID	Group Name	Cluster Mode	IDC Type	Component Name	IP Address	Service Port	Management Port	Type	
65	HotDB-IDC-Bank	Master/Slave Node v.2.5.6	Master center	HotDB_01	192.168.210.78	3323	3325	Master	Repair the IDC:
				HotDB_02	192.168.210.79	3323	3325	Slave	Remove the IDC:
	HotDB-IDC-Bank	Master/Slave Node v.2.5.6	DB center	HotDB_01	192.168.210.65	3323	3325	Master	Switch:
				HotDB_02	192.168.210.66	3323	3325	Slave	Rebuild (in the IDC):

2.4. Other instructions

In HotDB Server V.2.5.6 and above and with DR mode enabled, when more cluster deployment information is unfolded, the original buttons of [repair the IDC], [remove the IDC], [switch] and [rebuild] will be displayed in a smaller version, and button information will be shown when the cursor moves over the icon.

Repair the IDC : Remove the IDC: Switch (in the IDC): Rebuild (in the IDC):

Cluster Deployment Info										Operation						
ID	Group Name	Cluster Mode	IDC Type	Component Name	IP Address	Service Port	Management Port	Type	Computer Node	High-Available Components	Configfile	HTTP-Service	Data Source Instance	Deployment Environment	Code	
10	HotDB-IDC-Bank	Master/Slave Node v.2.5.6	Master center	HotDB_01	192.168.220.210	3323	3325	Master							Non-Symmetrical:	
				HotDB_02	192.168.220.214	3323	3325	Slave							Non-Symmetrical:	
	HotDB-IDC-Bank	Master/Slave Node v.2.5.6	DB center	HotDB_01	192.168.220.217	3323	3325	Master							Non-Symmetrical:	
				HotDB_02	192.168.220.218	3323	3325	Slave							Non-Symmetrical:	

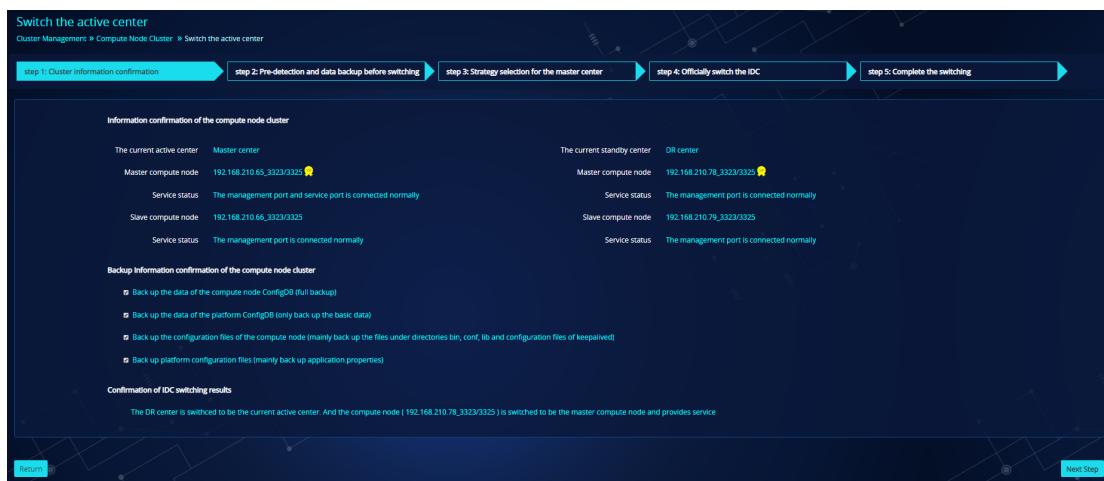
3. Switch the active center

To switch the active center mainly includes five steps: cluster information confirmation, Pre-detection and data backup before switching, strategy selection for the master center, officially switch the IDC and complete the switching. Based on the selection of switching strategy, the IDC is switched to be the active center, and the roles of data sources and ConfigDBs are changed accordingly.

3.1. The service port of the master center is connected normally

3.1.1. Cluster information confirmation

The cluster information confirmation page includes the confirmation of cluster information, backup information and switching results of IDC.



Information confirmation of compute node cluster

The current active center and standby center: displays information about the current active center and standby center

Master compute node: displays the master compute node and VIP of the current IDC

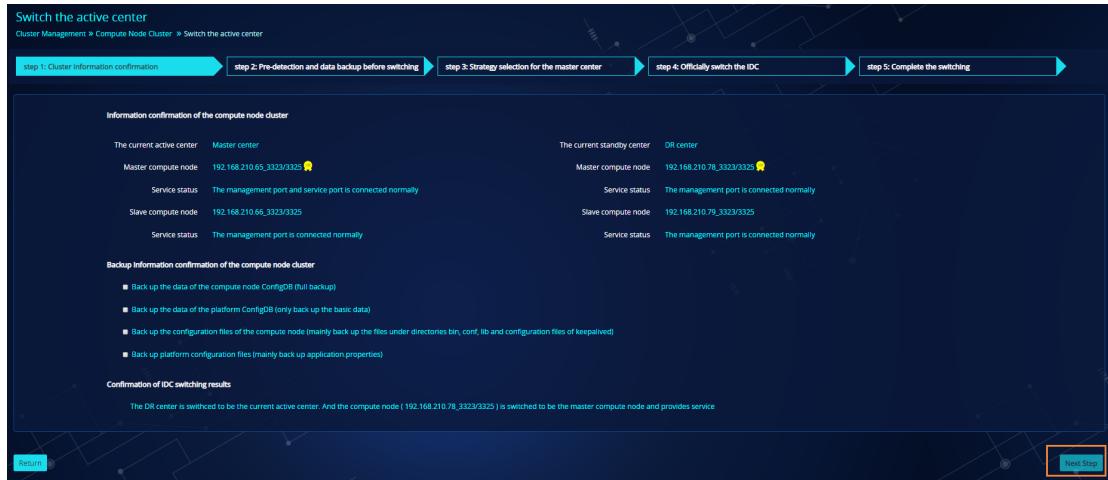
Service status: displays the connection status of the service port / management port of the master compute node in the current IDC

Slave compute node: displays the slave compute node of the current IDC

Service status: displays the connection status of the service port / management port of the slave compute node in the current IDC

➤ Backup information confirmation of compute node cluster

By default, all backup items are checked in the backup information confirmation module of the compute node cluster. You can also select the backup items by yourself. After selecting at least one item, the [next] button will be opened normally and allow to enter the next step.

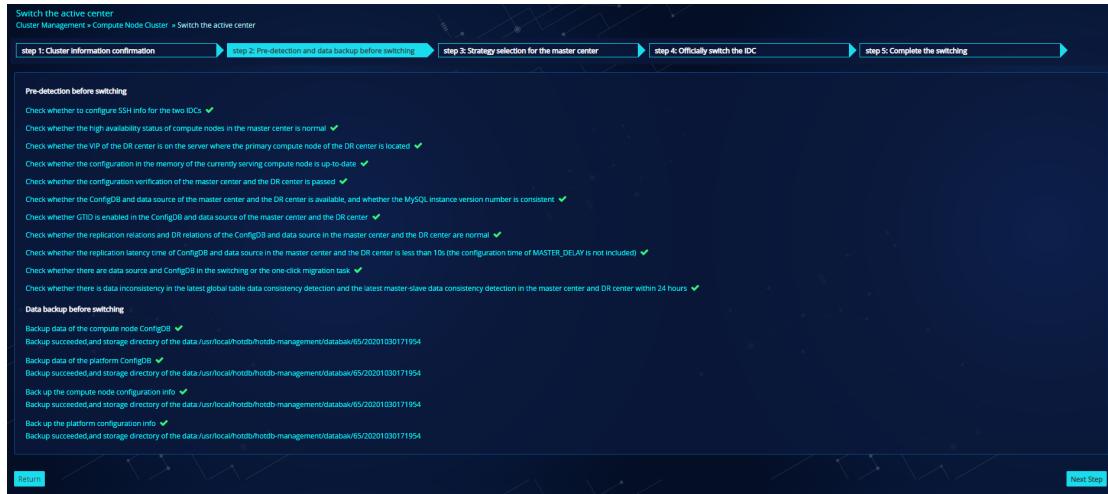


➤ Confirmation of IDC switching results

Displays information about the active center and master compute node after switching

3.1.2. Pre-detection and data backup before switching

The pre-detection of cluster running status, configuration information, replication latency and replication relations of nodes is to ensure the normal running and data accuracy of compute nodes and data sources after the switching. The data backup ensures that the data will not be lost if switching failed.



➤ Buttons description

Retry: retry the current step.

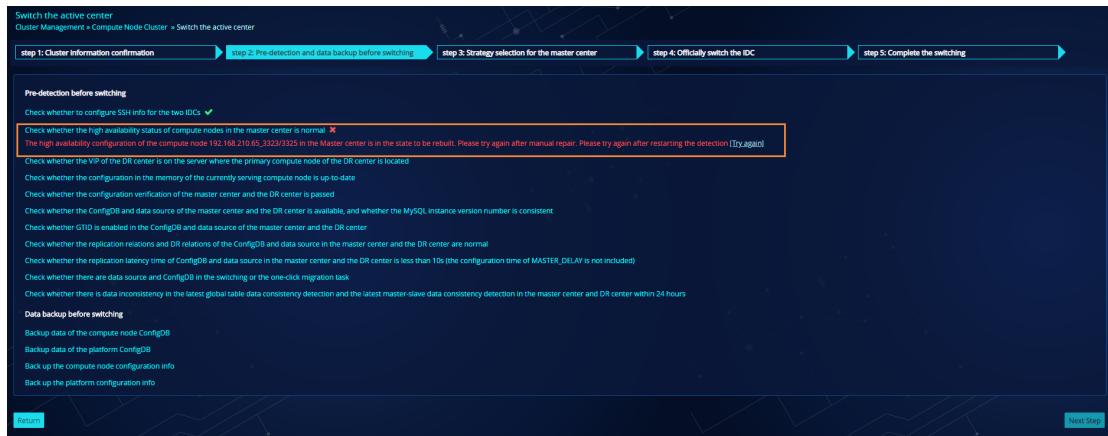
Ignore this item and proceed to the next step: skip this step and perform the next step.

Return: return to the "cluster information confirmation" page.

Next step: available only after all detection and backup items are passed. Otherwise, it will be grayed.

- Detection items must all be passed before taking the next step. Otherwise, manual intervention is required to solve the failed items.

1. Abnormal high availability status of compute nodes in the master center



2. The data source in the master center is not available.

Switch the active center
Cluster Management > Compute Node Cluster > Switch the active center

step 1: Cluster information confirmation step 2: Pre-detection and data backup before switching step 3: Strategy selection for the master center step 4: Officially switch the IDC step 5: Complete the switching

Pre-detection before switching

- Check whether to configure SSH info for the two IDCs ✓
- Check whether the high availability status of compute nodes in the master center is normal ✓
- Check whether the VIP of the DR center is on the server where the primary compute node of the DR center is located ✓
- Check whether the configuration in the memory of the currently serving compute node is up-to-date ✓
- Check whether the configuration verification of the master center and the DR center is passed ✓
- Check whether the ConfigDB and data source of the master center and the DR center is available, and whether the MySQL instance version number is consistent ✓
The data source in the Master center is not available (1_192.168.210.66_3310_dt01) Please retry or continue to the next step after manual repair [Try again] ignore this item and continue to the next step
- Check whether GTID is enabled in the ConfigDB and data source of the master center and the DR center
- Check whether the replication relations and DR relations of the ConfigDB and data source in the master center and the DR center are normal
- Check whether the replication latency time of ConfigDB and data source in the master center and the DR center is less than 10s (the configuration time of MASTER_DELAY is not included)
- Check whether there are data source and ConfigDB in the switching or the one-click migration task
- Check whether there is data inconsistency in the latest global table data consistency detection and the latest master-slave data consistency detection in the master center and DR center within 24 hours

Data backup before switching

- Backup data of the compute node ConfigDB
- Backup data of the platform ConfigDB
- Back up the compute node configuration info
- Back up the platform configuration info

[Return](#) [Next Step](#)

3. Abnormal DR relations of data source.

Switch the active center
Cluster Management > Compute Node Cluster > Switch the active center

step 1: Cluster information confirmation step 2: Pre-detection and data backup before switching step 3: Strategy selection for the master center step 4: Officially switch the IDC step 5: Complete the switching

Pre-detection before switching

- Check whether to configure SSH info for the two IDCs ✓
- Check whether the high availability status of compute nodes in the master center is normal ✓
- Check whether the VIP of the DR center is on the server where the primary compute node of the DR center is located ✓
- Check whether the configuration in the memory of the currently serving compute node is up-to-date ✓
- Check whether the configuration verification of the master center and the DR center is passed ✓
- Check whether the ConfigDB and data source of the master center and the DR center is available, and whether the MySQL instance version number is consistent ✓
Check whether GTID is enabled in the ConfigDB and data source of the master center and the DR center
- Check whether the replication relations and DR relations of the ConfigDB and data source in the master center and the DR center are normal ✓
Abnormal replication relations between the Master center data source(1_192.168.210.66_3310_dt01) and the DR center data source(1_192.168.210.78_3310_dt01) Please try again after restarting the detection [Try again]
- Check whether the replication latency time of ConfigDB and data source in the master center and the DR center is less than 10s (the configuration time of MASTER_DELAY is not included)
- Check whether there are data source and ConfigDB in the switching or the one-click migration task
- Check whether there is data inconsistency in the latest global table data consistency detection and the latest master-slave data consistency detection in the master center and DR center within 24 hours

Data backup before switching

- Backup data of the compute node ConfigDB
- Backup data of the platform ConfigDB
- Back up the compute node configuration info
- Back up the platform configuration info

[Return](#) [Next Step](#)

4. No master-slave data consistency detection and global data consistency is performed for all data with 24 hours.

Switch the active center
Cluster Management > Compute Node Cluster > Switch the active center

step 1: Cluster information confirmation step 2: Pre-detection and data backup before switching step 3: Strategy selection for the master center step 4: Officially switch the IDC step 5: Complete the switching

Pre-detection before switching

- Check whether to configure SSH info for the two IDCs ✓
- Check whether the high availability status of compute nodes in the master center is normal ✓
- Check whether the VIP of the DR center is on the server where the primary compute node of the DR center is located ✓
- Check whether the configuration in the memory of the currently serving compute node is up-to-date ✓
- Check whether the configuration verification of the master center and the DR center is passed ✓
- Check whether the ConfigDB and data source of the master center and the DR center is available, and whether the MySQL instance version number is consistent ✓
Check whether GTID is enabled in the ConfigDB and data source of the master center and the DR center
- Check whether the replication relations and DR relations of the ConfigDB and data source in the master center and the DR center are normal ✓
- Check whether the replication latency time of ConfigDB and data source in the master center and the DR center is less than 10s (the configuration time of MASTER_DELAY is not included) ✓
- Check whether there are data source and ConfigDB in the switching or the one-click migration task
- Check whether there is data inconsistency in the latest global table data consistency detection and the latest master-slave data consistency detection in the master center and DR center within 24 hours ✗
No master-slave data consistency detection has been performed in Master center within 24 hours
No master-slave data consistency detection has been performed in DR center within 24 hours Please try again after restarting the detection [Try again]

Data backup before switching

- Backup data of the compute node ConfigDB
- Backup data of the platform ConfigDB
- Back up the compute node configuration info
- Back up the platform configuration info

[Return](#) [Next Step](#)

- The data backup before switching is mainly to back up the backup items selected in the previous step and store data under the directory /hotdb-management / databak / cluster number / backup time.

