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# Document conventions

<table>
<thead>
<tr>
<th>Style</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>⚠️</td>
<td>A danger notice indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.</td>
<td>Danger: Resetting will result in the loss of user configuration data.</td>
</tr>
<tr>
<td>⚠️</td>
<td>A warning notice indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.</td>
<td>Warning: Restarting will cause business interruption. About 10 minutes are required to restart an instance.</td>
</tr>
<tr>
<td>!</td>
<td>A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.</td>
<td>Notice: If the weight is set to 0, the server no longer receives new requests.</td>
</tr>
<tr>
<td>📝</td>
<td>A note indicates supplemental instructions, best practices, tips, and other content.</td>
<td>Note: You can use Ctrl + A to select all files.</td>
</tr>
<tr>
<td>&gt;</td>
<td>Closing angle brackets are used to indicate a multi-level menu cascade.</td>
<td>Click Settings &gt; Network &gt; Set network type.</td>
</tr>
<tr>
<td><strong>Bold</strong></td>
<td>Bold formatting is used for buttons, menus, page names, and other UI elements.</td>
<td>Click OK.</td>
</tr>
<tr>
<td><strong>Courier font</strong></td>
<td>Courier font is used for commands.</td>
<td>Run the <code>cd /d C:/window</code> command to enter the Windows system folder.</td>
</tr>
<tr>
<td><em>Italic</em></td>
<td>Italic formatting is used for parameters and variables.</td>
<td><code>bae log list --instanceid Instance_ID</code></td>
</tr>
<tr>
<td></td>
<td>This format is used for an optional value, where only one item can be selected.</td>
<td>`ipconfig [-all</td>
</tr>
<tr>
<td>Style</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td><code>{}</code> or `{a</td>
<td>b}`</td>
<td>This format is used for a required value, where only one item can be selected.</td>
</tr>
</tbody>
</table>
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3 Use a standalone ApsaraDB for MongoDB instance........................................ 5
4 Create a standalone ApsaraDB for MongoDB instance................................. 6
5 Set a password for a standalone ApsaraDB for MongoDB instance.................. 11
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1 Before you start

You can migrate data from a user-created MongoDB database to an ApsaraDB for MongoDB instance. Please pay close attention to the limits of ApsaraDB for MongoDB.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deploy an instance</td>
<td>Standalone instances can only be created in the China (Hangzhou), China (Shanghai), China (Qingdao), China (Beijing), and China (Shenzhen) regions.</td>
</tr>
<tr>
<td>Database version</td>
<td>The MongoDB version must be 3.4.</td>
</tr>
<tr>
<td>Storage engine</td>
<td>The storage engine must be WiredTiger.</td>
</tr>
<tr>
<td>Public connection address</td>
<td>Connecting to ApsaraDB for MongoDB instances over the Internet poses security risks. By default, only a VPC connection address is provided after an instance is activated. If you need to connect to an instance over the Internet, apply for a public endpoint. For more information, see Apply for a public endpoint.</td>
</tr>
<tr>
<td>Restart an instance</td>
<td>You must log on to the ApsaraDB for MongoDB console or call the #unique_5 operation to restart an instance.</td>
</tr>
<tr>
<td>Migrate data</td>
<td>For details about data migration, see Migrate user-created databases to Alibaba Cloud by using tools provided by MongoDB and Migrate user-created standalone MongoDB databases to Alibaba Cloud by using DTS.</td>
</tr>
<tr>
<td>Back up data</td>
<td>Standalone instances are backed up in snapshot mode due to their special architecture.</td>
</tr>
</tbody>
</table>

**Note:**
Snapshot backups retain the state of disk data from a certain time point.

| Restore data               | You can only create instances based on backup data. For more information, see #unique_8. |
| Modify the parameters of an instance | For security and stability purposes, some parameters cannot be modified. For more information, see #unique_9. |
The ApsaraDB for MongoDB console is a web application used to manage ApsaraDB for MongoDB instances. You can log on to the ApsaraDB for MongoDB console to create an instance, configure an IP address whitelist, set a password for connecting to the instance, configure the connection information, and perform other operations.

The ApsaraDB for MongoDB console is part of the Alibaba Cloud console. For more information about general settings and basic operations in the console, see Alibaba Cloud console.

Prerequisites

You have logged on to the ApsaraDB for MongoDB console with your Alibaba Cloud account. If you do not have an Alibaba Cloud account, click Register.

Console home page

The information on the home page of the ApsaraDB for MongoDB console is the same for all standalone instances.

Log on to the ApsaraDB for MongoDB console. In the left-side navigation pane, click Replica Set Instances to view the list of instances, as shown in the following figure, which is provided only as an example. The actual GUI prevails.

