Multi-Site High Availability Service

Getting Started

Issue 01

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Contents

1 Introduction to MAS

Multi-Site High Availability Service (MAS) is part of Huawei's consumer solution for high availability of multi-active applications. It provides E2E service failover and disaster recovery (DR) drill capabilities from the traffic input and data to the application layer, for faster service recovery and better continuity.

Prerequisites

1. You have **signed up for a HUAWEI ID and enabled Huawei Cloud services**.
2. Your account has permission to use MAS. For details, see **Creating a User and Assigning Permissions**.

Procedure

MAS usage process

1. Buy a module.

   On the MAS console, enable a function module on the **Overview** page by selecting an edition and features.

2. Create a namespace.

   Create a namespace on the **Namespace** page of MAS to isolate resources for security.

3. Buy a MAS instance.

   On the MAS console, buy MAS instances with different specifications to suit your needs. For example, you can select the Platinum edition if all of your services are deployed on Huawei Cloud.

4. Check monitors for multi-active areas.

   Check the multi-active area statuses on the **Basic Info** page of the MAS instance.

5. Create an application.

   Create one or multiple applications for the instance, and associate all instance resources with these applications.

6. Create a monitor.

   If your MAS instance is deployed in an intra-city multi-active namespace, you can create monitors for it.

   - Create a MySQL/Oracle/PostgreSQL monitor.

     Go to an instance details page to create a monitor to monitor the service databases and switch traffic between data centers.

   - Create a Redis monitor.

     Go to an instance details page to create a monitor to monitor the service databases and switch traffic between data centers.

   - Create a MongoDB monitor.

     Go to an instance details page to create a monitor to monitor the service databases and switch traffic between data centers.

   - Create an Elasticsearch monitor.

     Go to an instance details page to create a monitor to monitor the service databases and switch traffic between data centers.

   - Create an API monitor.

     Go to an instance details page to create a monitor to monitor the API gateways of your services and handle gateway exceptions if any.

7. Create a data source.

   On the **Data Management** > **Data Sources** page, create a data source and associate it with a namespace.

8. Create a sync link.

   On the **Data Management** > **Synchronization** page, create a sync link and associate it with a namespace. The link is used to synchronize data between data sources of the same type.

2 MySQL Monitoring and DR

Introduction

A monitor detects your database status, and automatically triggers traffic switching when the database is abnormal. You can also switch the traffic manually. For details, see **Step 4: Switch the MySQL Monitor**.

This section uses an example of MySQL monitor to help you quickly get started.

The general process includes:

- **Step 1: Prepare MySQL Databases**
- **Step 2: Create an Application**
- **Step 3: Create a MySQL Monitor**
- **Step 4: Switch the MySQL Monitor**

Step 1: Prepare MySQL Databases

Prepare a MAS instance and two MySQL databases before you start. You can use the databases bought on the Huawei Cloud official website or deployed on two local machines.

This section uses two MySQL databases bought on Huawei Cloud as an example. Deploy the databases in different availability zones (AZs) of the same region for failover and high availability.

1. Prepare two MySQL databases with the same name, username, and password. For details, see **Buying an RDS for MySQL DB Instance**.
2. Bind an EIP by referring to **Binding and Unbinding an EIP**.
3. Configure security group rules by referring to **Configuring a Security Group Rule**. The default port for database access is 3306.

Step 2: Create an Application

Applications isolate resources of different users in an instance. Monitors must be associated with applications.

1. Log in to the MAS console. On the **Multi-Active Instances** page, click an instance to go to its console.

2. Click the **Applications** tab, and click **Create**.
3. Enter the application information, then click **OK**.

Table 2-1 Application parameters

Parameter	Description
Application	Customize the application name.
Description	(Optional) Enter a description about the application.

Step 3: Create a MySQL Monitor

1. Log in to the MAS console. On the **Multi-Active Instances** page, click an instance whose namespace type is **Intra-city multi-active**.
2. Click the **Monitor List** tab, and click **Create Monitor**.
3. Configure the basic information, then click **Next: Data Centers**.