3.1.3. Strategy selection for the master center

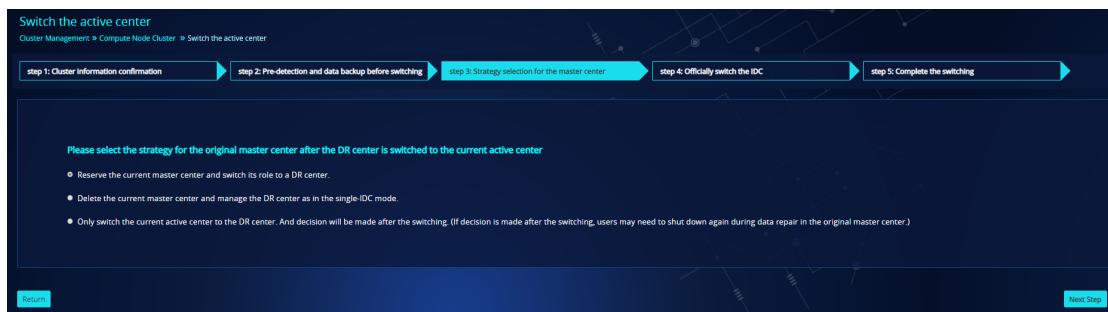
There are mainly three switching strategies:

Reserve the current master center and switch its role to a DR center.

Delete the current master center and manage the DR center as in the single-IDC mode.

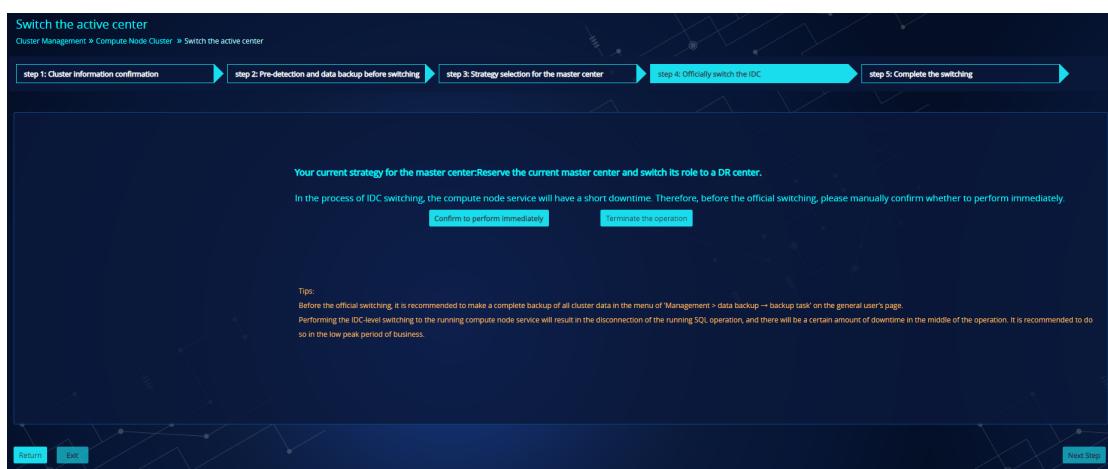
Only switch the current active center to the DR center. And decision will be made after the switching.

The first switching strategy is selected by default.



3.1.4. Officially switch the IDC

- Confirm again before the official switching.



- In this step, you can click the exit button to exit and switch it to an active center task. After the detection, exit will not be allowed.

Switch the active center

Cluster Management > Compute Node Cluster > Switch the active center

step 1: Cluster information confirmation step 2: Pre-detection and data backup before switching step 3: Strategy selection for the master center step 4: Officially switch the IDC step 5: Complete the switching

Note: you are not allowed to withdraw from the current page during the operation.

Execution Items

- An attempt to increase the probability of success, the compute node will pre-check the necessary conditions before switching:
 - Check whether the VIP of the DR center is on the server where the primary compute mode of the DR center is located
 - Check whether the configuration in the memory of the currently serving compute node is up-to-date
 - Check whether the ConfigDB and data source of the master center and the DR center is available
 - Check whether the replication relations and DR relations of the ConfigDB and data source in the master center and the DR center are normal
 - Check whether the replication latency time of ConfigDB and data source in the master center and the DR center is less than 10s (the configuration time of MASTER_DELAY is not included)
 - Check whether there are data source and ConfigDB in the switching or the one-click migration task

The platform closes the keepalive service of the standby compute node in the master center or stops election inside the master center to prevent the high availability switching of compute node in the master center and restrict the management port to accept only query commands.

The platform calls the command to close the service port of the compute node in the master center. The compute node will close all idle front-end connections of compute nodes in the master center, with new front-end connections unallowed to enter. After the commit or rollback of the ongoing transaction, it will close the service port and no longer accept the online command.

The platform calls the command to start the service of the compute node in the DR center. At the same time, the compute node rebuilds the replication relations and updates the configuration according to the strategy of the original master center.

The current strategy is Reserve the current master center and switch its role to a DR center. As shown in the following steps:

Wait for the replication latency of data sources and ConfigDBs in the DR center to catch up

Clean up the replication relations between the original master center and the DR center

Set up the internal replication relations of DR center

Clean up the replication relations from the slave data sources and ConfigDBs to the master data sources and ConfigDBs in the original master center

Rebuild the reverse DR relations between the DR center and the original master center

Exchange the roles of the ConfigDBs, data sources and ConfigDBs in server.xml

Update the IOC info of server.xml and ConfigDB in memory, including haMode, idcId, online, or which is allowed to be executed by the original master center

Release interface services other than queries of the management port and allow the internal election

Formally open service of the active center after switching

The platform updates the configuration information and performs dynamic loading.

The platform finally confirms and updates all ConfigDB and server.xml configuration files relevant to compute nodes, including haMode, idcId, etc.

Update the configuration information of compute node cluster of management platform

Reload

The platform opens the keepalive service of the current DR center

Buttons

Return Step 1 Step 2 Step 3 Step 4 Step 5 Step 6 Step 7 Step 8 Step 9 Step 10 Step 11 Step 12 Step 13 Step 14 Step 15 Step 16 Step 17 Step 18 Step 19 Step 20 Step 21 Step 22 Step 23 Step 24 Step 25 Step 26 Step 27 Step 28 Step 29 Step 30 Step 31 Step 32 Step 33 Step 34 Step 35 Step 36 Step 37 Step 38 Step 39 Step 40 Step 41 Step 42 Step 43 Step 44 Step 45 Step 46 Step 47 Step 48 Step 49 Step 50 Step 51 Step 52 Step 53 Step 54 Step 55 Step 56 Step 57 Step 58 Step 59 Step 60 Step 61 Step 62 Step 63 Step 64 Step 65 Step 66 Step 67 Step 68 Step 69 Step 70 Step 71 Step 72 Step 73 Step 74 Step 75 Step 76 Step 77 Step 78 Step 79 Step 80 Step 81 Step 82 Step 83 Step 84 Step 85 Step 86 Step 87 Step 88 Step 89 Step 90 Step 91 Step 92 Step 93 Step 94 Step 95 Step 96 Step 97 Step 98 Step 99 Step 100 Step 101 Step 102 Step 103 Step 104 Step 105 Step 106 Step 107 Step 108 Step 109 Step 110 Step 111 Step 112 Step 113 Step 114 Step 115 Step 116 Step 117 Step 118 Step 119 Step 120 Step 121 Step 122 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Switch the active center

Cluster Management > Compute Node Cluster > Switch the active center

step 1: Cluster information confirmation step 2: Pre-detection and data backup before switching step 3: Strategy selection for the master center step 4: Officially switch the IDC step 5: Complete the switching

Note: you are not allowed to withdraw from the current page during the operation

Execution Items

- ▼ In order to improve the probability of success, the compute node will re-detect the necessary conditions before switching
 - Check whether the VIP of the DR center is on the server where the primary compute node of the DR center is located ✓
 - Check whether the configuration in the memory of the currently serving compute node is up-to-date ✓
 - Check whether the ConfigDB and data source of the master center and the DR center is available ✓
 - Check whether the replication relations and DR relations of the ConfigDB and data source in the master center and the DR center are normal ✓
 - Check whether the replication latency time of ConfigDB and data source in the master center and the DR center is less than 10s (the configuration time of MASTER_DELAY is not included) ✓
 - Check whether there are data source and ConfigDB in the switching or the one-click migration task ✓
- ▼ The platform closes the keepalive service of the standby compute node in the master center or stops election inside the master center to prevent the high availability switching of compute node in the master center and restrict the management port to accept only query commands ✓
- ▼ The platform calls the command to close the service port of the compute node in the master center
 - The compute node will close all idle front-end connections of compute nodes in the master center, with new front-end connections unallowed to enter. After the commit or rollback of the ongoing transaction, it will close the service port and no longer accept the online command ✓
- ▼ The platform calls the command to start the service of the compute node in the DR center. At the same time, the compute node rebuilds the replication relations and updates the configuration according to the strategy of the original master center
 - The current strategy is Reserve the current master center and switch its role to a DR center As shown in the following steps:
 - Wait for the replication latency of data sources and ConfigDBs in the DR center to catch up ✓
 - Clean up the replication relations between the original master center and the DR center ✓
 - Set up the internal replication relations of DR center ✓
 - Clean up the replication relations from the slave data sources and ConfigDBs to the master data sources and ConfigDBs in the original master center ✓
 - Rebuild the reverse DR relations between the DR center and the original master center ✓
 - Exchange the roles of the ConfigDBs, data sources and ConfigDBs in server.xml ✓
 - Update the IDC mode of server.xml and ConfigDB in memory, including haMode, idcId, online_, or which is allowed to be executed by the original master center ✓
 - Release interface services other than queries of the management port and allow the internal election ✓
- ▼ Formally open service of the active center after switching ✓
- ▼ The platform updates the configuration information and performs dynamic loading
 - The platform finally confirms and updates all ConfigDB and server.xml configuration files relevant to compute nodes, including haMode, idcId, etc. ✓
 - Update the configuration information of compute node cluster of management platform ✓
 - Reload ✓
 - The platform opens the keepalive service of the current DR center ✓

Congrat! All operations of switching the active center have been completed. Click Next to enter the final information confirmation page.

Return **Exit** **Next Step**

2. Delete the current master center.

Switch the active center

Cluster Management > Compute Node Cluster > Switch the active center

step 1: Cluster information confirmation step 2: Pre-detection and data backup before switching step 3: Strategy selection for the master center step 4: Officially switch the IDC step 5: Complete the switching

Note: you are not allowed to withdraw from the current page during the operation

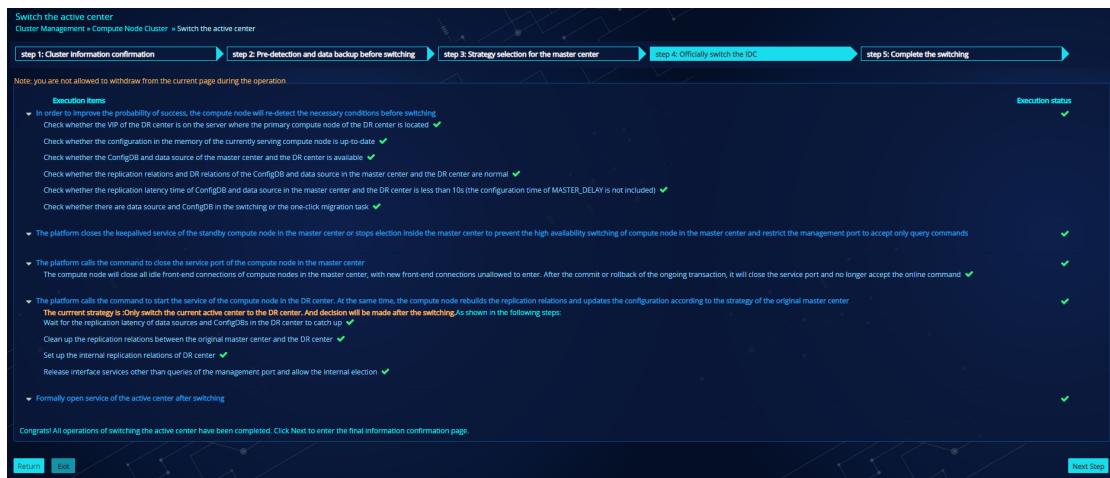
Execution Items

- ▼ In order to improve the probability of success, the compute node will re-detect the necessary conditions before switching
 - Check whether the VIP of the DR center is on the server where the primary compute node of the DR center is located
 - Detection is not required ✓
 - Check whether the configuration in the memory of the currently serving compute node is up-to-date ✓
 - Check whether the ConfigDB and data source of the master center and the DR center is available ✓
 - Check whether the replication relations and DR relations of the ConfigDB and data source in the master center and the DR center are normal ✓
 - Check whether the replication latency time of ConfigDB and data source in the master center and the DR center is less than 10s (the configuration time of MASTER_DELAY is not included) ✓
 - Check whether there are data source and ConfigDB in the switching or the one-click migration task ✓
- ▼ The platform closes the keepalive service of the standby compute node in the master center or stops election inside the master center to prevent the high availability switching of compute node in the master center and restrict the management port to accept only query commands
 - This step is passed with no operation required, because the current compute node is in the single-node mode ✓
- ▼ The platform calls the command to close the service port of the compute node in the master center
 - The compute node will close all idle front-end connections of compute nodes in the master center, with new front-end connections unallowed to enter. After the commit or rollback of the ongoing transaction, it will close the service port and no longer accept the online command ✓
- ▼ The platform calls the command to start the service of the compute node in the DR center. At the same time, the compute node rebuilds the replication relations and updates the configuration according to the strategy of the original master center
 - The current strategy is Delete the current master center and manage the DR center as in the single-IDC mode As shown in the following steps:
 - Wait for the replication latency of data sources and ConfigDBs in the DR center to catch up ✓
 - Clean up the replication relations between the original master center and the DR center ✓
 - Set up the internal replication relations of DR center ✓
 - Update the roles of data sources and ConfigDBs in the ConfigDB and server.xml and delete the configuration of the original master center in the ConfigDB ✓
 - The ConfigDBs of the current active center cannot be connected. Please try again later. ✓
 - Release interface services other than queries of the management port ✓
- ▼ Formally open service of the active center after switching ✓
- ▼ The platform updates the configuration information and performs dynamic loading
 - The platform finally confirms and updates all ConfigDB and server.xml configuration files relevant to compute nodes, including haMode, idcId, etc. ✓
 - Update the configuration information of compute node cluster of management platform ✓
 - Reload ✓

Congrat! All operations of switching the active center have been completed. Click Next to enter the final information confirmation page.