GUI element description
<table>
<thead>
<tr>
<th>No.</th>
<th>GUI element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Replica Set Instances</td>
<td>On the home page of the ApsaraDB for MongoDB console, click it to list the information about all standalone instances of a region under your account.</td>
</tr>
<tr>
<td>2</td>
<td>Region</td>
<td>Click it to select a region. Then, all instances of this region under your account can be listed.</td>
</tr>
<tr>
<td>3</td>
<td>Refresh</td>
<td>Click it to refresh the instance list.</td>
</tr>
<tr>
<td>4</td>
<td>Create Instance</td>
<td>Create a standalone ApsaraDB for MongoDB instance Click it to create an instance.</td>
</tr>
<tr>
<td>5</td>
<td>Instance ID</td>
<td>Click an instance ID to go to the details page of this instance.</td>
</tr>
<tr>
<td>6</td>
<td>Running Status</td>
<td>The running status of an instance. The running status can vary with each instance.</td>
</tr>
<tr>
<td>7</td>
<td>Manage</td>
<td>Select it to go to the management details page of an instance, on which you can view the basic information about the instance, configure instance backup and recovery, view the monitoring information, configure a whitelist, and perform other operations.</td>
</tr>
<tr>
<td>8</td>
<td>Restart</td>
<td>Select it to restart an instance.</td>
</tr>
<tr>
<td>9</td>
<td>More</td>
<td>Perform more operations, for example, change the configuration and renew an instance.</td>
</tr>
<tr>
<td>10</td>
<td>Modify the instance alias</td>
<td>Click the pencil icon to modify the alias of an instance. If you do not modify the instance alias, it is the same as the instance ID by default.</td>
</tr>
<tr>
<td>11</td>
<td>Export</td>
<td>#unique_16</td>
</tr>
</tbody>
</table>

ApsaraDB for MongoDB instance management details page

Log on to the ApsaraDB for MongoDB console. Click the More icon and select Manage in the Operation column corresponding to an instance to go to the Basic Information page of this instance. The following table describes the detailed information on this page.
<table>
<thead>
<tr>
<th>GUI element or page</th>
<th>Area</th>
<th>Description</th>
<th>Common operation and link</th>
</tr>
</thead>
</table>
| Top navigation bar  | -    | Migrate data from the user-created MongoDB instance, back up the instance, and restart the instance. | • Migrate data  
• #unique_18  
• Restart an instance |
| Basic Information   | Basic Information | View the basic information about the instance, including the instance ID, region, network type, specifications, and disk space. Change the configuration of the instance. | Change the configuration of an instance |
| Accounts            |      | View the accounts of the instance and reset the password. | Reset the password |
| Connection Info     |      | View the Internet and intranet connection information about the instance. | - |
| Backup and Recovery | Backup List | View the backup list based on a specified time range, recover the instance from backup data, create an instance based on a backup, and create an instance based on a time point. | • Create an instance based on a backup  
• Create an instance based on a time point |
| Backup Settings     |      | Set a backup policy to automatically and periodically back up data based on the specified backup time. | Automatically back up an instance |
| Monitoring Info     | Monitoring Info | View the monitoring information about the primary node based on the specified metrics and time range. | #unique_12 |
| Data Security       | Data Security | Configure an IP address whitelist. | Configure an IP address whitelist |
3 Use a standalone ApsaraDB for MongoDB instance

This topic describes how to use a standalone ApsaraDB for MongoDB instance, to help you quickly learn how to create an instance, perform basic settings, and connect to a database.

Quick start flowchart

If this is the first time you use ApsaraDB for MongoDB, you can start with Before you start.

The following figure shows all the operations that you need to perform, from purchasing an instance to using it.

1. Create a standalone ApsaraDB for MongoDB instance.
2. Set a password for a standalone ApsaraDB for MongoDB instance.
3. Configure a whitelist for a standalone ApsaraDB for MongoDB instance.
4. Apply for a public endpoint for a standalone ApsaraDB for MongoDB instance.
5. Connect to and manage a standalone ApsaraDB for MongoDB instance.
   - #unique_25.
   - Connect to a standalone ApsaraDB for MongoDB instance by using the mongo shell.
4 Create a standalone ApsaraDB for MongoDB instance

This topic describes how to create a standalone instance in the ApsaraDB for MongoDB console.

Prerequisites

• An Alibaba Cloud account is registered. For more information, see Sign up with Alibaba Cloud.

• Your account balance is sufficient if you want to create a pay-as-you-go instance.

Billing

For more information, see Billing items and pricing.

