

### Introduction

The BSN-DDC portal OpenAPI is a set of BSN-DDC management service interfaces developed by the BSN Development Association for Platform Owners. In the BSN-DDC portal, apart from "DDC Service Activation" and "Billing account recharge/withdrawal" functions which Platform Owners need to manually perform, we recommend that all functions use OpenAPI according to the development documentation, so that Platform Owners can integrate BSN-DDC's management functions and query functions into their own business portals. When calling each interface of the BSN-DDC portal OpenAPI, Platform Owners need to fill in the value of the apitoken into the request header. The server side will validate this value and then associate the request to the corresponding platform. Platform Owners should manage their apitoken properly to prevent information leaks.

### Version 1.0.1

Interface Path: /v3/api-docs

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# 1.Open Permissioned Blockchain Framework

## Open Permissioned Blockchain Framework - Query List

**API URL:** /ddcoai/sys/v1/opb/frame/framework/searches

**Request method:** POST

**Request data type:** application/x-www-form-urlencoded

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Query the list of OPB framework that supports DDC

**Request parameter:**

| Name     | Description | Request type | Required | Data type | schema |
|----------|-------------|--------------|----------|-----------|--------|
| apitoken | apitoken    | header       | Yes      | String    |        |

**Response status:**

| State code | Description  | schema  |
|------------|--------------|---|
| 200        | OK           | ResultInfo«List«OutOaiOpbAccountFrameworkSearches»» |
| 201        | Created      |   |
| 401        | Unauthorized |   |
| 403        | Forbidden    |   |
| 404        | Not Found    |   |

**Response parameter:**

| Name | Description             | Type           | schema         |
|------|-------------------------|----------------|----------------|
| code | Success: 0, Failure: -1 | integer(int32) | integer(int32) |

|                  |   |                |                                   |
|------------------|---|----------------|-----------------------------------|
| data             |   | array          | OutOaiOpbAccountFrameworkSearches |
| opbAlgorithmType | OPB's algorithm type  | integer(int32) |                                   |
| opbChainId       | OPB's chain ID  | integer(int32) |                                   |
| opbChainName     | OPB name  | string         |                                   |
| opcOnlineCreate  | Support chain account online generation, 0=Yes;1=No                   | integer(int32) |                                   |
| errorLogCode     | This marker is also written to the log file to make it easier to find | string         |                                   |
| message          | Message encoding, front-end internationalizes itself                  | string         |                                   |

#### Response example:

```
{
  "code": 0,
  "data": [
    {
      "opbAlgorithmType": 0,
      "opbChainId": 0,
      "opbChainName": "",
      "opcOnlineCreate": 0
    }
  ],
  "errorLogCode": "0",
  "message": "0"
}
```

#### Open Permissioned Blockchain Framework - Supported Chain Account Types

**API URL:** /ddcoai/sys/v1/opb/frame/opbaccounttype/searches

**Request method:** POST

**Request data type:** application/json

**Response data type:** /\*\*

#### Interface description:

Open Permissioned Blockchain framework - supported chain account types

#### Request example:

```
{
  "opbChainId": 0
}
```

### Request parameter:

| Name                              | Description                       | Request type | Required | Data type                         | schema                            |
|-----------------------------------|-----------------------------------|--------------|----------|-----------------------------------|-----------------------------------|
| apitoken                          | apitoken                          | header       | Yes      | String                            |                                   |
| inOaiOpbAccountClientTypeSearches | InOaiOpbAccountClientTypeSearches | body         | Yes      | InOaiOpbAccountClientTypeSearches | InOaiOpbAccountClientTypeSearches |
| opbChainId                        | OPB chain ID                      |              | Yes      | integer(int32)                    |                                   |

### Response status:

| State code | Description  | schema   |
|------------|--------------|--|
| 200        | OK           | ResultInfo«List«OutOaiOpbAccountClientTypeSearches»» |
| 201        | Created      |  |
| 401        | Unauthorized |  |
| 403        | Forbidden    |  |
| 404        | Not Found    |  |

