Distributed Database Middleware

API Reference

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Contents

1 Before You Start

1.1 Overview

Welcome to Distributed Database Middleware (DDM). This document describes functions, syntax, parameters, and examples of DDM.

If you plan to access DDM using an API, ensure that you are familiar with DDM concepts.

This document describes how to use application programming interfaces (APIs) to perform creating, modifying, querying, and updating operations.

NOTE

- This document will be updated when APIs of new functions are added, for example, adding response parameters.
- To reduce impacts caused by API changes, DDM is backward compatible with existing APIs. When using DDM, you should accept and ignore unused parameters and parameter values in JSON responses.

1.2 API Calling

DDM supports Representational State Transfer (REST) APIs, allowing you to call APIs using HTTPS.

1.3 Endpoints

An endpoint is the **request address** for calling an API. Endpoints vary depending on services and regions. For the endpoints of all services, see **Regions and Endpoints**.

1.4 Constraints

- The number of DDM instances that you can create is determined by your quota.

- For more constraints, see API description.

1.5 Concepts

- Account

  An account is created after your registration. The account has full access permissions for all of its cloud services and resources. It can be used to reset user passwords and grant user permissions. The account is a payment entity and should not be used directly to perform routine management. For security purposes, create users and grant them permissions for routine management.

- IAM user

  An IAM user is created using an account to use cloud services. Each IAM user has its own identity credentials (password and access keys).

  An IAM user can view the account ID and user ID on the **API Credentials** page of the management console. The account name, username, and password will be required for API authentication.

- Region

  A region is a geographic area in which cloud resources are deployed. Availability zones (AZs) in the same region can communicate with each other over an intranet, while AZs in different regions are isolated from each other. Deploying cloud resources in different regions can better suit certain user requirements or comply with local laws or regulations.

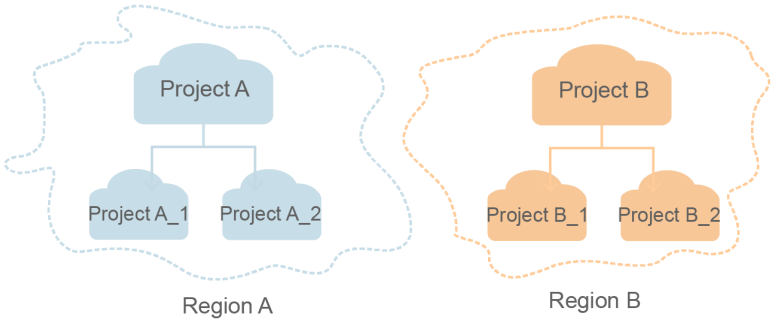
- AZ

  An AZ comprises one or more physical data centers equipped with independent cooling, fire extinguishing, moisture-proof, and electricity facilities. Computing, network, storage, and other resources in an AZ are logically divided into multiple clusters. AZs within a region are interconnected using high-speed optical fibers to allow users to build cross-AZ high-availability systems.

- Project

  A project corresponds to a region. Projects group and isolate resources (including compute, storage, and network resources) across physical regions. Users can be granted permissions in a default project to access all resources in the region associated with the project. For more refined access control, create subprojects under a project and buy resources in the subprojects. Users can then be assigned permissions to access only specific resources in the subprojects.

Figure 1-1 Project isolating model



- Enterprise project

  Enterprise projects group and manage resources across regions. Resources in enterprise projects are logically isolated from each other. An enterprise project can contain resources of multiple regions, and resources can be added to or removed from the enterprise project.

  For more information about enterprise projects and how to obtain enterprise project IDs, see ***Enterprise Management User Guide***.

2 API Overview

DDM provides REST APIs. With DDM APIs, you can use all DDM functions, including creating DDM instances and schemas.

Table 2-1 API description

Type	API	Description
APIs for managing DDM instances	Buying a DDM instance	This API is used to buy a DDM instance. DDM instances created using this API are billed in pay-per-use mode. DDM runs in VPCs. Before you create a DDM instance, ensure that a VPC is available and a subnet and security group have been configured.
	Querying DDM instances	This API is used to query DDM instances.
	Querying details of a DDM instance	This API is used to query details about a DDM instance.
	Modifying the name of a DDM instance	This API is used to modify the name of an existing DDM instance.
	Modifying the security group of a DDM instance	This API is used to modify the security group of a DDM instance.
	Deleting a DDM instance	This API is used to delete a DDM instance to release all its resources.
	Restarting a DDM instance	This API is used to restart a DDM instance.
	Reloading table data	This API is used to reload table data of the destination DDM instance for cross-region DR.

Type	API	Description
	Scaling out a DDM instance	This API is used to add nodes to a specified DDM instance.
	Scaling in a DDM instance	This API is used to remove nodes from a specified DDM instance.
	Modifying the read policy of the associated DB instance	This API is used to modify the read policy of the DB instance associated with a DDM instance.
	Synchronizing data node information	This API is used to synchronize configuration information of all data nodes that are associated with the current DDM instance.
	Querying nodes of a DDM instance	This API is used to query nodes of a DDM instance.
	Querying details of a DDM instance node	This API is used to query details of a DDM instance node.
	Querying parameters of a specified DDM instance	This API is used to query parameters of a specified DDM instance.
	Modifying parameters of a DDM instance	This API is used to modify parameters of a DDM instance.
	Querying DDM engine information	This API is used to query information about DDM engine.
	Querying DDM node classes available in an AZ	This API is used to query DDM node classes available in an AZ.
	Changing the node class of a DDM Instance	This API is used to change the node class of a DDM instance.
	Obtaining the instance group information	This API is used to obtain the group details of a DDM instance.

Type	API	Description
APIs for managing schemas	Creating a schema	This API is used to create a schema. Before creating a schema, ensure that there is an RDS instance available and that the instance is running properly and not associated with any DDM instance.
	Querying schemas of a DDM instance	This API is used to query schemas of a DDM instance.
	Querying details of a schema	This API is used to query details about a schema.
	Deleting a schema	This API is used to delete a schema to release all its resources.
	Querying DB instances available for creating a schema	This API is used to query DB instances that can be used for creating a schema.
APIs for managing DDM accounts	Creating a DDM account	This API is used to create a DDM account. DDM accounts are used to connect to and manage schemas. One DDM account can be associated with multiple schemas.
	Querying DDM accounts	This API is used to query DDM accounts.
	Modifying a DDM account	This API is used to modify the permissions and associated schemas of a DDM account.
	Deleting a DDM account	This API is used to delete a DDM account. This operation will also disassociate the account from schemas if any.
	Resetting the password of a DDM account	This API is used to reset the password of a DDM account.
	Validating password strength	This API is used to validate whether an instance password is a weak password.
Monitoring	Monitoring slow query logs	This API is used to query the SQL statements that take a long time to execute on the DDM instance within a specified time range.
	Monitoring the read/write ratio (unavailable Soon)	This API is used to query reads and writes of a DDM instance in a specified time range.

3 Calling APIs

3.1 Making an API Request

This section describes the structure of a REST API and how to call an API. Before calling an API, you need to **obtain the user token** using the IAM API.

Request URI

A request URI is in the following format:

{URI-scheme} :// {Endpoint} / {resource-path} ? {query-string}

Although a request URI is a part of a request header, most programming languages or frameworks require the request URI to be separately transmitted, rather than being conveyed in a request message.

Table 3-1 URI parameter description

Parameter	Description
URI-scheme	Protocol used to transmit requests. All APIs use HTTPS.
Endpoint	Domain name or IP address of the server bearing the REST service endpoint. The endpoint varies depending on the service and service region. *Endpoint*: Endpoint of the **Objective-func** function. For details, see **Regions and Endpoints**. For example, the endpoint of IAM in region **CN-Hong Kong** is **ddm.ap-southeast-1.myhuaweicloud.com**.
resource-path	Access path of an API for performing a specified operation. Obtain the path from the URI of an API. For example, the **resource-path** of the API used to obtain a user token is **/v3/auth/tokens**.

Parameter	Description
Query string	Query parameter, which is optional. Ensure that a question mark (?) is included before each query parameter that is in the format of "Parameter name=Parameter value". For example, **? limit=10** indicates that a maximum of 10 data records will be displayed.

For example, to obtain an IAM token in the **CN-Hong Kong** region, obtain the endpoint of IAM (**iam.ap-southeast-1.myhuaweicloud.com**) for this region and the **resource-path** (**/v3/auth/tokens**) in the URI of the API used to **obtain a user token**. Then, construct the URI as follows:

```
https://iam.ap-southeast-1.myhuaweicloud.com/v3/auth/tokens
```

NOTE

To simplify the URI display, each API is provided only with a resource-path and a request method. This is because the **URI-scheme** value of all APIs is **HTTPS**, and the endpoints in a region are the same. Therefore, the two parts are omitted.

Request Method

HTTP methods, which are also called operations or actions, specify the type of operations that you are requesting.

Table 3-2 HTTP methods

Method	Description
GET	Requests a server to return specified resources.
PUT	Requests a server to update specified resources.
POST	Requests the server to add a resource or perform special operations.
DELETE	Requests a server to delete specified resources, for example, an object.

For example, for the URI of the API used to **obtain a user token**, the request method is POST. The request is as follows:

```
POST https://iam.cn-north-1.myhuaweicloud.com/v3/auth/tokens
```

Request Headers

You can also add additional header fields to a request, such as the fields required by a specified URI or HTTP method. For example, to request for the authentication information, add **Content-Type**, which specifies the request body type.

You can also add additional fields to the request header, for example, the fields required by a specified URI and an HTTP method. **Table 3-3** lists common request header fields.

Table 3-3 Common request headers

Field	Description	Mandatory	Example
Host	Requested server information, which can be obtained from the URL of the service API. The value is in the *hostname[:port]* format. If the port number is not specified, the default port is used. The default port number for **https** is **443**.	No This parameter is mandatory for AK/SK authentication.	code.test.com or code.test.com:443
Content-Type	MIME type of the request body. You are advised to use the default value **application/json**. For APIs used to upload objects or images, the value varies depending on the flow type.	Yes	application/json
Content-Length	Length of the request body. The unit is byte.	This parameter is optional for POST requests, but must be left blank for GET requests.	3495

Field	Description	Mandatory	Example
X-Project-Id	Project ID. Obtain the project ID by following the instructions in **Obtaining a Project ID**.	No This parameter is mandatory for requests that use AK/SK authentication in the Dedicated Cloud (DeC) scenario or multi-project scenario.	e9993fc787d94b6c886cbaa340f9c0f4
X-Auth-Token	User token After the request is processed, the value of **X-Subject-Token** in the header is the token value.	No This parameter is mandatory for token authentication.	The following is part of an example token: MIIPAgYJKoZIhvcNAQc-Co...ggg1BBIINPXsidG9rZ

NOTE

In addition to supporting token-based authentication, APIs support authentication using access key ID/secret access key (AK/SK). During AK/SK-based authentication, an SDK is used to sign the request, and the **Authorization** (signature information) and **X-Sdk-Date** (time when the request is sent) header fields are automatically added to the request.

For more information, see **AK/SK-based Authentication**.

The API used to **obtain a user token** does not require authentication. Therefore, this API only requires adding the **Content-Type** field. The request with the added **Content-Type** header is as follows:

```
POST https://iam.cn-north-1.myhuaweicloud.com/v3/auth/tokens
Content-Type: application/json
```

(Optional) Request Body

This part is optional. The body of a request is often sent in a structured format (for example, JSON or XML) as specified in the **Content-Type** header field. If the request body contains Chinese characters, these characters must be coded in UTF-8.

The request body varies depending on APIs. Some APIs do not require the request body, such as the APIs requested using GET and DELETE methods.

For the API used to **obtain a user token**, the request parameters and parameter description can be obtained in the API request. The following provides an example request with a body included. Replace ***username***, ***domainname***, ******** (login

password), and ***xxxxxxxxxxxxxxxxxx*** (project name such as cn-north-1) with actual values. You can obtain the values from **Regions and Endpoints**.

NOTE

The **scope** parameter specifies where a token takes effect. You can set **scope** to an account or a project under an account. In the following example, the token takes effect only for the resources in a specified project.

```
POST https://iam.cn-north-1.myhuaweicloud.com/v3/auth/tokens
Content-Type: application/json

{
    "auth": {
        "identity": {
            "methods": [
                "password"
            ],
            "password": {
                "user": {
                    "name": "username",
                    "password": "********",
                    "domain": {
                        "name": "domainname"
                    }
                }
            }
        },
        "scope": {
            "project": {
                "name": "xxxxxxxxxxxxxxxxxx"
            }
        }
    }
}
```

If all data required for the API request is available, you can send the request to call the API through **curl**, **Postman**, or coding. For the API of obtaining a user token, **x-subject-token** in the response header is the required user token. This token can then be used to authenticate the calling of other APIs.

3.2 Authentication

Requests for calling an API can be authenticated with either of the following methods:

- Token-based authentication: Requests are authenticated using a token.
- AK/SK-based authentication: Requests are authenticated by encrypting the request body using an AK/SK pair. Authentication using AK/SK is recommended because it is more secure than authentication using tokens.

Token-based Authentication

NOTE

The validity period of a token is 24 hours. If a token is required, the system caches the token to avoid frequent calling.

A token specifies temporary permissions in a computer system. Token-based authentication adds a token in a request as its header during API calling to obtain the permissions for operating APIs on IAM.

When **calling an API to obtain a user token**, you must set **auth.scope** in the request body to **project**.

```
{
    "auth": {
        "identity": {
            "methods": [
                "password"
            ],
            "password": {
                "user": {
                    "name": "username",
                    "password": "********",
                    "domain": {
                        "name": "domainname"
                    }
                }
            }
        },
        "scope": {
            "project": {
                "name": "xxxxxxxx"
            }
        }
    }
}
```

In **Making an API Request**, the process of calling the API used to **obtain a user token** is described.

After obtaining the token, add the **X-Auth-Token** header in a request to specify the token when calling other APIs. For example, if the token is **ABCDEFJ....**, **X-Auth-Token: ABCDEFJ....** can be added to a request as follows:

```
Content-Type: application/json
X-Auth-Token: ABCDEFJ....
```

AK/SK-based Authentication

NOTE

AK/SK-based authentication supports API requests with a body not larger than 12 MB. For API requests with a larger body, token-based authentication is recommended.

In AK/SK-based authentication, AK/SK is used to sign requests and the signature is then added to the requests for authentication.

- AK: access key ID, which is a unique identifier associated with a secret access key and is used in conjunction with a secret access key to sign requests cryptographically.
- SK: secret access key used in conjunction with an AK to sign requests cryptographically. It identifies a request sender and prevents the request from being modified.

In AK/SK-based authentication, you can use an AK/SK to sign requests based on the signature algorithm or use the signing SDK to sign requests. For details about how to sign requests or use the signing SDK, see **API Request Signing Guide**.

NOTICE

The signing SDK is only used for signing requests and is different from the SDKs provided by services.

3.3 Returned Values

Status Code

After sending a request, you will receive a response, including the status code, response header, and response body.

A status code is a group of digits ranging from 1xx to 5xx. It indicates the status of a response. For more information, see **Status Codes**.

For example, if status code **201** is returned for calling the API used to **obtain a user token**, the request is successful.

Response Header

Similar to a request, a response also has a header, for example, **Content-Type**.

Figure 3-1 shows the response header for the API used to **obtain a user token**. The **x-subject-token** header field is the desired user token. This token can then be used to authenticate the calling of other APIs.

Figure 3-1 Header fields of the response to the request for obtaining a user token

(Optional) Response Body

This part is optional. The body of a response is often returned in structured format (for example, JSON or XML) as specified in the **Content-Type** header field. The response body transfers content except the response header.

For the API used to **obtain a user token**, the following information is returned. The following describes part of the request body.

```
{
    "token": {
        "expires_at": "2019-02-13T06:52:13.855000Z",
        "methods": [
            "password"
        ],
        "catalog": [
            {
                "endpoints": [
                    {
                        "region_id": "az-01",
.....
```

If an error occurs during API calling, the system returns an error code and message to you. The following shows the format of an error response body:

```
{
    "error_code": "AS.0001",
    "error_msg": "The format of message is error"
}
```

In the response body, **error_code** is an error code, and **error_msg** provides information about the error.

4 APIs (Recommended)

4.1 DDM Instances

4.1.1 Buying a DDM instance

Function

This API is used to buy a DDM instance.

Constraints

DDM runs in VPCs. Before you create a DDM instance, ensure that a VPC is available and a subnet and security group have been configured.

URI

POST /v1/{project_id}/instances

Table 4-1 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.