Procedure

1. Log on to the ApsaraDB for MongoDB console.

2. In the left-side navigation pane, click Replica Set Instances.

3. On the Replica Set Instances page that appears, click Create Instance.

4. Click the Pay-As-You-Go(Replica Set) tab.

5. Configure the instance. The following table describes related parameters.

<table>
<thead>
<tr>
<th>Section</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Configuration</td>
<td>Region</td>
<td>The region where the standalone ApsaraDB for MongoDB instance is deployed. Supported regions: China (Hangzhou), China (Shanghai), China (Qingdao), China (Beijing), and China (Shenzhen).</td>
</tr>
</tbody>
</table>

Note:

• After an instance is created, you cannot change its region. Exercise caution when you select the region.
• Only instances in the same region (for example, an ECS instance and a standalone ApsaraDB for MongoDB instance) can communicate with each other inside an internal network.
<table>
<thead>
<tr>
<th>Section</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone</td>
<td></td>
<td>Geographic areas in a region with independent power grids and networks. For more information, see <a href="#">Regions and zones</a>.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> An ECS instance and a standalone ApsaraDB for MongoDB instance in the same zone can be interconnected over an internal network with the minimum network latency.</td>
</tr>
<tr>
<td>Database</td>
<td>Version</td>
<td>Standalone ApsaraDB for MongoDB instances support MongoDB 3.4. Select MongoDB 3.4.</td>
</tr>
<tr>
<td>Storage</td>
<td>Engine</td>
<td>The storage engine is WiredTiger.</td>
</tr>
<tr>
<td>Replication</td>
<td>Factor</td>
<td>Select Single Node.</td>
</tr>
<tr>
<td>Network</td>
<td>Type</td>
<td>A Virtual Private Cloud (VPC) is an isolated network with higher security and better performance than a classic network.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> You must create a VPC before you create an instance. For more information, see <a href="#">Create a VPC</a>.</td>
</tr>
<tr>
<td>Specification</td>
<td>Specification</td>
<td>The CPU and memory of the instance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Both the maximum number of connections and maximum input/output operations per second (IOPS) vary depending on specifications. The maximum IOPS is measured for read and write operations separately. Collectively, the maximum sum of read and write operations can be twice the maximum IOPS. For more information, see <a href="#">unique_28</a>.</td>
</tr>
<tr>
<td>Storage</td>
<td>Space</td>
<td>The storage space of the instance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> The storage space stores your data, system files, and log files.</td>
</tr>
<tr>
<td>Section</td>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Set Password</td>
<td>• Set Now</td>
<td>The password of the root user. You can set the password when you create the instance or while the instance is running. For more information, see Set a password.</td>
</tr>
<tr>
<td></td>
<td>• Set Later</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The password must contain at least three types of the following characters: uppercase letters, lowercase letters, digits, and special characters. Special characters include ! $ % ^ &amp; * ( ) _ + - =</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The password must be 8 to 32 characters in length.</td>
</tr>
<tr>
<td>Purchase quantity</td>
<td>Duration Quantity</td>
<td>• Subscription: Select a duration and quantity for the subscription-based instance purchase. For yearly subscriptions, you can select one to three years. For monthly subscriptions, you can select one to nine months.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pay-as-you-go: Specify a quantity for the pay-as-you-go instance you want to purchase with the same configuration. You can select an integer in the range of 1 to 10.</td>
</tr>
</tbody>
</table>

6. Click Buy Now to go to the Confirm Order page.

7. On the Confirm Order page that appears, read and select ApsaraDB for MongoDB Agreement of Service and follow the instructions to complete the payment process.

View the created instance

1. Log on to the ApsaraDB for MongoDB console.
2. In the upper-left corner of the page, select the region where your instance resides.

3. In the left-side navigation pane, click Replica Set Instances.

Troubleshoot if you cannot find the instance

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>You selected the wrong region in the console.</td>
<td>Select the region where the instance is deployed. For more information, see <a href="#">View the created instance</a>.</td>
</tr>
<tr>
<td>You opened the incorrect page.</td>
<td>In the left-side navigation pane, click Replica Set Instances. For more information, see <a href="#">View the created instance</a>.</td>
</tr>
<tr>
<td>The instance list in the ApsaraDB for MongoDB console is not updated or updated before the instance is created.</td>
<td>Wait several minutes and then update the instance list to check whether the instance is added to the list.</td>
</tr>
<tr>
<td>Resources are insufficient.</td>
<td>The fees for a new instance may be refunded if the resources are insufficient. You can go to the Billing Management page to view the refund.</td>
</tr>
<tr>
<td></td>
<td>After you confirm the refund, you can change the zone and try to purchase the instance again. You can also <a href="#">submit a ticket</a>.</td>
</tr>
</tbody>
</table>
What's next

After you create an instance, you must configure a whitelist. For more information, see [Configure a whitelist for a standalone ApsaraDB for MongoDB instance](#). If you want to connect to the instance over the Internet, you must apply for a public endpoint. For more information, see [Apply for a public endpoint for a standalone ApsaraDB for MongoDB instance](#).

For more information about instance connection methods and connection scenarios, see [#unique_29](#).
5 Set a password for a standalone ApsaraDB for MongoDB instance

This topic describes how to set or reset a password for a standalone ApsaraDB for MongoDB instance if you did not set the password when you created the instance, want to change the password, or forget the password.