### Response parameter:

| Name            | Description   | Type           | schema                             |
|-----------------|---|----------------|------------------------------------|
| code            | Success: 0, Failure: -1   | integer(int32) | integer(int32)                     |
| data            |   | array          | OutOaiOpbAccountClientTypeSearches |
| opbCertType     | Certificate type  | integer(int32) |                                    |
| opbCertTypeName | Certificate type name   | string         |                                    |
| opbChainId      | OPB chain ID  | integer(int32) |                                    |
| errorLogCode    | This marker is also written to the log file to make it easier to find | string         |                                    |
| message         | Message encoding, front-end internationalizes itself                  | string         |                                    |

### Response example:

```
{
  "code": 0,
  "data": [
    {
      "opbCertType": 0,
      "opbCertTypeName": "",
      "opbChainId": 0
    }
  ],
  "errorLogCode": "0",
  "message": "0"
}
```

## 2. Project Management

## Project Management – Project Creation

**API URL:** /ddcoai/sys/v1/opb/project/save

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

### Interface description:

Caller: Platform Owner

Service provider: OpenAPI

Description: A Platform Owner uses the project ID and project key to access the OPB gateway and initiate contract transactions. Note: The project key is not enabled by default for new projects and needs to be manually enabled on the BSN-DDC portal.

### Request example:

```
{
  "opbChainId": 0
}
```

### Request parameter:

| Name                | Description         | Request type | Required | Data type           | schema              |
|---------------------|---------------------|--------------|----------|---------------------|---------------------|
| apitoken            | apitoken            | header       | Yes      | String              |                     |
| inOpbOaiProjectSave | InOpbOaiProjectSave | body         | Yes      | InOpbOaiProjectSave | InOpbOaiProjectSave |
| opbChainId          | OPB chain ID        |              | Yes      | integer(int32)      |                     |
| opbProjectName      | Project name        |              | Yes      | string              |                     |

### Response status:

| State code | Description  | schema                        |
|------------|--------------|-------------------------------|
| 200        | OK           | ResultInfo«OutOaiProjectSave» |
| 201        | Created      |                               |
| 401        | Unauthorized |                               |
| 403        | Forbidden    |                               |
| 404        | Not Found    |                               |

### Response parameter:

| Name            | Description             | Type           | schema                                 |
|-----------------|-------------------------|----------------|--|
| code            | Success: 0, Failure: -1 | integer(int32) | integer(int32)                         |
| data            |                         | array          | OutOaiOpbAccount<br>ClientTypeSearches |
| opbCertType     | Certificate type        | integer(int32) |  |
| opbCertTypeName | Certificate type name   | string         |  |

|              |   |                |  |
|--------------|---|----------------|--|
| opbChainId   | OPB chain ID  | integer(int32) |  |
| errorLogCode | This marker is also written to the log file to make it easier to find | string         |  |
| message      | Message encoding, front-end internationalizes itself                  | string         |  |

**Response example:**

```
{
  "code": 0,
  "data": [
    {
      "opbCertType": 0,
      "opbCertTypeName": "",
      "opbChainId": 0
    }
  ],
  "errorLogCode": "0",
  "message": "0"
}
```

**Project Management – Project List**

**API URL:** /ddcoai/sys/v1/opb/project/searches

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Search the project list created by calling the API.