Request Parameters

Table 4-2 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-3 Request body parameters

Parameter	Mandatory	Type	Description
instance	Yes	**CreateInstanceDetail** object	Instance information
extend_param	No	**CreateInstanceExtendParam** object object	Extended parameter, which is available only when you create a yearly/monthly instance

Table 4-4 CreateInstanceDetail

Parameter	Mandatory	Type	Description
name	Yes	String	Name of a DDM instance, which: • Can include 4 to 64 characters. • Must start with a letter. • Can contain only letters, digits, underscores (_), and hyphens (-). Minimum length: 4 characters Maximum length: 64 characters
flavor_id	Yes	String	Class ID
node_num	Yes	Integer	Number of nodes
engine_id	Yes	String	Engine ID
enterprise_project_id	No	String	Enterprise project ID

Parameter	Mandatory	Type	Description
available_zones	Yes	Array of strings	AZ code. The value cannot be empty. For details, see **Regions and Endpoints**.
vpc_id	Yes	String	VPC ID
security_group_id	Yes	String	Security group ID
subnet_id	Yes	String	Subnet ID
param_group_id	No	String	Parameter group ID
time_zone	No	String	UTC time zone. The default value is **UTC**. The value can be **UTC**, **UTC-12:00**, **UTC-11:00**, **UTC-10:00**, **UTC-09:00**, **UTC-08:00**, **UTC-07:00**, **UTC-06:00**, **UTC-05:00**, **UTC-04:00**, **UTC-03:00**, **UTC-02:00**, **UTC-01:00**, **UTC+01:00**, **UTC+02:00**, **UTC+03:00**, **UTC+05:00**, **UTC+06:00**, **UTC+07:00**, **UTC+08:00**, **UTC+09:00**, **UTC+10:00**, **UTC+11:00**, and **UTC+12:00**.
admin_user_name	No	String	Username of the administrator. The username: • Can include 1 to 32 characters. • Must start with a letter. • Can contain only letters, digits, and underscores (_).
admin_user_password	No	String	Password of the administrator. The password: • Can include 8 to 32 characters. • Must be a combination of uppercase letters, lowercase letters, digits, and the following special characters: ~!@#%^*-_+? Must be a strong password to improve security and prevent security risks such as brute force cracking.

Table 4-5 CreateInstanceExtendParam

Parameter	Mandatory	Type	Description
charge_mode	No	String	Billing mode. The value can be: • **prePaid**: indicates the yearly/monthly billing mode. • **postPaid**: indicates the pay-per-use billing mode. Default value: **postPaid** Default value: **postPaid** Enumerated values: • **prePaid** • **postPaid**
period_type	No	String	Subscription period. The value can be: • **month**: indicates the subscription time unit is month. • **year**: indicates the subscription time unit is year. This parameter is valid and mandatory if **charge_mode** is set to **prePaid**. Enumerated values: • **month** • **year**
period_num	No	Integer	Subscription duration. • If **period_type** is set to **month**, the value ranges from **1** to **9**. • If **period_type** is set to **year**, the value is **1**. This parameter is valid and mandatory if **charge_mode** is set to **prePaid**.

Parameter	Mandatory	Type	Description
is_auto_renew	No	String	Whether the instance is automatically renewed when it expires. The value can be: • **true**: The instance is automatically renewed when it expires. • **false**: The instance is not automatically renewed when it expires. This parameter is valid when **charge_mode** is set to **prePaid**. The instance is not automatically renewed by default if no value is specified. " Enumerated values: • **true** • **false**
is_auto_pay	No	String	Whether the order is paid from the customer's account balance. The value can be: • **true**: indicates that the order is automatically paid from the customer's account balance. • **false**: indicates that the order needs to be paid manually. This parameter is available if **charge_mode** is set to **prePaid**. The order needs to be paid manually by default if no value is specified. " Enumerated values: • **true** • **false**

Response Parameters

Status code: 200

Table 4-6 Response body parameters

Parameter	Type	Description
id	String	Instance ID. This parameter is returned only when a pay-per-use instance is created.
order_id	String	Order ID. This parameter is returned only when a yearly/monthly instance is created.

Status code: 400

Table 4-7 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-8 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

- Creating a pay-per-use DDM instance. You are billed based on how long you use the instance by default.

```
POST https://{endpoint}/v1/{project_id}/instances

{
  "instance" : {
    "name" : "ddm-test-001",
    "flavor_id" : "8f2e696c-a9c1-30bd-af90-25522bc67606",
    "node_num" : 4,
    "engine_id" : "2325a707-0361-8be6-dd01-13474bbac437",
    "enterprise_project_id" : "0",
    "available_zones" : [ "az1" ],
    "vpc_id" : "e1d886ec-cfe7-4cd4-b748-fc55a10b4172",
    "security_group_id" : "035b70ed-319b-4086-9fd7-62a2e8548b2e",
    "subnet_id" : "f942f970-1a02-4eee-8927-xxxxxxxx",
    "param_group_id" : "035b70ed-319b-4086-9fd7-xxxxxxxx"
  }
}
```

- Creating a yearly/monthly DDM instance. You are billed on a monthly basis. The order will be paid from your account balance and automatically renewed before the subscription expires.

```
POST https://{endpoint}/v1/{project_id}/instances

{
  "instance" : {
    "name" : "ddm-test-003",
    "flavor_id" : "8f2e696c-a9c1-30bd-af90-25522bc67606",
    "node_num" : 4,
    "engine_id" : "2325a707-0361-8be6-dd01-13474bbac437",
    "enterprise_project_id" : "0",
    "available_zones" : [ "az1" ],
    "vpc_id" : "e1d886ec-cfe7-4cd4-b748-fc55a10b4172",
    "security_group_id" : "035b70ed-319b-4086-9fd7-62a2e8548b2e",
    "subnet_id" : "f942f970-1a02-4eee-8927-xxxxxxxx",
    "param_group_id" : "035b70ed-319b-4086-9fd7-xxxxxxxx"
  },
  "extend_param" : {
    "charge_mode" : "prePaid",
    "period_type" : "month",
    "period_num" : 1,
    "is_auto_renew" : "true",
    "is_auto_pay" : "true"
  }
}
```

Example Response

Status code: 200

OK

Buying a pay-per-use instance:

```
{
  "id": "e90bc6739a3c4666a577c3fa1524dac2in09",
  "order_id": null
}
```

Buying a yearly/monthly instance:

```
{
  "id" : null,
  "order_id" : "CS1810251738L8VVD"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```


Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.2 Querying DDM Instances

Function

This API is used to query DDM instances.

Constraints

None

URI

GET /v1/{project_id}/instances?offset={offset}&limit={limit}

Table 4-9 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.

Table 4-10 Query parameters

Parameter	Mandatory	Type	Description
offset	No	Integer	Index offset. The query starts from the next piece of data indexed by this parameter. The value is **0** by default. The value must be a positive integer.

Parameter	Mandatory	Type	Description
limit	No	Integer	Maximum instances to be queried. Value range: 1 to 128. If the parameter value is not specified, 10 instances are queried by default.

Request Parameters

Table 4-11 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-12 Response body parameters

Parameter	Type	Description
instances	Array of **ShowInstanceBeanResponse** objects	DDM instance information
instance_num	Integer	Number of DDM instances of a tenant
page_no	Integer	Current page
page_size	Integer	Data records on the current page
total_record	Integer	Total records
total_page	Integer	Total pages

Table 4-13 ShowInstanceBeanResponse

Parameter	Type	Description
id	String	DDM instance ID

Parameter	Type	Description
status	String	DDM instance status For details about this parameter value, see **Status Description**.
name	String	Name of the created DDM instance
created	String	Time when the DDM instance is created. The time must be in the format of **yyyy-mm-dd Thh:mm:ssZ**. **T** indicates the separator between the calendar and the hourly notation of time. **Z** indicates Coordinated Universal Time (UTC).
updated	String	Time when the DDM instance is last updated, which is in the same format as **created**.
available_zone	String	AZ name
vpc_id	String	VPC ID
subnet_id	String	Subnet ID
security_group_id	String	Security group ID
node_count	Integer	Number of nodes
access_ip	String	Address for accessing the DDM instance
access_port	String	Port for accessing the DDM instance
core_count	String	Number of vCPUs
ram_capacity	String	Memory size in GB
error_msg	String	Response message. This parameter is not returned if no abnormality occurs.
node_status	String	Node status
enterprise_project_id	String	Enterprise project ID
project_id	String	Project ID of a tenant in a region
engine_version	String	Engine version (core version)
order_id	String	Order ID, which is returned if the DDM instance is billed on a yearly/monthly basis

Status code: 400

Table 4-14 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-15 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Querying DDM instances

```
GET https://{endpoint}/v1/{project_id}/instances?offset={offset}&limit={limit}
```

Example Response

Status code: 200

OK

```
{
  "instance_num" : 26,
  "instances" : [ {
    "id" : "73f27bb0b26d4a79a9b0c58a4c700c4fin09",
    "status" : "RUNNING",
    "name" : "ddm-36c7",
    "created" : "2021-12-14T07:46:22+0000",
    "updated" : "2021-12-14T10:11:22+0000",
    "available_zone" : "az1",
    "vpc_id" : "1d9441c5-1a4b-431d-9edb-bf3564a83e74",
    "subnet_id" : "20c2d83c-755b-42a2-846a-4688eb35d1a7",
    "security_group_id" : "fbdff89d-32fe-45a4-832b-115ac4bfaac9",
    "node_count" : 1,
    "access_ip" : "192.168.23.143",
    "access_port" : "5066",
    "core_count" : "2",
    "ram_capacity" : "4",
    "node_status" : "RUNNING",
    "enterprise_project_id" : "0",
    "project_id" : "055d9f4ee780d4d42f96c01c1bc3c50c",
    "engine_version" : "3.0.8"
  } ],
  "page_size" : 1,
  "total_record" : 26,
  "total_page" : 26,
  "page_no" : 3
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.3 Querying Details of a DDM Instance

Function

This API is used to query details about a DDM instance.

Constraints

None

URI

GET /v1/{project_id}/instances/{instance_id}

Table 4-16 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-17 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-18 Response body parameters

Parameter	Type	Description
id	String	DDM instance ID
status	String	DDM instance status For details about this parameter value, see **Status Description**.
name	String	DDM instance name
created	String	Time when the DDM instance is created. The time must be in the format of **yyyy-mm-dd Thh:mm:ssZ**.
updated	String	Time when the DDM instance is last updated
available_zone	String	Name of the AZ where the DDM instance is located
vpc_id	String	VPC ID
subnet_id	String	Subnet ID

Parameter	Type	Description
security_group_id	String	Security group ID
node_count	Integer	Number of nodes
access_ip	String	Address for accessing the DDM instance
access_port	String	Port for accessing the DDM instance
node_status	String	Node status
core_count	String	Number of vCPUs
ram_capacity	String	Memory size in GB
error_msg	String	Response message. This parameter is not returned if no abnormality occurs.
project_id	String	Project ID
order_id	String	Order ID. No value is returned when a pay-per-use instance is created.
enterprise_project_id	String	Enterprise project ID
engine_version	String	Engine version (core version)
nodes	Array of **GetDetailfNodesInfo** objects	Node information
admin_user_name	String	Username of the administrator. The username: • Can include 1 to 32 characters. • Must start with a letter. • Can contain only letters, digits, and underscores (_).

Table 4-19 GetDetailfNodesInfo

Parameter	Type	Description
status	String	Status of the DDM instance node
port	String	Port of the DDM instance node
ip	String	IP address of the DDM instance node

Status code: 400

Table 4-20 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-21 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Querying details of a DDM instance

```
GET https://{endpoint}/v1/{project_id}/instances/{instance_id}
```

Example Response

Status code: 200

OK

```
{
  "nodes" : [ {
    "status" : "RUNNING",
    "port" : 5066,
    "ip" : "192.168.0.160"
  } ],
  "id" : "1f5c9fd6cd984056ba89c8c87cc03278in09",
  "status" : "RUNNING",
  "name" : "ddm2-test",
  "created" : "2021-11-09T03:30:01+0000",
  "updated" : "2021-12-15T09:12:58+0000",
  "available_zone" : "az1",
  "vpc_id" : "cfaa4024-0603-4aba-81d4-2203b4ad26fb",
  "subnet_id" : "48f270ef-af70-4ad9-bb1c-c28dd5b37f93",
  "security_group_id" : "bc28ef93-0083-4652-bce6-381e14284db6",
  "node_count" : 1,
  "access_ip" : "192.168.0.160",
  "access_port" : "5066",
  "core_count" : "2",
  "ram_capacity" : "8",
  "node_status" : "RUNNING",
  "enterprise_project_id" : "0",
  "project_id" : "070c071d8e80d58c2f42c0121b10cf9f",
  "engine_version" : "3.0.6",
  "admin_user_name" : "root"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.4 Modifying the Name of a DDM Instance

Function

This API is used to modify the name of a DDM instance.

Constraints

None

URI

PUT /v1/{project_id}/instances/{instance_id}/modify-name

Table 4-22 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-23 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-24 Request body parameters

Parameter	Mandatory	Type	Description
name	Yes	String	Name of a DDM instance, which: • Can include 4 to 64 characters. • Must start with a letter. • Can contain only letters, digits, underscores (_), and hyphens (-). Minimum length: 4 characters Maximum length: 64 characters

Response Parameters

Status code: 200

Table 4-25 Response body parameters

Parameter	Type	Description
name	String	DDM instance name

Status code: 400

Table 4-26 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-27 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Modifying the name of a DDM instance

```
PUT https://{endpoint}/v1/{project_id}/instances/{instance_id}/modify-name

{
  "name" : "DDM-test-04"
}
```

Example Response

Status code: 200

OK

```
{
  "name" : "DDM-test-04"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
```



```
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.5 Changing the Security Group of a DDM Instance

Function

This API is used to modify the security group of a DDM instance.

Constraints

None

URI

PUT /v1/{project_id}/instances/{instance_id}/modify-security-group

Table 4-28 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-29 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-30 Request body parameters

Parameter	Mandatory	Type	Description
security_group_id	Yes	String	Security group ID. The default value is the original security group ID. You can change the value as required.

Response Parameters

Status code: 200

Table 4-31 Response body parameters

Parameter	Type	Description
security_group_id	String	Security group ID

Status code: 400

Table 4-32 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-33 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Changing the security group of a DDM instance

```
PUT https://{endpoint}/v1/{project_id}/instances/{instance_id}/modify-security-group

{
  "security_group_id" : "035b70ed-319b-4086-9fd7-62a2e8548b2e"
}
```

Example Response

Status code: 200

OK

```
{
  "security_group_id" : "035b70ed-319b-4086-9fd7-62a2e8548b2e"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.6 Deleting a DDM Instance

Function

This API is used to delete a DDM instance to release all its resources.

Constraints

None

URI

DELETE /v1/{project_id}/instances/{instance_id}

Table 4-34 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Table 4-35 Query parameters

Parameter	Mandatory	Type	Description
delete_rds_data	No	String	Whether data stored on the associated DB instances is deleted. The value can be: • **true**: indicates that the data stored on the associated DB instances is deleted. • **false**: indicates that the data stored on the associated DB instances is not deleted. It is left blank by default. Enumerated values: • **true** • **false**

Request Parameters

Table 4-36 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-37 Response body parameters

Parameter	Type	Description
id	String	DDM instance ID

Status code: 400

Table 4-38 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-39 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

- Deleting a DDM instance (including the data stored on associated DB instances)

```
DELETE https://{endpoint}/v1/{project_id}/instances/{instance_id}?delete_rds_data=true
```

- Deleting a DDM instance (excluding the data stored on associated DB instances)

```
DELETE https://{endpoint}/v1/{project_id}/instances/{instance_id}?delete_rds_data=false
```

Example Response

Status code: 200

OK

```
{
  "id" : "9608ce63-bf66-4342-be8a-44f9b6b15d54"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.7 Restarting a DDM Instance

Function

This API is used to restart a DDM instance.

Constraints

None

URI

POST /v1/{project_id}/instances/{instance_id}/action

Table 4-40 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-41 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-42 Request body parameters

Parameter	Mandatory	Type	Description
restart	No	**RestarInstanceInfo** object	Restart-related parameter

Table 4-43 RestarInstanceInfo

Parameter	Mandatory	Type	Description
type	No	String	Restart type, which can be **soft** or **hard**. • **soft**: Only the process is restarted. • **hard**: The instance VM is forcibly restarted. Enumerated values: • **soft** • **hard**

Response Parameters

Status code: 200

Table 4-44 Response body parameters

Parameter	Type	Description
instanceId	String	DDM instance ID
instanceName	String	DDM instance name
jobId	String	Task ID

Status code: 400

Table 4-45 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-46 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Restarting a DDM instance (only the instance process)

```
POST https://{endpoint}/v1/{project_id}/instances/{instance_id}/action

{
  "restart" : {
    "type" : "soft"
  }
}
```


Example Response

Status code: 200

ok

```
{
  "instanceId" : "28e8841d0b9c4f6a9a30742ee60e1068in09",
  "instanceName" : "ddm-fb88-test",
  "jobId" : "1eb697c0-1842-43a3-8671-f562d0385cb9"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	ok
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.8 Reloading Table Data

Function

This API is used to reload table data of the destination DDM instance for cross-region DR.

Constraints

None

URI

POST /v1/{project_id}/instances/{instance_id}/reload-config

Table 4-47 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-48 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 400

Table 4-49 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-50 Response body parameters

Parameter	Type	Description
errCode	String	Service error code

Parameter	Type	Description
externalMessage	String	Error message

Example Request

Reloading table data

```
POST https://{endpoint}/v1/{project_id}/instances/{instance_id}/reload_config

{ }
```

Example Response

Status code: 200

ok

```
{ }
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	ok
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.9 Scaling Out a DDM Instance

Function

This API is used to scale out a specified DDM instance. Pay-per-use and yearly/monthly instances are all supported.