Procedure

1. Log on to the ApsaraDB for MongoDB console.
2. In the upper-left corner of the page, select the region where your instance resides.
3. In the left-side navigation pane, click Replica Set Instances.
4. Find the target instance and click its ID.
5. In the left-side navigation pane, click Accounts.
6. Click Reset Password.
7. In the Reset Password dialog box that appears, enter and confirm the new password. Click OK.

Note:

- The password must contain at least three types of the following characters: uppercase letters, lowercase letters, digits, and special characters. Special characters include ! # $ % ^ & * ( ) _ + - =
- The password must be 8 to 32 characters in length.
6 Configure a whitelist for a standalone ApsaraDB for MongoDB instance

This topic describes how to configure a whitelist for a standalone ApsaraDB for MongoDB instance. Only the devices whose IP addresses are added to the whitelists of the instance are allowed to access the instance. The default whitelist only contains the IP address 127.0.0.1, which indicates that no devices can connect to the instance.

Context

- You must configure a whitelist upon the first use of an instance. After the whitelist is configured, the connection address of the instance is displayed on the Basic Information and Database Connection pages.
- Proper configuration of the whitelists can enhance access security of ApsaraDB for MongoDB. We recommend that you regularly maintain the whitelist.

Procedure

1. Log on to the ApsaraDB for MongoDB console.

2. In the upper-left corner of the page, select the region where your instance resides.

3. In the left-side navigation pane, click Replica Set Instances.

4. Find the target instance and click its ID.

5. In the left-side navigation pane, choose Data Security > Whitelist Setting.
6. Click the icon in the Operation column, and select Manually Modify or Import ECS Intranet IP.

- Click Manually Modify. In the dialog box that appears, enter an IP address or CIDR block, and click OK.
- Click Import ECS Intranet IP. In the dialog box that appears, the internal IP addresses of the ECS instances of your Alibaba Cloud account are displayed. You can select the desired IP addresses, add them to a whitelist, and click OK.
ApsaraDB for MongoDB

Quick Start for Standalone / 6 Configure a whitelist for a standalone ApsaraDB for MongoDB instance

Note:

• If a whitelist contains more than one IP address, separate them with commas (,). Every IP address in a whitelist must be unique. A whitelist can contain a maximum of 1,000 IP addresses.

Supported formats include 0.0.0.0/0, 10.23.12.24 (single IP address), and 10.23.12.24/24. 10.23.12.24/24 is a CIDR notation (for more information, see CIDR blocks), in which the suffix /24 indicates the number of bits for the prefix of the IP address. The prefix consists of 1 to 32 bits.

• If the value is 0.0.0.0/0 or empty, the ApsaraDB for MongoDB instance can be accessed by all IP addresses. In this situation, the database is at high security risk.

More operations

• #unique_30/unique_30_Connect_42_section_fwu_oit_4dc
• #unique_30/unique_30_Connect_42_section_1si_mlr_q72

Issue: 20200303
Common connection scenarios

- #unique_31
- #unique_32
- #unique_33
- #unique_34

Result

After a whitelist is configured, the VPC connection address of the instance is displayed on the Basic Information and Database Connection pages.
7 Apply for a public endpoint for a standalone ApsaraDB for MongoDB instance

This topic describes how to apply for a public endpoint for a standalone ApsaraDB for MongoDB instance when you want to connect to this instance over the Internet.

Context

The following table describes the connections supported by a standalone ApsaraDB for MongoDB instance.

<table>
<thead>
<tr>
<th>Address type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPC connection address</td>
<td>• A VPC is an isolated virtual network with better security and performance than a classic network.</td>
</tr>
<tr>
<td></td>
<td>• By default, an ApsaraDB for MongoDB instance provides VPC connection addresses.</td>
</tr>
<tr>
<td>Public connection address</td>
<td>• By default, ApsaraDB for MongoDB instances do not provide public connection addresses because connecting to instances over the Internet poses security risks.</td>
</tr>
<tr>
<td></td>
<td>• If you want to connect to an ApsaraDB for MongoDB instance from a device outside of Alibaba Cloud (such as a local device), you must apply for a public endpoint.</td>
</tr>
</tbody>
</table>

Procedure

Note:
To ensure data security, promptly release public connection addresses you no longer need. For more information, see Release a public connection address.

1. Log on to the ApsaraDB for MongoDB console.
2. In the upper-left corner of the page, select the region where your instance resides.
3. In the left-side navigation pane, click Replica Set Instances.
4. Find the target instance and click its ID.
5. In the left-side navigation pane, click Database Connection.
6. Click Apply for Public Connection String on the right of Public IP Connection.

7. In the dialog box that appears, click OK.

Note:
If you want to connect to an instance by using a requested public endpoint, you must add the public IP address of the device that connects to the instance to a whitelist of the instance. For more information, see Configure a whitelist.

References

#{unique_31}
8 Connect to an instance

8.1 Connect to a standalone ApsaraDB for MongoDB instance by using the mongo shell

This topic describes how to connect to a standalone ApsaraDB for MongoDB instance by using the mongo shell, which is a database management tool built in MongoDB. You can install the mongo shell on your client or in an ECS instance.