**Request example:**

```
{
  "data": {
    "opbChainId": 0,
    "opbProjectName": ""
  },
  "page": {
    "pageNum": 1,
    "pageSize": 5
  }
}
```

```

    }
}

```

#### Request parameter:

| Name                                     | Description   | Request type | Required | Data type                                | schema                                   |
|--|---|--------------|----------|--|--|
| apitoken                                 | apitoken  | header       | Yes      | string                                   |  |
| requestPageInfo«InOpbOaiProjectSearches» | RequestPageInfo«InOpbOaiProjectSearches»  | body         | Yes      | RequestPageInfo«InOpbOaiProjectSearches» | RequestPageInfo«InOpbOaiProjectSearches» |
| data                                     | The request message body cannot be null, but can be an empty object                                 |              | Yes      | InOpbOaiProjectSearches                  | InOpbOaiProjectSearches                  |
| opbChainId                               | OPB chain ID  |              | No       | integer                                  |  |
| opbProjectName                           | Project name  |              | No       | string                                   |  |
| page                                     | Send parameters by page   |              | Yes      | InPage                                   | InPage                                   |
| pageNum                                  | Page: start with 1, example (1)   |              | Yes      | integer                                  |  |
| pageSize                                 | The size of each page, controlled by the front end. If not passed then query all pages, example (5) |              | No       | integer                                  |  |

#### Response status:

| State code | Description  | schema   |
|------------|--------------|--|
| 200        | OK           | ResultInfoPage«List«OutOaiOpbProjectSearches»» |
| 201        | Created      |  |
| 401        | Unauthorized |  |
| 403        | Forbidden    |  |
| 404        | Not Found    |  |

#### Response parameter:

| Name           | Description   | Type           | schema                   |
|----------------|---|----------------|--------------------------|
| code           | Success: 0, Failure: -1   | integer(int32) | integer(int32)           |
| data           |   | array          | OutOaiOpbProjectSearches |
| opbChainId     | OPB chain ID  | integer(int32) |                          |
| opbChainName   | OPB framework name  | string         |                          |
| opbProjectId   | Project ID  | string         |                          |
| opbProjectKey  | Project key   | string         |                          |
| opbProjectName | Project name  | string         |                          |
| errorLogCode   | This marker is also written to the log file to make it easier to find | string         |                          |
| message        | Message encoding, front-end internationalizes                         | string         |                          |

|                |        |                |          |
|----------------|--------|----------------|----------|
|                | itself |                |          |
| resultPageInfo |        | PageInfo       | PageInfo |
| firstPage      |        | boolean        |          |
| lastPage       |        | boolean        |          |
| pageNum        |        | integer(int32) |          |
| pageSize       |        | integer(int32) |          |
| pages          |        | integer(int32) |          |
| total          |        | integer(int64) |          |

#### Response example:

```
{
  "code": 0,
  "data": [
    {
      "opbChainId": 0,
      "opbChainName": "",
      "opbProjectId": "",
      "opbProjectKey": "",
      "opbProjectName": ""
    }
  ],
  "errorLogCode": "0",
  "message": "0",
  "resultPageInfo": {
    "firstPage": Yes,
    "lastPage": Yes,
    "pageNum": 0,
    "pageSize": 0,
    "pages": 0,
    "total": 0
  }
}
```

#### Project Management – Enable/Disable/Update Project Key

API URL: /ddcoai/sys/v1/opb/project/key/modify

Request method: POST

Request data type: application/json



**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Enable/Disable/Update a project key. Note: Re-enabling a project key after disabling it will update the key value.

**Request example:**

```
{  
  "opbProjectId": "",  
  "opbProjectKeyType": 0  
}
```

**Request parameter:**

| Name                  | Description   | Request type | Required | Data type             | schema                |
|-----------------------|---|--------------|----------|-----------------------|-----------------------|
| apitoken              | apitoken  | header       | Yes      | string                |                       |
| inOaiProjectKeyModify | InOaiProjectKeyModify                                   | body         | Yes      | InOaiProjectKeyModify | InOaiProjectKeyModify |
| opbProjectId          | Project ID  |              | Yes      | string                |                       |
| opbProjectKeyType     | Project status (0 = enabled, 1 = updated, 2 = disabled) |              | Yes      | integer(int32)        |                       |

**Response status:**

| State code | Description  | schema                             |
|------------|--------------|------------------------------------|
| 200        | OK           | ResultInfo«OutOaiProjectKeyModify» |
| 201        | Created      |                                    |
| 401        | Unauthorized |                                    |
| 403        | Forbidden    |                                    |
| 404        | Not Found    |                                    |