Constraints

Make sure that the associated RDS instances are available and not undergoing other operations.

URI

POST /v2/{project_id}/instances/{instance_id}/action/enlarge

Table 4-51 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-52 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-53 Request body parameters

Parameter	Mandatory	Type	Description
flavor_id	Yes	String	Flavor ID of the VM for deploying the DDM instance that is to be scaled out
node_number	Yes	Integer	Number of nodes to be added

Parameter	Mandatory	Type	Description
group_id	No	String	Group ID, which specifies the group that is scaled out. This parameter must be specified if there are more than one node group.
is_auto_pay	No	Boolean	Whether the order is automatically paid when you change the node class of a yearly/monthly instance. This parameter does not affect the billing mode of automatic renewal. • **true**: indicates that the order is automatically paid from the account. • **false**: indicates that the order is manually paid from the account. The default value is **false**.
available_zones	No	Array of strings	AZ code. This parameter is valid only for yearly/monthly instances. The number of AZs must be same as that specified in **node_number**. For details, see **Regions and Endpoints**.

Response Parameters

Status code: 200

Table 4-54 Response body parameters

Parameter	Type	Description
instanceId	String	DDM instance ID
instanceName	String	DDM instance name. This parameter is returned only for pay-per-use instances.
jobId	String	Task ID. This parameter is returned only for pay-per-use instances.
orderId	String	Order ID. This parameter is returned only for yearly/monthly instances.

Status code: 400

Table 4-55 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-56 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

- Scaling out a pay-per-use DDM instance. The number of nodes to be added is 1.

```
POST https://{endpoint}/v2/{project_id}/instances/{instance_id}/action/enlarge

{
  "flavor_id" : "8f2e696c-a9c1-30bd-af90-25522bc67606",
  "node_number" : 1
}
```

- Scaling out a pay-per-use DDM instance that has more than one group. The number of nodes to be added is 1.

```
POST https://{endpoint}/v2/{project_id}/instances/{instance_id}/action/enlarge

{
  "flavor_id" : "8f2e696c-a9c1-30bd-af90-25522bc67606",
  "group_id" : "f080abf2010d45118068c28c8958f5fcgr09",
  "node_number" : 1
}
```

- Scaling out a yearly/monthly DDM instance. The number of nodes to be added is 1 and the order is paid from your account balance.

```
POST https://{endpoint}/v2/{project_id}/instances/{instance_id}/action/enlarge

{
  "flavor_id" : "8f2e696c-a9c1-30bd-af90-25522bc67606",
  "node_number" : 1,
  "is_auto_pay" : true,
  "available_zones": [
    "az1xahz"
  ]
}
```

Example Response

Status code: 200

ok


```
{
  "instanceId" : "28e8841d0b9c4f6a9a30742ee60e1068in09",
  "instanceName" : "ddm-fb88-test",
  "jobId" : "1eb697c0-1842-43a3-8671-f562d0385cb9"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	ok
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.10 Scaling in a DDM instance

Function

This API is used to remove nodes from a specified DDM instance.

Constraints

Make sure that the associated RDS instances are available and not undergoing other operations. Yearly/Monthly instances do not support this operation.

URI

POST /v2/{project_id}/instances/{instance_id}/action/reduce

Table 4-57 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-58 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-59 Request body parameters

Parameter	Mandatory	Type	Description
node_number	Yes	Integer	Number of the nodes to be removed. The maximum value is the instance nodes minus 1.
group_id	No	String	Group ID, which specifies the group that is scaled out. This parameter must be specified if there are more than one node group.

Response Parameters

Status code: 200

Table 4-60 Response body parameters

Parameter	Type	Description
instanceId	String	DDM instance ID
instanceName	String	DDM instance name

Parameter	Type	Description
jobId	String	Task ID. This parameter is returned only for pay-per-use instances.
orderId	String	Order ID. This parameter is returned only for yearly/monthly instances.

Status code: 400

Table 4-61 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-62 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

- Scaling in a DDM instance. The number of nodes to be removed is 2.

```
POST https://{endpoint}/v2/{project_id}/instances/{instance_id}/action/reduce

{
  "node_number" : 2
}
```

- Scaling in a DDM instance that has more than one group. The number of nodes to be removed is 1.

```
POST https://{endpoint}/v2/{project_id}/instances/{instance_id}/action/reduce

{
  "group_id" : "f080abf2010d45118068c28c8958f5fcgr09",
  "node_number" : 1
}
```

Example Response

Status code: 200

ok

```
{
  "instanceId" : "28e8841d0b9c4f6a9a30742ee60e1068in09",
  "instanceName" : "BUG-ddm-fb88-test",
  "jobId" : "1eb697c0-1842-43a3-8671-f562d0385cb9"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	ok
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.11 Modifying the Read Policy of the Associated DB Instance

Function

This API is used to modify the read policy of the DB instance associated with a DDM instance.

Constraints

Make sure that the associated RDS instances are available and not undergoing other operations.

URI

PUT /v2/{project_id}/instances/{instance_id}/action/read-write-strategy

Table 4-63 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-64 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-65 Request body parameters

Parameter	Mandatory	Type	Description
read_weight	Yes	Map<String, Integer>	Read weights of the primary DB instance and its read replicas • key: DB instance ID • value: read weight parameter

Response Parameters

Status code: 200

Table 4-66 Response body parameters

Parameter	Type	Description
success	Boolean	Whether the operation is successful
instance_id	String	DDM instance ID

Status code: 400

Table 4-67 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-68 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Modifying the read policy of the associated DB instance

```
PUT https://{endpoint}/v2/{project_id}/instances/{instance_id}/action/read-write-strategy

{
  "read_weight" : {
    "395298ae6fb9496d95939ed556474983in01" : 60,
    "38ef52c365a14b7caeb7333137900e96in01" : 50
  }
}
```

Example Response

Status code: 200

ok

```
{
  "success" : true,
  "instance_id" : "175f5aff-xxxx-xxxx-xxxx-d0858982bbec"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
```



```
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	ok
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.12 Synchronizing Data Node Information

Function

This API is used to synchronize configuration information of all data nodes that are associated with a DDM instance.

Constraints

None

URI

POST /v1/{project_id}/instances/{instance_id}/rds/sync

Table 4-69 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-70 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-71 Response body parameters

Parameter	Type	Description
instanceId	String	DDM instance ID
jobId	String	Task ID

Status code: 400

Table 4-72 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-73 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Synchronizing data node information

```
POST https://{endpoint}/v1/{project_id}/instances/{instance_id}/rds/sync

None
```

Example Response

Status code: 200

OK

```
{
  "instanceId" : "1f5c9fd6cd984056ba89c8c87cc03278in09",
  "jobId" : "6f1334ca-faa6-479e-837f-f3219192675e"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.13 Querying Nodes of a DDM Instance

Function

This API is used to query nodes of a DDM instance.

Constraints

None

URI

GET /v1/{project_id}/instances/{instance_id}/nodes?offset={offset}&limit={limit}

Table 4-74 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Table 4-75 Query parameters

Parameter	Mandatory	Type	Description
offset	No	Integer	Index offset. The query starts from the next piece of data indexed by this parameter. The value is **0** by default. The value must be a positive integer.
limit	No	Integer	Maximum nodes to be queried. Value range: 1 to 128. If the parameter value is not specified, 10 nodes are queried by default.

Request Parameters

Table 4-76 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-77 Response body parameters

Parameter	Type	Description
nodes	Array of **NodeList** objects	Instance node information
offset	Integer	Which page the server starts returning items.
limit	Integer	Number of records displayed on each page
total	Integer	Number of DDM instance nodes

Table 4-78 NodeList

Parameter	Type	Description
port	String	Port
status	String	Node status
node_id	String	Node ID
ip	String	IP Address

Status code: 400

Table 4-79 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-80 Response body parameters

Parameter	Type	Description
errCode	String	Service error code

Parameter	Type	Description
externalMessage	String	Error message

Example Request

Querying nodes of a DDM instance

```
GET https://{endpoint}/v1/{project_id}/instances/{instance_id}/nodes?offset={offset}&limit={limit}
```

Example Response

Status code: 200

OK

```
{
  "nodes" : [ {
    "port" : "5066",
    "status" : "normal",
    "node_id" : "4a2b97b7f5e3462c9c78aae93b46ed83no09",
    "ip" : "192.168.0.160"
  } ],
  "offset" : 0,
  "limit" : 128,
  "total" : 1
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.14 Querying Details of a DDM Instance Node

Function

This API is used to query details of a DDM instance node.

Constraints

None

URI

GET /v1/{project_id}/instances/{instance_id}/nodes/{node_id}

Table 4-81 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID
node_id	Yes	String	DDM instance node ID

Request Parameters

Table 4-82 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-83 Response body parameters

Parameter	Type	Description
status	String	Node status
name	String	Node name
node_id	String	Node ID
private_ip	String	Private IP address of the node
floating_ip	String	Floating IP address of the node
server_id	String	VM ID
subnet_name	String	Subnet name
datavolume_id	String	Data disk ID
res_subnet_ip	String	IP address provided by the resource subnet
systemvolume_id	String	System disk ID

Status code: 400

Table 4-84 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-85 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Querying details of a DDM instance node


```
GET https://{endpoint}/v1/{project_id}/instances/{instance_id}/nodes/{node_id}
```

Example Response

Status code: 200

OK

```
{
  "status" : "normal",
  "name" : "ddm2-test_node_01",
  "node_id" : "4a2b97b7f5e3462c9c78aae93b46ed83no09",
  "private_ip" : "192.168.0.160",
  "floating_ip" : "100.65.78.158",
  "server_id" : "8bd4d0bd-f63e-489a-95b6-50351f9657e6",
  "datavolume_id" : "30ade9fb-26de-4d1f-af08-c376974b9d86",
  "res_subnet_ip" : "172.16.15.224",
  "systemvolume_id" : "88d7de55-f886-4929-ae7c-04d842959700"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.15 Querying Parameters of a Specified DDM Instance

Function

This API is used to query parameters of a specified DDM instance.

Constraints

None

URI

GET /v3/{project_id}/instances/{instance_id}/configurations?offset={offset}&limit={limit}

Table 4-86 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Table 4-87 Query parameters

Parameter	Mandatory	Type	Description
offset	No	Integer	Index offset. The query starts from the next piece of data indexed by this parameter. The value is **0** by default. The value must be a positive integer.
limit	No	Integer	Maximum parameters to be queried. Value range: 1 to 128. If the parameter value is not specified, 10 parameters are queried by default.

Request Parameters

Table 4-88 Request header parameters

Parameter	Mandatory	Type	Description
X-Language	No	String	Language. The value can be **zh-cn** or **en-us**. The default value is **zh-cn**.

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-89 Response body parameters

Parameter	Type	Description
updated	String	Time when DDM instance parameters are last updated
configuration_parameter	Array of **ConfigurationParameterList** objects	Information about DDM instance parameters
offset	Integer	Which page the server starts returning items
limit	Integer	Number of records displayed on each page
total	Integer	Total collections

Table 4-90 ConfigurationParameterList

Parameter	Type	Description
name	String	Parameter name
value	String	Parameter value
need_restart	String	Whether the instance needs to be restarted
read_only	String	Whether the parameter is read-only
value_range	String	Parameter value range
data_type	String	Parameter type
description	String	Parameter description

Status code: 400

Table 4-91 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-92 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Querying parameters of a specified DDM instance

```
GET https://{endpoint}/v3/{project_id}/instances/{instance_id}/configurations?offset={offset}&limit={limit}
```

Example Response

Status code: 200

OK

```
{
  "updated" : "2021-11-09 03:26:52",
  "configuration_parameter" : [ {
    "name" : "temp_table_size_limit",
    "value" : "1000000",
    "need_restart" : "0",
    "read_only" : "0",
    "value_range" : "500000-2000000000",
    "data_type" : "integer",
    "description" : "Maximum size of the temporary table."
  } ],
  "offset" : 0,
  "limit" : 128,
  "total" : 22
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.16 Modifying Parameters of a DDM Instance

Function

This API is used to modify parameters of a DDM instance.

Constraints

The values of the modified parameters must be within the value range defined on the DDM console. For details about the range of parameter values, see **Modifying Parameters of a DDM Instance** in *Distributed Database Middleware User Guide*.

URI

PUT /v3/{project_id}/instances/{instance_id}/configurations

Table 4-93 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-94 Request header parameters

Parameter	Mandatory	Type	Description
X-Language	No	String	Language. The value can be **zh-cn** or **en-us**. The default value is **zh-cn**.
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-95 Request body parameters

Parameter	Mandatory	Type	Description
values	Yes	**values** object Map<String,String>	Parameter values defined by users based on a default parameter template. • **key**: indicates the parameter name. If the key is empty, the parameter value is not changed. • **value**: indicates the parameter value.

Table 4-96 values

Parameter	Mandatory	Type	Description
bind_table	No	String	Data association among multiple sharded tables. The optimizer processes JOIN operations at the MySQL layer based on these associations. The format is [{tb.col1,tb2.col2}, {tb.col2,tb3.col1},...].

Parameter	Mandatory	Type	Description
character_set_server	No	String	DDM server's character set. To store emoticons, set both this parameter and the character set on RDS to **utf8mb4**. To modify the character set, you must change the collation of the DDM server correspondingly. Enumerated values: • **gbk** • **utf8** • **utf8mb4**
collation_server	No	String	Collation on the DDM server. To modify the collation, you must modify the server's character set correspondingly. Enumerated values: • **utf8_unicode_ci** • **utf8_bin** • **gbk_chinese_ci** • **gbk_bin** • **utf8mb4_unicode_ci** • **utf8mb4_bin**
concurrent_execution_level	No	String	Concurrency level of scanning table shards in a logical table: • **DATA_NODE**: indicates that database shards are scanned in parallel and table shards in each database shard are scanned in serial. • **RDS_INSTANCE**: indicates that RDS DB instances are scanned in parallel and shards in each DB instance are scanned in serial. • **PHY_TABLE**: indicates that all table shards are scanned in parallel. Enumerated values: • **RDS_INSTANCE** • **DATA_NODE** • **PHY_TABLE**

Parameter	Mandatory	Type	Description
connection_idle_timeout	No	String	Number of seconds the server waits for activity on a connection before closing it. The value ranges from **60** to **28800**. The default value is **28800**, indicating that the server waits for 28800 seconds before closing a connection.
enable_table_recycle	No	String	Whether the table recycle bin is enabled. Enumerated values: • **OFF** • **ON**
insert_to_load_data	No	String	Whether constant values can be inserted by executing the LOAD DATA statement. Enumerated values: • **OFF** • **ON**
live_transaction_timeout_on_shutdown	No	String	Timeout limit of an in-transit transaction, in seconds. The value ranges from **0** to **100**. The default value is **1**, indicating that the server waits for 1 second before closing the connection.
long_query_time	No	String	Minimum duration of a query to be logged as slow, in seconds. The value ranges from **0.01** to **10**. The default value is **1**, indicating that the query is considered as a slow query if its execution duration is greater than or equal to 1 second.
max_allowed_packet	No	String	Maximum size allowed for the packets transferred between the server and the client at a time. The value must be a multiple of **1024**. The value ranges from **1024** to **1073741824**. The default value is **1073741824**.

Parameter	Mandatory	Type	Description
max_backend_connections	No	String	Maximum of concurrent RDS client connections allowed per DDM instance. When this parameter is set to **0** (default), the maximum concurrent connections from a DDM node to an RDS instance is: (RDS instance's maximum connections - 20)/DDM nodes. The value ranges from **0** to **10000000**.
max_connections	No	String	Concurrent connections allowed per DDM instance, which depends on the class and quantity of associated RDS instances. The default value is **20000**. The value ranges from **10** to **40000**, indicating that the maximum of concurrent connections cannot exceed 40,000.
min_backend_connections	No	String	Minimum concurrent connections from a DDM node to an RDS instance. The default value is **10**. The value ranges from **0** to **10000000**.
not_from_pushdown	No	String	Whether the SELECT statements that do not contain any FROM clauses are pushed down. Enumerated values: • **OFF** • **ON**
seconds_behind_master	No	String	Threshold in seconds of the replication lag between a primary RDS instance to its read replica. The value ranges from **0** to **7200**. The default value is **30**, indicating that the time for data replication between the primary RDS instance and its read replicas cannot exceed 30 seconds. If the time exceeds 30 seconds, the data read requests are no longer forwarded to the read replicas.

Parameter	Mandatory	Type	Description
sql_audit	No	String	Whether SQL audit is enabled. Enumerated values: • **OFF** • **ON**
sql_execute_timeout	No	String	Number of seconds to wait for a SQL statement to execute before it times out. The value ranges from **100** to **28800**. The default value is **28800**, indicating that the SQL statement times out if its execution time is not less than 28,800 seconds.
support_ddl_binlog_hint	No	String	Whether a binlog hint is added to each DDL statement. Enumerated values: • **OFF** • **ON**
transaction_policy	No	String	• **XA**: * XA transaction, which attempts to ensure atomicity and isolation. • **FREE**: Best-effort commit transaction that allows data to be written to multiple shards, without affecting performance. This setting does not ensure atomicity. • **NO_DTX**: With this setting, single-shard transactions are executed. Enumerated values: • **XA** • **FREE** • **NO_DTX**
ultimate_optimize	No	String	Whether the SQL execution plan is optimized based on parameter values. Enumerated values: • **OFF** • **ON**

Example Request

Changing the value of **long_query_time** to **2**. The value indicates that the query is considered as a slow query if its execution duration is greater than or equal to 2 seconds.