Figure 2-1 Basic information configurations

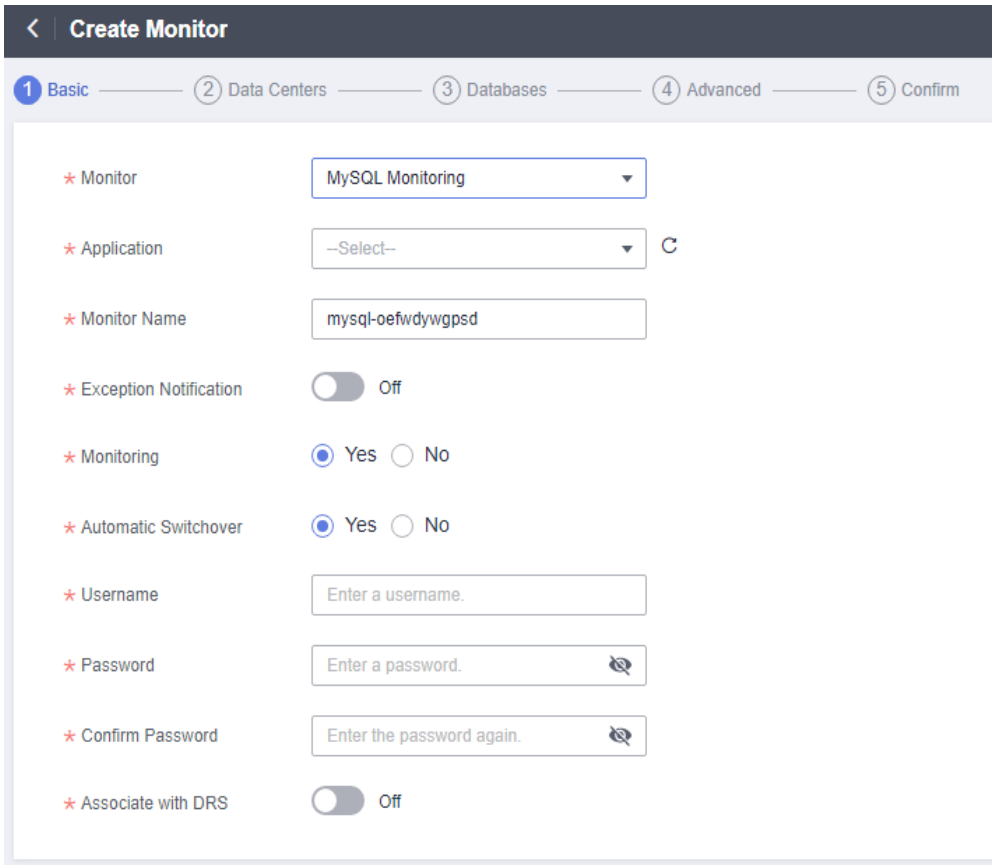


Table 2-2 Basic information parameters

Parameter	Description
Monitor	Select **MySQL Monitoring**.
Application	Select the application created in **Step 2: Create an Application**.
Monitor Name	Customize the monitor name.
Exception Notification	The default setting (**Disabled**) is used in this example. If this option is enabled, monitor and database alarms will be sent to you in a timely manner with the Huawei Cloud Simple Message Notification (SMN) service. Configure a secret key before enabling this option.
Monitoring	The default value is **Yes**. If **No**, database exceptions will not be monitored.
Automatic Switchover	The default value is **Yes**. If **No**, automatic switchover of the databases will not be triggered.
Username	Enter the username for logging in to the monitored database.
Password	Enter the password for logging in to the monitored database.
Confirm Password	Enter the password again.
Associate with DRS	The default setting (**Disabled**) is used in this example. If it is enabled, Data Replication Service (DRS) will be associated.

NOTE

Enter the username and password you configured in **•Step 1: Prepare MySQL Databases**.

4. Configure the information, then click **Next: Databases**.

Figure 2-2 Data center configurations

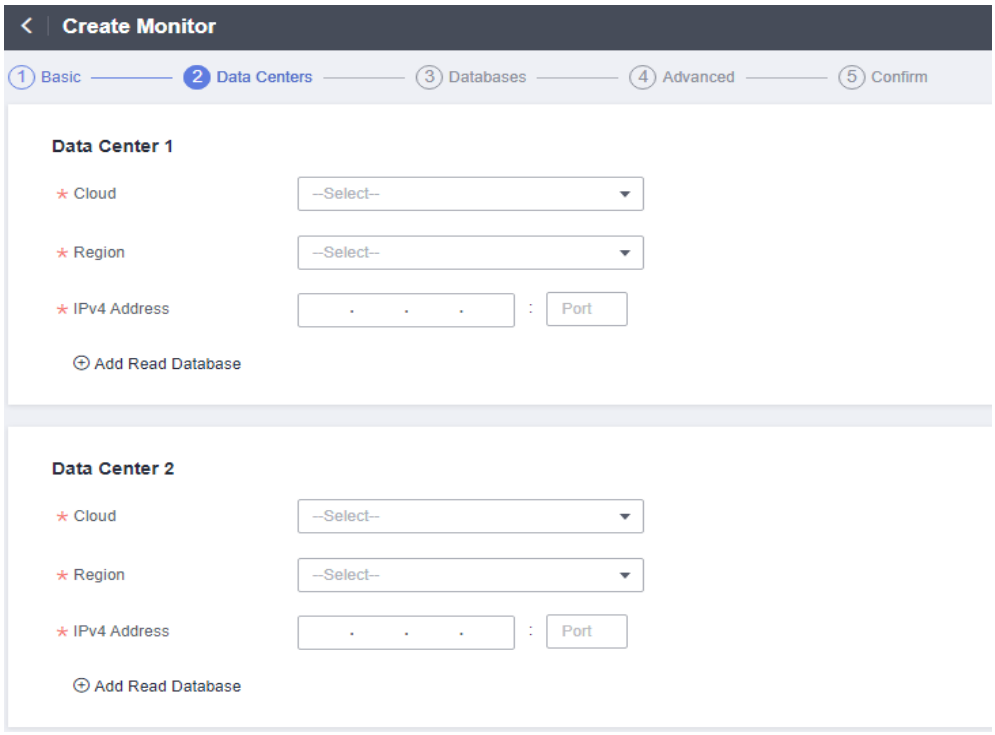
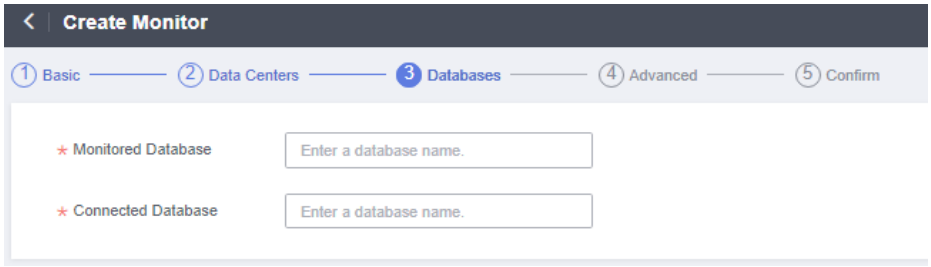


Table 2-3 Data center parameters

Parameter	Description
Cloud	Select the environments where the MySQL databases are deployed.
Region	Select the regions of the MySQL databases created in **Step 1: Prepare MySQL Databases**.
IPv4 Address	Enter the access addresses and ports of the MySQL databases created in **Step 1: Prepare MySQL Databases**.
Add Read Database	Click to add the read database address.

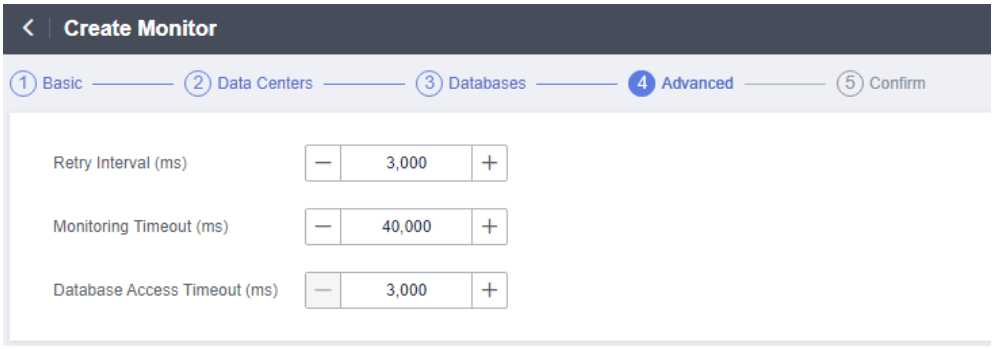
5. Configure the information, then click **Next: Advanced**.