**Response parameter:**

| Name         | Description   | Type                   | schema                 |
|--------------|---|------------------------|------------------------|
| code         | Success: 0, Failure: -1   | integer(int32)         | integer(int32)         |
| data         |   | OutOaiProjectKeyModify | OutOaiProjectKeyModify |
| opbProectKey | Project key   | string                 |                        |
| errorLogCode | This marker is also written to the log file to make it easier to find | string                 |                        |
| message      | Message encoding, front-end internationalizes itself                  | string                 |                        |

**Response example:**

```
{
  "code": 0,
  "data": {
    "opbProectKey": ""
  },
  "errorLogCode": "0",
  "message": "0"
}
```

### 3. DDC Chain Account Management

#### DDC Chain Account Management – Account Creation

**API URL:** /ddcoai/sys/v1/opb/account/create/save

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: After generating a chain account, the Platform Owner registers the chain account through the official portal OpenAPI. Only chain accounts with access to official DDC contracts can enable BSN-DDC business functions.

When you create a new account, you can access it without accessing the official DDC contract, and you can adjust the "Access to official DDC contract" interface.

**Request example:**

```
{
  "opbChainClientName": "XXXXXX",
  "opbChainClientPass": "1",
  "opbChainClientType": 1,
  "opbChainId": 1,
  "opbClientAddress": "3",
  "opbKeyType": 1,
  "opbPublicKey": "The newline should be replaced to \n",
  "openDdc": 1,
  "proof": ""
}
```

**Request parameter:**

| Name                      | Description   | Request type | Required | Data type                 | schema                    |
|---------------------------|---|--------------|----------|---------------------------|---------------------------|
| apitoken                  | apitoken  | header       | Yes      | string                    |                           |
| inOaiOpbAccountCreateSave | InOaiOpbAccountCreateSave   | body         | Yes      | InOaiOpbAccountCreateSave | InOaiOpbAccountCreateSave |
| opbChainClientName        | Chain account name, example (XXXXX)   |              | Yes      | string                    |                           |
| opbChainClientPass        | Password of Key Trust Mode (Required if the chain account type is 1), example (1)   |              | No       | string                    |                           |
| opbChainClientType        | User type (1= Platform Owner 2= End User), example (1)                              |              | No       | integer(int32)            |                           |
| opbChainId                | OPB chain ID (Calling API: OPB – Query List), example (1)                           |              | Yes      | integer(int32)            |                           |
| opbClientAddresses        | Upload Chain Account Address (Required if the chain account type is 3), example (3) |              | No       | string                    |                           |
| opbKeyType                | Chain account type (Calling API: OPB - Supported Chain Account Types) , example (1) |              | Yes      | integer(int32)            |                           |
| opbPublicKey              | Upload Public Key (Required if the chain account type is 2), example                |              | No       | string                    |                           |

|         |  |  |     |                |  |
|---------|--|--|-----|----------------|--|
|         | (replace the<br>newline with<br>\n)  |  |     |                |  |
| openDdc | Use BSN-<br>DDC Contract<br>1= No<br>5= Yes<br>, example (1)                                     |  | Yes | integer(int32) |  |
| proof   | DDC Service<br>Certificate.<br>The content<br>is a JSON<br>string and<br>needs to be<br>escaped. |  | Yes | string         |  |

#### Response status:

| State code | Description  | schema  |
|------------|--------------|---|
| 200        | OK           | ResultInfo«OutOpbAccountControllerCreateSave» |
| 201        | Created      |   |
| 401        | Unauthorized |   |
| 403        | Forbidden    |   |
| 404        | Not Found    |   |