Prerequisites

- Mongo shell 3.0 or later is installed to ensure successful authentication. For more information about the installation process, visit Install MongoDB at the official MongoDB website.
- The IP address of your client is added to a whitelist of the ApsaraDB for MongoDB instance. For more information, see Configure a whitelist for a standalone ApsaraDB for MongoDB instance.

Note:
If you want to connect to the instance over the Internet, you must apply for a public endpoint.

Procedure

1. Log on to the ApsaraDB for MongoDB console.
2. In the upper-left corner of the page, select the region where your instance resides.
3. In the left-side navigation pane, click Replica Set Instances.
4. Find the target instance and click its ID.
5. In the left-side navigation pane, click Database Connection to obtain the connection addresses of the primary node.

Table 8-1: Database connection information

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Address type**      | • VPC connection address: A VPC is an isolated virtual network with better security and performance than a classic network. By default, an ApsaraDB for MongoDB instance provides VPC connection addresses.  
                         • Public connection address: By default, ApsaraDB for MongoDB instances do not provide public connection addresses because connecting to instances over the Internet poses security risks. If you want to connect to an ApsaraDB for MongoDB instance from a device outside of Alibaba Cloud (such as a local device), you must apply for a public endpoint. For more information, see [Apply for a public endpoint for a standalone ApsaraDB for MongoDB instance](#). |
| **Role**              | Primary: indicates the primary node of the ApsaraDB for MongoDB instance. You can connect to this node to perform read/write operations on the database. |
| **Connection string of the primary node** | The address of the primary node is in the format of `<host>:<port>`.                                                                                   |

**Note:**

• `<host>`: the endpoint of the primary node.  
• `<port>`: the service port of the primary node.
### Connection string URI

The connection string URI is in the following format:

```
mongodb://[username:password@]host1[:port1][,host2[:port2],...[hostN[:portN]]][/database][?options]
```

- **mongodb://**: the prefix, indicating a connection string URI.
- **username:password@**: the username and password used to connect to the ApsaraDB for MongoDB instance. Separate them with a colon (:).
- **hostX:portX**: the endpoint and port number of the instance.
- **/database**: the name of the authentication database. It is the database where the database account is created.
- **? options**: additional connection options.

6. Run the following command on the local server or ECS instance where the mongo shell is installed to connect to the database:

   ```
mongo --host <host:port> -u <username> -p --authenticationDatabase <database>
   ```

**Note:**

- **<host:port>**: the connection string of the primary node, including the endpoint and port number.
- **<username>**: the database account of the ApsaraDB for MongoDB instance. The initial account is root. We recommend that you do not log on to a database as the root user in the production environment. You can create users and grant permissions based on your business needs. For more information, see *Manage MongoDB users through DMS*.
• `<database>`: the name of the authentication database. It is the database where the database account is created. If the database account is root, enter `admin`.

**Example:**

`mongo --host dds-bpxxxxxxxxx.mongodb.rds.aliyuncs.com:3717 -u root -p --authenticationDatabase admin`

7. When **Enter password** is displayed, enter the password for the database user and press Enter. If you forgot the password for the root user, you can reset it. For more information, see [Set a password](#).

**Note:**
The password you enter is not displayed.

Common connection scenarios

• #unique_31
• #unique_32
• #unique_33
• #unique_34

FAQ

• *How to troubleshoot logon issues for the mongo shell*
• #unique_39
• *How to troubleshoot high CPU utilization of ApsaraDB for MongoDB*
• *How to query and limit the number of connections*
9 Data migration

9.1 Migrate user-created standalone MongoDB databases to Alibaba Cloud by using DTS

This topic describes how to use Data Transmission Service (DTS) to migrate data from a standalone user-created MongoDB database to Alibaba Cloud. DTS allows you to fully and incrementally migrate data without interruptions to your applications.

To avoid service disruption, we recommend that you use DTS to migrate user-created MongoDB databases to Alibaba Cloud. You can also use the built-in commands of MongoDB in this situation. For more information, see Migrate user-created databases to Alibaba Cloud by using tools provided by MongoDB.

For more data migration and synchronization solutions, see #unique_44.

Prerequisites

- The service port of the user-created MongoDB database is open to the Internet.
- The version of the user-created MongoDB database is 3.0, 3.2, or 3.4.
- The storage space of the ApsaraDB for MongoDB instance must be larger than that required by the user-created MongoDB database.

