

Alibaba Cloud

Elasticsearch Operation and Maintenance

Document Version: 20201030

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Document conventions

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

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1. Intelligent operations and maintenance

1.1. Overview

Elasticsearch cluster diagnostics

Intelligent Maintenance is a smart operation and maintenance system provided by Alibaba Cloud Elasticsearch. Intelligent Maintenance can perform diagnostics on more than 20 items to detect potential threats to the health of Elasticsearch clusters. These items include clusters, nodes, and indexes. Intelligent Maintenance provides a summary of the diagnostic results, shows the status of clusters, and extracts key information to facilitate the development.

Elasticsearch Intelligent Maintenance Elasticsearch cluster diagnostic

Regions

Intelligent Maintenance is supported in the following regions:

- China (Hangzhou)
- China (Shanghai)
- China (Qingdao)
- China (Beijing)
- China (Shenzhen)
- China East 1 Finance
- China East 2 Finance

Features

Intelligent Maintenance allows you to perform the following operations:

- Enable or disable Intelligent Maintenance
For more information, see [Enable Intelligent Maintenance](#) and [Disable Intelligent Maintenance](#).
- [Check the overview of an Elasticsearch cluster](#)
You can check the health status of an Elasticsearch cluster.
- [Perform a diagnostic on an Elasticsearch cluster](#)
The system diagnoses an Elasticsearch cluster and generates a diagnostic report. Scheduled and custom diagnostics are supported. You can specify the indexes and diagnostic items.
- [View historical diagnostic reports](#)
You can view the last 20 diagnostic reports. A diagnostic report describes the diagnostic items, shows the diagnostic result, and provides suggestions. For more information, see [View historical diagnostic reports](#).

1.2. Enable Intelligent Maintenance

Elasticsearch Intelligent Maintenance

If you enable Intelligent Maintenance for your Alibaba Cloud Elasticsearch cluster for the first time, you must authorize Intelligent Maintenance to access the basic data and logs of the cluster. Intelligent Maintenance does not access any data aside from the basic data and cluster logs.

Prerequisites

An Elasticsearch cluster is created. For more information, see [Create an Elasticsearch cluster](#).

Procedure

1. Log on to the [Alibaba Cloud Elasticsearch console](#).
2. In the top navigation bar, select the region where your cluster resides.
3. In the left-side navigation pane, click **Elasticsearch Clusters**. On the page that appears, find the target cluster and click its ID in the **Cluster ID/Name** column.
4. In the left-side navigation pane of the cluster details page, click **Intelligent Maintenance**. Then, click **Cluster Overview**.
5. Click **Authorization Disclaimer**.
6. In the **Authorization Disclaimer** message, read the disclaimer and click **I Agree**.

7. Click **Authorize and Activate Service**.

What's next

[Perform a diagnostic on an Elasticsearch cluster](#)

1.3. Check the overview of an Elasticsearch cluster

Health status of an Elasticsearch cluster

This topic describes how to use the Cluster Overview feature to check the health status of your Alibaba Cloud Elasticsearch cluster.

Elasticsearch cluster status

Prerequisites

- Intelligent Maintenance is enabled. For more information, see [Enable Intelligent Maintenance](#).
- At least one diagnostic is performed on your Elasticsearch cluster, and a diagnostic report is generated. For more information, see [Perform a diagnostic on an Elasticsearch cluster](#).

Procedure

1. Log on to the [Alibaba Cloud Elasticsearch console](#).
2. In the top navigation bar, select the region where your cluster resides.
3. In the left-side navigation pane, click **Elasticsearch Clusters**. On the page that appears, find the target cluster and click its ID in the **Cluster ID/Name** column.
4. In the left-side navigation pane of the cluster details page, click **Intelligent Maintenance**. Then, click **Cluster Overview**.
5. On the **Cluster Overview** page, view the health status of your Elasticsearch cluster. The **Cluster**

Overview page shows the health status of your Elasticsearch cluster in the last seven days. You can view this page to obtain information about the health status of your cluster.

Intelligent Maintenance uses red, yellow, and green to indicate the health status of an Elasticsearch cluster.

- **Red:** A severe issue or threat that may affect the usage of the cluster exists and requires immediate processing. If you do not address this issue, data loss or cluster crash may occur.
- **Yellow:** A moderate issue or threat that may affect the usage of the cluster exists and requires prompt processing.
- **Green:** The cluster is healthy.

1.4. Perform a diagnostic on an Elasticsearch cluster

Perform a diagnostic on an Elasticsearch cluster

The system automatically performs a diagnostic on your Alibaba Cloud Elasticsearch cluster. This diagnostic is performed every morning. After the diagnostic is complete, a diagnostic report is generated. In addition to the daily diagnostic, you can use the Cluster Diagnosis feature to manually diagnose your Elasticsearch cluster. You can use this feature to diagnose a cluster for up to five times a day. Each diagnostic requires about three minutes.

Elasticsearch cluster status Elasticsearch cluster diagnostic

Prerequisites

Intelligent Maintenance is enabled. For more information, see [Enable Intelligent Maintenance](#).