#### Response parameter:

| Name                  | Description   | Type                              | schema                            |
|-----------------------|---|-----------------------------------|-----------------------------------|
| code                  | Success: 0, Failure: -1   | integer(int32)                    | integer(int32)                    |
| data                  |   | OutOpbAccountControllerCreateSave | OutOpbAccountControllerCreateSave |
| opbChainClientAddress | Chain account address   | string                            |                                   |
| errorLogCode          | This marker is also written to the log file to make it easier to find | string                            |                                   |
| message               | Message encoding, front-end internationalizes itself                  | string                            |                                   |

#### Response example:

```
{
  "code": 0,
  "data": {
    "opbChainClientAddress": "",
  },
  "errorLogCode": "0",
  "message": "0"
```

```
}
```

## DDC Chain Account Management – Access to BSN-DDC Contract

**API URL:** /ddcoai/sys/v1/opb/account/access/official/save

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Access to BSN-DDC contracts based on the existing chain account address

**Request example:**

```
{
  "opbChainClientAddress": "",
  "opbChainClientType": 0,
  "opbChainId": 0,
  "proof": ""
}
```

**Request parameter:**

| Name                      | Description  | Request type | Required | Data type                 | schema                    |
|---------------------------|--|--------------|----------|---------------------------|---------------------------|
| apitoken                  | apitoken   | header       | Yes      | string                    |                           |
| inOaiDdcAccountCreateSave | InOaiDdcAccountCreateSave  | body         | Yes      | InOaiDdcAccountCreateSave | InOaiDdcAccountCreateSave |
| opbChainClientAddress     | Chain account address  |              | Yes      | string                    |                           |
| opbChainClientType        | User type (1 = Platform Owner, 2 = End User)                                   |              | Yes      | integer(int32)            |                           |
| opbChainId                | OPB chain ID   |              | No       | integer(int32)            |                           |
| proof                     | DDC Service Certificate. The content is a JSON string and needs to be escaped. |              | Yes      | string                    |                           |

**Response status:**

| State code | Description | schema             |
|------------|-------------|--------------------|
| 200        | OK          | ResultInfo«string» |

|     |              |  |
|-----|--------------|--|
| 201 | Created      |  |
| 401 | Unauthorized |  |
| 403 | Forbidden    |  |
| 404 | Not Found    |  |

**Response parameter:**

| Name         | Description   | Type           | schema         |
|--------------|---|----------------|----------------|
| code         | Success: 0, Failure: -1   | integer(int32) | integer(int32) |
| data         |   | string         |                |
| errorLogCode | This marker is also written to the log file to make it easier to find | string         |                |
| message      | Message encoding, front-end internationalizes itself                  | string         |                |

**Response example:**

```
{
  "code": 0,
  "data": "",
  "errorLogCode": "0",
  "message": "0"
}
```

## DDC Chain Account Management – View Details

**API URL:** /ddcoai/sys/v1/opb/account/check/details/search

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: View basic information about a DDC chain account.

**Request example:**

```
{
  "opbChainClientAddress": "",
  "opbChainId": 0
}
```

**Request parameter:**

| Name                              | Description                       | Request type | Required | Data type                         | schema                            |
|-----------------------------------|-----------------------------------|--------------|----------|-----------------------------------|-----------------------------------|
| apitoken                          | apitoken                          | header       | Yes      | String                            |                                   |
| inOaiOpbAccountCheckDetailsSearch | InOaiOpbAccountCheckDetailsSearch | body         | Yes      | InOaiOpbAccountCheckDetailsSearch | InOaiOpbAccountCheckDetailsSearch |
| opbChainClientAddress             | DDC chain account address         |              | Yes      | string                            |                                   |
| opbChainId                        | OPB chain ID                      |              | Yes      | integer(int32)                    |                                   |

#### Response status:

| State code | Description  | schema   |
|------------|--------------|--|
| 200        | OK           | ResultInfo«OutOaiOpbAccountCheckDetailsSearch» |
| 201        | Created      |  |
| 401        | Unauthorized |  |
| 403        | Forbidden    |  |
| 404        | Not Found    |  |