Precautions

- We recommend that you migrate your data during off-peak hours to avoid business interruptions.
- If the source user-created MongoDB databases and the destination ApsaraDB for MongoDB instance run different database versions or storage engines, ensure that there are no compatibility issues between them before you start migration. For more information about the database versions and storage engines supported by ApsaraDB for MongoDB, see #unique_45.
- To incrementally migrate data from a standalone user-created MongoDB database, you must enable oplog for the database. For more information, see Preparations for incremental data migration.
Billing

<table>
<thead>
<tr>
<th>Migration type</th>
<th>Link configuration fee</th>
<th>Internet traffic fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full data migration</td>
<td>Free of charge</td>
<td>Charged only when data is migrated from Alibaba Cloud over the Internet. For more information, see #unique_46.</td>
</tr>
<tr>
<td>Incremental data migration</td>
<td>Charged. For more information, see #unique_46.</td>
<td></td>
</tr>
</tbody>
</table>

Migration types

- Full data migration: All data of the source MongoDB database is migrated to the destination database.

  **Note:**
  Database migration is supported at the database, collection, and index levels.

- Incremental data migration: Updated data of the source MongoDB database is incrementally synchronized to the destination MongoDB database.

  **Note:**
  - Creation and deletion operations on databases, collections, and indexes can be synchronized.
  - Creation, deletion, and update operations on documents can be synchronized.

Required database account permissions

<table>
<thead>
<tr>
<th>Data source</th>
<th>Full data migration</th>
<th>Incremental data migration</th>
</tr>
</thead>
<tbody>
<tr>
<td>User-created MongoDB database</td>
<td>Read permissions on the source database</td>
<td>Read permissions on the source database, admin database, and local database</td>
</tr>
<tr>
<td>ApsaraDB for MongoDB</td>
<td>Read/write permissions on the destination database</td>
<td>Read/write permissions on the destination database</td>
</tr>
</tbody>
</table>

How to create a database account and grant permissions to the account:

- For user-created MongoDB databases, see *Create User for MongoDB*. 
• For ApsaraDB for MongoDB instances, see Use DMS to manage MongoDB users.

Preparations for incremental data migration

To incrementally migrate data by using DTS, you must enable oplog for the source database. Skip this step if you only perform full data migration.

**Note:**
This operation restarts the MongoDB service. Perform this operation during off-peak hours.

1. Use the mongo shell to connect to the user-created MongoDB database.
2. Run the following commands to shut down the MongoDB service:

```javascript
use admin
db.shutdownServer()
```

3. Run the following command to start the MongoDB service from the backend as a replica set:

```bash
mongod --port 27017 --dbpath /var/lib/mongodb --logpath /var/log/mongodb/mongod.log --replSet rs0 --bind_ip 0.0.0.0 --auth --fork
```

**Note:**
- The database path used by this command is /var/lib/mongodb. The log file path is /var/log/mongodb/mongod.log. You need to specify the paths as needed.
- This command uses 0.0.0.0 as the binding IP address of the MongoDB service, which allows access from all IP addresses. After migration is complete, run the kill command to end the process, and start the MongoDB service by using the original configuration file.
- This command enables authentication. You can only access the database after passing the authentication.

4. Use the mongo shell to reconnect to the user-created MongoDB database.
5. Run the following commands to initialize the replica set:

```bash
use admin
```
6. Wait for a few minutes. The role of the current node changes to primary.

Note:
You can run the `rs.printReplicationInfo()` command to view the status of oplog.

Procedure

1. Log on to the DTS console.
2. In the left-side navigation pane, click Data Migration.
3. On the top of the Data Migration page, select the region where the ApsaraDB for MongoDB instance resides.
4. In the upper-right corner, click Create Migration Task.
5. Configure the source and destination databases.

<table>
<thead>
<tr>
<th>Section</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Name</td>
<td>N/A</td>
<td>DTS automatically generates a name for every task. We recommend that you use an informative name for easy identification. The task name does not need to be unique.</td>
</tr>
<tr>
<td>Source Database</td>
<td>Instance Type</td>
<td>Select User-Created Database with Public IP Address.</td>
</tr>
<tr>
<td></td>
<td>Instance Region</td>
<td>When the instance type is set to User-Created Database with Public IP Address, you do not need to set Instance Region.</td>
</tr>
<tr>
<td></td>
<td>Database Type</td>
<td>Select MongoDB.</td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>If the whitelist of your database has been configured, you must click Get IP Address Segment of DTS next to Instance Region to obtain the IP address of the DTS server and add it to the whitelist of your database.</td>
</tr>
<tr>
<td>Section</td>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Hostname or IP Address</td>
<td>Enter the address of the user-created MongoDB database. In this example, enter the public connection address.</td>
</tr>
<tr>
<td></td>
<td>Port Number</td>
<td>Enter the service port of the user-created MongoDB database.</td>
</tr>
<tr>
<td></td>
<td>Database Name</td>
<td>Enter the name of the authentication database. It is the database where the database account is created.</td>
</tr>
<tr>
<td></td>
<td>Database Account</td>
<td>Enter the database account of the user-created MongoDB database. For permission requirements, see Required database account permissions.</td>
</tr>
<tr>
<td></td>
<td>Database Password</td>
<td>Enter the password of the database account.</td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>After you specify the source database information, click Test Connectivity next to Database Password to check whether the information is correct.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If the information is correct, the Passed message is displayed. If the Failed message is displayed, and you must click Check next to the Failed message to modify the information as prompted.</td>
</tr>
<tr>
<td></td>
<td>Destination Database</td>
<td>Select the instance type.</td>
</tr>
<tr>
<td></td>
<td>Instance Region</td>
<td>Select the region where the destination ApsaraDB for MongoDB instance resides.</td>
</tr>
<tr>
<td></td>
<td>MongoDB Instance ID</td>
<td>Select the ID of the destination ApsaraDB for MongoDB instance.</td>
</tr>
<tr>
<td></td>
<td>Database Name</td>
<td>Enter the name of the authentication database. It is the database where the database account is created.</td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>If the database account is root, enter admin.</td>
</tr>
<tr>
<td></td>
<td>Database Account</td>
<td>Enter the database account of the ApsaraDB for MongoDB instance. For permission requirements, see Required database account permissions.</td>
</tr>
</tbody>
</table>
### Data migration