Return **Exit** **Next Step**

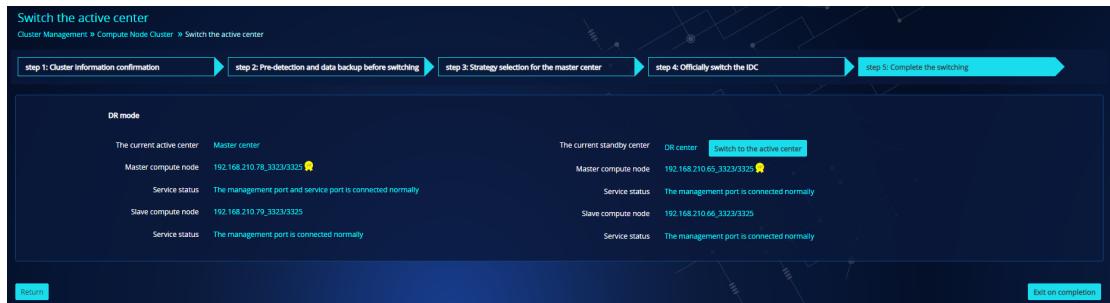
3. Only switch the current active center to the DR center.



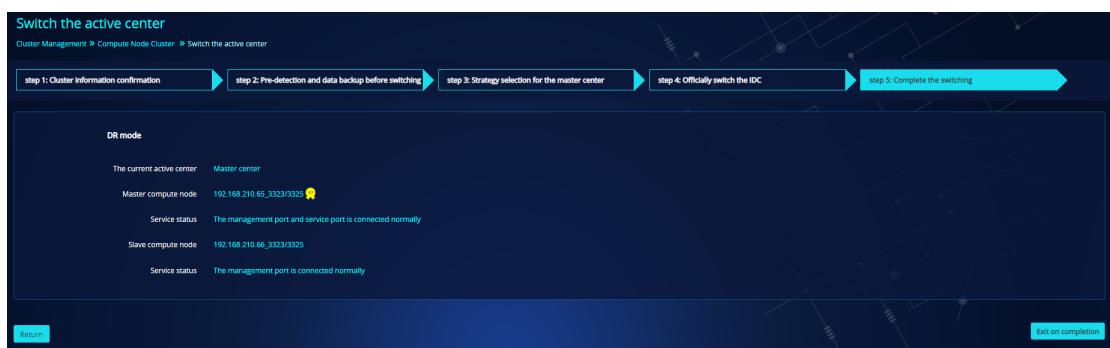
3.1.5. Complete the switching

Operation buttons for the current standby IDC on the final “complete the switching” page is different based on the switching strategy you chose.

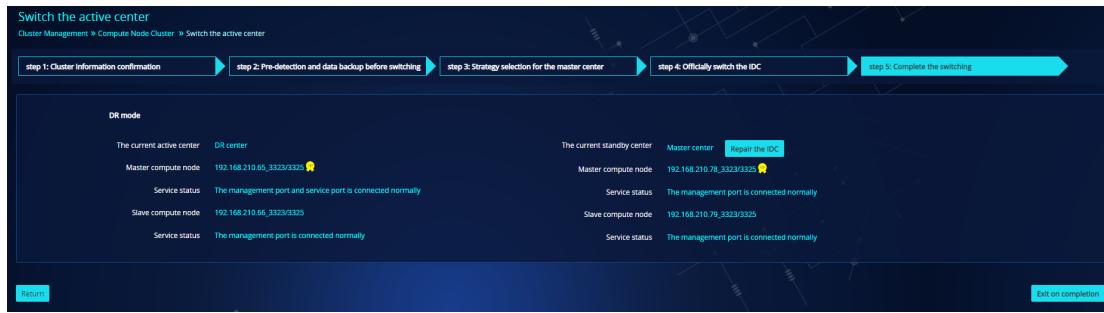
- Reserve the master center and exchange roles



- Delete the current master center.



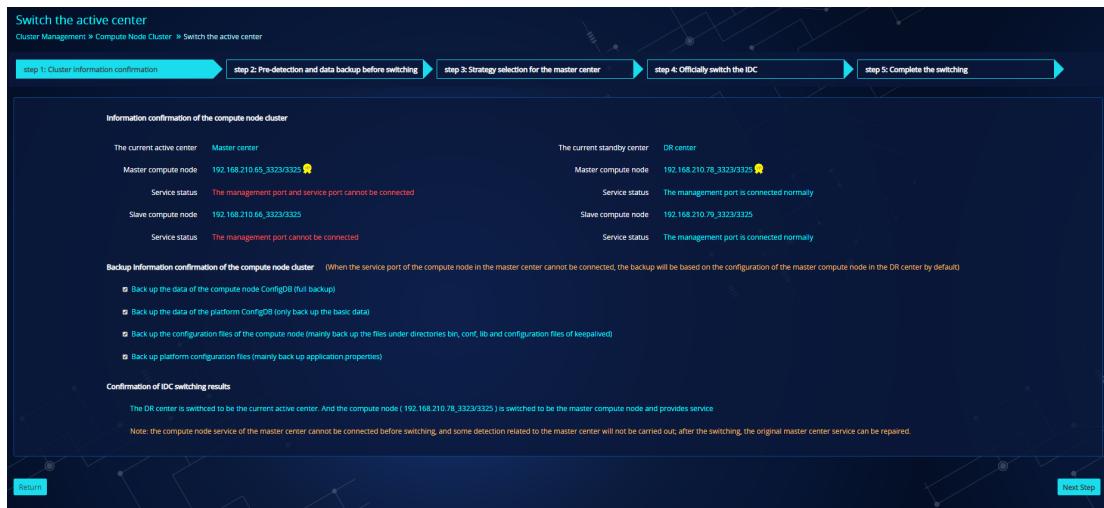
- Only switch the current active center to the DR center.



3.2. Abnormal connections of the service port in the master center

3.2.1. Cluster information confirmation

When the connection status of the service port of the master center is abnormal, the service status of the compute node on the cluster information confirmation page changes correspondingly, while others remain consistent with the normal connection page.

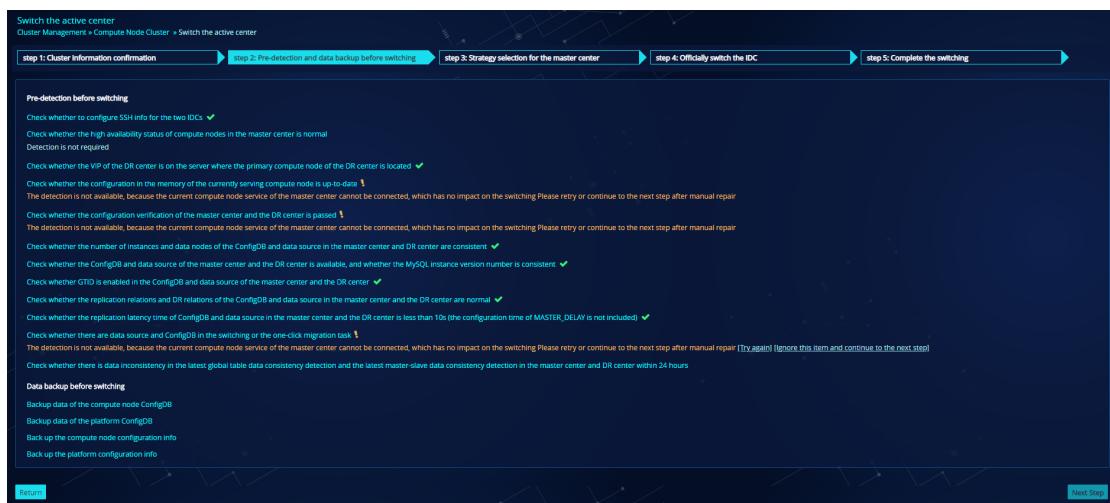


3.2.2. Pre-detection and data backup before switching

- The pre-detection of cluster running status, configuration information, replication latency and replication relations of nodes is to ensure the normal running and data

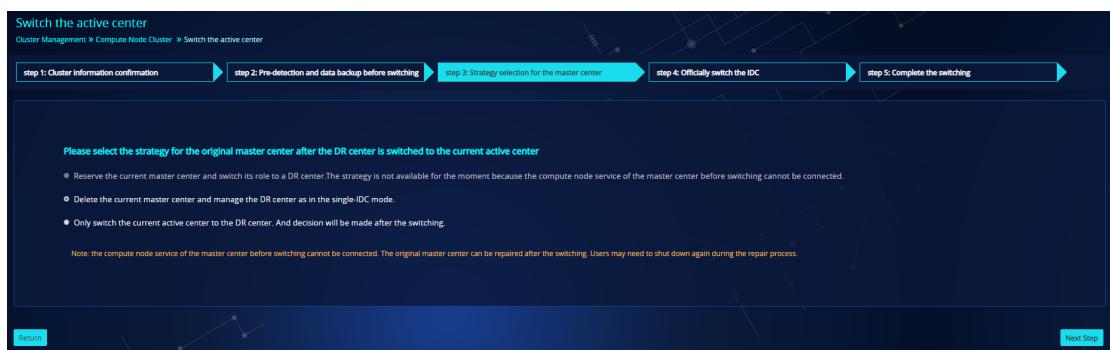
accuracy of compute nodes and data sources after the switching. The data backup ensures that the data will not be lost if switching failed.

- When the service port of the master center is connected abnormally, some detection related to the master center will not be executed and a warning in orange will be given. With this warning, detections will be directly ignored, which has no impact on the current task of switching the active center.
- The data backup remains consistent with the master center of normal service.



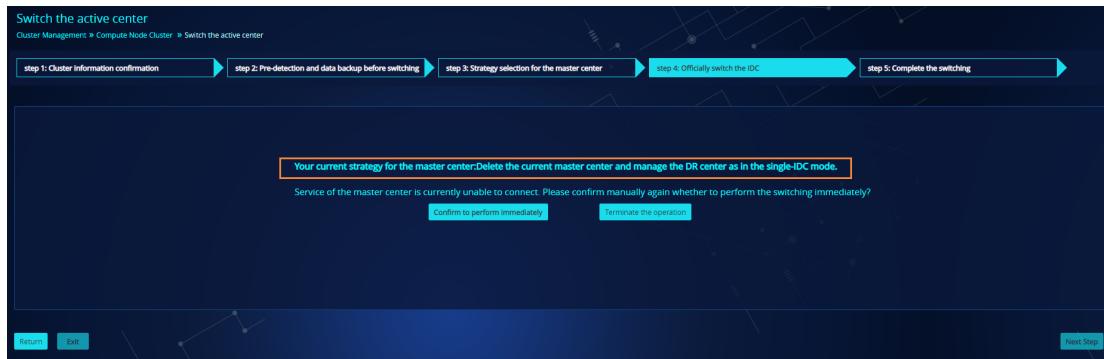
3.2.3. Strategy selection for the master center

- There are three switching strategies provided on the page, with the second one selected by default. Only the second strategy and third strategy can be selected because the service port of the master center is connected abnormally.
- When the master center service cannot be connected, the original master center can be repaired after switching.

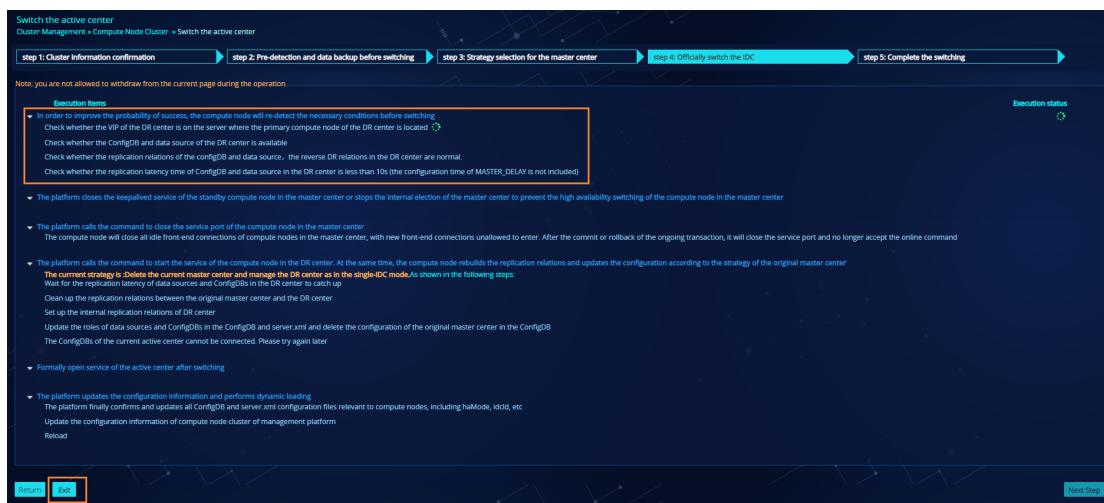


3.2.4. Officially switch the IDC

- Confirm again before officially switching the IDC. The confirmation is displayed according to the strategy selection.



- A re-detection of necessary conditions is required for the “officially switch the IDC” step. You can click the exit button to exit and switch it to an active center task during the step. After the re-detection step, you cannot exit.



- The exceptions occurred during switching can be processed manually according to the specific information.
- Different switching strategies correspond to different switching processes.