Figure 2-3 Database configurations



6. Configure the advanced settings, then click **Next: Confirm**. Default values are used in the following figure.

Figure 2-4 Advanced configurations



7. Confirm settings and click **Create**.

Step 4: Switch the MySQL Monitor

1. On the **Monitoring List** page, click **Switch Over** in the row of a target monitor.
2. Click **OK**. The active (primary) database changes from data center 1 to data center 2.
3. After the database connection and read/write in data center 1 recover, click **Switch Back** in the row of the target monitor.
4. Click **OK**. The active (primary) database changes back to data center 1.

3 Redis Monitoring and DR

Introduction

A monitor detects your database status, and automatically triggers traffic switching when the database is abnormal.

You can also switch the traffic manually. For details, see **Step 4: Switch the Redis Monitor**.

This section uses an example of Redis monitor to help you quickly get started. The general process includes:

- **Step 1: Prepare Redis Databases**
- **Step 2: Create an Application**
- **Step 3: Create a Redis Monitor**
- **Step 4: Switch the Redis Monitor**

Step 1: Prepare Redis Databases

Prepare a MAS instance and two Redis databases before you start. You can use the databases bought on the Huawei Cloud official website or deployed on two local machines.

This section uses two Redis databases bought on Huawei Cloud as an example. Deploy the databases in different AZs of the same region for failover and high availability.

1. Prepare two Redis databases. For details, see **Buying a DCS Redis Instance**.
2. Configure security group rules by referring to **How Do I Configure a Security Group?**. The default port for database access is 6379.

Step 2: Create an Application

Applications isolate resources of different users in an instance. Monitors must be associated with applications.

1. Log in to the MAS console. On the **Multi-Active Instances** page, click an instance to go to its console.
2. Click the **Applications** tab, and click **Create**.

3. Enter the application information, then click **OK**.

Table 3-1 Application parameters

Parameter	Description
Application	Customize the application name.
Description	(Optional) Enter a description about the application.

Step 3: Create a Redis Monitor

1. Log in to the MAS console. On the **Multi-Active Instances** page, click an instance whose namespace type is **Intra-city multi-active**.
2. Click the **Monitor List** tab, and click **Create Monitor**.
3. Configure the basic information, then click **Next: Data Centers**.

Figure 3-1 Basic information configurations

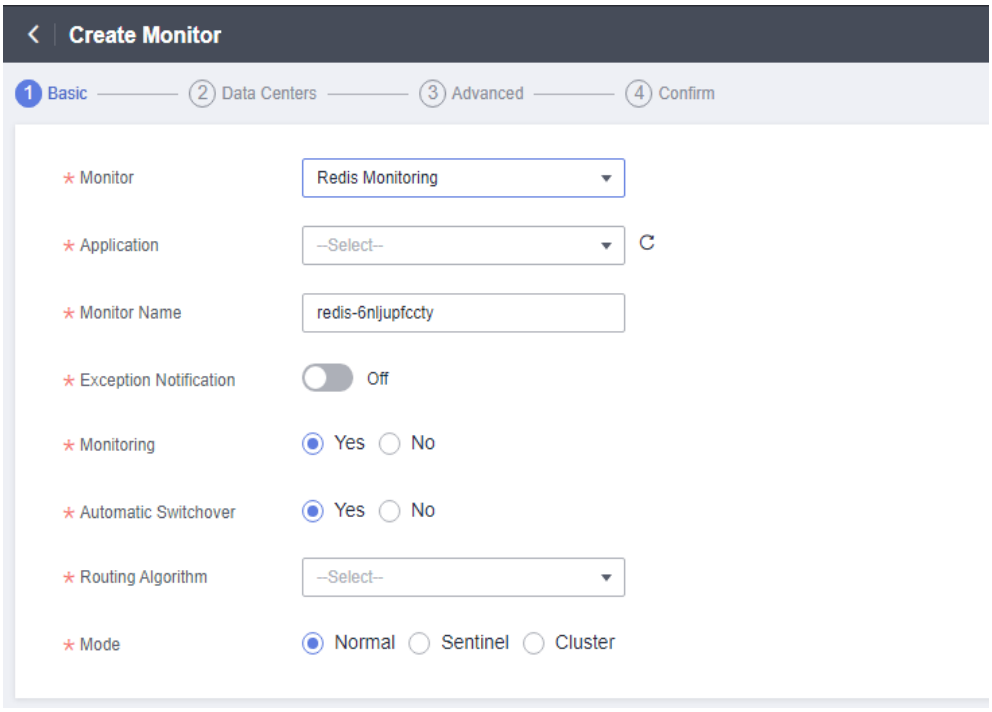


Table 3-2 Basic information parameters

Parameter	Description
Monitor	Select **Redis Monitoring**.
Application	Select the application created in **Step 2: Create an Application**.
Monitor Name	Customize the monitor name.

Parameter	Description
Exception Notification	The default setting (**Disabled**) is used in this example. If this option is enabled, monitor and database alarms will be sent to you in a timely manner with the Huawei Cloud SMN service. Configure a secret key before enabling this option.
Monitoring	The default value is **Yes**. If **No**, database exceptions will not be monitored.
Automatic Switchover	The default value is **Yes**. If **No**, automatic switchover of the databases will not be triggered.
Routing Algorithm	Select **Single read/write**, **Local read, asynchronous dual write**, or **Single read, asynchronous dual write** as required.
Mode	Select **Normal** (default), **Sentinel**, or **Cluster** based on Redis deployment.