Procedure

1. Log on to the [Alibaba Cloud Elasticsearch console](#).
2. In the top navigation bar, select the region where your cluster resides.
3. In the left-side navigation pane, click **Elasticsearch Clusters**. On the page that appears, find the target cluster and click its ID in the **Cluster ID/Name** column.
4. In the left-side navigation pane of the cluster details page, click **Intelligent Maintenance**. Then, click **Cluster Diagnosis**.
5. On the page that appears, specify **Indexes** and **Diagnostic Items**. All indexes and diagnostic items are selected by default. You can specify up to 10 indexes for each diagnostic request.
6. Click **Diagnose Now**.
After the diagnostic is complete, the system displays the latest diagnostic report.
7. In the **Diagnosis Report** section, check the report and obtain details about the report, such as diagnostic item descriptions, diagnostic results, and suggestions, to learn the health status of the cluster.

What's next

[Check the overview of an Elasticsearch cluster](#)

1.5. View historical diagnostic reports

View historical diagnostic reports

This topic describes how to view historical diagnostic reports. You can view historical diagnostic reports on the [Previous Reports](#) page of your Alibaba Cloud Elasticsearch cluster. You can view the last 20 reports.

[view diagnostic reports](#)

Prerequisites

- Intelligent Maintenance is enabled. For more information, see [Enable Intelligent Maintenance](#).
- At least one diagnostic is performed on your Elasticsearch cluster, and a diagnostic report is generated. For more information, see [Perform a diagnostic on an Elasticsearch cluster](#).

Procedure

1. Log on to the [Alibaba Cloud Elasticsearch console](#).
2. In the top navigation bar, select the region where your cluster resides.
3. In the left-side navigation pane, click **Elasticsearch Clusters**. On the page that appears, find the target cluster and click its ID in the **Cluster ID/Name** column.
4. In the left-side navigation pane of the cluster details page, click **Intelligent Maintenance**. Then, click **Previous Reports**.
5. In the **Previous Reports** section of the page that appears, find the target report and click its name to view details about the report.

1.6. Disable Intelligent Maintenance

Disable Intelligent Maintenance for an Elasticsearch cluster

This topic describes how to disable Intelligent Maintenance for your Alibaba Cloud Elasticsearch cluster. You can disable Intelligent Maintenance when you no longer need it. If you disable Intelligent Maintenance, all diagnostic and statistical data of your cluster is cleared.

[disable Intelligent Maintenance](#)

Prerequisites

Intelligent Maintenance is enabled. For more information, see [Enable Intelligent Maintenance](#).

Procedure

1. Log on to the [Alibaba Cloud Elasticsearch console](#).
2. In the top navigation bar, select the region where your cluster resides.
3. In the left-side navigation pane, click **Elasticsearch Clusters**. On the page that appears, find the target cluster and click its ID in the **Cluster ID/Name** column.
4. In the left-side navigation pane of the cluster details page, click **Intelligent Maintenance**. Then, click **Cluster Overview**.
5. On the **Cluster Overview** page, click **Disable Intelligent Maintenance**.
6. In the **Disable Intelligent Maintenance** message, confirm the operation and click **OK**.

2. Command-based O&M

2.1. O&M commands

Elasticsearch O&M commands

If your Alibaba Cloud Elasticsearch cluster becomes abnormal, you can use the commands provided in this topic for troubleshooting.

 **Note** You can run the commands provided in this topic in the Kibana console. For more information, see [Log on to the Kibana console](#).

Cluster

Command	Description
GET /_cat/health?v	Queries the health status of a cluster. A cluster can be in the green, red, or yellow state. For information about these states, see View the health status of an Elasticsearch cluster .
GET /_cluster/health?pretty=true	Queries the health status of a cluster. <code>pretty=true</code> indicates that the command output will be formatted. You can also add other query parameters. Examples: <ul style="list-style-type: none"> <code>level=indices</code> : indicates that the command output will include index status. <code>level=shards</code> : indicates that the command output will include shard status.
GET /_cluster/stats	Queries the system information of a cluster, such as CPU utilization and JVM heap memory usage.
GET /_cluster/state	Queries the details of a cluster, such as the nodes and shards in the cluster.
GET /_cluster/pending_tasks	Queries the pending tasks of a cluster.
GET /_cluster/settings	Queries the settings of a cluster.

Node

Command	Description
GET /_cat/master?v	Queries the information of dedicated master nodes in a cluster.
GET /_cat/nodes?v	Queries the information of each node in a cluster, such as CPU utilization, JVM heap memory usage, and load status.
GET /_cat/nodeattrs?v	Queries the custom attributes of a single node.
GET /_nodes/stats?pretty=true	Queries the status of a node.

Command	Description
GET /_nodes/process	Queries processes on a node.
GET /_nodes/hot_threads	Queries tasks that are handled by threads with high consumption.
GET /_nodes/<nodeip>/jvm,process,os	Queries the JVM heap memory usage, processes, and operating system information of a specific node.
GET _cat/plugins?v	Queries plug-ins on each node.
GET /_cat/thread_pool?v	Queries the information of thread pools for each node, such as the thread pool type, number of active threads, and size of the task queue.