1. Delete the master center

Switch the active center

Cluster Management > Compute Node Cluster > Switch the active center

step 1: Cluster Information confirmation step 2: Pre-detection and data backup before switching step 3: Strategy selection for the master center step 4: Officially switch the IDC step 5: Complete the switching

Note: you are not allowed to withdraw from the current page during the operation

Execution Items

- ▼ In order to improve the probability of success, the compute node will re-detect the necessary conditions before switching
 - Check whether the VIP of the DR center is on the server where the primary compute node of the DR center is located ✓
 - Check whether the ConfigDB and data source of the DR center is available ✓
 - Check whether the replication relations of the configDB and data source, the reverse DR relations in the DR center are normal. ✓
 - Check whether the replication latency time of ConfigDB and data source in the DR center is less than 10s (the configuration time of MASTER_DELAY is not included). ✓
- ▼ The platform closes the keepalive service of the standby compute node in the master center or stops the internal election of the master center to prevent the high availability switching of the compute node in the master center ✓
- ▼ The platform calls the command to close the service port of the compute node in the master center
 - The compute node will close all idle front-end connections of compute nodes in the master center, with new front-end connections unallowed to enter. After the commit or rollback of the ongoing transaction, it will close the service port and no longer accept the online command. The operation is not allowed, because the current compute node service of the master center cannot be connected, which however has no impact on the switching. It is recommended to manually intervene. ✎
- ▼ The platform calls the command to start the service of the compute node in the DR center. At the same time, the compute node rebuilds the replication relations and updates the configuration according to the strategy of the original master center
 - The current strategy is Delete the current master center and manage the DR center as in the single-IDC mode. As shown in the following steps: Wait for the replication latency of data sources and ConfigDBs in the DR center to catch up ✓
 - Clean up the replication relations between the original master center and the DR center ✓
 - Set up the internal replication relations of DR center ✓
 - Update the roles of data sources and ConfigDBs in the ConfigDB and server.xml and delete the configuration of the original master center in the ConfigDB. The ConfigDBs of the current active center cannot be connected. Please try again later. ✓
- ▼ Formally open service of the active center after switching ✓
- ▼ The platform updates the configuration information and performs dynamic loading
 - The platform finally confirms and updates all ConfigDB and server.xml configuration files relevant to compute nodes, including haMode, iddd, etc. ✓
 - Update the configuration information of compute node cluster of management platform ✓
 - Reload ✓

Congrats! All operations of switching the active center have been completed. Click Next to enter the final information confirmation page.

[Return](#) [Exit](#) [Next Step](#)

2. Only switch the current active center to the DR center.

Switch the active center

Cluster Management > Compute Node Cluster > Switch the active center

step 1: Cluster Information confirmation step 2: Pre-detection and data backup before switching step 3: Strategy selection for the master center step 4: Officially switch the IDC step 5: Complete the switching

Note: you are not allowed to withdraw from the current page during the operation

Execution Items

- ▼ In order to improve the probability of success, the compute node will re-detect the necessary conditions before switching
 - Check whether the VIP of the DR center is on the server where the primary compute node of the DR center is located ✓
 - Check whether the ConfigDB and data source of the DR center is available ✓
 - Check whether the replication relations of the configDB and data source, the reverse DR relations in the DR center are normal. ✓
 - Check whether the replication latency time of ConfigDB and data source in the DR center is less than 10s (the configuration time of MASTER_DELAY is not included). ✓
- ▼ The platform closes the keepalive service of the standby compute node in the master center or stops the internal election of the master center to prevent the high availability switching of the compute node in the master center ✓
- ▼ The platform calls the command to close the service port of the compute node in the master center
 - The compute node will close all idle front-end connections of compute nodes in the master center, with new front-end connections unallowed to enter. After the commit or rollback of the ongoing transaction, it will close the service port and no longer accept the online command. The operation is not allowed, because the current compute node service of the master center cannot be connected, which however has no impact on the switching. It is recommended to manually intervene. ✎
- ▼ The platform calls the command to start the service of the compute node in the DR center. At the same time, the compute node rebuilds the replication relations and updates the configuration according to the strategy of the original master center
 - The current strategy is Only switch the current active center to the DR center. And decision will be made after the switching. As shown in the following steps: Wait for the replication latency of data sources and ConfigDBs in the DR center to catch up ✓
 - Clean up the replication relations between the original master center and the DR center ✓
 - Set up the internal replication relations of DR center ✓
- ▼ Formally open service of the active center after switching ✓

Congrats! All operations of switching the active center have been completed. Click Next to enter the final information confirmation page.

[Return](#) [Exit](#) [Next Step](#)

3.2.5. Complete the switching

➤ Delete the master center

Switch the active center

Cluster Management > Compute Node Cluster > Switch the active center

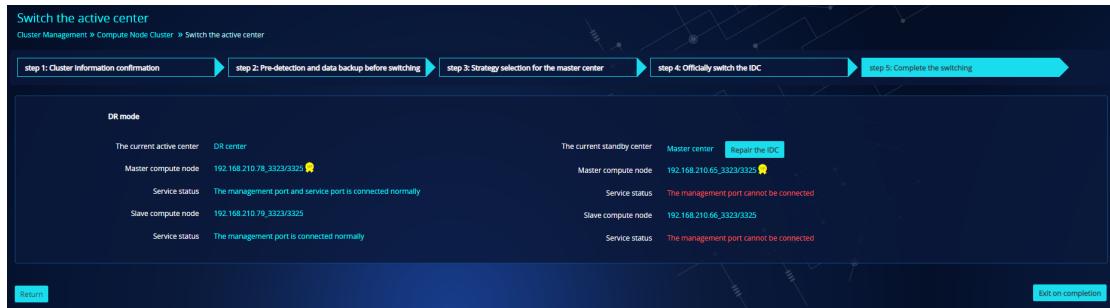
step 1: Cluster Information confirmation step 2: Pre-detection and data backup before switching step 3: Strategy selection for the master center step 4: Officially switch the IDC step 5: Complete the switching

DR mode

The current active center	Master center
Master compute node	192.168.210.65_3323/3325
Service status	The management port and service port is connected normally
Slave compute node	192.168.210.66_3323/3325
Service status	The management port is connected normally

[Return](#) [Exit on completion](#)

- Only switch the current active center to the DR center.



3.3. Other instructions

- Tasks cannot be initiated when the status of switching the active center button on the compute node cluster page is not up-to-date. If you click the button, it will prompt that "The current status is not up-to-date. Please refresh the page."
- New tasks cannot be initiated when there is a task in progress (in all clusters monitored under the management platform).

4. Repair the IDC

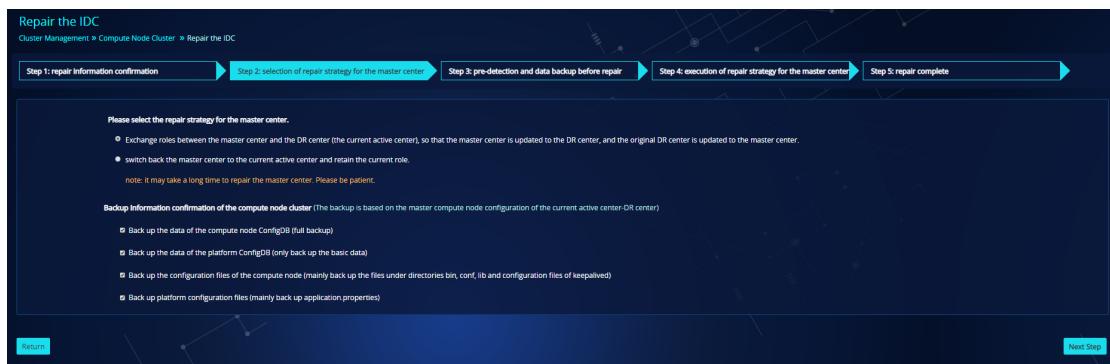
After the IDC switching, you can restore the original master center to the DR center, and keep the original DR center as the active center or restore the original master center to the active center.

4.1. Repair information confirmation

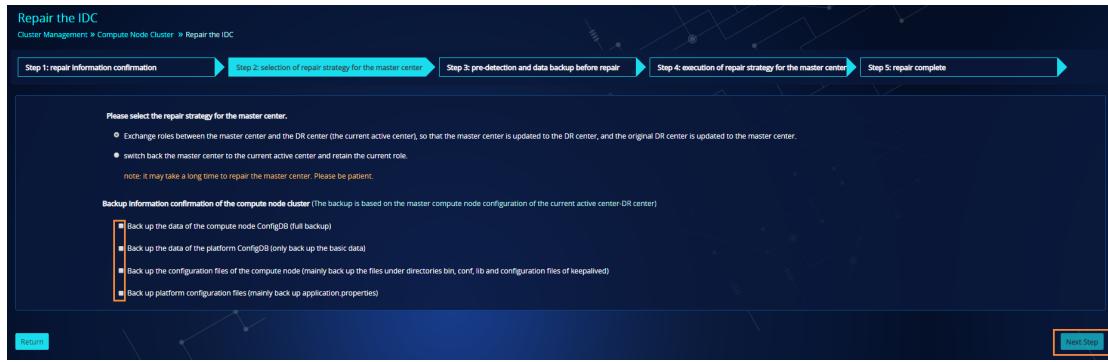
Before repairing the IDC, it is necessary to ensure the normal service of the compute node in the current active center. Whether the service port or the management port is connected normally or not, the compute node can be repaired.



4.2. Selection of repair strategy for the master center

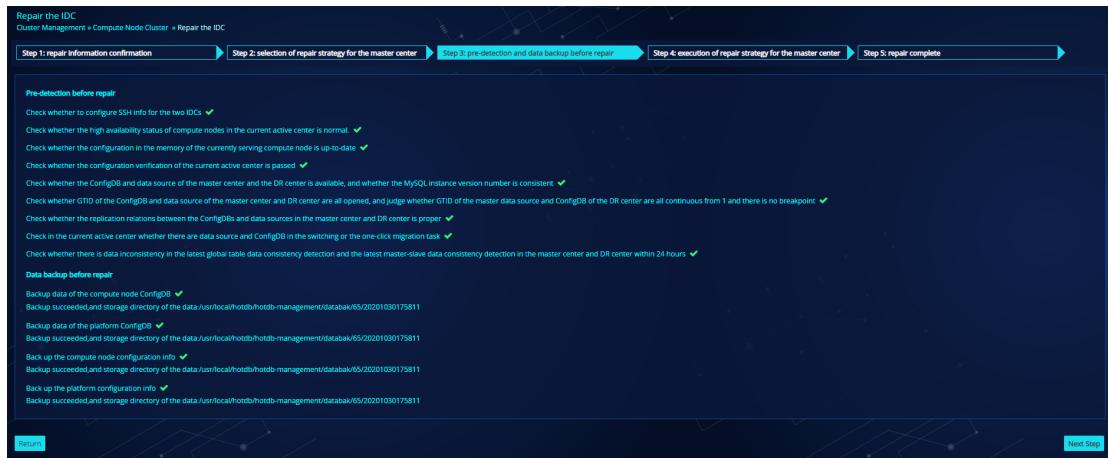


- There are two repair strategies provided on the page, with the first one selected by default.
- It may take a long time to repair the master center. Please be patient.
- At least one item shall be selected. Otherwise, you cannot proceed to the next step.

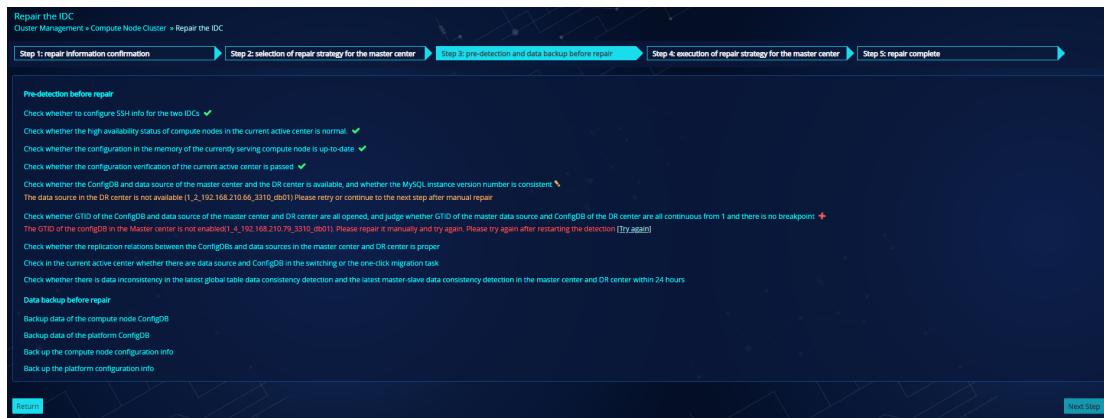


4.3. Pre-detection and data backup before repair

- Before the repair of the IDC, the cluster running status, various configuration, and the replication latency and replication relations of nodes should be thoroughly detected to ensure the normal execution of the repair of the IDC.

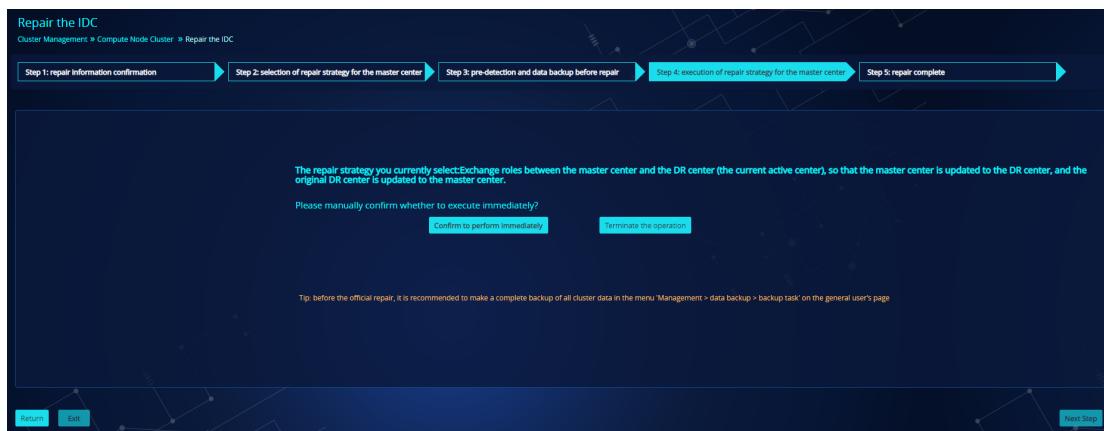


- The exceptions detected can be processed manually according to the specific information. You can ignore the steps which have no impact on the repair (generally prompted in orange) and proceed to the next step directly.



4.4. Execution of repair strategy for the master center

- Confirm again before the repair of the IDC. And the confirmation is displayed according to the strategy selection.



- A re-detection of necessary conditions is required for the official repair of the IDC. You can click the exit button to exit and switch it to an active center task during the step. After the re-detection step, you cannot exit.