#### Response parameter:

| Name                  | Description   | Type                               | schema                             |
|-----------------------|---|------------------------------------|------------------------------------|
| code                  | Success: 0, Failure: -1   | integer(int32)                     | integer(int32)                     |
| data                  |   | OutOaiOpbAccountCheckDetailsSearch | OutOaiOpbAccountCheckDetailsSearch |
| business              | BSN-DDC service fee balance (cent)  | integer(int64)                     |                                    |
| createDate            | Created time  | string                             |                                    |
| did                   | DID   | string                             |                                    |
| gasNum                | Gas balance (Maximum 50 length 8 decimal points)  | string                             |                                    |
| opbChainClientAddress | Chain account address   | string                             |                                    |
| opbChainClientName    | Chain account name  | string                             |                                    |
| opbChainClientType    | User type (1 = Platform Owner, 2 = End User)  | integer(int32)                     |                                    |
| opbChainName          | OPB chain ID  | string                             |                                    |
| opbChainType          | Chain account type  | string                             |                                    |
| openDdcYn             | Use BSN-DDC Contract<br>1= No<br>5= Yes   | integer(int32)                     |                                    |
| opsPlatformState      | Operator setting status<br>(0=not connected to the BSN-DDC contract 1=frozen 2=enabled (not frozen) | integer(int32)                     |                                    |

|                  |   |                |  |
|------------------|---|----------------|--|
|                  | 3=freezing 4=unfreezing)  |                |  |
| platformSetState | Platform Owner setting status (0=not connected to the BSN-DDC contract 1=frozen 2=enabled (not frozen) 3=freezing 4=unfreezing) | integer(int32) |  |
| errorLogCode     | This marker is also written to the log file to make it easier to find   | string         |  |
| message          | Message encoding, front-end internationalizes itself  | string         |  |

#### Response example:

```
{
  "code": 0,
  "data": {
    "business": 0,
    "createDate": "",
    "did": "",
    "gasNum": "",
    "opbChainClientAddress": "",
    "opbChainClientName": "",
    "opbChainClientType": 0,
    "opbChainName": "",
    "opbChainType": "",
    "openDdcYn": 0,
    "opsPlatformState": 0,
    "platformSetState": 0
  },
  "errorLogCode": "0",
  "message": "0"
}
```

### DDC Chain Account Management – Public/Private Key of Chain Account Online

#### Generation

**API URL:** /ddcoai/sys/v1/opb/account/create/publicprivatekey

**Request method:** POST

**Request data type:** application/json



**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Platform Owners can generate public-private key pairs online through OpenAPI for their DDC chain accounts. Which framework supports this function can be searched by the value the "Open Permissioned Blockchain Framework - Query List" interface return value of opbChainId is 0.

**Request example:**

```
{
  "opbChainId": 0
}
```

**Request parameter:**

| Name                                | Description                         | Request type | Required | Data type                           | schema                              |
|-------------------------------------|-------------------------------------|--------------|----------|-------------------------------------|-------------------------------------|
| apitoken                            | apitoken                            | header       | Yes      | string                              |                                     |
| inOaiOpbAccountCreateOnlineDownload | InOaiOpbAccountCreateOnlineDownload | body         | Yes      | InOaiOpbAccountCreateOnlineDownload | InOaiOpbAccountCreateOnlineDownload |
| opbChainId                          | OPB chain ID                        |              | Yes      | integer(int32)                      |                                     |

**Response status:**

| State code | Description  | schema             |
|------------|--------------|--------------------|
| 200        | OK           | ResultInfo«string» |
| 201        | Created      |                    |
| 401        | Unauthorized |                    |
| 403        | Forbidden    |                    |
| 404        | Not Found    |                    |

**Response parameter:**

| Name         | Description   | Type           | schema         |
|--------------|---|----------------|----------------|
| code         | Success: 0, Failure: -1   | integer(int32) | integer(int32) |
| data         |   | string         |                |
| errorLogCode | This marker is also written to the log file to make it easier to find | string         |                |
| message      | Message encoding, front-end internationalizes itself                  | string         |                |