<table>
<thead>
<tr>
<th>Section</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Database Password</td>
<td>Enter the password of the database account.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="image" alt="Note:" /> After the destination database is specified, click Test Connectivity next to Database Password to check whether the information is correct. If the information is correct, the Passed message is displayed. If the Failed message is displayed, click Check next to the Failed message to modify the information as prompted.</td>
</tr>
</tbody>
</table>

6. Click Set Whitelist and Next.

![Note:](image) The IP addresses of the DTS servers are automatically added to a whitelist of the destination ApsaraDB for MongoDB instance. This ensures that the DTS servers can connect to the instance. After the migration is completed, you can remove these IP addresses from the whitelist. For more information, see Configure a whitelist.
7. Configure migration types and migration objects.

### Parameter Description

**Migration Types**

- If you want to migrate all data, select Full Data Migration.

**Note:**
To ensure data consistency, do not write new data into the source MongoDB database during full data migration.

- If live migration is required, select both Full Data Migration and Incremental Data Migration.

**Note:**
To incrementally migrate data from a standalone user-created MongoDB database, you must enable oplog for the database. For more information, see *Preparations for incremental data migration*.
### Parameter | Description
--- | ---
Migration object | In the Available section, click the object to be migrated, and click to move it to the Selected section.

**Note:**
- The data in the admin database cannot be migrated even if it is selected as a migration object.
- The config database is an internal database. Do not migrate its data unless otherwise specified.
- A migration object can be a database, collection, or function.
- By default, the names of the objects to be migrated remain unchanged after the migration. If you want to change the object name in the destination database, you can use object name mapping provided by DTS. For more information, see [Object name mapping](#).

8. After you complete the preceding settings, click Precheck.

**Note:**
- A precheck is performed before a migration task is started. The migration task starts only after the precheck succeeds.
- If the precheck fails, click the icon next to each failed check item to view details. Fix the issues as instructed and start the precheck again.

9. After the precheck is passed, click Next.

10. On the Confirm Purchase Configuration page, select Link Type and read and select Data Transmission (Pay-As-You-Go) Service Terms.
11. Click Buy and Start to start the migration task.

- Full data migration

  Do not manually stop a migration task. Otherwise, the system may fail to migrate all data from the database. A migration task stops when it is complete.

- Incremental data migration

  An incremental data migration task does not stop after it is complete. You need to manually end the task.

  **Note:**

  We recommend that you manually end the migration task during off-peak hours or before you migrate your business to the ApsaraDB for MongoDB instance.

  a. When the task progress bar displays Incremental Data Migration and The migration task is not delayed, stop writing to the source database for a few minutes. The progress bar displays the delay time of incremental data migration.

  b. After the status of Incremental Data Migration changes to The migration task is not delayed, manually end the migration task.

12. Migrate your business to the ApsaraDB for MongoDB instance.

9.2 Migrate user-created databases to Alibaba Cloud by using tools provided by MongoDB

  mongodump and mongorestore are both built in MongoDB for backup and restoration. You can install the MongoDB database on a local device or ECS instance and use mongodump and mongorestore to migrate a user-created MongoDB database to an ApsaraDB for MongoDB instance.

  We recommend that you use DTS to migrate user-created MongoDB databases to Alibaba Cloud, which ensures data migration without service downtime. For more
information, see *Migrate user-created standalone MongoDB databases to Alibaba Cloud by using DTS*.

For more data migration and synchronization solutions, see `#unique_44`.

Prerequisites

- The version of mongodump and mongorestore is the same as that of the user-created MongoDB database. For more information about the installation procedure, visit *Install MongoDB* at the official MongoDB website.

  **Note:**
  
  You can also run the mongodump and mongorestore commands on the server where the user-created MongoDB databases reside.

- Standalone ApsaraDB for MongoDB instances only support MongoDB 3.4. To ensure compatibility, the version of the user-created MongoDB database must be 3.0, 3.2, or 3.4.