Repair the IDC

Cluster Management > Compute Node Cluster > Repair the IDC

Step 1: repair information confirmation Step 2: selection of repair strategy for the master center Step 3: pre-detection and data backup before repair Step 4: execution of repair strategy for the master center Step 5: repair complete

Note: you are not allowed to withdraw from the current page during the operation

Execution Items

- ▼ In order to improve the probability of success, the compute node will re-detect the necessary conditions before switching
 - Check whether the high availability status of compute nodes in the current active center is normal ✓
 - Check whether the configuration in the memory of the currently serving computer node is up-to-date ✓
 - Check whether the ConfigDB and data source of the master center and the DR center is available ✓
 - Check whether the replication relations of the ConfigDB and data source in the current active center are normal ✓
 - Check in the current active center whether there are data source and ConfigDB in the switching or the one-click migration task Judge whether GTID of the master data source and ConfigDB of the DR center are all continuous from 1 and there is no breakpoint ✓
- ▼ The platform closes the compute nodes and high availability component services of the master center, closes the keepalive service of the slave compute node of the current active center- DR center or stops the election inside the IDC. Besides, it restricts the management port to only query commands ✓
- ▼ Re-import data of the current active center according to the data source and ConfigDB data of DR center, the current active center.
 - Determine whether to export the data source and ConfigDB data of the DR center and then re-import it into the master center.
 - Clean up the replication relations between the original data sources and ConfigDBs of the master center on demand
 - Re-import data for instances whose data needs to be re-imported (this process may take a long time, please be patient)
- ▼ Rebuild DR relations between the master center and the DR center, and build the internal replication relations of the master center
- ▼ Modify the configuration according to the repair strategy of the master center.
 - The current strategy is Exchange roles between the master center and the DR center (the current active center), so that the master center is updated to the DR center, and the original DR center is updated to the master center. As shown in the following steps:
 - Exchange the IOC info of server.xml and ConfigDB in memory, including haMode, idcd, idcl, online_, etc which is allowed to be executed by the DR center
 - Release interface services of the current master center (the original DR center) other than queries of the management port and allow the internal election
 - The platform finally confirms and updates all ConfigDB and server.xml configuration files relevant to compute nodes, including haMode, idcd, etc
 - The platform updates the configuration information
 - Reload
- ▼ Restart the keepalive service of the current master center (the original DR center), and the compute nodes and high availability component services of the current DR center (the original master center)

Execution status

Return **Exit** **Next Step**

- The exceptions detected during the repair can be processed manually according to the specific information.
- Different repair strategies have different repair processes.

1. Roles exchange

Repair the IDC

Cluster Management > Compute Node Cluster > Repair the IDC

Step 1: repair information confirmation Step 2: selection of repair strategy for the master center Step 3: pre-detection and data backup before repair Step 4: execution of repair strategy for the master center Step 5: repair complete

Note: you are not allowed to withdraw from the current page during the operation

Execution Items

- ▼ In order to improve the probability of success, the compute node will re-detect the necessary conditions before switching
 - Check whether the high availability status of compute nodes in the current active center is normal ✓
 - Check whether the configuration in the memory of the currently serving computer node is up-to-date ✓
 - Check whether the ConfigDB and data source of the master center and the DR center is available ✓
 - Check whether the replication relations of the ConfigDB and data source in the current active center are normal ✓
 - Check in the current active center whether there are data source and ConfigDB in the switching or the one-click migration task Judge whether GTID of the master data source and ConfigDB of the DR center are all continuous from 1 and there is no breakpoint ✓
- ▼ The platform closes the compute nodes and high availability component services of the master center, closes the keepalive service of the slave compute node of the current active center- DR center or stops the election inside the IDC. Besides, it restricts the management port to only query commands ✓
- ▼ Re-import data of the current active center according to the data source and ConfigDB data of DR center, the current active center.
 - Determine whether to export the data source and ConfigDB data of the DR center and then re-import it into the master center.
 - There are no data sources and configDB instances with data re-imported temporarily ✓
 - Clean up the replication relations between the original data sources and ConfigDBs of the master center on demand ✓
 - Re-import data for instances whose data needs to be re-imported (this process may take a long time, please be patient)
 - There are no data sources and configDB instances with data re-imported temporarily ✓
- ▼ Rebuild DR relations between the master center and the DR center, and build the internal replication relations of the master center
- ▼ Modify the configuration according to the repair strategy of the master center.
 - The current strategy is Exchange roles between the master center and the DR center (the current active center), so that the master center is updated to the DR center, and the original DR center is updated to the master center. As shown in the following steps:
 - Exchange the IOC info of server.xml and ConfigDB in memory, including haMode, idcd, idcl, online_, etc which is allowed to be executed by the DR center
 - Release interface services of the current master center (the original DR center) other than queries of the management port and allow the internal election ✓
 - The platform finally confirms and updates all ConfigDB and server.xml configuration files relevant to compute nodes, including haMode, idcd, etc ✓
 - The platform updates the configuration information
 - Reload ✓
- ▼ Restart the keepalive service of the current master center (the original DR center), and the compute nodes and high availability component services of the current DR center (the original master center) ✓

Execution status

Congrat! All operations of repairing the master center have been completed. Click Next to enter the final information confirmation page.

Return **Exit** **Next Step**

2. Reserve the current role and switch back.

Repair the IDC

Cluster Management > Compute Node Cluster > Repair the IDC

Step 1: repair information confirmation Step 2: selection of repair strategy for the master center Step 3: pre-detection and data backup before repair Step 4: execution of repair strategy for the master center Step 5: repair complete

Note: you are not allowed to withdraw from the current page during the operation

Execution status

Execution Items

- In order to Improve the probability of success, the compute node will re-detect the necessary conditions before switching
 - Check whether the high availability status of compute nodes in the current active center is normal ✓
 - Check whether the configuration in the memory of the currently serving compute node is up-to-date ✓
 - Check whether the ConfigDB and data source of the master center and the DR center is available ✓
 - Check whether the replication relations of the ConfigDB and data source in the current active center are normal ✓
 - Check in the current active center whether there are data source and ConfigDB in the switching or the one-click migration task ✓
 - Judge whether GTID of the master data source and ConfigDB of the DR center are all continuous from 1 and there is no breakpoint ✓
- The platform closes the compute nodes and high availability component services of the master center, closes the keepalive service of the slave compute node of the current active center- DR center or stops the election inside the IDC. Besides, it restricts the management port to only query commands ✓
- Re-repair data of the current active center according to the data source and ConfigDB data of DR center, the current active center.
 - Determines whether to export the data source and ConfigDB data of the DR center and then re-import it into the master center. There are no data sources and configDB instances with data re-exported temporarily ✓
 - Clean up the replication relations between the original data sources and ConfigDBs of the master center on demand ✓
 - Re-import data for instances whose data needs to be re-imported (this process may take a long time, please be patient) ✓
 - There are no data sources and configDB instances with data re-exported temporarily ✓
- Rebuild DR relations between the master center and the DR center, and build the internal replication relations of the master center ✓
- Modify the configuration according to the repair strategy of the master center.
 - The current strategy is to switch back the master center to the current active center and retain the current role. With this strategy, in order to reduce downtime, we will first update the repaired master center to the DR center, and then switch back the IDC to restore the IDC configuration. As shown in the following steps:
 - Exchange the roles of the ConfigDBs, data sources and ConfigDBs in server.xml ✓
 - Update the IDC info of server.xml and ConfigDB in memory, including haMode, idcId, online_etc which is allowed to be executed by the DR center ✓
 - Release interface services of the current master center (the original DR center) other than queries of the management port and allow the internal election ✓
 - The platform finally confirms and updates all ConfigDB and server.xml configuration files relevant to compute nodes, including haMode, idcId, etc ✓
 - The platform updates the configuration information ✓
 - Reload ✓

At this time, the master center (192.168.210.65_3323/3325) is successfully restored and becomes the DR center, and the original DR center (192.168.210.78_3323/3325) becomes the master center. The first role exchange is completed successfully.

Execution Items

- Restart the keepalive service of the current master center (the original DR center), and the compute nodes and high availability component services of the current DR center (the original master center) ✓
- In order to Improve the probability of success, the compute node will re-detect the necessary conditions before switching
 - Check whether the VIP of the DR center is on the server where the primary compute node of the DR center is located ✓
 - Check whether the configuration in the memory of the currently serving compute node is up-to-date ✓
 - Check whether the ConfigDB and data source of the master center and the DR center is available ✓
 - Check whether the replication relations and DR relations of the ConfigDB and data source in the master center and the DR center are normal ✓
 - Check whether the replication latency of ConfigDB and data source in the master center and the DR center is less than 10s (the configuration time of MASTER_DELAY is not included) ✓
 - Check whether there are data source and ConfigDB in the switching or the one-click migration task ✓
- The platform closes the keepalive service of the standby compute node in the master center or stops election inside the master center to prevent the high availability switching of compute node in the master center and restrict the management port to accept only query commands ✓
- The platform calls the command to close the service port of the compute node in the master center
 - The compute node will close all idle front-end connections of compute nodes in the master center, with new front-end connections unallowed to enter. After the commit or rollback of the ongoing transaction, it will close the service port and no longer accept the online command. ✓
- The platform calls the command to start the service of the compute node in the DR center. At the same time, the compute node rebuilds the replication relations and updates the configuration according to the strategy of the original master center
 - Wait for the replication latency of data sources and ConfigDBs in the DR center to catch up ✓
 - Clean up the replication relations between the original master center and the DR center ✓
 - Set up the internal replication relations of DR center ✓
 - Clean up the replication relations from the slave data sources and ConfigDBs to the master data sources and ConfigDBs in the original master center ✓
 - Rebuild the reverse DR relations between the DR center and the original master center ✓
 - Exchange the roles of the ConfigDBs, data sources and ConfigDBs in server.xml ✓
 - Update the IDC info of server.xml and ConfigDB in memory, including haMode, idcId, online_etc which is allowed to be executed by the original master center ✓
 - Release interface services other than queries of the management port and allow the internal election ✓
- Formally open service of the active center after switching
 - The platform updates the configuration information and performs dynamic loading
 - The platform finally confirms and updates all ConfigDB and server.xml configuration files relevant to compute nodes, including haMode, idcId, etc ✓
 - Update the configuration information of compute node cluster of management platform ✓
 - Reload ✓
 - The platform opens the keepalive service of the current DR center ✓

Congratulation! All operations of repairing the master center have been completed. Click Next to enter the final information confirmation page

Return **Exit** **Next Step**

4.5. Repair complete

After the repair of IDC, you can choose to switch the active center in the current standby center.

Repair the IDC

Cluster Management > Compute Node Cluster > Repair the IDC

Step 1: repair information confirmation Step 2: selection of repair strategy for the master center Step 3: pre-detection and data backup before repair Step 4: execution of repair strategy for the master center Step 5: repair complete

DR mode

The current active center	Master center	The current standby center	DR center
Master compute node	192.168.210.65_3323/3325	Master compute node	192.168.210.78_3323/3325
Service status	The management port and service port is connected normally	Service status	The management port is connected normally
Slave compute node	192.168.210.66_3323/3325	Slave compute node	192.168.210.79_3323/3325
Service status	The management port is connected normally	Service status	The management port is connected normally

Switch to the active center

Return **Exit on completion**

4.6. Other instructions

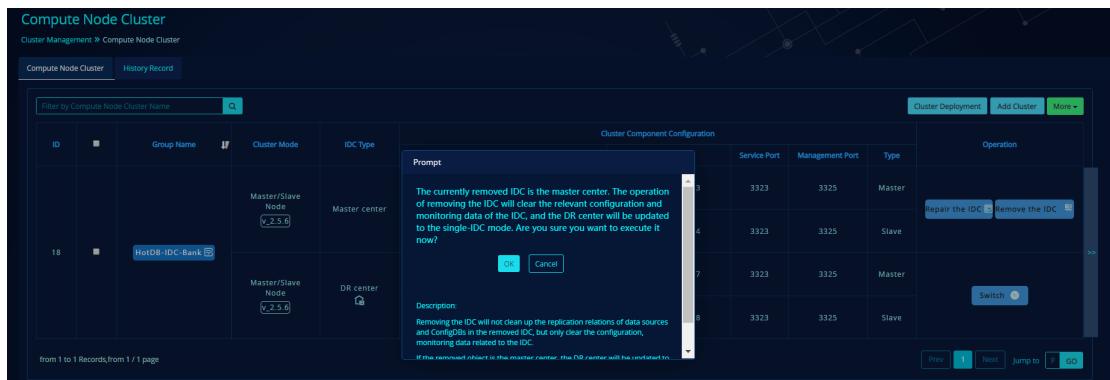
- Tasks cannot be initiated when the status of repair the IDC button on the compute node cluster page is not up-to-date. If you click the button, it will prompt that "The current status is not up-to-date. Please refresh the page."
- New tasks cannot be initiated when there is a task in progress (in all clusters monitored under the management platform).

5. Remove the IDC

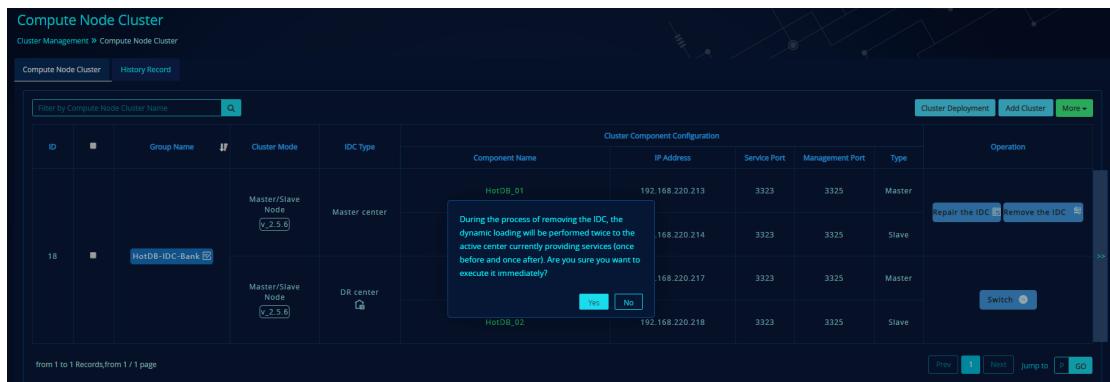
5.1. Remove the master center

When the DR center is the current active center and the service port and the management port is connected normally, the master center can be removed and the DR center can run as a single IDC. Swap server.xml and update server.xml to single-node mode.

- Confirm again before removing the IDC. Click the "confirm" button to enter the process of removing the IDC, and click the "Cancel" button to return to the compute node cluster page.



- During the process of removing the IDC, the dynamic loading will be performed twice to the current active center. If you click "yes", the task will be continued; if you click "no", the task will be cancelled, with a 3-second prompt "task cancelled".



- If the dynamic loading fails, a pop-up prompt "the IDC cannot be removed temporarily" will be shown.

Cluster Component Configuration

ID	Group Name	Cluster Mode	IDC Type	Component Name	IP Address	Service Port	Management Port	Type	Operation
18	HotDB-IDC-Bank	Master/Slave Node v.2.5.6	Master center	HotDB_01	192.168.220.213	3323	3325	Master	<button>Repair the IDC</button> <button>Remove the IDC</button>
		Master/Slave Node v.2.5.6	DR center	HotDB_02	168.220.214	3323	3325	Slave	
					168.220.217	3323	3325	Master	
					192.168.220.218	3323	3325	Slave	

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- After the preparation for removing the IDC is completed, confirm again whether to remove the master center. Click "yes" to. Click "no" to cancel the task of removing the IDC. The page will disappear in 3 seconds and prompt "cancel the task of removing the IDC".
- If you click "yes", removal of the IDC will be officially started and the loading status will be displayed on the page; if you click "no", the task will be cancelled, with a 3-second prompt "task cancelled".