```
PUT https://{endpoint}/v3/{project_id}/instances/{instance_id}/configurations

{
  "values" : {
    "long_query_time" : 2
  }
}
```

Response Parameters

- Normal response

  Table 4-97 Response body parameters

Parameter	Type	Description
nodeList	String	DDM instance nodes
needRestart	Boolean	Whether the instance needs to be restarted
jobId	String	Task ID
configId	String	Parameter group ID
configName	String	Parameter group name

- Normal response example

```
{
  "nodeList" : null,
  "needRestart" : "false",
  "jobId" : "9fe84a77-6a6b-4b03-9a3e-db910a548657",
  "configId" : null,
  "configName" : null
}
```

- Abnormal response

  For details, see **Abnormal Request Results**.

Status Code

- Normal

  200

- Abnormal

  For details, see **Status Codes**.

Error Codes

For details, see **Error Codes**.

4.1.17 Querying DDM Engine Information

Function

This API is used to query information about DDM engine.

Constraints

None

URI

GET /v2/{project_id}/engines?offset={offset}&limit={limit}

Table 4-98 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.

Table 4-99 Query parameters

Parameter	Mandatory	Type	Description
offset	No	Integer	Index offset. The query starts from the next piece of data indexed by this parameter. The value is **0** by default. The value must be a positive integer.
limit	No	Integer	Maximum engines to be queried. Value range: 1 to 128. If the parameter value is not specified, 10 engines are queried by default.

Request Parameters

Table 4-100 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-101 Response body parameters

Parameter	Type	Description
engineGroups	Array of **EngineGroupsInfo** objects	Information of available engines
offset	Integer	Which page the server starts returning items
limit	Integer	Number of records displayed on each page
total	Integer	Number of engine versions

Table 4-102 EngineGroupsInfo

Parameter	Type	Description
id	String	Engine ID
name	String	Engine name
version	String	Engine version
supportAzs	Array of **SupportAzsInfo** objects	AZs

Table 4-103 SupportAzsInfo

Parameter	Type	Description
code	String	AZ code

Parameter	Type	Description
name	String	AZ name
favored	Boolean	Whether the current AZ is supported

Status code: 400

Table 4-104 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-105 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Querying DDM engine information

```
GET https://{endpoint}/v2/{project_id}/engines?offset={offset}&limit={limit}
```

Example Response

Status code: 200

OK

```
{
  "engineGroups" : [ {
    "id" : "b6907aa2-aacb-3ac9-9782-b90b152d456c",
    "name" : "ddm",
    "version" : "3.0.8",
    "supportAzs" : [ {
      "code" : "az1",
      "name" : "az1",
      "favored" : false
    }, {
      "code" : "az2",
      "name" : "az2",
      "favored" : true
```



```
    } ]
  } ],
  "offset" : 0,
  "limit" : 128,
  "total" : 1
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.18 Querying DDM Node Classes Available in an AZ

Function

This API is used to query DDM node classes available in an AZ.

Constraints

None

URI

GET /v2/{project_id}/flavors?engine_id={engine_id}&offset={offset}&limit={limit}

Table 4-106 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.

Table 4-107 Query parameters

Parameter	Mandatory	Type	Description
engine_id	Yes	String	Engine ID, which can be obtained by calling the API for querying DDM engine information.
offset	No	Integer	Index offset. The query starts from the next piece of data indexed by this parameter. The value is **0** by default. The value must be a positive integer.
limit	No	Integer	Maximum node classes to be queried. Value range: 1 to 128. If the parameter value is not specified, 10 node classes are queried by default.

Request Parameters

Table 4-108 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-109 Response body parameters

Parameter	Type	Description
computeFlavorGroups	Array of **ComputeFlavorGroupsInfo** objects	Compute flavor information

Table 4-110 ComputeFlavorGroupsInfo

Parameter	Type	Description
groupType	String	Compute resource architecture type. The value can be **x86** or **Arm**.
computeFlavors	Array of **ComputeFlavors** objects	Compute flavors
offset	Integer	Which page the server starts returning items
limit	Integer	Number of records displayed on each page
total	Integer	Total number of compute flavors

Table 4-111 ComputeFlavors

Parameter	Type	Description
id	String	Class ID
typeCode	String	Resource type code
code	String	VM flavor types recorded in DDM
iaasCode	String	VM flavor types recorded by the IaaS layer
cpu	String	Number of vCPUs
mem	String	Memory size in GB
maxConnections	String	Maximum number of connections
serverType	String	Compute resource type
architecture	String	Compute resource architecture type. The value can be **x86** or **ARM**.

Parameter	Type	Description
azStatus	Map<String,String>	Status of the AZ where node classes are available. The key is the AZ ID and the value is the AZ status. The value can be: • **normal**: indicates that the node classes in the AZ are available. • **unsupported**: indicates that the node classes are not supported by the AZ. • **sellout**: indicates that the node classes in the AZ are sold out.
regionStatus	String	Region status
groupType	String	Compute resource architecture type. The value can be **x86** or **ARM**.
dbType	String	Engine type
extendFields	Map<String,String>	Extension field for storing AZ information

Status code: 400

Table 4-112 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-113 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Querying DDM node classes available in an AZ

```
GET https://{endpoint}/v2/{project_id}/flavors?engine_id={engine_id}&offset={offset}&limit={limit}
```


Example Response

Status code: 200

OK


```
{
  "computeFlavorGroups" : [ {
    "offset" : 0,
    "limit" : 128,
    "total" : 6,
    "groupType" : "X86",
    "computeFlavors" : [ {
      "id" : "8f2e696c-a9c1-30bd-af90-25522bc67606",
      "typeCode" : "hws.resource.type.ddm",
      "code" : "ddm.c3.large.2",
      "iaasCode" : "c3.large.2",
      "cpu" : "2",
      "mem" : "4",
      "maxConnections" : "null",
      "serverType" : "KVM",
      "architecture" : "X86",
      "azStatus" : {
        "az2.dc0" : "unsupported",
        "az3xahz" : "normal",
        "az2xahz" : "normal",
        "az1xahz" : "normal"
      },
      "regionStatus" : "normal",
      "dbType" : "DDM",
      "extendFields" : {
        "azCode" : "az2.dc0,az3xahz,az2xahz,az1xahz",
        "azDescription" : "az2.dc0,az3xahz,az2xahz,az1xahz"
      }
    } ]
  }, {
    "offset" : 0,
    "limit" : 128,
    "total" : 3,
    "groupType" : "ARM",
    "computeFlavors" : [ {
      "id" : "87a6cb8b-0c56-3e16-a91d-9b680a1f8b7f",
      "typeCode" : "hws.resource.type.ddm",
      "code" : "ddm.rc6.large.2",
      "iaasCode" : "kc1.xlarge.2",
      "cpu" : "4",
      "mem" : "8",
      "maxConnections" : "null",
      "serverType" : "KVM",
      "architecture" : "ARM",
      "azStatus" : {
        "az2.dc0" : "unsupported",
        "az3xahz" : "normal",
        "az2xahz" : "normal",
        "az1xahz" : "normal"
      },
      "regionStatus" : "normal",
      "groupType" : "null",
      "dbType" : "DDM",
      "extendFields" : {
        "azCode" : "az2.dc0,az3xahz,az2xahz,az1xahz",
        "azDescription" : "az2.dc0,az3xahz,az2xahz,az1xahz"
      }
    } ]
  } ]
}
```


Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.1.19 Changing the Node Class of a DDM Instance

Function

This API is used to change the node class of a DDM instance.

Constraints

- The node class can be changed only when the corresponding DDM instance is normal.
- The new node class cannot be the same as the original one.
- Node classes of c6s series cannot be changed to those classes of c6 series.

URI

PUT /v3/{project_id}/instances/{instance_id}/flavor

Table 4-114 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-115 Request header parameters

Parameter	Mandatory	Type	Description
x-auth-token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-116 Request body parameters

Parameter	Mandatory	Type	Description
spec_code	Yes	String	Resource specification code of the new node class
group_id	No	String	This parameter is not required if the instance has only one node group. Each instance has one node group by default. If you need to create multiple node groups, set this parameter to the ID of the group whose node class you want to change.

Parameter	Mandatory	Type	Description
is_auto_pay	No	Boolean	Whether the order is automatically paid when you change the node class of a yearly/monthly instance. This parameter does not affect the billing mode of automatic renewal. **true**: indicates that the order is automatically paid from the account. **false**: indicates that the order is manually paid from the account. The default value is **false**.

Response Parameters

Status code: 200

Table 4-117 Response body parameters

Parameter	Type	Description
job_id	String	ID of the task of changing node class. This parameter is returned only when you change the node class of a pay-per-use instance.
order_id	String	Order ID. This parameter is returned only when you change the node class of a yearly/monthly instance.

Status code: 400

Table 4-118 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-119 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Changing node class of a DDM instance to **ddm.c6.4xlarge.2**

```
PUT https://{endpoint}/v3/{project_id}/instances/{instance_id}/flavor
{
  "spec_code" : "ddm.c6.4xlarge.2",
  "group_id" : "3e5a9063d3b84729b0a3310fad3a0942gr09",
  "is_auto_pay" : false
}
```

Example Response

Status code: 200

ok

```
{
  "job_id" : "2x414788a5112333a02390e2eb0ea227"
}
```

Status Codes

Status Code	Description
200	OK
400 500	bad request server error

Error Codes

For details, see **Error Codes**.

4.1.20 Obtaining the Instance Group Information

Function

Obtain DDM instance group information.

Constraints

None

URI

- URL format

  GET /v3/{project_id}/instances/{instance_id}/groups?offset={offset}&limit={limit}

- Parameter description

  Table 4-120 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region. To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID
offset	No	Integer	Which page the server starts returning items. The default value is **0**. The value is an integer greater than or equal to 0.
limit	No	Integer	Number of records displayed on each page. The default value is **10**. Value range: 1 to 128.

Request

Table 4-121 Parameter description

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Example Request

Obtaining DDM instance group information.

```
GET https://{endpoint}/v3/{project_id}/instances/{instance_id}/groups?offset=null&limit=null
```

Response

- Normal response

Table 4-122 Response body parameters

Parameter	Type	Description
total_count	Integer	Total records
group_list	Array of **Table 4-123** objects	Instance group information

Table 4-123 GroupInfo

Parameter	Type	Description
id	String	Group ID
name	String	Group name
role	String	Group role type, which can be read/write or read-only. Returned values: • **rw**: read/write group • **r**: read-only group
endpoint	String	Connection address of the group. If load balancing is not enabled, the connection address string of the node in the group is returned.
ipv6_endpoint	String	IPv6 connection address of the group
is_load_balance	Boolean	Whether load balancing is enabled
is_default_group	Boolean	Whether the API group is the default group
cpu_num_per_node	Integer	Number of CPU cores per node
mem_num_per_node	Integer	Memory size per node, in GB
architecture	String	CPU architecture Returned values: • **x86** • **Arm**
node_list	Array of objects (**Table 4-124**)	Node information list

Table 4-124 GroupNodeInfo

Parameter	Type	Description
id	String	Node ID
name	String	Node name
az	String	AZ to which the node belongs

- Normal response example

```
{
   "group_list":[
      {
         "id":"****gr09",
         "name":"group-default",
         "role":"rw",
         "endpoint":"**.**.**.**:5066",
         "is_load_balance":true,
         "is_default_group":false,
         "architecture":"X86",
         "cpu_num_per_node":4,
         "mem_num_per_node":8,
         "node_list":[
            {
               "id":"****no09",
               "name":"node_01",
               "az":"some_az"
            }
         ]
      }
   ],
   "total_count":1
}
```

- Abnormal response

  For details, see **Abnormal Request Results**.

Status Code

- Normal

  200

- Abnormal

  For details, see **Status Codes**.

Error Codes

For details, see **Error Codes**.

4.1.21 Creating an Instance Group

Function

This API is used to create DDM instances.

Constraints

None

URI

- URL format

  POST /v3/{project_id}/instances/{instance_id}/groups

- Parameter description

Table 4-125 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region. To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID.

Request

Table 4-126 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-127 Request body parameters

Parameter	Mandatory	Type	Description
name	Yes	String	Name of a DDM instance group, which: • Can include 4 to 64 characters. • Must start with a letter. • Can contain only letters, digits, underscores (_), and hyphens (-). Minimum characters: **4** Maximum characters: **64**
type	Yes	String	Type of the instance group. **rw**: read/write group **r**: read-only group

Parameter	Mandatory	Type	Description
flavor_id	Yes	String	Specification ID.
nodes	Yes	Array of **Table NodeInfo** objects	Node information list. Minimum value: **1** Maximum value: **32**

Table 4-128 NodeInfo

Parameter	Mandatory	Type	Description
available_zone	Yes	String	AZ where the node is located. The value cannot be empty. For details, see **Regions and Endpoints**.
subnet_id	Yes	String	Subnet ID.

Example Request

Create a DDM instance group. The group type is read/write and the number of nodes is 1.

```
POST https://{endpoint}/v3/{project_id}/instances/{instance_id}/groups
{
   "name": "group-1",
   "type": "rw",
   "flavor_id": "a615922f-0ed8-3691-aad4-a595185febba",
    "nodes": [
      {
         "available_zone": "az1",
         "subnet_id": "ead1e945-ca89-45dd-bcce-4a30b2054c22"
      }
   ]
}
```

Create a DDM instance group. The group type is read-only and the number of nodes is 1.

```
POST https://{endpoint}/v3/{project_id}/instances/{instance_id}/groups
{
   "name": "group-2",
   "type": "r",
   "flavor_id": "a615922f-0ed8-3691-aad4-a595185febba",
    "nodes": [
      {
         "available_zone": "az1",
         "subnet_id": "ead1e945-ca89-45dd-bcce-4a30b2054c22"
      }
   ]
}
```

Create a DDM instance group. The group type is read/write and the number of nodes is 2.

```
POST https://{endpoint}/v3/{project_id}/instances/{instance_id}/groups
{
```



```
  "name": "group-3",
  "type": "rw",
  "flavor_id": "a615922f-0ed8-3691-aad4-a595185febba",
   "nodes": [
     {
        "available_zone": "az1",
        "subnet_id": "ead1e945-ca89-45dd-bcce-4a30b2054c22"
     },
     {
        "available_zone": "az2",
        "subnet_id": "ead1e945-ca89-45dd-bcce-4a30b2054c22"
     }
  ]
}
```

Response

- Normal response

  Table 4-129 Response body parameters

Parameter	Type	Description
instance_id	String	Instance ID.
job_id	String	ID of the job for creating an instance group. This parameter is returned only when pay-per-use instances are created.
order_id	String	Order ID. This parameter is returned only when yearly/monthly instances are created.

- Normal response example

```
{
  "instance_id" : "28e8841d0b9c4f6a9a30742ee60e1055****",
  "job_id" : "1eb697c0-1842-43a3-8671-f562d038****"
}
```

- Abnormal response

  For details, see **Abnormal Request Results**.

Status Code

- Normal

  200

- Abnormal

  For details, see **Status Codes**.

Error Codes

For details, see **Error Codes**.

4.2 Schemas

4.2.1 Creating a Schema

Function

This API is used to create a schema.

Constraints

Before creating a schema, ensure that you have associated RDS instances with your DDM instance and that the RDS instances are not associated with other DDM instances.