  **Note:**
  
  If the source user-created MongoDB databases and the destination ApsaraDB for MongoDB instance run different database versions or storage engines, ensure that there are no compatibility issues between them before you start migration. For more information about the database versions and storage engines supported by ApsaraDB for MongoDB, see `#unique_45`.

- The storage space of the standalone ApsaraDB for MongoDB instance must be larger than that required by the user-created MongoDB database. If the storage space is insufficient, you can expand the storage space. For more information, see `#unique_48`.

Precautions

- This is full data migration. To ensure data consistency, stop related services and data writing operations on the source MongoDB database before the migration starts.

- If you have run the mongodump command to back up the database, move the backup files in the `dump` folder to another directory. Ensure that the `dump` folder is empty. Otherwise, the historical backup files in this folder is overwritten during data backup.
Run the mongodump and mongorestore commands on the server where the user-created MongoDB database resides. Do not run them in the mongo shell.

Step 1: Back up the user-created database

1. On the server where the user-created database resides, run the following command to back up the whole data:

   ```bash
   mongodump --host <mongodb_host> --port <port> -u <username> --authenticationDatabase <database>
   ```

   **Note:**
   - `<mongodb_host>`: the server address of the user-created MongoDB database. If this database is deployed on the current server, set this parameter to `127.0.0.1`.
   - `<port>`: the service port number for the user-created database. The default port number is 27017.
   - `<username>`: the account used to log on to the user-created MongoDB database.
   - `<database>`: the name of the authentication database. It is the database where the database account is created.

   **Example:**
   ```bash
   mongodump --host 127.0.0.1 --port 27017 -u root --authenticationDatabase admin
   ```

2. Enter the password for the database user in the Enter password: prompt and press Enter to start the backup.

   **Note:**
   The password you enter is not displayed.

Wait until the data backup is complete. The data of the user-created database is backed up in the `dump` folder of the current directory.
Step 2: Migrate data to the ApsaraDB for MongoDB instance

1. Obtain the connection address of the primary node of the ApsaraDB for MongoDB instance.
   a) Log on to the ApsaraDB for MongoDB console.
   b) In the upper-left corner of the page, select the region where your instance resides.
   c) In the left-side navigation pane, click Replica Set Instances.
   d) Find the target instance and click its ID.
   e) In the left-side navigation pane, click Database Connection to view the database connection details.

Table 9-1: Connection addresses

<table>
<thead>
<tr>
<th>Address type</th>
<th>Description</th>
<th>Application scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPC connection address</td>
<td>A VPC is an isolated virtual network with better security and performance than a classic network.</td>
<td>The user-created MongoDB database is deployed on the ECS instance.</td>
</tr>
</tbody>
</table>

Note:
The ECS instance and ApsaraDB for MongoDB instance must be located in the same region and VPC.
### Address type | Description | Application scenario
--- | --- | ---
Public connection address | By default, ApsaraDB for MongoDB instances do not provide public connection addresses. You need to apply for a public endpoint if required. For more information, see Apply for a public endpoint. | The user-created MongoDB database is deployed on a local device. |

2. Add the IP address of the server where the user-created database resides to a whitelist of the ApsaraDB for MongoDB instance. For more information, see Configure a whitelist.

**Note:**
- When you connect to an ApsaraDB for MongoDB instance over a VPC, you must add the internal IP address of the ECS instance where the user-created database resides to the whitelist of the ApsaraDB for MongoDB instance.
- When you connect to an ApsaraDB for MongoDB instance over the Internet, you must add the public IP address of the local server where the user-created database resides to a whitelist of the ApsaraDB for MongoDB instance.

3. On the server where the user-created database resides, run the following command to migrate the whole data to the ApsaraDB for MongoDB instance:

   ```
mongorestore --host <Primary_host> -u <username> --authenticationDatabase <database> <Backup directory>
   ```

**Note:**
- `<Primary_host>`: the connection address of the primary node in the ApsaraDB for MongoDB instance.
- `<username>`: the database account of the ApsaraDB for MongoDB instance. The initial account is root.
- `<database>`: the name of the authentication database. It is the database where the database account is created. If the database account is root, enter admin.
• <Backup directory>: the directory that stores backup files. The default backup directory is `dump`.

Example:

```
mongorestore --host dds-bp**********-pub.mongodb.rds.aliyuncs.com:3717 -u root --authenticationDatabase admin dump
```

4. Enter the password for the database user of the ApsaraDB for MongoDB instance in the `Enter password:` prompt and press Enter to start data migration.

Note:

• The password you enter is not displayed.

• If you forget the password for the root user, you can reset it. For more information, see Set a password.

Wait until the data migration is complete. Switch your business to the ApsaraDB for MongoDB instance during off-peak hours.

References

After the database is migrated to an ApsaraDB for MongoDB instance, you can connect to the database and manage the database and database account.

• Connect to a standalone ApsaraDB for MongoDB instance by using the mongo shell

• #unique_37