Cluster Component Configuration

ID	Group Name	Cluster Mode	IDC Type	Component Name	IP Address	Service Port	Management Port	Type	Operation
18	HotDB-IDC-Bank	Master/Slave Node v.2.5.6	Master center	Prompt	13	3323	3325	Master	<button>Repair the IDC</button> <button>Remove the IDC</button>
		Master/Slave Node v.2.5.6	DR center		14	3323	3325	Slave	
					17	3323	3325	Master	
					18	3323	3325	Slave	

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- If removal fails, the specific failure reason will be displayed, and the configuration will be rolled back.

Cluster Component Configuration

ID	Group Name	Cluster Mode	IDC Type	Component Name	IP Address	Service Port	Management Port	Type	Operation
18	HotDB-IDC-Bank	Master/Slave Node v.2.5.6	Master center	Prompt	168.220.213	3323	3325	Master	<button>Repair the IDC</button> <button>Remove the IDC</button>
		Master/Slave Node v.2.5.6	DR center		168.220.214	3323	3325	Slave	
					168.220.217	3323	3325	Master	
					168.220.218	3323	3325	Slave	

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- If the removal is successful, a 3-second prompt "removed successfully" will be shown and the cluster info will be updated to single-node mode.

ID	Group Name	Cluster Mode	IDC Type	Component Name	IP Address	Service Port	Management Port	Type	Operation
18	HotDB-IDC-Bank	Master/Slave Node [v_2.5.6]	-	HotDB_01	192.168.220.217	3323	3325	Master	<button>Switch</button>
				HotDB_02	192.168.220.218	3323	3325	Slave	

5.2. Remove the DR center

- When the master center is the current active center and the service port and the management port is connected normally, the DR center can be removed and the master center can run as a single IDC. Remove the DR center and server.xml will be updated to single-node mode
- During the removal, there is no need to swap server.xml. You shall directly update server.xml. Other processes are consistent with the removal of the master center

5.3. Other instructions

- After the removal of IDC, the other IDC will run independently as a single IDC, so please be careful with the operation.
- Before removal, you should ensure that the service port and management port of the current active center are connected normally.
- The operation of removing the IDC will not clear the replication relations of data sources and ConfigDBs in the removed IDC, but only clear the configuration and monitoring data related to the IDC.

6. Historical records

Operations including switching the active center, repairing the IDC, removing the IDC, switching (inside the IDC), and rebuilding (inside the IDC) will be recorded in the compute node cluster--> historical records.

Compute Node Cluster										
Cluster Management > Compute Node Cluster										
Compute Node Cluster		History Record								
Fuzzy search by cluster			Fuzzy search by user			Fuzzy search by access		Search by execution content	Search by execution status	
Compute Node Cluster	Time started	Operation User	Access IP	Execution content	Execution object	Execution strategy	Time completed	Execution status	Operation	
HotDB-IDC-Bank	2020-10-30 15:09:27	yds	192.168.200.6	Remove the DR center	192.168.220.217_332 5/3323	The original master center is switched back to the current active center	2020-10-30 15:09:57	●	●	
HotDB-IDC-Bank	2020-10-30 15:06:36	yds	192.168.200.6	Repair the IDC	192.168.220.213_332 5/3323	Only switch the current active center to the DR center.	2020-10-30 15:08:42	●	●	●
HotDB-IDC-Bank	2020-10-30 15:04:49	yds	192.168.200.6	Switch the active center	192.168.220.217_332 5/3323	The original master center is restored to the current standby center	2020-10-30 15:06:05	●	●	●
HotDB-IDC-Bank	2020-10-30 15:03:21	yds	192.168.200.6	Repair the IDC	192.168.220.217_332 5/3323	Only switch the current active center to the DR center.	2020-10-30 15:04:07	●	●	●
HotDB-IDC-Bank	2020-10-30 15:00:46	yds	192.168.200.6	Switch the active center	192.168.220.213_332 5/3323	Delete the original master center.	2020-10-30 15:02:06	●	●	●
HotDB-IDC-Bank	2020-10-30 14:45:42	yds	192.168.200.6	Switch the active center	192.168.220.217_332 5/3323	Reserve the current master center and switch its role to a DR center.	2020-10-30 14:46:19	●	●	●
HotDB-IDC-Bank	2020-10-30 14:27:53	yds	192.168.200.6	Switch the active center	192.168.220.213_332 5/3323		2020-10-30 14:28:35	●	●	●
HotDB-IDC-Bank	2020-10-30 14:15:47	yds	192.168.200.6	Reset up (inside the IDC)	192.168.220.213_332 5/3323		2020-10-30 14:16:13	●	●	
HotDB-IDC-Bank	2020-10-30 14:09:57	yds	192.168.200.6	Switch (inside the IDC)	192.168.220.213_332 5/3323		2020-10-30 14:13:22	●	●	

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- You can search by typing or selecting key words such as compute node name, operation user, access IP, execution content and execution status.
- Sorting is supported by all columns except for the “operation” column.
- When the compute node cluster is available, you can click the cluster name to enter the edit page.
- Only when the execution content is “switch the active center” or “repair the IDC”, the corresponding execution strategy will be displayed. Otherwise, the execution strategy column will be empty.
- The execution status column records the specific execution status. Hovering over the cursor, the specific status will be displayed, such as execution success, in progress..., halfway exit, and execution failed (failure reason will be marked).

Compute Node Cluster										
Cluster Management > Compute Node Cluster										
Compute Node Cluster		History Record								
Fuzzy search by cluster			Fuzzy search by user			Fuzzy search by access		Remove the DR center	Search by execution content	
Compute Node Cluster	Time started	Operation User	Access IP	Execution content	Execution object	Execution strategy	Time completed	Presentation	Presentation	Presentation
aaaaaaaa	2020-10-27 16:43:10	admin	192.168.200.6	Remove the DR center	192.168.210.137_3325/ 3323		2020-10-27 16:43:24	●	●	●

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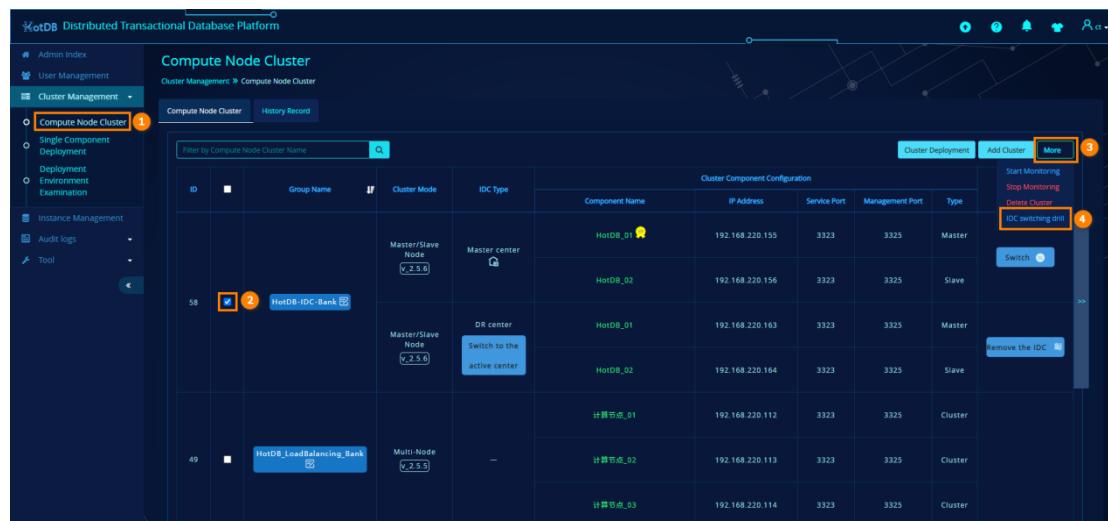
- Only when the execution content is “switch the active center” or “repair the IDC”, the “details” button will be displayed in the operation column.
- Click the "details" button in the operation column, you can enter the task records of switching the active center / repairing the IDC and view the detailed switching / repair process. Click the "delete" button to delete the latest historical record.

7. IDC switching drill

The IDC switching drill mainly includes five steps: cluster information confirmation, pre-detection and data backup before switching, strategy selection for the master center, officially switch the IDC and complete the switching. You are not allowed to proceed to the next step until the previous step is completed. In the step “officially switch the IDC”, you can view the animation demonstration of IDC switching.

7.1. Function entry

In the cluster with DR mode enabled, if the cluster meets the conditions for the IDC switching drill, you can click the [IDC switching drill] button in the "more" drop-down box to view the animation demonstration of IDC switching.



The screenshot shows the 'Compute Node Cluster' management page. A cluster named 'HotDB-IDC-Bank' (ID: 58) is selected. In the 'More' dropdown menu (step 3), the 'IDC switching drill' option is highlighted (step 4). The table lists components and their status, including 'HotDB_01' and 'HotDB_02' under 'Master/Slave Node' mode, and 'HotDB_01', 'HotDB_02', and '计费节点_01' under 'DR center' mode.

ID	Group Name	Cluster Mode	IDC Type	Component Name	IP Address	Service Port	Management Port	Type
58	HotDB-IDC-Bank	Master/Slave Node v.2.5.6	Master center	HotDB_01	192.168.220.155	3323	3325	Master
				HotDB_02	192.168.220.156	3323	3325	Slave
49	HotDB_LoadBalancing_Bank	DR center	—	HotDB_01	192.168.220.163	3323	3325	Master
				HotDB_02	192.168.220.164	3323	3325	Slave
				计费节点_01	192.168.220.112	3323	3325	Cluster
				计费节点_02	192.168.220.113	3323	3325	Cluster
				计费节点_03	192.168.220.114	3323	3325	Cluster

7.2. Drilling conditions

The following conditions shall be met for the IDC switching drill:

- V.2.5.6 and above, with DR mode enabled;
- Only one group of compute node clusters is allowed to be selected;
- Switching-related operations are allowed in the current cluster;
- There is no switching task in progress in the current cluster;

The screenshot shows the 'Compute Node Cluster' management interface. It displays a table of cluster components under 'Cluster Component Configuration'. The table includes columns for Component Name, IP Address, Service Port, Management Port, and Type. Two components are listed: HotDB_01 (Master center) and HotDB_02 (DR center). Both components have their service ports set to 3323 and management ports to 3325. The master component is identified as a 'Master' type, while the slave component is identified as a 'Slave' type. A 'Switch' button is visible next to the master component, and a 'Remove the IDC' button is visible next to the slave component.

7.3. Under normal service of the master center

When the master center and the DR center are serving normally, you can carry out the IDC switching drill.

This screenshot is similar to the one above, showing the 'Compute Node Cluster' management interface. It displays a table of cluster components under 'Cluster Component Configuration'. The master component is now identified as 'HotDB_01' and the slave component as 'HotDB_02'. Both components have their service ports set to 3323 and management ports to 3325. The master component is identified as a 'Master' type, while the slave component is identified as a 'Slave' type. A 'Switch' button is visible next to the master component, and a 'Remove the IDC' button is visible next to the slave component.

7.3.1. Cluster information confirmation

This screenshot shows the 'IDC switching drill' process within the 'HotDB Distributed Transactional Database Platform'. The process consists of five steps: 1. Cluster information confirmation, 2. Pre-detection and data backup before switching, 3. Strategy selection for the master center, 4. Officially switch the IDC, and 5. Complete the switching. Step 1 is currently active. The 'Information confirmation of the compute node cluster' section shows details for the current active center (Master center) and the current standby center (DR center). The 'Backup Information confirmation of the compute node cluster' section lists backup options for the compute node ConfigDB, platform ConfigDB, configuration files, and platform configuration files. The 'Confirmation of IDC switching results' section states that the DR center has been switched to the current active center and the master compute node is providing service. Navigation buttons 'Return' and 'Next Step' are at the bottom.

- This step is divided into three modules: information confirmation of compute node

cluster, backup information confirmation of compute node cluster and confirmation of IDC switching results;

- The information confirmation module of compute node cluster displays the latest information and service status of the current cluster;
- By default, all backup items are checked in the backup information confirmation module of the compute node cluster. You can also select the backup items by yourself.
- The [next] button is only opened after selecting at least one item.
- The confirmation of IDC switching results module displays the active center and the master compute node after the switching;

7.3.2. Pre-detection and data backup before switching

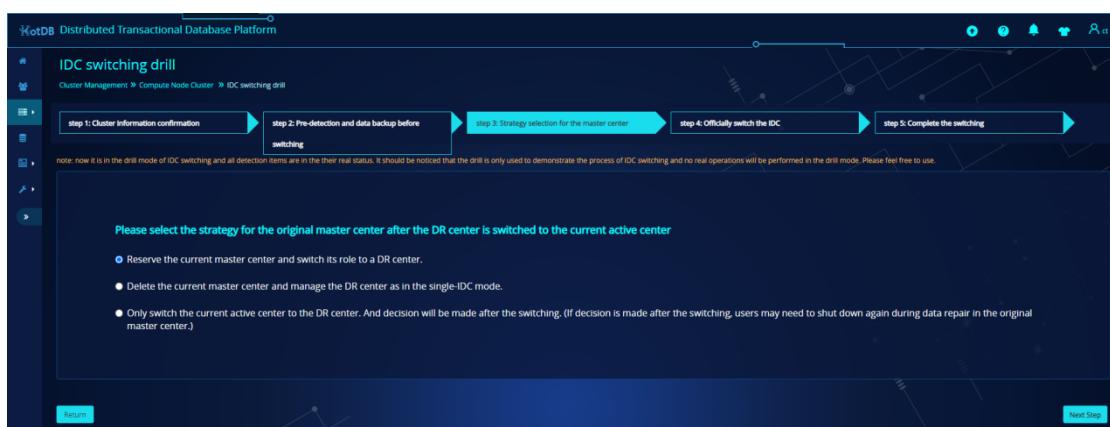


- This step is divided into two modules: pre-detection before switching and data backup before switching;
- The pre-detection module before switching is mainly to detect the detection items

of each IDC in the current cluster;

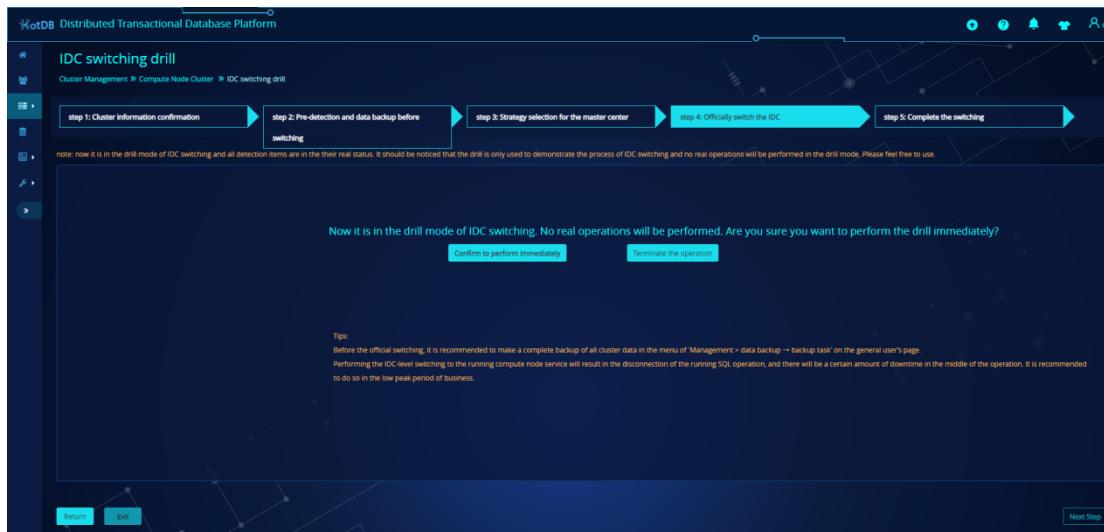
- The data backup before switching is mainly to back up the backup items selected in the previous step and store data under the directory /hotdb-management / databak / cluster number / backup time.
- Detection items must all be passed before taking the next step. Otherwise, manual intervention is required to solve the failed items.