4. Configure the data centers, then click **Next: Advanced**.

Figure 3-2 Data center configurations

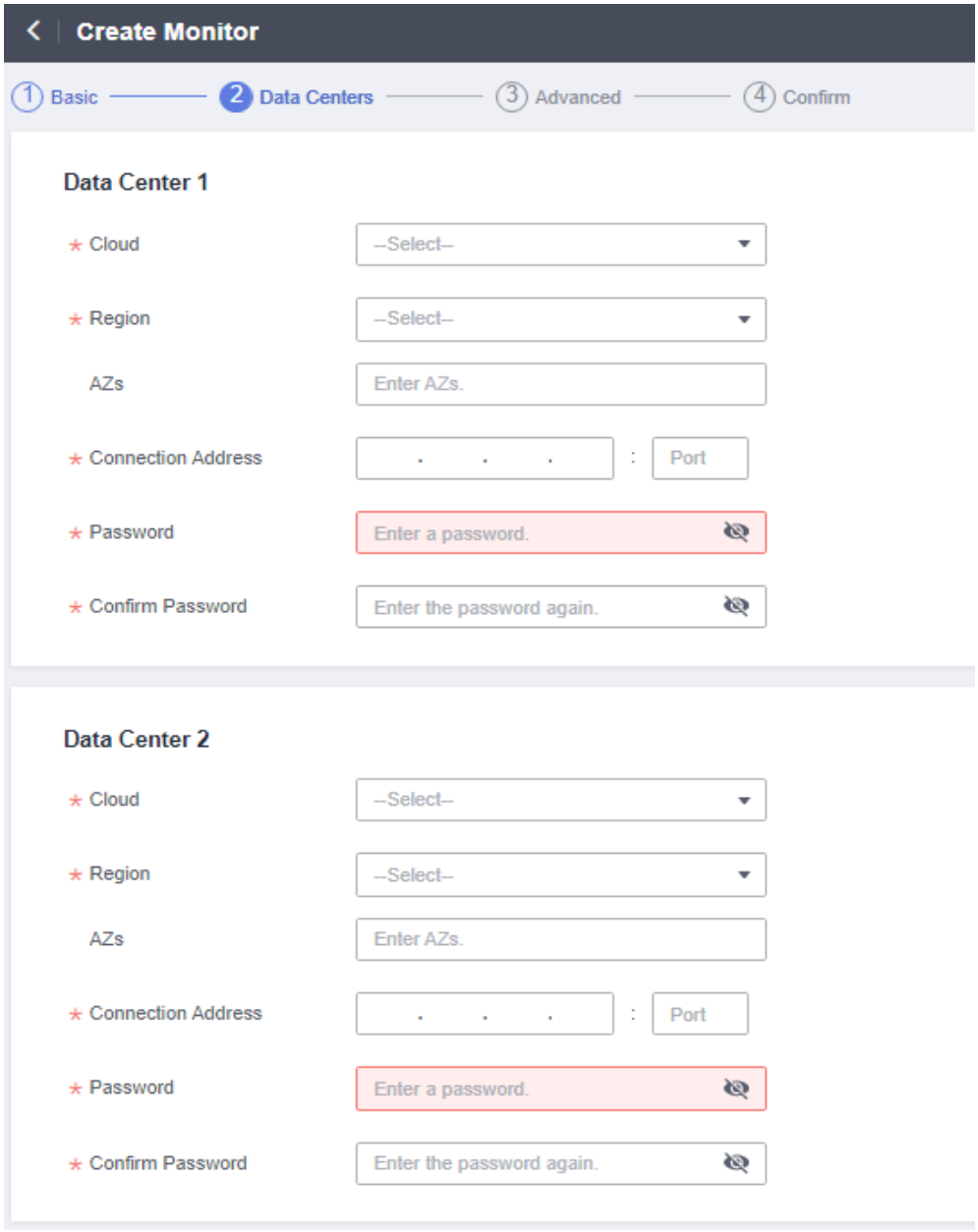


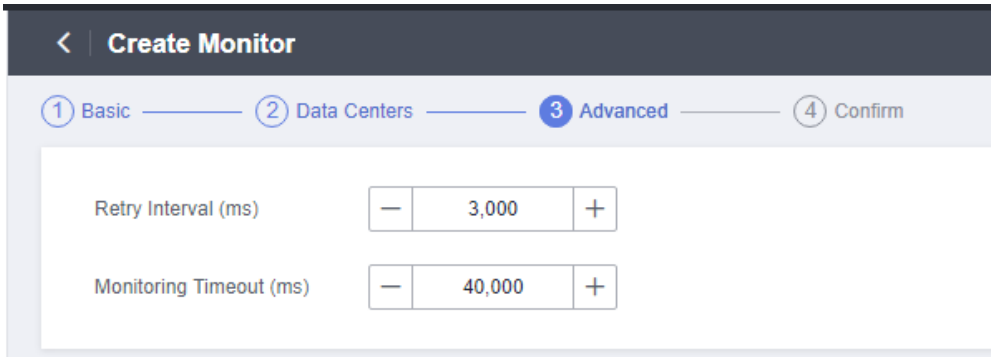
Table 3-3 Data center parameters

Parameter	Description
Cloud	Select the environments where the Redis databases are deployed. You can select a third-party data center for cross-cloud monitoring.
Region	Enter the regions of the Redis databases created in **Step 1: Prepare Redis Databases**.
AZs	Enter the AZs of the Redis databases created in **Step 1: Prepare Redis Databases**.

Parameter	Description
Connection Address	Enter the access addresses and ports of the Redis databases created in **Step 1: Prepare Redis Databases**.
Password	Enter the passwords for logging in to the Redis databases created in **Step 1: Prepare Redis Databases**.
Confirm Password	Enter the password again.

5. Configure the advanced settings, then click **Next: Confirm**. Default values are used in the following figure.

Figure 3-3 Advanced configurations



6. Confirm settings and click **Create**.

Step 4: Switch the Redis Monitor

1. On the **Monitoring List** page, click **Switch Over** in the row of a target monitor.
2. Click **OK**. The active (primary) database changes from data center 1 to data center 2.
3. After the database connection and read/write in data center 1 recover, click **Switch Back** in the row of the target monitor.
4. Click **OK**. The active (primary) database changes back to data center 1.

4 MongoDB Monitoring and DR

Introduction

A monitor detects your database status, and automatically triggers traffic switching when the database is abnormal. You can also switch the traffic manually. For details, see **Step 4: Switch the MongoDB Monitor**.

This section uses an example of MongoDB monitor to help you quickly get started.

The general process includes:

- **Step 1: Prepare MongoDB Databases**
- **Step 2: Create an Application**
- **Step 3: Create a MongoDB Monitor**
- **Step 4: Switch the MongoDB Monitor**

Step 1: Prepare MongoDB Databases

Prepare a MAS instance and two MongoDB databases before you start. You can use the databases bought on the Huawei Cloud official website or deployed on two local machines.