URI

POST /v1/{project_id}/instances/{instance_id}/databases

Table 4-130 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-131 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-132 Request body parameters

Parameter	Mandatory	Type	Description
databases	Yes	Array of **CreateDatabaseDetail** objects	Schema information

Table 4-133 CreateDatabaseDetail

Parameter	Mandatory	Type	Description
name	Yes	String	Schema name, which: • Can include 2 to 48 characters. • Must start with a letter. • Contains only lowercase letters, digits, and underscores (_). • Cannot contain keywords **information_schema**, **mysql,** **performance_schema**, or **sys**. Minimum length: 2 characters Maximum length: 48 characters
shard_mode	Yes	String	Sharding mode of the schema. The value can be: • **cluster**: indicates that the schema is in sharded mode. • **single**: indicates that the schema is in unsharded mode. Enumerated values: • **cluster** • **single**
shard_number	Yes	Integer	Number of shards in the same working mode • If **shard_unit** is not empty, the value is the product of **shard_unit** multiplied by the associated RDS instances. • If **shard_unit** is left blank, the value must be greater than the number of associated RDS instances and less than or equal to the product of the associated RDS instances multiplied by 64.

Parameter	Mandatory	Type	Description
shard_unit	No	Integer	Number of shards per RDS instance This parameter is optional. • The value is **1** if the schema is unsharded. • The value ranges from **1** to **64** if the schema is sharded. Minimum value: **1** Maximum value: **64**
used_rds	Yes	Array of **DatabaseInstabcesParam** objects	RDS instances associated with the schema

Table 4-134 DatabaseInstabcesParam

Parameter	Mandatory	Type	Description
id	Yes	String	ID of the RDS instance associated with the schema
adminUser	Yes	String	Username for logging in to the associated RDS instance
adminPassword	Yes	String	Password for logging in to the associated RDS instance

Response Parameters

Status code: 200

Table 4-135 Response body parameters

Parameter	Type	Description
databases	Array of **CreateDatabaseDetailResponses** objects	Schema information

Table 4-136 CreateDatabaseDetailResponses

Parameter	Type	Description
name	String	Schema name

Status code: 400

Table 4-137 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-138 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Creating a schema and associating it with an existing DDM account

```
POST https://{endpoint}/v1/{project_id}/instances/{instance_id}/databases

{
  "databases" : [ {
    "name" : "mytestdb",
    "shard_mode" : "cluster",
    "shard_number" : 8,
    "shard_unit" : 8,
    "used_rds" : [ {
      "id" : "f296c394f13f48449d715bf99af07e59in01",
      "adminUser" : "root",
      "adminPassword" : "xxxxxx"
    } ]
  } ]
}
```

Example Response

Status code: 200

OK


```
{
  "databases" : [ {
    "name" : "mytestdb"
  } ]
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.2.2 Querying Schemas

Function

This API is used to query schemas of a DDM instance.

Constraints

None

URI

GET /v1/{project_id}/instances/{instance_id}/databases?
offset={offset}&limit={limit}

Table 4-139 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Table 4-140 Query parameters

Parameter	Mandatory	Type	Description
offset	No	Integer	Index offset. The query starts from the next piece of data indexed by this parameter. The value is **0** by default. The value must be a positive integer.
limit	No	Integer	Maximum schemas to be queried. Value range: 1 to 128. If the parameter value is not specified, 10 schemas are queried by default.

Request Parameters

Table 4-141 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-142 Response body parameters

Parameter	Type	Description
databases	Array of **GetDatabaseInfo** objects	Schema information
total	Integer	Total records

Table 4-143 GetDatabaseInfo

Parameter	Type	Description
name	String	Schema name
shard_mode	String	Sharding mode of the schema • **cluster**: indicates that the schema is in sharded mode. • **single**: indicates that the schema is in unsharded mode.
shard_number	Integer	Number of shards in the same working mode
status	String	Schema status
created	String	Time when the schema is created
used_rds	Array of **GetDatabaseUsedRds** objects	RDS instances associated with the schema
shard_unit	Integer	Number of shards per RDS instance

Table 4-144 GetDatabaseUsedRds

Parameter	Type	Description
id	String	Node ID of the associated RDS instance
name	String	Name of the associated RDS instance
status	String	Status of the associated RDS instance
error_msg	String	Response message. This parameter is not returned if no abnormality occurs.

Status code: 400

Table 4-145 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-146 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Querying schemas

```
GET https://{endpoint}/v1/{project_id}/instances/{instance_id}/databases?offset={offset}&limit={limit}
```

Example Response

Status code: 200

OK

```
{
  "databases" : [ {
    "status" : "RUNNING",
    "created" : "1642063713625",
    "name" : "mytestdb170",
    "shard_mode" : "cluster",
    "shard_number" : 8,
    "shard_unit" : 8,
    "used_rds" : [ {
      "id" : "c6f68fed9e74478c8679479a07d7d568in01",
      "status" : "normal",
      "name" : "rds-test"
    } ]
  } ],
  "total" : 172
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.2.3 Querying Details of a Schema

Function

This API is used to query details about a schema.

Constraints

None

URI

GET /v1/{project_id}/instances/{instance_id}/databases/{ddm_dbname}

Table 4-147 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID
ddm_dbname	Yes	String	Name of the schema to be queried, which is case-insensitive

Request Parameters

Table 4-148 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-149 Response body parameters

Parameter	Type	Description
database	GetDatabaseResponseBean object	Schema information

Table 4-150 GetDatabaseResponseBean

Parameter	Type	Description
name	String	Schema name
created	String	Time when the schema is created
status	String	Schema status
updated	String	Time when the DDM instance is last updated
databases	Array of GetDatabases objects	Sharding information of the schema
shard_mode	String	Sharding mode of the schema • **cluster**: indicates that the schema is in sharded mode. • **single**: indicates that the schema is in unsharded mode.
shard_number	Integer	Number of shards in the same working mode
shard_unit	Integer	Number of shards per RDS instance
dataVips	Array of strings	IP address and port number for connecting to the schema

Parameter	Type	Description
used_rds	Array of GetDatabaseUsedRds objects	Associated RDS instances

Table 4-151 GetDatabases

Parameter	Type	Description
dbslot	Integer	Number of shards
name	String	Shard name
status	String	Schema status
created	String	Time when the shard is created
updated	String	Time when the shard is last updated
id	String	ID of the RDS instance where the shard is located
idName	String	Name of the physical database

Table 4-152 GetDatabaseUsedRds

Parameter	Type	Description
id	String	Node ID of the associated RDS instance
name	String	Name of the associated RDS instance
status	String	Status of the associated RDS instance
error_msg	String	Response message. This parameter is not returned if no abnormality occurs.

Status code: 400

Table 4-153 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-154 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Querying details of a schema

```
GET https://{endpoint} /v1/{project_id}/instances/{instance_id}/databases/{ddm_dbname}
```

Example Response

Status code: 200

OK

```
{
  "database" : {
    "name" : "db_7567",
    "created" : "1604631243234",
    "status" : "RUNNING",
    "updated" : "1604631243234",
    "databases" : [ {
      "id" : "e70a82534a364492b795c5080e3a1591in01",
      "name" : "db_7567_0000",
      "idName" : "db_7567_0000",
      "dbslot" : 0,
      "status" : "RUNNING",
      "created" : "1604631243234",
      "updated" : "1604631243234"
    }, {
      "id" : "e70a82534a364492b795c5080e3a1591in01",
      "name" : "db_7567_0001",
      "idName" : "db_7567_0001",
      "dbslot" : 1,
      "status" : "RUNNING",
      "created" : "1604631243234",
      "updated" : "1604631243234"
    }, {
      "id" : "e70a82534a364492b795c5080e3a1591in01",
      "name" : "db_7567_0002",
      "idName" : "db_7567_0002",
      "dbslot" : 2,
      "status" : "RUNNING",
      "created" : "1604631243234",
      "updated" : "1604631243234"
    }, {
      "id" : "e70a82534a364492b795c5080e3a1591in01",
      "name" : "db_7567_0003",
      "idName" : "db_7567_0003",
      "dbslot" : 3,
      "status" : "RUNNING",
      "created" : "1604631243234",
      "updated" : "1604631243234"
    }, {
      "id" : "e70a82534a364492b795c5080e3a1591in01",
```

```
    "name" : "db_7567_0004",
    "idName" : "db_7567_0004",
    "dbslot" : 4,
    "status" : "RUNNING",
    "created" : "1604631243234",
    "updated" : "1604631243234"
   }, {
    "id" : "e70a82534a364492b795c5080e3a1591in01",
    "name" : "db_7567_0005",
    "idName" : "db_7567_0005",
    "dbslot" : 5,
    "status" : "RUNNING",
    "created" : "1604631243234",
    "updated" : "1604631243234"
   }, {
    "id" : "e70a82534a364492b795c5080e3a1591in01",
    "name" : "db_7567_0006",
    "idName" : "db_7567_0006",
    "dbslot" : 6,
    "status" : "RUNNING",
    "created" : "1604631243234",
    "updated" : "1604631243234"
   }, {
    "id" : "e70a82534a364492b795c5080e3a1591in01",
    "name" : "db_7567_0007",
    "idName" : "db_7567_0007",
    "dbslot" : 7,
    "status" : "RUNNING",
    "created" : "1604631243234",
    "updated" : "1604631243234"
   } ],
   "shard_mode" : "cluster",
   "shard_number" : 8,
   "shard_unit" : 8,
   "dataVips" : [
       "192.168.185.97:5066"
   ],
   "used_rds" : [ {
    "id" : "e70a82534a364492b795c5080e3a1591in01",
    "name" : "rds-5338",
    "status" : "normal"
   } ]
  }
}
```


Status code: 400

bad request


```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```


Status code: 500

server error


```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```


Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.2.4 Deleting a Schema

Function

This API is used to delete a schema to release all its resources.

Constraints

None

URI

DELETE /v1/{project_id}/instances/{instance_id}/databases/{ddm_dbname}?delete_rds_data={delete_rds_data}

Table 4-155 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID
ddm_dbname	Yes	String	Name of the schema to be queried, which is case-insensitive

Table 4-156 Query parameters

Parameter	Mandatory	Type	Description
delete_rds_data	No	String	Whether data stored on the associated DB instances is deleted. The value can be: • **true**: indicates that the data stored on the associated DB instances is deleted. • **false**: indicates that the data stored on the associated DB instances is not deleted. It is left blank by default. Enumerated values: • **true** • **false**

Request Parameters

Table 4-157 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 400

Table 4-158 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-159 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

- Deleting a schema (including the data stored on associated DB instances)
  ```
  DELETE https://{endpoint}/v1/{project_id}/instances/{instance_id}/databases/{ddm_dbname}?delete_rds_data=true
  ```
- Deleting a schema (excluding the data stored on associated DB instances)
  ```
  DELETE https://{endpoint}/v1/{project_id}/instances/{instance_id}/databases/{ddm_dbname}?delete_rds_data=false
  ```

Example Response

Status code: 200

OK

```
{ }
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.2.5 Querying DB Instances Available for Creating a Schema

Function

This API is used to query DB instances that can be used for creating a schema.

Constraints

None

URI

GET /v1/{project_id}/instances/{instance_id}/rds?offset={offset}&limit={limit}

Table 4-160 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Table 4-161 Query parameters

Parameter	Mandatory	Type	Description
offset	No	Integer	Index offset. The query starts from the next piece of data indexed by this parameter. The value is **0** by default. The value must be a positive integer.
limit	No	Integer	Maximum instances to be queried. Value range: 1 to 128. If the parameter value is not specified, 10 schemas are queried by default.

Request Parameters

Table 4-162 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-163 Response body parameters

Parameter	Type	Description
instances	Array of **QueryAvailableRdsList** objects	DB instances that can be used for creating a schema
offset	Integer	Which page the server starts returning items
limit	Integer	Number of records displayed on each page
total	Integer	Total collections

Table 4-164 QueryAvailableRdsList

Parameter	Type	Description
id	String	DB instance ID
projectId	String	Project ID of the tenant that the DB instance belongs to
status	String	DB instance status
name	String	DB instance name
engineName	String	Engine name of the DB instance
engineSoftwareVersion	String	Engine version of the DB instance
privateIp	String	Private IP address for connecting to the DB instance

Parameter	Type	Description
mode	String	DB instance type (primary/standby or single-node)
port	Integer	Port for connecting to the DB instance
azCode	String	AZ
timeZone	String	Time zone

Status code: 400

Table 4-165 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-166 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Querying DB instances available for creating a schema

```
GET https://{endpoint}/v1/{project_id}/instances/{instance_id}/rds?offset={offset}&limit={limit}
```

Example Response

Status code: 200

OK

```
{
  "instances" : [ {
    "id" : "c6f68fed9e74478c8679479a07d7d568in01",
    "projectId" : "055d9f4ee780d4d42f96c01c1bc3c50c",
    "status" : "normal",
    "name" : "test-ddm-no-delete-test01-00",
    "engineName" : "mysql",
```



```
    "engineSoftwareVersion" : 5.7,
    "privateIp" : "192.168.23.97",
    "mode" : "Ha",
    "port" : 3306,
    "azCode" : "az1xahzaz1xahz",
    "timeZone" : "UTC+08: 00"
  }, {
    "id" : "337e2598c2a64cb5935079f85996731din01",
    "projectId" : "055d9f4ee780d4d42f96c01c1bc3c50c",
    "status" : "normal",
    "name" : "test-ddm-no-delete-test01",
    "engineName" : "mysql",
    "engineSoftwareVersion" : 5.7,
    "privateIp" : "192.168.23.221",
    "mode" : "Ha",
    "port" : 3306,
    "azCode" : "az1xahzaz1xahz",
    "timeZone" : "UTC+08: 00"
  } ],
  "offset" : 0,
  "limit" : 6,
  "total" : 2
}
```


Status code: 400

bad request


```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```


Status code: 500

server error


```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```


Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.3 Accounts

4.3.1 Creating a DDM Account

Function

This API is used to create a DDM account. DDM accounts are used to connect to and manage schemas. A maximum of 100 DDM accounts can be created for each DDM instance, and one DDM account can be associated with multiple schemas.

Constraints

None

URI

POST /v1/{project_id}/instances/{instance_id}/users

Table 4-167 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-168 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-169 Request body parameters

Parameter	Mandatory	Type	Description
users	Yes	Array of **CreateUsersInfo** objects	DDM account information

Table 4-170 CreateUsersInfo

Parameter	Mandatory	Type	Description
name	Yes	String	Username of the DDM account, which: • Can include 1 to 32 characters. • Must start with a letter. • Can contain only letters, digits, and underscores (_). Minimum length: 1 character Maximum length: 32 characters
password	Yes	String	DDM account password
base_authority	Yes	Array of strings	Basic permissions of the DDM account. The value can be **CREATE**, **DROP**, **ALTER**, **INDEX**, **INSERT**, **DELETE**, **UPDATE**, or **SELECT**. Enumerated values: • **CREATE** • **DROP** • **ALTER** • **INDEX** • **INSERT** • **DELETE** • **UPDATE** • **SELECT**
description	No	String	Description of the DDM account, which cannot exceed 256 characters. It is left blank by default. Maximum length: 256 characters
databases	No	Array of **CreateUsersDatabases** objects	Associated schemas. The **databases** field is optional. You can create a DDM account without associating it with any schema.

Table 4-171 CreateUsersDatabases

Parameter	Mandatory	Type	Description
name	Yes	String	Name of the associated schema

Response Parameters

Status code: 200

Table 4-172 Response body parameters

Parameter	Type	Description
users	Array of **CreateUsersDetailResponses** objects	DDM account information

Table 4-173 CreateUsersDetailResponses

Parameter	Type	Description
name	String	Username of the DDM account

Status code: 400

Table 4-174 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-175 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Creating account **DDMuser1** that has permissions of CREATE, DROP, ALTER, INDEX, INSERT, DELETE, UPDATE, and SELECT, and associating it with schema **DDMdb1**

```
POST https://{endpoint}/v1/{project_id}/instances/{instance_id}/users

{
  "users" : [ {
    "name" : "DDMuser1",
    "password" : "xxxxxx",

    "base_authority" : [ "CREATE", "DROP", "ALTER", "INDEX", "INSERT", "DELETE", "UPDATE", "SELECT" ],
    "description" : "",
    "databases" : [ {
      "name" : "DDMdb1"
    } ]
  } ]
}
```

Example Response

Status code: 200

OK

```
{
  "users" : [ {
    "name" : "DDMuser1"
  } ]
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request

Status Code	Description
500	server error

Error Codes

For details, see **Error Codes**.

4.3.2 Querying DDM Accounts

Function

This API is used to query DDM accounts.

Constraints

None

URI

GET /v1/{project_id}/instances/{instance_id}/users?offset={offset}&limit={limit}

Table 4-176 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Table 4-177 Query parameters

Parameter	Mandatory	Type	Description
offset	No	Integer	Index offset. The query starts from the next piece of data indexed by this parameter. The value is **0** by default. The value must be a positive integer.

Parameter	Mandatory	Type	Description
limit	No	Integer	Maximum accounts to be queried. Value range: 1 to 128. If the parameter value is not specified, 10 accounts are queried by default.