7.3.3. Strategy selection for the master center



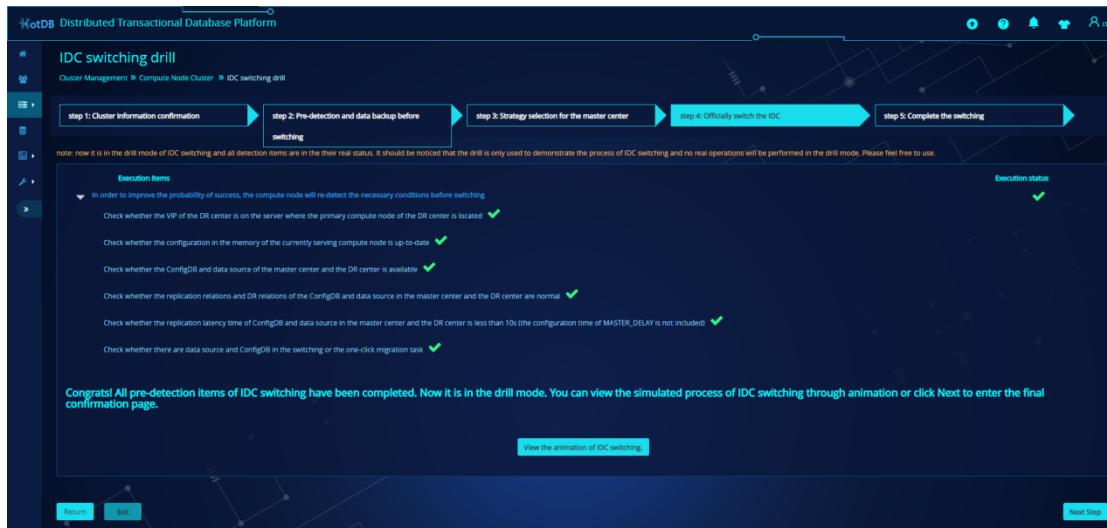
- There are mainly three switching strategies: reserve the current master center and switch its role to a DR center; delete the current master center and manage the DR center as in the single-IDC mode; only switch the current active center to the DR center. And decision will be made after the switching.
- Reserve the current master center and switch its role to a DR center, i.e. exchange the master center and the DR center.
- Delete the current master center and manage the DR center as in the single-IDC mode, i.e. return to the single-IDC mode.
- Only switch the current active center to the DR center. And decision will be made after the switching, i.e. only switch to the DR center.

7.3.4. Officially switch the IDC

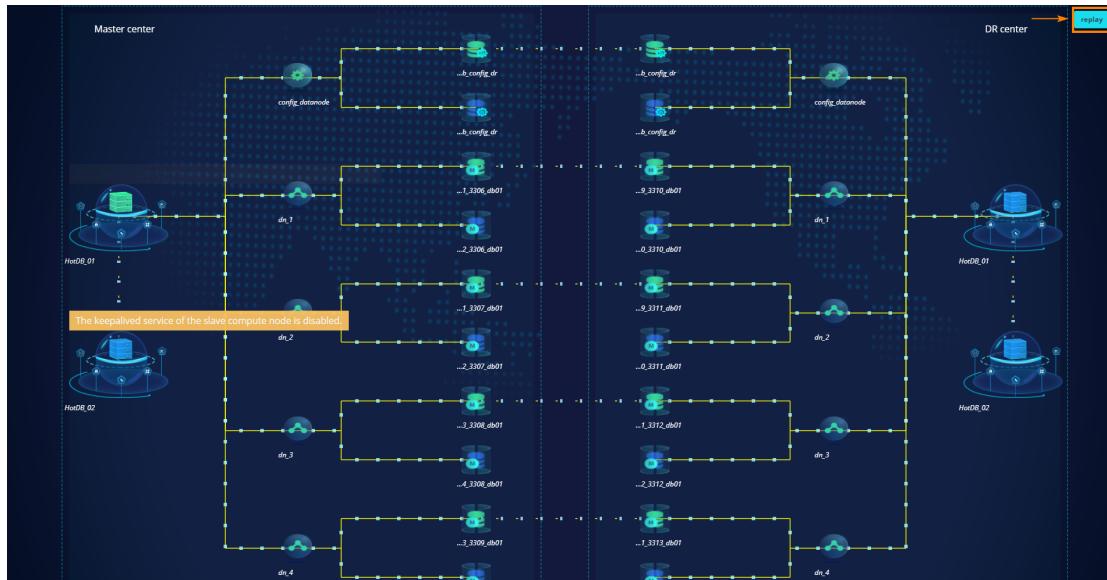


- In this step, you can confirm to start the IDC switching drill or terminate the operation. It should be noted that now it is in the drill mode of IDC switching. No real operations will be performed;
- Click “terminate the operation”, you will exit from the IDC switching drill and return to the compute node cluster page;
- Click “Confirm to perform immediately”, the necessary conditions will be re-detected to improve the probability of success. When the re-detection is finished, the message will be given as "Congrats! All pre-detection items of IDC switching have been completed. Now it is in the drill mode. You can view the simulated process of IDC switching through animation or click Next to enter the final confirmation page."

7.3.5. View the animation of IDC switching



- Click the "view the animation of IDC switching" button, and view the animation on the popped-up new page. This step is the key step of IDC switching drill, which shows the detailed process of IDC switching through animation;
- During the animation, you can click the "replay" button in the upper right corner to replay the animation. The button is available in the entire process;



7.3.6. Complete the switching

- This step mainly displays the results of IDC switching drill based on the previously

selected strategy;

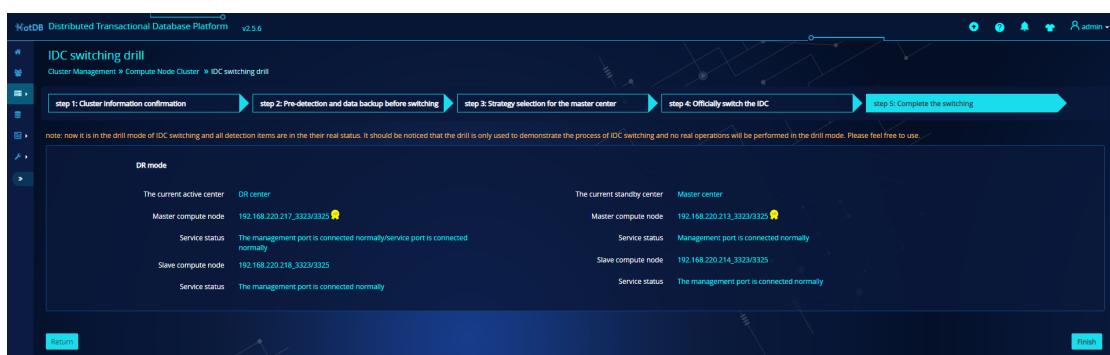
- When you select the strategy “reserve the current master center and switch its role to a DR center”, the switching steps will be as follows:



- When you select the strategy “delete the current master center and manage the DR center as in the single-IDC mode”, the switching steps will be as follows:



- When you select the strategy “only switch the current active center to the DR center. And decision will be made after the switching”, the switching steps will be as follows:



- Click "Finish" to complete the IDC switching drill and return to the compute node

cluster page.

7.4. Under abnormal service of the master center

When the service of the master center is abnormal, while the DR center is serving normally, you can carry out the IDC switching drill:

The screenshot shows the 'Compute Node Cluster' management interface. It displays a table of cluster components under 'Cluster Component Configuration'. The table includes columns for Component Name, IP Address, Service Port, Management Port, and Type. There are two rows for each of the four nodes: HotDB_01 and HotDB_02. The nodes are categorized by IDC Type: Master center (Master center) and DR center (DR center). The nodes are also grouped by 'Group Name' (Master/Slave Node). A tooltip 'Only the management port of the cluster in the DR mode can be connected' is shown over the DR center group. Another tooltip 'Switch to the active center' is shown over the DR center node. The interface includes tabs for 'Compute Node Cluster' and 'History Record', and buttons for 'Cluster Deployment', 'Add Cluster', and 'More'.

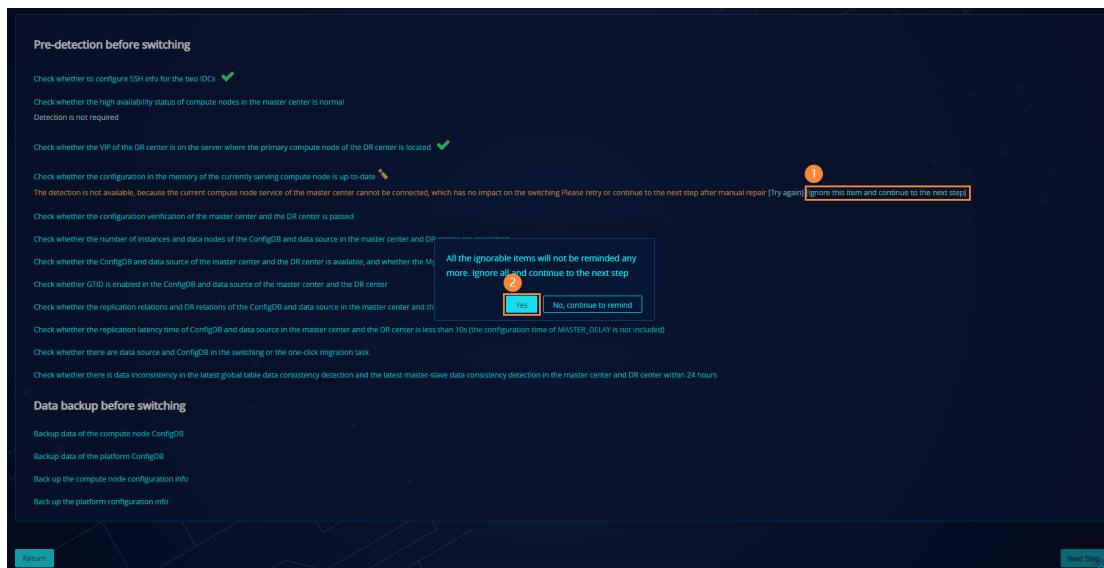
7.4.1. Cluster information confirmation

The screenshot shows the 'HotDB Distributed Transactional Database Platform' interface. It displays the 'IDC switching drill' process with five steps: Step 1: Cluster information confirmation; Step 2: Pre-detection and data backup before switching; Step 3: Strategy selection for the master center; Step 4: Officially switch the IDC; Step 5: Complete the switching. A note at the bottom states: 'note: now it is in the drill mode of IDC switching and all detection items are in their real status. It should be noticed that the drill is only used to demonstrate the process of IDC switching and no real operations will be performed in the drill mode. Please free to use.' The 'Information confirmation of the compute node cluster' section shows details for the current active center (Master center) and current standby center (DR center), including service status and backup information. The 'Confirmation of IDC switching results' section notes that the DR center has been switched to the current active center. The interface includes a sidebar with navigation icons and a bottom bar with buttons for 'Next Step' and 'Cancel'.

- This step is divided into three modules: information confirmation of compute node cluster, backup information confirmation of compute node cluster and confirmation of IDC switching results;

- The information confirmation module of compute node cluster displays the latest information and service status of the current cluster. When the service of the master center is abnormal, a message in red will be given to remind that the management port / service port cannot be connected;
- By default, all backup items are checked in the backup information confirmation module of the compute node cluster. You can also select the backup items by yourself. When the service port of compute nodes in the master center cannot be connected, the backup will be based on the configuration of the master compute node in the DR center by default;
- The confirmation of IDC switching results module displays the active center and the master compute node after the switching. When the compute node service of the master center before switching cannot be connected, some detection related to the master center will not be carried out; after the switching, the original master center service can be repaired;
- The [next] button is only opened after selecting at least one item.