This section uses two MongoDB databases bought on Huawei Cloud as an example. Deploy the databases in different AZs of the same region for failover and high availability.

1. Prepare two MongoDB databases with the same name, username, and password. For details, see **Custom Config**.
2. Bind EIPs. For details, see **Binding and Unbinding an EIP**.
3. Configure security group rules. For details, see **Configuring a Security Group**. The default port for database access is 8635.

Step 2: Create an Application

Applications isolate resources of different users in an instance. Monitors must be associated with applications.

1. Log in to the MAS console. On the **Multi-Active Instances** page, click an instance to go to its console.

2. Click the **Applications** tab, and click **Create**.
3. Enter the application information, then click **OK**.

Table 4-1 Application parameters

Parameter	Description
Application	Customize the application name.
Description	(Optional) Enter a description about the application.

Step 3: Create a MongoDB Monitor

1. Log in to the MAS console. On the **Multi-Active Instances** page, click an instance whose namespace type is **Intra-city multi-active**.
2. Click the **Monitor List** tab, and click **Create Monitor**.
3. Configure the basic information, then click **Next: Data Centers**.

Figure 4-1 Basic information configurations

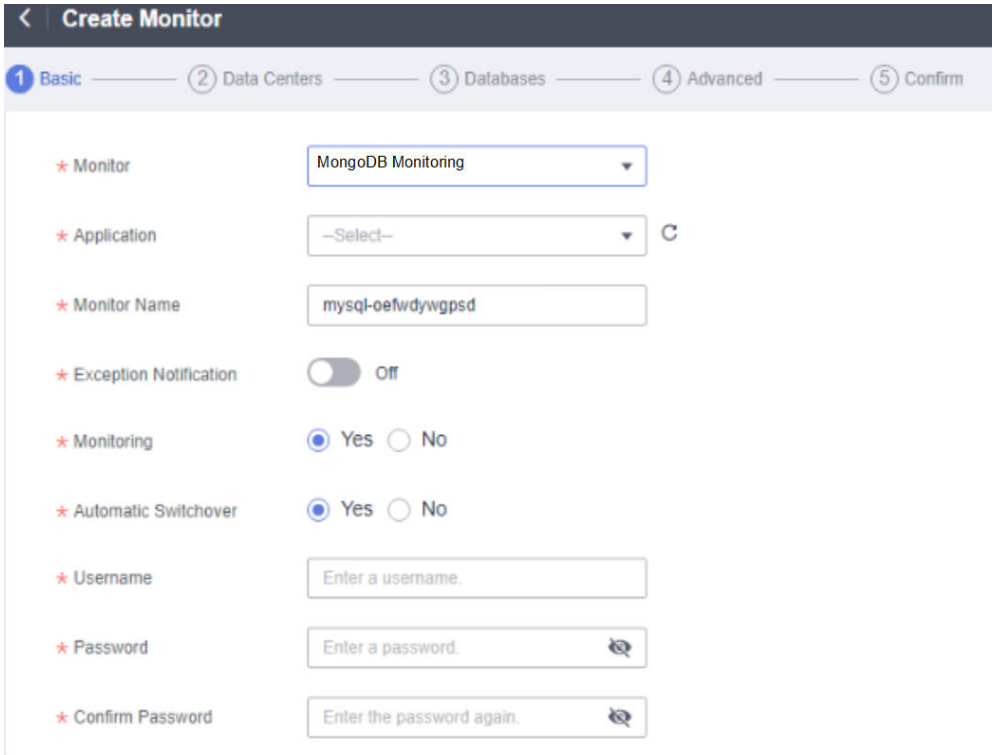


Table 4-2 Basic information parameters

Parameter	Description
Monitor	Select **MongoDB Monitoring**.
Application	Select the application created in **Step 2: Create an Application**.

Parameter	Description
Monitor Name	Customize the monitor name.
Exception Notification	The default setting (**Disabled**) is used in this example. If this option is enabled, monitor and database alarms will be sent to you in a timely manner with the Huawei Cloud SMN service. Configure a secret key before enabling this option.
Monitoring	The default value is **Yes**. If **No**, database exceptions will not be monitored.
Automatic Switchover	The default value is **Yes**. If **No**, automatic switchover of the databases will not be triggered.
Username	Enter the username for logging in to the monitored database.
Password	Enter the password for logging in to the monitored database.
Confirm Password	Enter the password again.

NOTE

Enter the username and password you configured in **Step 1: Prepare MongoDB Databases**.