Request Parameters

Table 4-178 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-179 Response body parameters

Parameter	Type	Description
users	Array of **GetUsersListDetailResponses** objects	DDM account information
page_no	Integer	Current page
page_size	Integer	Data records on the current page
total_record	Integer	Total records
total_page	Integer	Total pages

Table 4-180 GetUsersListDetailResponses

Parameter	Type	Description
name	String	Username of the DDM account
status	String	Status of the DDM account

Parameter	Type	Description
base_authority	Array of strings	Basic permissions of the DDM account. The value can be **CREATE**, **DROP**, **ALTER**, **INDEX**, **INSERT**, **DELETE**, **UPDATE**, or **SELECT**.
extend_authority	Array of strings	Extended permissions of the DDM account. The value can be **fulltableDelete**, **fulltableSelect**, or **fulltableUpdate**.
password_last_changed	Long	Time when the password of a DDM account is changed, in UNIX timestamp format
description	String	Description of the DDM account
created	Long	Time when a DDM account is created, in UNIX timestamp format
databases	Array of **GetUsersList database** objects	Associated schemas

Table 4-181 GetUsersListdatabase

Parameter	Type	Description
name	String	Name of the schema associated with the DDM account
description	String	Schema description

Status code: 400

Table 4-182 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-183 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Querying DDM accounts

```
GET https://{endpoint}/v1/{project_id}/instances/{instance_id}/users?offset={offset}&limit={limit}
```

Example Response

Status code: 200

OK

```
{
  "users" : [ {
    "name" : "ddmtest",
    "status" : "RUNNING",
    "base_authority" : [ "SELECT" ],

    "password_last_changed" : 1686904661709,
    "description" : "Account",
    "created" : 1686904661709,
    "databases" : [ {
      "name" : "zhxtest",
      "description" : "Schema"
    } ]
  } ],
  "page_no" : 1,
  "page_size" : 10,
  "total_record" : 1,
  "total_page" : 1
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.3.3 Modifying a DDM Account

Function

This API is used to modify the permissions and associated schemas of a DDM account.

Constraints

At least one of the following parameters must be configured: **base_authority**, **description**, and **databases**.

URI

PUT /v1/{project_id}/instances/{instance_id}/users/{username}

Table 4-184 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID
username	Yes	String	Username of the DDM account

Request Parameters

Table 4-185 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-186 Request body parameters

Parameter	Mandatory	Type	Description
user	Yes	**UpdateUserDetailReq** object	DDM account information

Table 4-187 UpdateUserDetailReq

Parameter	Mandatory	Type	Description
base_authority	No	Array of strings	Basic permissions of the DDM account. The default value is the original account permission. The value can be **CREATE**, **DROP**, **ALTER**, **INDEX**, **INSERT**, **DELETE**, **UPDATE**, or **SELECT**. Enumerated values: • **CREATE** • **DROP** • **ALTER** • **INDEX** • **INSERT** • **DELETE** • **UPDATE** • **SELECT**

Parameter	Mandatory	Type	Description
description	No	String	Description of the DDM account, which cannot exceed 256 characters. It is left blank by default. Maximum length: 256 characters
databases	No	Array of **UpdateUsersDatabases** objects	DDM account information

Table 4-188 UpdateUsersDatabases

Parameter	Mandatory	Type	Description
name	No	String	Schema name, which is case-insensitive. The **databases** and **name** fields must be both or neither specified. The parameter is left blank by default.

Response Parameters

Status code: 200

Table 4-189 Response body parameters

Parameter	Type	Description
name	String	Username of the DDM account

Status code: 400

Table 4-190 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-191 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Modifying the account permission to SELECT and associating it with schema **db_7350**

```
PUT https://{endpoint}/v1/{project_id}/instances/{instance_id}/users/{username}

{
  "user" : {

    "base_authority" : [ "SELECT" ],
    "description" : "test11",
    "databases" : [ {
      "name" : "db_7350"
    } ]
  }
}
```

Example Response

Status code: 200

OK

```
{
  "name" : "ddmtest"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```


Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.3.4 Deleting a DDM Account

Function

This API is used to delete a DDM account. This operation will also disassociate the account from schemas if any.

Constraints

None

URI

DELETE /v1/{project_id}/instances/{instance_id}/users/{username}

Table 4-192 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID
username	Yes	String	Username of the DDM account to be deleted

Request Parameters

Table 4-193 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-194 Response body parameters

Parameter	Type	Description
name	String	Username of the DDM account

Status code: 400

Table 4-195 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-196 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Deleting a DDM account

```
DELETE https://{endpoint}/v1/{project_id}/instances/{instance_id}/users/{username}
```

Example Response

Status code: 200

OK

```
{
  "name" : "ddmtest"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.3.5 Resetting the Password of a DDM Account

Function

This API is used to reset the password of a DDM account.

Constraints

None

URI

POST /v2/{project_id}/instances/{instance_id}/users/{username}/password

Table 4-197 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID
username	Yes	String	Username of the DDM account to be modified

Request Parameters

Table 4-198 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-199 Request body parameters

Parameter	Mandatory	Type	Description
password	Yes	String	New password

Response Parameters

Status code: 200

Table 4-200 Response body parameters

Parameter	Type	Description
success	Boolean	Whether the operation is successful
instance_id	String	DDM instance ID
user_name	String	Username of the DDM account

Status code: 400

Table 4-201 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-202 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Resetting the password of a DDM account

```
POST https://{endpoint}/v2/{project_id}/instances/{instance_id}/users/{username}/password

{
  "password" : "xxxxxx"
}
```

Example Response

Status code: 200

OK

```
{
  "success": true,
  "instance_id": "e6b99563-xxxx-xxxx-xxxx-1820d4fd2a67",
  "user_name" : "ddmtest"
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
```



```
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.3.6 Managing the Administrator Password

Function

If it is the first time to call this API, it is used to create an administrator and reset its password for a DDM instance. Then this API can only be used to update the administrator password.

URI

PUT /v3/{project_id}/instances/{instance_id}/admin-user

Table 4-203 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Request Parameters

Table 4-204 Request header parameters

Parameter	Mandatory	Type	Description
x-auth-token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-205 Request body parameters

Parameter	Mandatory	Type	Description
name	Yes	String	Username of the administrator. The username: • Can include 1 to 32 characters. • Must start with a letter. • Can contain only letters, digits, and underscores (_).
password	Yes	String	Password of the administrator. The password: • Can include 8 to 32 characters. • Must be a combination of uppercase letters, lowercase letters, digits, and the following special characters: ~!@#%^*-_+? Must be a strong password to improve security and prevent security risks such as brute force cracking.

Response Parameters

Status code: default

Table 4-206 Response body parameters

Parameter	Type	Description
error_code	String	Error code
error_msg	String	Error message

Example Request

Creating administrator account **root** and setting a password for it

```
PUT https://{endpoint}/v3/{project_id}/instances/{instance_id}/admin-user

{
  "name" : "root",
  "password" : "xxxxx"
}
```

Example Response

None

Status Codes

Status Code	Description
200	OK
default	Client or server error.

Error Codes

For details, see **Error Codes**.

4.3.7 Validating Password Strength

Function

This API is used to check whether an instance password is a weak password.

URI

POST /v3/{project_id}/weak-password-verification

Table 4-207 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region To obtain this value, see **Obtaining a Project ID**.

Request Parameters

Table 4-208 Request header parameters

Parameter	Mandatory	Type	Description
x-auth-token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-209 Request body parameters

Parameter	Mandatory	Type	Description
password	Yes	String	Character string to be validated

Response Parameters

Status code: 200

Table 4-210 Response body parameters

Parameter	Type	Description
is_weak_password	Boolean	Whether the password is a weak password. The value can be: **true**: indicating that the password is a weak password. Such a password is not recommended. **false**: indicating that the password is not a weak password. Such a password is recommended.

Status code: 400

Table 4-211 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-212 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Verifying password strength

```
POST https://{endpoint}/v3/{project_id}/weak-password-verification

{
  "password" : "xxx"
}
```

Example Response

Status code: 200

OK

```
{
  "is_weak_password" : true
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.4 Monitoring

4.4.1 Monitoring Slow Query Logs

Function

This API is used to query the SQL statements that take a long time to execute on the DDM instance within a specified time range.

Constraints

None

URI

GET /v2/{project_id}/instances/{instance_id}/slowlog?curPage={curPage}&perPage={perPage}&startDate={startDate}&endDate={endDate}

Table 4-213 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID

Table 4-214 Query parameters

Parameter	Mandatory	Type	Description
curPage	Yes	String	Which page the server starts returning items. The start value cannot be less than **1**.
perPage	Yes	String	Number of records displayed on each page
startDate	Yes	String	Start time. The format is UNIX timestamp, in milliseconds.
endDate	Yes	String	End time. The format is UNIX timestamp, in milliseconds. The interval between the start time and the end time must be no more than 7 days.

Request Parameters

Table 4-215 Request header parameters

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token You can obtain the token by calling the IAM API used to obtain a user token.

Response Parameters

Status code: 200

Table 4-216 Response body parameters

Parameter	Type	Description
totalRecord	Integer	Number of slow query logs
slowLogList	Array of **SlowLogList** objects	Information about slow query logs

Table 4-217 SlowLogList

Parameter	Type	Description
users	String	Username of the DDM account for executing the slow SQL statement
database	String	Name of the schema where the slow SQL statement is executed
querySample	String	Syntax for executing the slow SQL statement
logTime	String	Time when the slow SQL statement starts to be executed. The format is **yyyy-mm-ddThh:mm:ssZ**.
time	String	Time for a SQL statement to execute, accurate to milliseconds
shards	String	Name of the physical shard
rowsExamined	String	Number of rows affected by the SQL statements that take a long time to execute

Parameter	Type	Description
host	String	Client IP address. This IP address may involve personal data. Anonymizing the IP address data is recommended.

Status code: 400

Table 4-218 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Status code: 500

Table 4-219 Response body parameters

Parameter	Type	Description
errCode	String	Service error code
externalMessage	String	Error message

Example Request

Querying the SQL statements that take a long time to execute on the DDM instance within a specified time range

```
GET https://{endpoint}/v2/{project_id}/instances/{instance_id}/slowlog?
curPage={curPage}&perPage={perPage}&startDate={startDate}&endDate={endDate}
```

Example Response

Status code: 200

OK

```
{
  "totalRecord" : 2,
  "slowLogList" : [ {
    "users" : "testddm",
    "database" : "test1",
    "querySample" : "select id, sleep(3) from test",
    "logTime" : "2021-04-26T02:40:21",
    "time" : "12002",
    "shards" : "test1_0000",
    "rowsExamined" : "4",
```



```
    "host" : "192.168.16.18"
  } ]
}
```

Status code: 400

bad request

```
{
  "externalMessage" : "Parameter error.",
  "errCode" : "DBS.280001"
}
```

Status code: 500

server error

```
{
  "externalMessage" : "Server failure.",
  "errCode" : "DBS.200412"
}
```

Status Codes

Status Code	Description
200	OK
400	bad request
500	server error

Error Codes

For details, see **Error Codes**.

4.5 Session Management

4.5.1 Querying Logical Sessions

Function

This API is used to obtain logical sessions of a DDM instance.

Constraints

None

URI

- URL format

  GET /v3/{project_id}/instances/{instance_id}/logical-processes?offset={offset}&limit={limit}

- Parameter description

Table 4-220 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region. To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID.
offset	No	Integer	Which page the server starts returning items. The default value is **0**. The value is an integer greater than or equal to 0.
limit	No	Integer	Number of records displayed on each page. The default value is **10**. Value range: 1 to 128.
keyword	No	String	Keyword filtered by the session result. It is a fuzzy match field and can contain a maximum of 255 characters.

Request

Table 4-221 Parameter description

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Example Request

This API is used to obtain logical sessions of a DDM instance.

```
GET https://{endpoint}/v3/{project_id}/instances/{instance_id}/logical-processes?offset=0&limit=10
```

Response

- Normal response

Table 4-222 Response body parameters

Parameter	Type	Description
total_count	Integer	Total records.
logical_processes	Array of **Table 4-223** objects	Logical session list of a DDM instance.

Table 4-223 logicalProcessesInfo

Parameter	Type	Description
id	String	Logical session ID.
user	String	Current user.
host	String	IP address and port number.
db	String	Database name.
command	String	Connection status. Generally, the value can be **sleep**, **query**, or **connect**.
time	Boolean	Duration of a connection, in seconds.
state	Boolean	Status of the SQL statement being executed.
info	Integer	SQL statement that is being executed.

- Normal response example

```
{
  "logical_processes": [
    {
      "id": "4564224",
      "user": "drdsagent",
      "host": "127.0.0.1:54486",
      "db": "None",
      "command": "Query",
      "time": "0",
      "state": "starting",
      "info": "show processlist"
    }
  ],
  "total_count": 1
}
```

- Abnormal response

  For details, see **Abnormal Request Results**.

Status Code

- Normal

  200

- Abnormal

  For details, see **Status Codes**.

Error Codes

For details, see **Error Codes**.

4.5.2 Killing Logical Sessions

Function

This API is used to delete logical sessions of a DDM instance.

Constraints

None

URI

- URL format
  DELETE /v3/{project_id}/instances/{instance_id}/logical-processes
- Parameter description

Table 4-224 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region. To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID.

Request

Table 4-225 Parameter description

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-226 Request body parameters

Parameter	Mandatory	Type	Description
process_ids	Yes	String	Session ID set. Value range: 1 to 100.

Example Request

This API is used to delete logical sessions of a DDM instance.

```
DELETE https://{endpoint}/v3/{project_id}/instances/{instance_id}/logical-processes
{
  "process_ids": [
    "12312"
  ]
}
```

Response

- Normal response

  Table 4-227 Response body parameters

Parameter	Type	Description
resp	String	Check whether a logical session is deleted.

- Normal response example

```
{
  "resp": "successful"
}
```

- Abnormal response

  For details, see **Abnormal Request Results**.

Status Code

- Normal

  200

- Abnormal

  For details, see **Status Codes**.

Error Codes

For details, see **Error Codes**.

4.5.3 Querying Physical Sessions

Function

This API is used to obtain physical sessions of a DDM instance.

Constraints

None

URI

- URL format

  GET /v3/{project_id}/instances/{instance_id}/physical-processes?offset={offset}&limit={limit}

- Parameter description

Table 4-228 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region. To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	ID of the associated RDS DB instance.
offset	No	Integer	Which page the server starts returning items. The default value is **0**. The value is an integer greater than or equal to 0.
limit	No	Integer	Number of records displayed on each page. The default value is **10**. Value range: 1 to 128.
keyword	No	String	Keyword filtered by the session result. It is a fuzzy match field and can contain a maximum of 255 characters.

Request

Table 4-229 Parameter description

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Example Request

This API is used to obtain physical sessions of a DDM instance.

```
GET https://{endpoint}/v3/{project_id}/instances/{instance_id}/physical-processes?offset=0&limit=10
```


Response

- Normal response

  Table 4-230 Response body parameters

Parameter	Type	Description
total_count	Integer	Total records.
physical_processes	Array of **Table 4-231** objects	Physical session list of a DDM instance.

  Table 4-231 PhysicalProcessInfo

Parameter	Type	Description
id	String	Physical session ID.
user	String	Current user.
host	String	IP address and port number.
db	String	Database name.
command	String	Connection status. Generally, the value can be **sleep**, **query**, or **connect**.
time	Boolean	Duration of a connection, in seconds.
state	Boolean	Status of the SQL statement being executed.
info	Integer	SQL statement that is being executed.
trx_executed_time	Integer	Duration of a transaction, in seconds.

- Normal response example

```
{
  "physical_processes": [
    {
      "id": 1973,
      "user": "DDMRW1613058863",
      "hots": "172.16.241.84:58908",
      "db": "ddm_db_test_0001",
      "state": "",
      "command": "Sleep",
      "info": null,
      "time": 13977,
      "trx_executed_time": 0
    }
  ],
  "total_count": 1
}
```

- Abnormal response

  For details, see **Abnormal Request Results**.

Status Code

- Normal
  200
- Abnormal
  For details, see **Status Codes**.

Error Codes

For details, see **Error Codes**.

4.5.4 Killing Physical Sessions

Function

This API is used to delete physical sessions of a DDM instance.

Constraints

None

URI

- URL format
  DELETE /v3/{project_id}/instances/{instance_id}/physical-processes
- Parameter description

Table 4-232 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region. To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	ID of the associated RDS DB instance.

Request

Table 4-233 Parameter description

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Table 4-234 Request body parameters

Parameter	Mandatory	Type	Description
process_ids	Yes	String	Session ID set. Value range: 1 to 100.

Example Request

Delete a physical session of a DDM instance.