Shard

Command	Description
GET /_cat/shards?v	Queries the details of each shard in a cluster, such as the index name, shard number, shard type (primary shard or replica shard), shard status, number of documents, and disk space used by the shard. If a shard allocation failure occurs, the command output also includes the reason for the failure. You can also specify an index to view the preceding information of the index. Example: <code>GET _cat/shards/<index>?v</code> .
GET /_cat/allocation?v	Queries shard allocation on each node in a cluster.
GET /_cat/recovery?v	Queries the recovery of each shard in a cluster.

Segment

`GET /_cat/segments?v`

Queries the information of segments in each index of a cluster, such as the segment name, shard to which the segment belongs, memory or disk space used by the segment, and whether a flush is performed. You can also specify an index to view the preceding information of the index. Example:

`GET _cat/segment/<index>?v` .

Index

Command	Description
GET /_cat/indices?v	Queries the details of all indexes in a cluster, such as the index health status, number of primary shards, number of replica shards, and number of documents. You can also specify an index to view the preceding information of the index. Example: <code>GET _cat/indices/<index>?v</code> .

Command	Description
GET <code>/_cat/aliases?v</code>	Queries the information of all index aliases of a cluster, such as the index name and routing configurations.

Mapping

Command	Description
GET <code>/_mapping</code>	Queries the mappings of all indexes in a cluster.
GET <code>/<index>/<type>/_mapping</code>	Queries the mapping of a specific index.

Document

Command	Description
GET <code>/_cat/count?v</code>	Queries the number of documents in a cluster. You can also specify an index to view the preceding information of the index. Example: <code>GET <code>/_cat/count/<index>?v</code></code> .
GET <code>/<index>/<type>/<id></code>	Queries data in documents.

Snapshot

Command	Description
GET <code>_snapshot/_all</code>	Queries all snapshots.
GET <code>_snapshot/<snapshot_name>/_status</code>	Queries the status of a specific snapshot.

2.2. View the health status of an Elasticsearch cluster

View the health status of an Elasticsearch cluster

You can call a health-related API operation to view the health status of your Alibaba Cloud Elasticsearch cluster. This helps you mitigate potential risks.

view the status of an Elasticsearch cluster by running a command `Elasticsearch cluster status`

Prerequisites

An Elasticsearch cluster is created. For more information, see [Create an Elasticsearch cluster](#).

Procedure

1. Log on to the Kibana console of your Elasticsearch cluster. For more information, see [Log on to the Kibana console](#).

2. In the left-side navigation pane, click **Dev Tools**.
3. On the **Console** tab, run the following command to query the health status of your Elasticsearch cluster:

```
GET /_cluster/health
```

If the command is successfully executed, the following result is returned:

```
{
  "cluster_name": "es-cn-45xxxxxxxxxxxxk1q",
  "status": "green",
  "timed_out": false,
  "number_of_nodes": 2,
  "number_of_data_nodes": 2,
  "active_primary_shards": 18,
  "active_shards": 36,
  "relocating_shards": 0,
  "initializing_shards": 0,
  "unassigned_shards": 0,
  "delayed_unassigned_shards": 0,
  "number_of_pending_tasks": 0,
  "number_of_in_flight_fetch": 0,
  "task_max_waiting_in_queue_millis": 0,
  "active_shards_percent_as_number": 100.0
}
```

The `status` parameter indicates the health status of the Elasticsearch cluster. Valid values are `green`, `yellow`, and `red`.

Value	State	Description
red	Not all of the primary shards are available.	One or more indexes have unassigned primary shards.
yellow	All primary shards are available, but not all of the replica shards are available.	One or more indexes have unassigned replica shards.
green	All primary and replica shards are available.	All indexes in the cluster are healthy and do not have unassigned shards.

If your Elasticsearch cluster is in the `yellow` state, operations on the cluster require a longer time to complete. These operations include password changes and cluster configuration upgrades. If your cluster is not in the `green` state, we recommend that you recover indexes before you perform other operations. If an index in your cluster has unassigned replica shards, your cluster is in the `yellow` state. In this case, you must perform the following operations to locate the index and recover it:

- Query the status of all indexes

```
curl -u <Username>:<Password> http://<host>:9200/_cat/indices
```

The index that is in the `yellow` state is the one that has unassigned replica shards.

- Recover the index

If the number of replica shards that you specify for the index is greater than the number of nodes minus 1, the cluster is in the `yellow` state. You can run the following command to adjust the number of replica shards. For example, your cluster has three nodes, and one or more indexes have three replica shards for each primary shard. In this case, the cluster is in the `yellow` state. To resolve this issue, set the number of replica shards to 2 for these indexes.

```
curl -XPUT -u <Username>:<Password> http://<host>:9200/<Index that has unassigned replica shards>/_settings -H 'Content-Type: application/json' -d '{"index":{"number_of_replicas":(<Number of nodes - 1>)}'
```

 **Note** After you customize the configuration of, scale out, or restart your Elasticsearch cluster, set the number of replica shards to a suitable value based on the number of nodes. This improves the reliability and stability of your Elasticsearch cluster.