4. Configure the information, then click **Next: Databases**.

Figure 4-2 Data center configurations

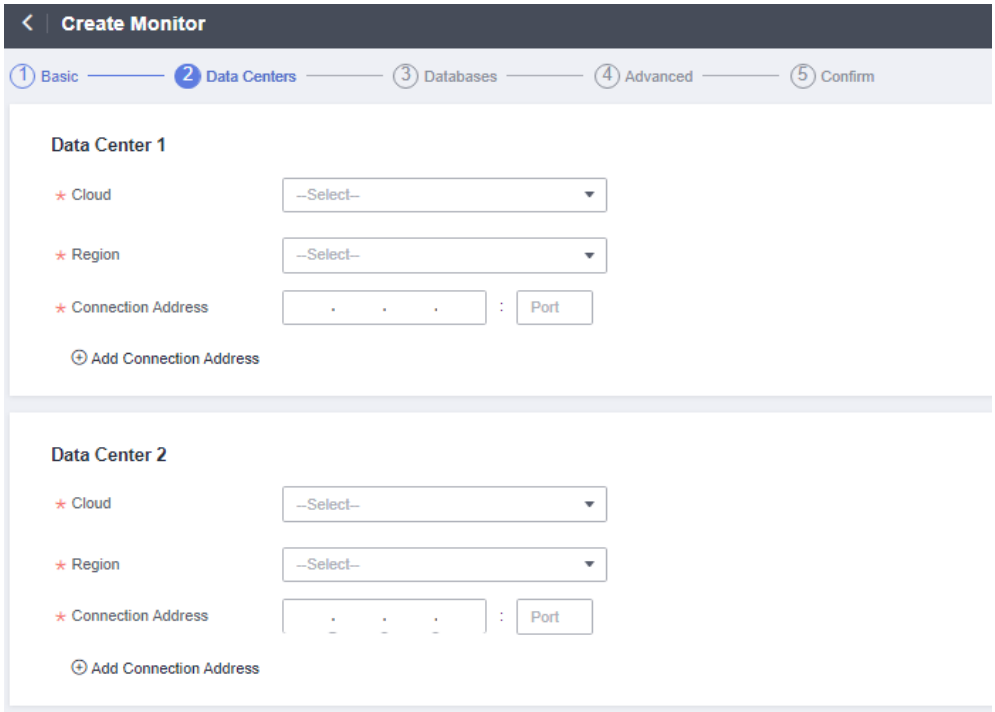
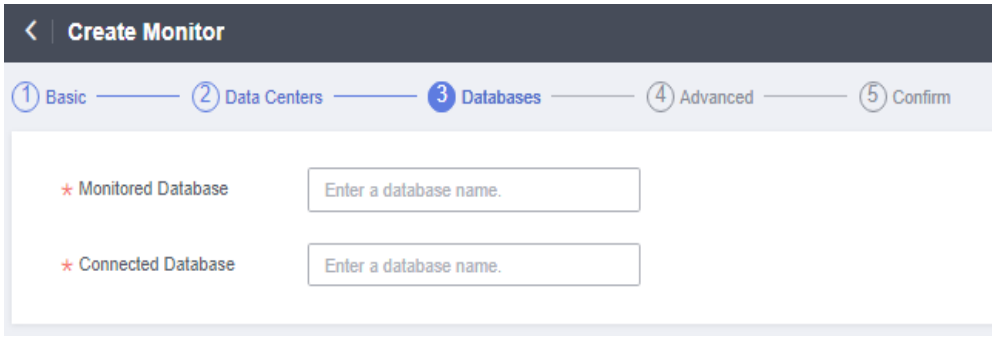


Table 4-3 Data center parameters

Parameter	Description
Cloud	Select the environments where the MongoDB databases are deployed.
Region	Select the regions of the MongoDB databases created in **Step 1: Prepare MongoDB Databases**.
Connection Address	Enter the access addresses and ports of the MongoDB databases created in **Step 1: Prepare MongoDB Databases**.

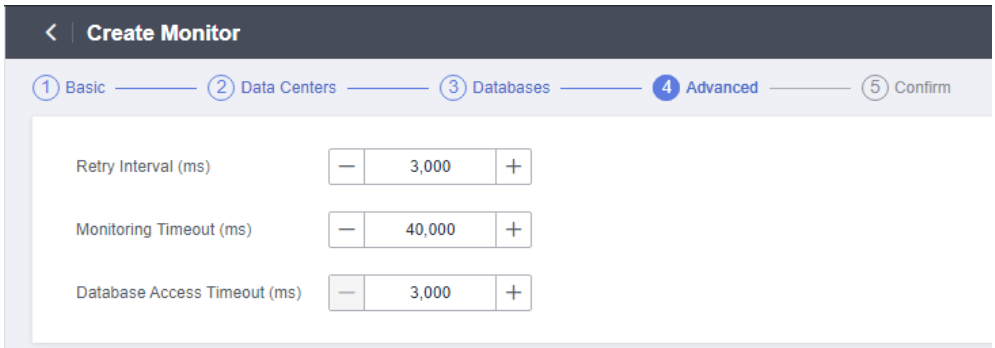
5. Configure the information and enter the database name you set in **Step 1: Prepare MongoDB Databases**, then click **Next: Advanced**.

Figure 4-3 Database configurations



6. Configure the advanced settings, then click **Next: Confirm**. Default values are used in the following figure.

Figure 4-4 Advanced configurations



7. Confirm settings and click **Create**.

Step 4: Switch the MongoDB Monitor

1. On the **Monitoring List** page, click **Switch Over** in the row of a target monitor.
2. Click **OK**. The active (primary) database changes from data center 1 to data center 2.

3. After the database connection and read/write in data center 1 recover, click **Switch Back** in the row of the target monitor.
4. Click **OK**. The active (primary) database changes back to data center 1.

5 API Monitoring

Introduction

API monitors monitor the API gateways of your services, and send gateway alarms to you in a timely manner.

This section uses an example to help you quickly get started. The general process includes:

- **Step 1: Create an Application**
- **Step 2: Add a Secret Key**
- **Step 3: Create a Notification**
- **Step 4: Create an API Monitor**

Step 1: Create an Application

Applications isolate resources of different users in an instance. Monitors must be associated with applications.

1. Log in to the MAS console. On the **Multi-Active Instances** page, click an instance to go to its console.
2. Click the **Applications** tab, and click **Create**.
3. Enter the application information, then click **OK**.

Table 5-1 Application parameters

Parameter	Description
Application	Customize the application name.
Description	(Optional) Enter a description about the application.

Step 2: Add a Secret Key

1. Log in to the MAS console. On the **Multi-Active Instances** page, click an instance whose namespace type is **Intra-city multi-active**.

2. Click the **Global** tab.
3. On the **Secret Keys** page, click **Add Secret Key**.
4. Configure information and click **OK**.