7.4.2. Pre-detection and data backup before switching



The screenshot shows the 'Pre-detection before switching' interface. It contains two main sections: 'Pre-detection before switching' and 'Data backup before switching'. The 'Pre-detection before switching' section lists several items with checkboxes:

- Check whether to configure SSH info for the two IDCs (checked)
- Check whether the high availability status of compute nodes in the master center is normal (unchecked)
- Check whether the VIP of the DR center is on the server where the primary compute node of the DR center is located (checked)
- Check whether the configuration in the memory of the currently serving compute node is up-to-date (unchecked)

The detection is not available, because the current compute node service of the master center cannot be connected, which has no impact on the switching. Please retry or continue to the next step after manual repair. Try again.
- Check whether the configuration verification of the master center and the DR center is passed
- Check whether the number of instances and data nodes of the ConfigDB and data source in the master center and DR center is consistent
- Check whether the ConfigDB and data source of the master center and the DR center is available, and whether the MGT connection is normal
- Check whether GTID is enabled in the ConfigDB and data source of the master center and the DR center
- Check whether the replication relations and DR relations of the ConfigDB and data source in the master center and the DR center are consistent
- Check whether the replication latency time of ConfigDB and data source in the master center and the DR center is less than 10s (the configuration time of MASTER_DELAY is not included)
- Check whether there are data source and ConfigDB in the switching or the one-click migration task
- Check whether there is data inconsistency in the latest global table data consistency detection and the latest master-slave data consistency detection in the master center and DR center within 24 hours

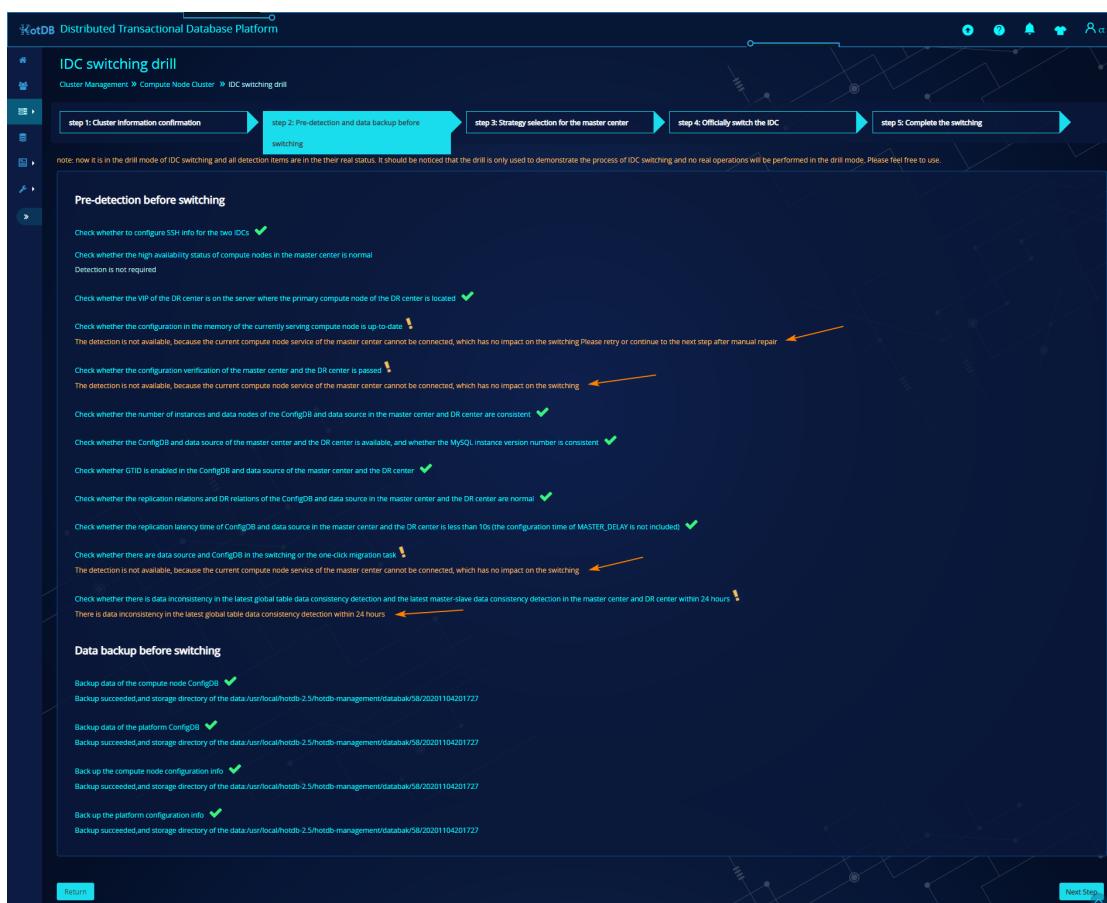
The 'Data backup before switching' section lists several backup items with checkboxes:

- Backup data of the compute node ConfigDB
- Backup data of the platform ConfigDB
- Back up the compute node configuration info
- Back up the platform configuration info

At the bottom right of the interface are 'Return' and 'Next Step' buttons.

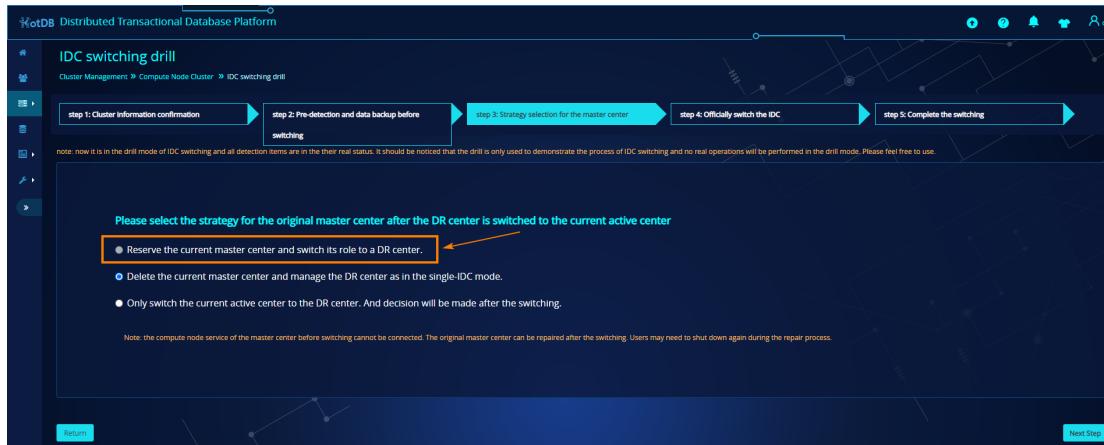
- This step is divided into two modules: pre-detection before switching and data backup before switching;
- The pre-detection module before switching is mainly to detect the detection items

of each IDC in the current cluster. When the service of the master center is abnormal and some detection items cannot be detected, a message in yellow will be given "detection is not available, because the compute node service of the current master center cannot be connected, which however has no impact on the switching.". You can select "ignore this item and continue to the next step" and choose "yes" in the pop-up window, and other items that cannot be detected will be ignored directly;



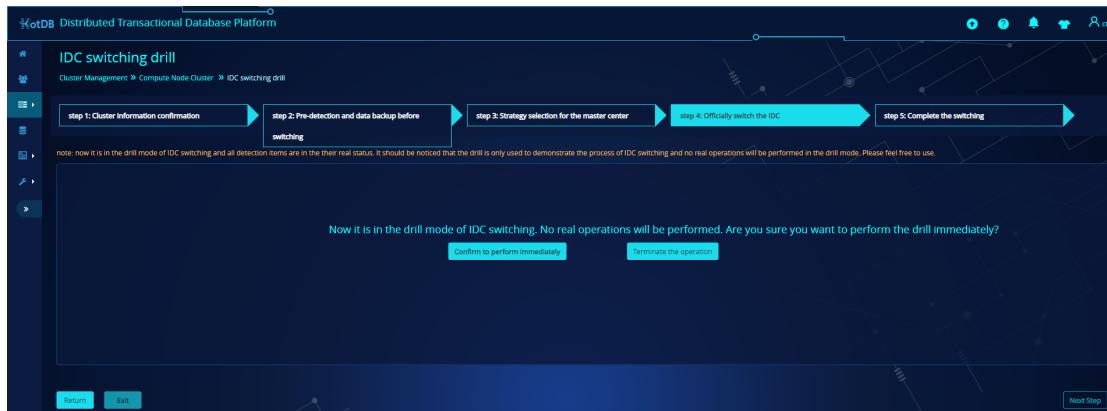
- The data backup before switching is mainly to back up the backup items selected in the previous step and store data under the directory /hotdb-management / databak / cluster number / backup time.
- Detection items must all be passed before taking the next step. Otherwise, manual intervention is required to solve the failed items.

7.4.3. Strategy selection for the master center



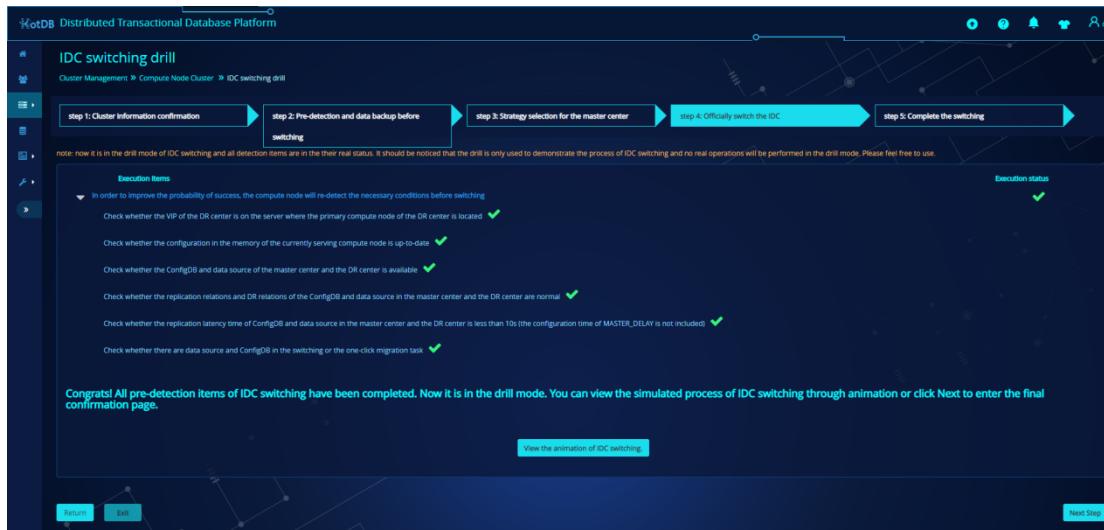
- There are mainly three switching strategies: reserve the current master center and switch its role to a DR center; delete the current master center and manage the DR center as in the single-IDC mode; only switch the current active center to the DR center. And decision will be made after the switching.
- Reserve the current master center and switch its role to a DR center, i.e. exchange the master center and the DR center.
- Delete the current master center and manage the DR center as in the single-IDC mode, i.e. return to the single-IDC mode.
- Only switch the current active center to the DR center. And decision will be made after the switching, i.e. only switch to the DR center.

7.4.4. Officially switch the IDC

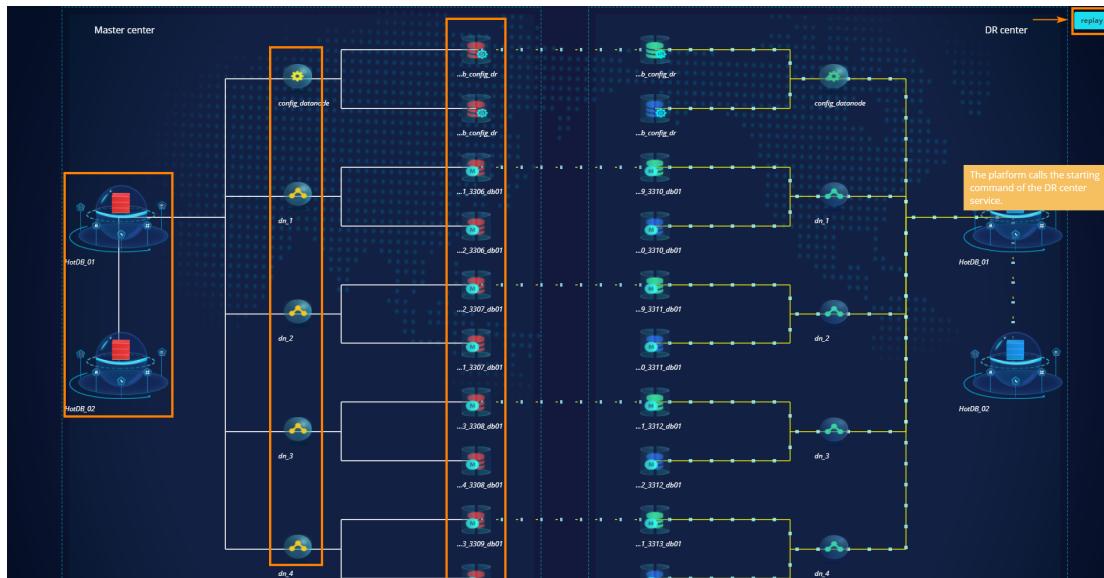


- In this step, you can confirm to start the IDC switching drill or terminate the operation. It should be noted that now it is in the drill mode of IDC switching. No real operations will be performed;
- Click “terminate the operation”, you will exit from the IDC switching drill and return to the compute node cluster page;
- Click “Confirm to perform immediately”, the necessary conditions will be re-detected to improve the probability of success. When the re-detection is finished, the message will be given as "Congrats! All pre-detection items of IDC switching have been completed. Now it is in the drill mode. You can view the simulated process of IDC switching through animation or click Next to enter the final confirmation page."

7.4.5. View the animation of IDC switching



- Click the "view the animation of IDC switching" button, and view the animation on the popped-up new page. This step is the key step of IDC switching drill, which shows the detailed process of IDC switching through animation;
- When the service of the master center is abnormal, the compute node in the left IDC will be red at the beginning of the animation, with ConfigDBs and data nodes unavailable;
- During the animation, you can click the "replay" button in the upper right corner to replay the animation. The button is available in the entire process;

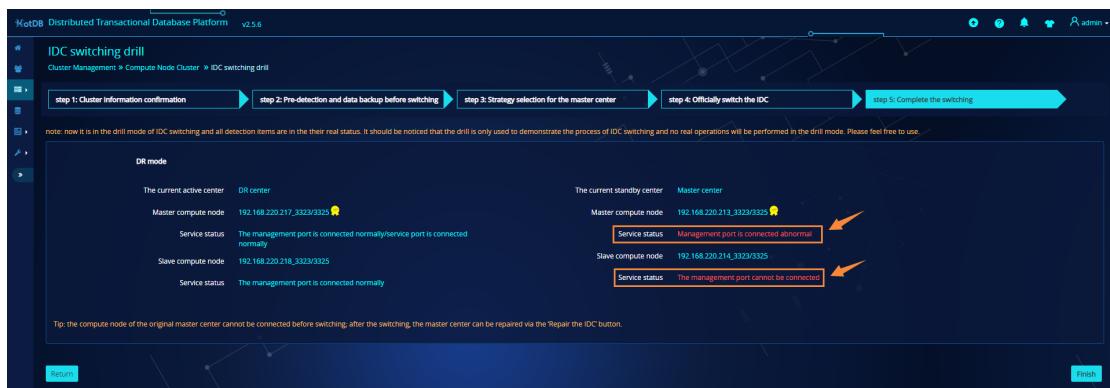


7.4.6. Complete the switching

- This step mainly displays the results of IDC switching drill based on the previously selected strategy;
- When you select the strategy “reserve the current master center and switch its role to a DR center”, the switching steps will be as follows:



- When you select the strategy “only switch the current active center to the DR center. And decision will be made after the switching”, the switching steps will be as follows:



- Click "Finish" to complete the IDC switching drill and return to the compute node cluster page.

7.5. Notes

In the IDC switching drill, all detection items are in their real status. It should be noticed that the drill is only used to demonstrate the process of IDC switching and no real operations will be performed in the drill mode. Please feel free to use.

Once you click "confirm", the strategy you select will be valid immediately. Even if other strategies are selected in the following operations, the first-time selection shall prevail.

If you want to view the animation under other strategies, you need to exit this switching drill, select a cluster on the compute node cluster page and restart the IDC switching animation.