```
DELETE https://{endpoint}/v3/{project_id}/instances/{instance_id}/physical-processes
{
  "process_ids": [
      "43534"
  ]
}
```

Response

- Normal response

  Table 4-235 Response body parameters

Parameter	Type	Description
resp	String	Check whether the physical session is deleted.

- Normal response example

  ```
  {
    "resp": "successful"
  }
  ```

- Abnormal response

  For details, see **Abnormal Request Results**.

Status Code

- Normal

  200

- Abnormal

  For details, see **Status Codes**.

Error Codes

For details, see **Error Codes**.

4.5.5 Querying Audit Logs of Killing Sessions

Function

Obtaining Audit Logs of Killing Sessions

Constraints

None

URI

- URL format

  GET /v3/{project_id}/instances/{instance_id}/processes-audit-log?offset={offset}&limit={limit}&start_time={start_time}&end_time={end_time}

- Parameter description

  Table 4-236 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID of a tenant in a region. To obtain this value, see **Obtaining a Project ID**.
instance_id	Yes	String	DDM instance ID or ID of the associated RDS instance.
offset	No	Integer	Which page the server starts returning items. The default value is **0**. The value is an integer greater than or equal to 0.
limit	No	Integer	Number of records displayed on each page. The default value is **10**. Value range: 1 to 128.
start_time	Yes	String	Start time in UTC, accurate to milliseconds. The format is yyyy-mm-ddThh:mm:ssZ. **T** is the separator between the calendar and the hourly notation of time. **Z** indicates the time zone offset. For example, in the Beijing time zone, the offset is **+0800**.

Parameter	Mandatory	Type	Description
end_time	Yes	String	End time in UTC, accurate to milliseconds. The format is yyyy-mm-ddThh:mm:ssZ. **T** is the separator between the calendar and the hourly notation of time. **Z** indicates the time zone offset. For example, in the Beijing time zone, the offset is **+0800**. The interval between the start time and the end time must be no more than 7 days.

Request

Table 4-237 Parameter description

Parameter	Mandatory	Type	Description
X-Auth-Token	Yes	String	User token. You can obtain the token by calling the IAM API used to obtain a user token.

Example Request

Obtain the audit logs of killing a session.

```
GET https://{endpoint}/v3/{project_id}/instances/{instance_id}/processes-audit-log?
start_time=2024-06-18T09:00:00+0800&end_time=2024-06-18T12:00:00+0800&offset=0&limit=10
```

Response

- Normal response

Table 4-238 Response body parameters

Parameter	Type	Description
total_count	Integer	Total records.
process_audit_logs	Array of **Table 4 UserProcessAuditLog** objects	Audit log list of killing a session.

Table 4-239 UserProcessAuditLog

Parameter	Type	Description
instance_id	String	Instance ID.
instance_name	String	Instance name.
process_id	String	Session ID.
execute_user_name	String	Name of the user who performs the operation.
excute_time	String	Operation time (UTC time).

- Normal response example

```
{
  "total_count": 1,
  "process_audit_logs": [
    {
      "instance_id": "5af0884170a84164980f79f9f5bf230c****",
      "instance_name": "UTS-ddm-name",
      "process_id": 6708736,
      "execute_user_name": "user_name",
      "execute_time": "2024-06-18T03:08:15+0800VGltZQ=="
    }
  ]
}
```

- Abnormal response

  For details, see **Abnormal Request Results**.

Status Code

- Normal

  200

- Abnormal

  For details, see **Status Codes**.

Error Codes

For details, see **Error Codes**.

4.6 Application Examples

4.6.1 Querying DDM Instances

Scenarios

This section describes how to query all DDM instances of a tenant by configuring the pagination parameter in the required API for **Querying DDM Instances**.

Procedure

Step 1 Configure parameters **limit** and **offset** to query DDM instances.

- API Information

  URI format: GET /v1/{project_id}/instances

  For details, see **Querying DDM Instances**.

  - Example request

    GET: https://*{endpoint}*/v1/743b4c0428d945316666666666666666/instances?offset=0&limit=1

    Obtain the endpoint from **Regions and Endpoints**.

    The **limit** value can be adjusted based on DDM instance data.

  - Example response

```
{
"instance_num":10,
"instances":
[
{
"id":"cab932b426ed4215a8d76b9d71322661in09",
"status":"RUNNING",
"name":"ddm-20-single-2u4g-1-202010231552401522260",
"created":"2020-10-23T07:52:46+0000",
"updated":"2020-10-23T07:59:56+0000",
"available_zone":"az1xahz",
"vpc_id":"9cf0f8f5-9748-4ebb-9905-bbe429182bd6",
"subnet_id":"b35a4be7-65a5-4176-bec9-7a437493c498",
"security_group_id":"9d10da6d-38cc-4cf0-8f96-c34940a3fd15",
"node_count":1,
"access_ip":"192.168.60.13",
"access_port":"5066",
"core_count":"2",
"ram_capacity":"4",
"node_status":"RUNNING",
"enterprise_project_id":"0",
"project_id":"070c071d8e80d58c2f42c0121b10cf9f",
"engine_version":"2.5.10.10222119"
}
],
"page_no":1,
"page_size":1,
"total_record":10,
"total_page":10
}
```

Step 2 Collect query results.

1. Repeat step **1** until the returned query result is empty or the returned body does not contain the **instances** field. This indicates that all DDM instances have been queried.
2. The collected DDM instances are the desired query results.

----End

4.6.2 Modifying the Name of a DDM Instance

Scenarios

This section describes how to modify the name of a DDM instance using an API. For details, see **Modifying the Name of a DDM Instance**.

Procedure

Step 1 Modify the name of a DDM instance.

- API Information

  URI format: PUT /v1/{project_id}/instances/{instance_id}/modify_name

  For details, see **Modifying the Name of a DDM Instance**.

- Example request

  PUT: https://*{endpoint}*/v1/743b4c0428d945316666666666666666/instances/modify_name

  {"name": "ddm-testaa"}

  Obtain the endpoint from **Regions and Endpoints**.

  - Example response

    ```
    {
    "name":"ddm-testaa"
    }
    ```

----End

4.6.3 Deleting a DDM instance

Scenarios

This section describes how to delete a DDM instance by calling an API. For details, see **Deleting a DDM Instance**.

Procedure

Step 1 Delete a DDM instance and delete the data stored in the associated RDS instances.

- API Information

  URI format: DELETE /v1/{project_id}/instances/{instance_id}?delete_rds_data=true

  For details, see **Deleting a DDM Instance**.

- Example request

  DELETE: https://*{endpoint}*/v1/743b4c0428d945316666666666666666/instances/d0b008c1ee95479d8799710d9f3a4097in09?delete_rds_data=true

  Obtain the endpoint from **Regions and Endpoints**.

  - Example response


```
{
    "id":"d0b008c1ee95479d8799710d9f3a4097in09"
}
```

----End

Step 1 Delete a DDM instance, but do not delete the data stored in the associated RDS instances.

- API Information

  URI format: DELETE /v1/{project_id}/instances/{instance_id}?delete_rds_data=false

  For details, see **Deleting a DDM Instance**.

- Example request

  Obtain the endpoint from **Regions and Endpoints**.

  – Example response

  ```
  {
      "id":"d0b008c1ee95479d8799710d9f3a4097in09"
  }
  ```

----End

5 Permissions Policies and Supported Actions

5.1 Introduction

This section describes fine-grained permissions management for your DDM instance. If your account does not need individual IAM users, skip over this section.

By default, new IAM users do not have any permissions granted. You need to add a user to one or more groups, and assign policies or roles to these groups. The user then inherits permissions from the groups it is a member of. This process is called authorization. After authorization, the user can perform specified operations on the DDM service based on the permissions.

NOTE

If you want to allow or deny the access to an API, fine-grained authorization is a good choice.

An account has all the permissions required to call all APIs, but IAM users must be assigned the required permissions. The permissions required for calling an API are determined by the actions supported by the API. Only users who have been granted permissions allowing the actions can call the API successfully. For example, if an IAM user queries ECSs using an API, the user must have been granted permissions that allow the **ecs:servers:list** action.

Supported Actions

DDM provides system-defined policies that can be directly used in IAM. You can also create custom policies and use them to supplement system-defined policies, implementing more refined access control. Actions supported by policies are specific to APIs. The following are common concepts related to policies:

- Permission: A statement in a policy that allows or denies certain operations.
- APIs: REST APIs that can be called in a custom policy
- Actions: Added to a custom policy to control permissions for specific operations

- Related actions: Actions which a specific action depends on to take effect. When assigning permissions for the action to a user, you also need to assign permissions for the dependent actions.
- IAM projects or enterprise projects: Type of projects in which policies can be used to grant permissions. A policy can be applied to IAM projects, enterprise projects, or both. Policies that contain actions for both IAM and enterprise projects can be used and take effect for both IAM and Enterprise Project Management Service (EPS). Policies that only contain actions supporting IAM projects can be assigned to user groups and only take effect for IAM. Such policies will not take effect if they are assigned to user groups in Enterprise Management.

5.2 Instance Management

Table 5-1 DDM instance management

Permission	API	Action	IAM Project	Enterprise Project
Buying a pay-per-use instance Buying a yearly/ monthly DDM instance	POST /v1/ {project_id}/ instances	ddm:instance:create Before buying a DDM instance, obtain the following dependent permissions: • ecs:*:get* • ecs:*:list* • vpc:vpcs:list • vpc:securityGroups: get • vpc:subnets:get • ecs:cloudServerNics :update • ecs:serverInterfaces :use • Global or region-level **vpc:ports:*** • **BSS Finance** and **BSS Operator** policies The last permission is required only when you buy a yearly/monthly DDM instance.	√	√

Permission	API	Action	IAM Project	Enterprise Project
Querying DDM Instances	GET /v1/{project_id}/instances?offset={offset}&limit={limit}	ddm:instance:list	√	√
Querying Details of a DDM Instance	GET /v1/{project_id}/instances/{instance_id}	ddm:instance:get • vpc:*:get* • vpc:*:list*	√	√
Modifying a DDM Instance	PUT /v1/{project_id}/instances/{instance_id}	ddm:instance:modify To modify a security group, the following permissions must be configured: • vpc:*:get* • vpc:*:list* • vpc:ports:update • vpc:securityGroups:get	√	√
Restarting a DDM Instance	POST /v1/{project_id}/instances/{instance_id}/action	ddm:instance:reboot	√	√
Deleting a DDM Instance	DELETE /v1/{project_id}/instances/{instance_id}?delete_rds_data=true	ddm:instance:delete vpc:ports:delete	√	√

NOTE

The check mark (√) indicates that an action takes effect. The cross mark (x) indicates that an action does not take effect.

5.3 Schema Management

Table 5-2 Schema management actions

Permission	API	Actions	IAM Project	Enterprise Project
Creating a Schema	POST /v1/{project_id}/instances/{instance_id}/databases	ddm:database:create	√	√
Querying Schemas	GET /v1/{project_id}/instances/{instance_id}/databases?offset={offset}&limit={limit}	ddm:database:list	√	√
Querying Details of a Schema	GET /v1/{project_id}/instances/{instance_id}/databases/{ddm_dbname}	ddm:database:get	√	√
Deleting a Schema	DELETE /v1/{project_id}/instances/{instance_id}/databases/{ddm_dbname}?delete_rds_data=true	ddm:database:delete	√	√

5.4 Account Management

Table 5-3 Account management permissions

Permission	API	Actions	IAM Project	Enterprise Project
Creating a DDM Account	POST /v1/{project_id}/instances/{instance_id}/users	ddm:user:create	√	√
Querying DDM Accounts	GET /v1/{project_id}/instances/{instance_id}/users?offset={offset}&limit={limit}	ddm:user:list	√	√
Modifying a DDM Account	PUT /v1/{project_id}/instances/{instance_id}/users/{username}	ddm:user:modify	√	√
Deleting a DDM Account	DELETE /v1/{project_id}/instances/{instance_id}/users/{username}	ddm:user:delete	√	√

5.5 Reloading Table Data

Table 5-4 Permissions for managing logical tables

Permission	API	Action	IAM Project	Enterprise Project
Reloading table data	POST /v1/{project_id}/instances/{instance_id}/reload-config	ddm:instance:modify	√	√

A Appendix

A.1 Abnormal Request Results

v3 APIs

Abnormal response description

Table A-1 Abnormal response description

Parameter	Type	Description
error_code	String	Error code returned when a task submission exception occurs
error_msg	String	Error description returned when a task submission exception occurs

Response example:

```
{
    "error_code": "DBS.300301",
    "error_msg": "Failed to update the account"
}
```

v1 and v2 APIs

Abnormal response description

Table A-2 Parameter description

Parameter	Type	Description
errCode	String	Error code returned when a task submission exception occurs

Parameter	Type	Description
externalMessage	String	Description of the error returned when a task submission exception occurs.

Response example:

```
{
    "errCode": "DBS.300101",
    "externalMessage": "Failed to delete the schema"
}
```

A.2 Status Codes

Normal

Table A-3 lists the status codes that may be returned.

Table A-3 Normal status codes

Status Code	Message	Description
200	OK	The request has been processed successfully.
202	OK	The asynchronous request is submitted successfully.

Abnormal

Table A-4 lists the status codes that may be returned.

Table A-4 Abnormal status codes

Status Code	Message	Description
400	Bad Request	The server fails to process the request. The possible causes are as follows: • The request could not be parsed by the server due to incorrect syntax. • Request parameters are incorrect.
401	Unauthorized	Necessary credentials (for example, username and password) required for user authentication are not provided.
403	Forbidden	Access to the requested page is denied.

Status Code	Message	Description
404	Not Found	The request failed because the requested resource could not be found on the server.
405	Method Not Allowed	You are not allowed to use the method specified in the request.
409	Conflict	The request could not be processed due to a conflict with the current resource status.
413	Request Entity Too Large	The requested resource exceeds the resource quota.
415	Unsupported Media Type	**ContentType** contained in the request header is neither **application** nor **json**.
500	Internal Server Error	The request is not completed due to a service error.
501	Not Implemented	The request is not completed because the server does not support the requested function.
503	Service Unavailable	The request could not be processed by the server because the server is being maintained or overloaded.

A.3 Error Codes

If an error code starting with **APIGW** is returned after you call an API, rectify the fault by referring to the instructions provided in **Error Codes**.

Status Code	Error Code	Error Message	Solution
400	DBS.280001	Parameter error.	Refresh the page, modify some parameters, and try again.
400	DBS.300002	Server failure.	Refresh the page and try again later.
400	DBS.300005	Failed to process the request. Contact technical support.	-

Status Code	Error Code	Error Message	Solution
400	DBS.300100	Failed to create the schema.	Check whether the DDM instance is available, whether the instance is in the **Running** state, whether the RDS instance is being scaled, and whether the schema name is duplicated. If the schema name is duplicated, modify the name and send the request again.
400	DBS.300101	Failed to delete the schema.	Check whether the schema has been deleted and whether the associated RDS instance exists or becomes abnormal.
400	DBS.300102	The number of RDS instances associated with the schema is invalid.	Check whether the number of RDS instances associated with the schema is valid and try again.
400	DBS.300103	The RDS instance does not exist or it is not in the same VPC as the schema.	Check whether the RDS DB instance exists and whether the DB instance is in the same VPC as the required DDM instance, and then try again.
400	DBS.300104	The sharding rule of the schema is invalid.	Ensure that the sharding rule is valid and try again.
400	DBS.300106	The number of shards per RDS instance is invalid.	Check whether the number of shards per RDS instance in the request is correct. If not, modify the number and try again.
400	DBS.300107	The accounts are duplicated.	Check whether the accounts configured in parameters are duplicated and try again.
400	DBS.300108	The RDS instances are duplicated.	Check whether there are duplicate RDS instances in the request. If yes, modify them and try again.
400	DBS.300109	The schema name is invalid.	Check whether the schema name is valid. If no, modify it and try again.
400	DBS.300110	The status of the RDS instance does not allow associating with the schema.	Resolve the RDS instance status exception and try again.

Status Code	Error Code	Error Message	Solution
400	DBS.300112	This schema name already exists.	Check whether a schema with the same name exists. If yes, modify the name and try again.
400	DBS.300113	Failed to create a physical database.	Check whether the RDS administrator and password are correct. If no, modify them and try again.
400	DBS.300114	The administrator or password is incorrect.	Check whether the RDS administrator and password are correct. If no, modify them and try again.
400	DBS.300115	Failed to delete the shard.	To delete the schema, check whether there are RDS instances associated with it. If the associated RDS DB instances have been deleted, click **Synchronize DB Instance Data** on the **Basic Information** page and delete the schema again.
400	DBS.300116	Failed to query available RDS instances.	Check whether the RDS service is running properly and try again.
400	DBS.300117	Failed to obtain the associated RDS instances.	Check whether the RDS service is running properly and try again.
400	DBS.300118	Failed to configure shards of a schema.	Check input parameters in the request.
400	DBS.300120	Failed to obtain task information.	Ensure that the DDM instance is running properly and try again.
400	DBS.300121	Failed to delete the shard configuration task.	Ensure that the shard configuration task exists and is in the valid state and that the administrator password of the destination RDS instance is correct, and try again.
400	DBS.300122	Failed to roll back the shard configuration task.	Ensure that the shard configuration task exists and is in the valid state and that the administrator password of the destination RDS instance is correct, and try again.
400	DBS.300123	Failed to retry the shard configuration task.	Ensure that the shard configuration task exists and is in the valid state, and try again.

Status Code	Error Code	Error Message	Solution
400	DBS.300125	Failed to synchronize RDS information.	Check whether the RDS service is running properly and try again.
400	DBS.300127	The number of shards in the RDS instances associated with the schema is invalid.	Ensure that the total number of shards in the associated RDS DB instances is valid and try again.
400	DBS.300128	Failed to query schema information.	Ensure that the DDM instance is running properly and try again.
400	DBS.300129	Failed to query schema information.	Ensure that the schema exists and try again.
400	DBS.300130	Invalid schema status.	Ensure that the schema is in the **Running** state and try again.
400	DBS.300131	Failed to update the schema SQL blacklist.	Ensure that the DDM instance is running properly and try again.
400	DBS.300132	Failed to query the schema SQL blacklist.	Ensure that the DDM instance is running properly and try again.
400	DBS.300133	The RDS instance is being used to scale out a schema.	Ensure that the RDS DB instance status is not **Scaling out** or **Scaling failed** and try again.
400	DBS.300134	The schema status does not allow rolling back or canceling the scale-out task.	Refresh the page and try again later.
400	DBS.300135	Failed to update the relative read weight of the RDS instance.	Ensure that the DDM instance is running properly and try again.
400	DBS.300300	Failed to create a DDM account	Ensure that the DDM instance, schema, and account exist and try again.
400	DBS.300301	Failed to update the account.	Ensure that the account and associated schema exist and that the password meets the requirements, and try again.

Status Code	Error Code	Error Message	Solution
400	DBS.300302	Failed to delete the account.	Ensure that the DDM instance is running properly and try again.
400	DBS.300305	Invalid DDM account name.	Ensure that the account name is valid and try again.
400	DBS.300306	The account password is invalid.	Ensure that the account name and password in the request body are correct and try again.
400	DBS.300307	The account description is invalid.	Ensure that the maximum length of account description does not exceed 256 characters and try again.
400	DBS.300309	The account basic permissions are invalid.	Ensure that basic permissions configured for the account are correct and try again.
400	DBS.300310	The account extended permissions are invalid.	Ensure that extended permissions configured for the account are correct and try again.
400	DBS.300311	The account already exists.	Ensure that the account name is unique and try again.
400	DBS.300312	Failed to query the account.	Ensure that the DDM instance is running properly and try again.
400	DBS.300313	Failed to configure the SQL blacklist.	Ensure that the schema exists and is in the **Running** state, and try again.
400	DBS.300314	Failed to modify the read/write policy.	Ensure that the DDM instance is running properly and try again.
400	DBS.300315	Invalid read/write relative weight.	Ensure that the weight is greater than 0 and less than 100.
400	DBS.300316	Failed to query the read/write policy.	Ensure that the DDM instance is running properly and try again.
400	DBS.300322	Failed to save instance metadata.	Provide environment information, instance ID, involved operations, and symptom description and contact technical support.
400	DBS.300323	The associated RDS instance is unavailable or this operation cannot be performed when the RDS instance is in the current state.	Ensure that the associated RDS DB instance exists and is in normal state, and try again.

Status Code	Error Code	Error Message	Solution
400	DBS.300327	The account does not exist.	Ensure that the account exists and try again.
400	DBS.300328	Failed to reset the password.	Ensure that the account exists and try again.
400	DBS.300329	Failed to obtain the step name.	Try again or roll back the scale-out task.
400	DBS.300330	Failed to convert the string from JSON to the required format.	Provide environment information, involved operations, instance ID, and symptom description and contact technical support.
400	DBS.300331	Data migration error.	Provide environment information, involved operations, instance ID, and symptom description and contact technical support.
400	DBS.300332	The request for shard configuration times out.	Try again or roll back the scale-out task.
400	DBS.300333	Failed to check the time zone.	Log in to the RDS console. In the instance list, locate the source RDS instance and click its name. In the navigation pane, choose **Parameters**, search for **time_zone** in the upper right text box to check its value. Then, perform these operations on the target RDS instance, and check whether its **time_zone** value is consistent with the source instance. If not, modify it to ensure that the two values are consistent and retry.
400	DBS.300334	**sql_mode** check failed.	Log in to the RDS console. In the instance list, locate the source RDS instance and click its name. In the navigation pane, choose **Parameters**, search for **sql_mode** in the upper right text box to check its value. Then, perform these operations on the target RDS instance, and check whether its **sql_mode** value is consistent with the source instance. If not, modify it to ensure that the two values are consistent and retry.
400	DBS.300335	Failed to obtain the RDS link.	Check whether the RDS service is running properly.

Status Code	Error Code	Error Message	Solution
400	DBS.300336	Physical database not found.	Log in to the associated RDS instance and execute **SHOW DATABASES**. Check whether there is a physical database whose name starts with the schema name, and whether the number of physical databases must be the same as the number of shards in the schema.
400	DBS.300337	Failed to check the primary key.	Check whether there are tables without primary keys. If yes, add primary keys for those tables and retry.
400	DBS.300338	Failed to disable DDL or DML.	Provide environment information, instance ID, involved operations, and symptom description and contact technical support.
400	DBS.300339	Failed to insert a scale-out subtask.	Contact technical support.
400	DBS.300340	Failed to change statuses of scale-out subtasks to **Initialization**.	Contact technical support.
400	DBS.300341	Failed to issue a scale-out subtask.	Contact technical support.
400	DBS.300342	Failed to obtain scale-out subtasks.	Contact technical support.
400	DBS.300343	The volume of remaining subtask data is invalid.	Provide environment information, involved operations, and symptom description and contact technical support.
400	DBS.300344	Status check for scale-out task failed.	Contact technical support.
400	DBS.300345	Failed to obtain information about the scale-out task.	Try again.
400	DBS.300346	Failed to obtain information about the DDM process.	Try again.
400	DBS.300347	Failed to disable the link.	Try again.

Status Code	Error Code	Error Message	Solution
400	DBS.300348	Failed to obtain subtasks during data verification.	Contact technical support.
400	DBS.300349	Failed to update the schema status during route switching.	Contact technical support.
400	DBS.300350	The required data is not found.	Provide environment information, involved operations, and symptom description and contact technical support.
400	DBS.300351	Failed to change statuses of scale-out subtasks to **Error**.	Contact technical support.
400	DBS.300352	Failed to change statuses of scale-out subtasks to **Stop**.	Provide environment information, involved operations, and symptom description and contact technical support.
400	DBS.300353	Data verification failed.	Provide environment information, involved operations, and symptom description and contact technical support.
400	DBS.300354	Failed to change statuses of scale-out subtasks to **Complete**.	Provide environment information, involved operations, and symptom description and contact technical support.
400	DBS.300355	Schema creation failed.	Provide environment information, involved operations, and symptom description and contact technical support.
400	DBS.300356	Failed to connect to the RDS DB instance.	Check whether the RDS service is running properly.
400	DBS.300357	The RDS instance administrator or password is incorrect.	If the RDS instance administrator is incorrect, log in to the RDS console, locate the required RDS instance and click its name, and view the administrator on the instance details page.

Status Code	Error Code	Error Message	Solution
400	DBS.300358	There is a schema where source data is not cleared.	Log in to the DDM console, switch to the schema management page, locate the target schema, and click **Clear** in the **Operation** column.
400	DBS.300360	The associated instance does not support this operation.	Provide environment information, involved operations, and symptom description and contact technical support.
400	DBS.300362	The scaling method is invalid.	Select either one of rebalance and reshard.
400	DBS.300363	Pre-check failed.	Provide environment information, involved operations, and symptom description and contact technical support.
400	DBS.300364	Failed to check disk space of the DB instance.	Perform the following operations to scale up disk space of the DB instance: 1. Log in to the management console. 2. Hover on the left menu to display **Service List** and choose **Database** > **Relational Database Service**. 3. On the **Instance Management** page, locate the required DB instance and click its name. 4. On the **Basic Information** page, locate the **Storage Space** part. 5. Click **Scale** and try again after the scaling is complete.
400	DBS.300365	Failed to update metadata.	Retry the scale-out task.
400	DBS.300366	Failed to rename physical tables during migration.	Retry the scale-out task.
400	DBS.300367	Failed to clear source data.	Try again.

Status Code	Error Code	Error Message	Solution
400	DBS.300368	Parameter **lower_case_table_names** of the DB instance is invalid.	Perform the following operations to scale up disk space of the DB instance: 1. Log in to the management console. 2. Hover on the left menu to display **Service List** and choose **Database** > **Relational Database Service**. 3. On the **Instance Management** page, locate the required DB instance and click its name. 4. Choose **Parameters** in the left navigation pane, search for **lower_case_table_names** and verify that its value is **1** and retry.
400	DBS.300369	Failed to configure access control. Contact technical support.	View DBS-ddm-instancemanager logs and DBS-resource-manager logs and modify as follows: ● If error code APIG.xxxx is returned, indicating that you have no permission to access the API, contact ELB O&M engineers to grant the user the required permission. View the URI of the API in the resource management INFO log. ● If an error code containing **ELB.***xxxx* is displayed, contact ELB O&M engineers to locate the fault.
400	DBS.300370	Load balancing is not enabled for the current DDM instance. To enable it, contact technical support.	If needed, go to DBS Operation System to enable access control for the required DDM instance.
400	DBS.300371	Creating a test DDM instance is not supported. To enable this function, contact technical support.	Creating DDM instances using the engine ID of a stable version is recommended. To create a test DDM instance, go to the DBS Operation System platform to add the user to the whitelist. View the DDM instance management logs to obtain the whitelist name.

Status Code	Error Code	Error Message	Solution
400	DBS.300372	Invalid destination DDM instance.	Create a DDM instance as the destination instance.
400	DBS.300375	Invalid **{param}**.	Change the value of **{param}** and try again.
400	DBS.300376	The time zone is invalid.	Enter a correct time zone.
400	DBS.300377	Invalid time range.	1. Ensure that the format of the time range for route switching is HH:mm:ss. 2. Ensure that the route switching start time and end time are the same day and the interval is longer than 1 hour. 3. Retry after completing the above operations.
400	DBS.300379	The operation is not allowed for this type of tasks.	Enter the ID of the required schema scale-out task.
400	DBS.300400	The task is not found.	Enter a valid task ID.
400	DBS.300401	Failed to modify the automatic route switching time range.	Provide environment information, involved operations, symptom description, and tenant node logs and contact technical support.
400	DBS.300402	Failed to switch the route manually.	Provide environment information, involved operations, symptom description, and tenant node logs and contact technical support.
400	DBS.300405	The schema name length is invalid.	Ensure that the schema name contains 2 to 24 characters.
400	DBS.300406	The schema name cannot contain keyword *keyword*.	Ensure that the schema name does not contain **information_schema**, **mysql**, **performance_schema**, and **sys**.
400	DBS.300407	The schema name cannot contain uppercase letters.	Enter a schema name that only consists of lowercase letters.

Status Code	Error Code	Error Message	Solution
400	DBS.300408	Failed to check the RDS connectivity.	1. Upgrade Agent to 2.6.1 or later. 2. Provide environment information, involved operations, symptom description and contact O&M engineers to check whether the Agent is faulty.
400	DBS.300541	Insufficient permissions.	Use an account with the required permissions.
400	DBS.200057	Invalid parameter template ID.	Enter a correct parameter template ID and try again later.
400	DBS.280305	Invalid security group ID.	Enter a valid security group ID and try again later.

A.4 Instance Specifications

DDM node classes are listed in the following table and vary according to actual situations.

Table A-5 Supported DDM node classes

Specification Code	vCPUs	Memory (GB)	Architecture
ddm.c6.2xlarge.2	8	16	x86
ddm.c6.4xlarge.2	16	32	x86
ddm.c6.8xlarge.2	32	64	x86
ddm.kc1.2xlarge.2	8	16	ARM
ddm.kc1.4xlarge.2	16	32	ARM
ddm.kc1.8xlarge.2	32	64	ARM

A.5 Obtaining a Project ID

Scenarios

When calling APIs, you need to specify the project ID in some URLs. To do so, you need to obtain the project ID first Two methods are available:

- **Obtaining the Project ID by Calling an API**
- **Obtaining a Project ID from the Console**

Obtaining the Project ID by Calling an API

You can obtain the project ID by calling the API used to query **project information based on the specified criteria**.

The API used to obtain a project ID is **GET https://{Endpoint}/v3/projects**. **{Endpoint}** is the IAM endpoint and can be obtained from **Regions and Endpoints**. For details about API authentication, see **Authentication**.

The following is an example response. **id** indicates the project ID.

```
{
    "projects": [
        {
            "domain_id": "65382450e8f64ac0870cd180d14e684b",
            "is_domain": false,
            "parent_id": "65382450e8f64ac0870cd180d14e684b",
            "name": "project_name",
            "description": "",
            "links": {
                "next": null,
                "previous": null,
                "self": "https://www.example.com/v3/projects/a4a5d4098fb4474fa22cd05f897d6b99"
            },
            "id": "a4a5d4098fb4474fa22cd05f897d6b99",
            "enabled": true
        }
    ],
    "links": {
        "next": null,
        "previous": null,
        "self": "https://www.example.com/v3/projects"
    }
}
```

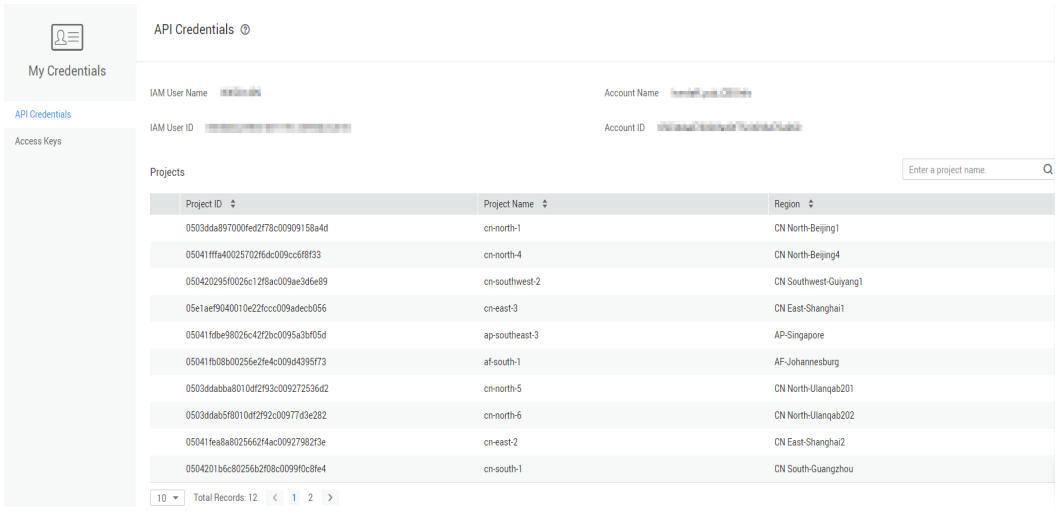
Obtaining a Project ID from the Console

Step 1 Sign up and log in to the management console.

Step 2 Hover the mouse over the username in the upper right corner and select **My Credentials** from the drop-down list.

On the **API Credentials** page, view the project ID in the project list.

Figure A-1 Viewing project IDs



----End

A.6 Status Description

DDM Instance Statuses

Table A-6 DDM instance statuses

Status	Description
CREATING	The DDM instance is being created.
CREATEFAILED	The DDM instance fails to be created.
RUNNING	The DDM instance is running and available.
ERROR	The DDM instance is faulty.
RESTARTING	The DDM instance is being restarted.
FREEZING	The DDM instance is being frozen.
FROZEN	The DDM instance is frozen.
UNFREEZING	The DDM instance is being unfrozen.
RESIZING	Class of the DDM instance fail to be changed.
UPGRADE_VERSION_INSTANCE	The version is being upgraded.
ROLL_BACK_DB_VERSION	The version is being rolled back.
GROWING	A DDM instance is being scaled out.
REDUCING	A DDM instance is being scaled in.

Status	Description
RESTORE	A DDM instance is being restored.
BACKUP	A DDM instance is being backed up.
ONDEMAND_TO_PERIOD	The billing mode of the DDM instance is being changed to yearly/monthly.
PERIOD_RESOURCE_SPEC_CHG	The change to the yearly/monthly DDM instance is being verified.
SET_CONFIGURATION	The instance parameters are being updated.

DDM Schema Statuses

Table A-7 DDM schema statuses

Status	Description
CREATING	The schema is being created.
RUNNING	The schema is running and available.
CREATE_FAILED	The schema fails to be created.
DELETING	The schema is being deleted.
EXPANDING	Shards are being configured.
EXPAND_FAILED	Shards fail to be configured.
ROLLING BACK	The schema is being rolled back.

DDM Node Status

Table A-8 Node statuses

Status	Description
normal	The node is running normally.
abnormal	The node is abnormal.
creating	The DDM instance is being created.
createfail	The DDM instance fails to be created.
enlargefail	The DDM instance fails to be scaled out.
resizing	The node class is being changed.