Figure 5-1 Secret key configurations

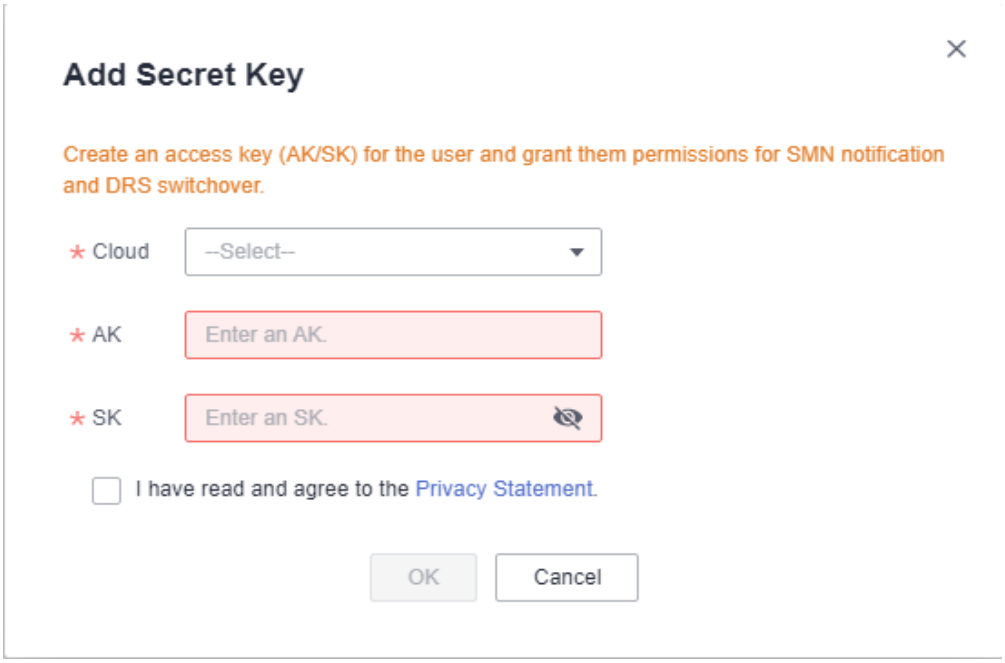


Table 5-2 Secret key parameters

Parameter	Description
Cloud	Select the environment where the SMN service is deployed.
AK	Access key ID.
SK	Secret access key.

NOTE

Refer to **Access Keys** to obtain an AK/SK.

Step 3: Create a Notification

1. Log in to the MAS console. On the **Multi-Active Instances** page, click an instance whose namespace type is **Intra-city multi-active**.
2. Click the **Global** tab.
3. On the **Notifications** page, click **Create Notification**.
4. Enter the notification information, then click **OK**.

Figure 5-2 Notification configurations

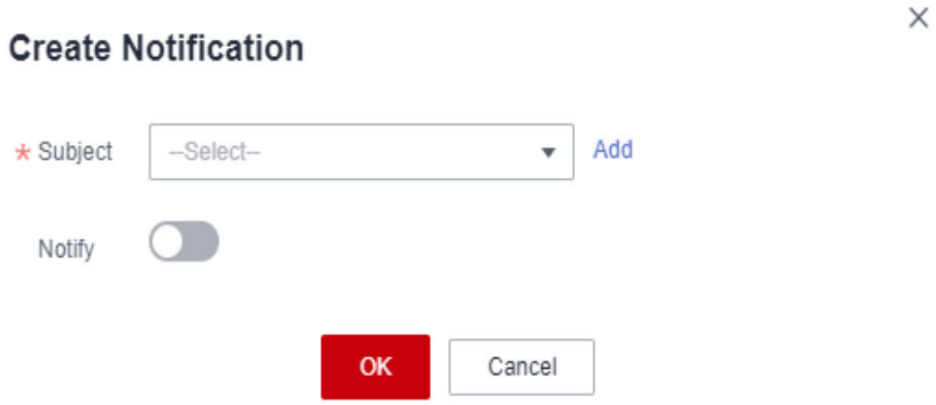


Table 5-3 Notification parameters

Parameter	Description
Subject	Select a notification subject or click **Add** to create one.
Notify	Specify whether to enable notification.

NOTE

For details about how to create an SMN subject, see **Publishing a JSON Message**.

Step 4: Create an API Monitor

1. Log in to the MAS console. On the **Multi-Active Instances** page, click an instance whose namespace type is **Intra-city multi-active**.
2. Click the **Monitor List** tab, and click **Create Monitor**.
3. Configure the basic information, then click **Next: Data Centers**.

Figure 5-3 Basic information configurations

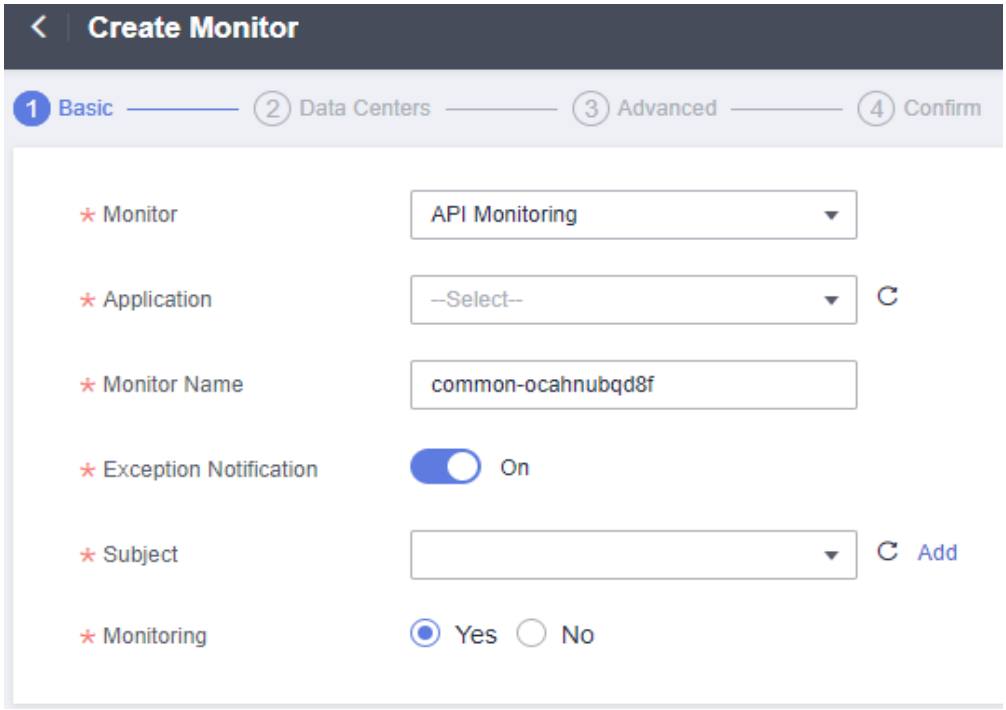


Table 5-4 Basic information parameters

Parameter	Description
Monitor	Select **API Monitoring**.
Application	Select the application created in **Step 1: Create an Application**.
Monitor Name	Customize the monitor name.
Exception Notification	By default, this option is disabled. In this example, this option is enabled. If this option is enabled, monitor and database alarms will be sent to you in a timely manner with the Huawei Cloud SMN service. Configure a secret key before enabling this option.
Subject	Select a subject from the drop-down list or click **Add** to create one.
Monitoring	The default value is **Yes**. If **No**, the API gateway statuses will not be monitored.

4. Configure the data centers, then click **Next: Advanced**.

Figure 5-4 Data center configurations

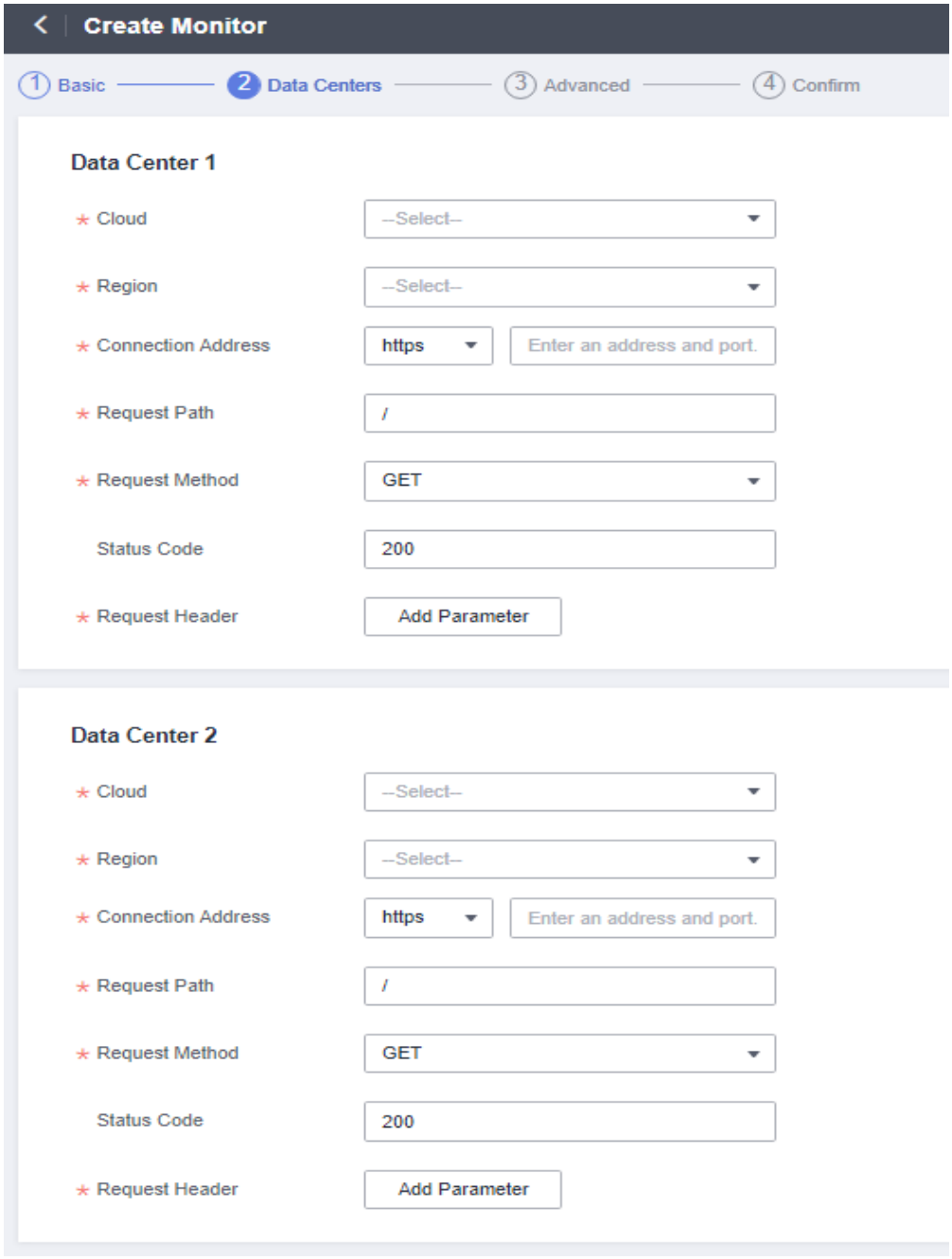


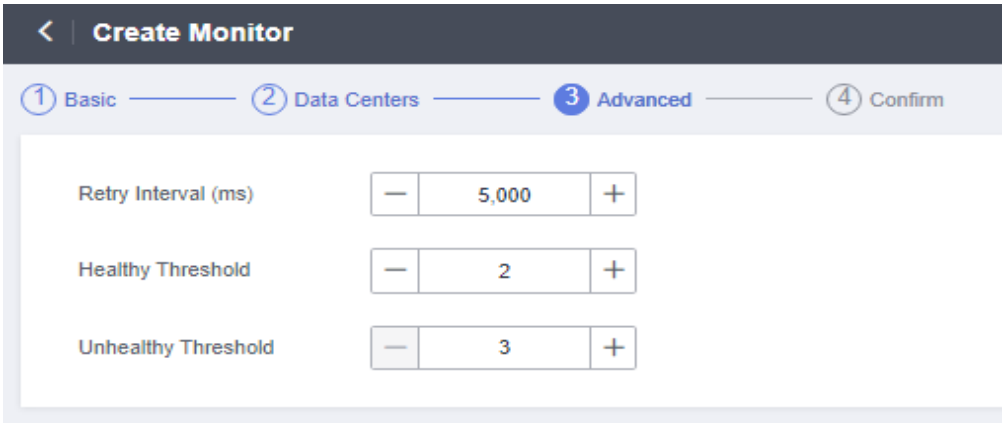
Table 5-5 Data center parameters

Parameter	Description
Cloud	Select the environments where the API gateways are deployed.
Region	Select the regions of the API gateways.
Connection Address	Select **HTTP** or **HTTPS**, and enter the addresses of the API gateways.

Parameter	Description
Request Path	Health check paths of the API gateways.
Request Method	Select **GET**, **POST**, **DELETE**, **PUT**, or **PATCH**.
Status Code	Set this parameter based on the requirements of the API gateways, for example, **200**.
Request Header	Set this parameter based on the requirements of the API gateways.

5. Configure the advanced settings, then click **Next: Confirm**. Default values are used in the following figure.

Figure 5-5 Advanced configurations



6. Confirm settings and click **Create**.