**Response example:**

```
{
  "code": 0,
  "data": "",
  "errorLogCode": "",
  "message": ""
}
```

```

    "errorLogCode": "0",
    "message": "0"
}

```

## DDC Chain Account Management – EOS Resource Allocation

**API URL:** /ddcoai/sys/v1/opb/eos/resource/save

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Platform Owners can allocate resources to their DDC chain accounts via OpenAPI. The total amount required to allocate resources to chain accounts can be previewed through the “EOS Resource Allocation Price Calculation” interface.

**Request example:**

```

{
  "cpuValue": 0,
  "netValue": 0,
  "opbChainClientAddress": "",
  "opbChainId": 0,
  "proof": "",
  "ramValue": 0,
  "reqTransactionSn": "",
  "validDate": ""
}

```

**Request parameter:**

| Name                    | Description                    | Request type | Required | Data type               | schema                  |
|-------------------------|--------------------------------|--------------|----------|-------------------------|-------------------------|
| apitoken                | apitoken                       | header       | Yes      | string                  |                         |
| inOaiOpbEosResourceSave | InOaiOpbEosResourceSave        | body         | Yes      | InOaiOpbEosResourceSave | InOaiOpbEosResourceSave |
| cpuValue                | Number of CPUs to be recharged |              | Yes      | integer(int64)          |                         |
| netValue                | Amount of net to be recharged  |              | Yes      | integer(int64)          |                         |
| opbChainClientAddress   | Chain account address          |              | Yes      | string                  |                         |
| opbChainId              | OPB chain ID                   |              | Yes      | integer(int32)          |                         |

|                  |  |  |     |                |  |
|------------------|--|--|-----|----------------|--|
| proof            | DDC Service Certificate<br>The content is a JSON string and needs to be escaped. |  | Yes | string         |  |
| ramValue         | Amount of RAM to be recharged  |  | Yes | integer(int64) |  |
| reqTransactionSn | Third party transaction ID   |  | Yes | string         |  |

#### Response status:

| State code | Description  | schema     |
|------------|--------------|------------|
| 200        | OK           | ResultInfo |
| 201        | Created      |            |
| 401        | Unauthorized |            |
| 403        | Forbidden    |            |
| 404        | Not Found    |            |

#### Response parameter:

| Name         | Description   | Type           | schema         |
|--------------|---|----------------|----------------|
| code         | Success: 0, Failure: -1   | integer(int32) | integer(int32) |
| data         |   | Object         |                |
| errorLogCode | This marker is also written to the log file to make it easier to find | string         |                |
| message      | Message encoding, front-end internationalizes itself                  | string         |                |

#### Response example:

```
{
  "code": 0,
  "data": "",
  "errorLogCode": "0",
  "message": "0"
}
```

### DDC Chain Account Management – Query Allocated EOS Resources

API URL: /ddcoai/sys/v1/opb/eos/resource/search

Request method: POST

Request data type: application/json

Response data type: \*/\*

Interface description:

Caller: Platform Owner

Service provider: OpenAPI

Description: Platform Owners can query the allocated EOS resources of the DDC chain account through OpenAPI.

**Request example:**

```
{  
  "opbChainClientAddress": "",  
  "reqTransactionSn": ""  
}
```

**Request parameter:**

| Name                            | Description                     | Request type | Required | Data type                       | schema                          |
|---------------------------------|---------------------------------|--------------|----------|---------------------------------|---------------------------------|
| apitoken                        | apitoken                        | header       | Yes      | string                          |                                 |
| inOaiOpbEosResourceResultSearch | InOaiOpbEosResourceResultSearch | body         | Yes      | InOaiOpbEosResourceResultSearch | InOaiOpbEosResourceResultSearch |
| opbChainClientAddress           | Chain account address           |              | Yes      | string                          |                                 |
| reqTransactionSn                | Third party transaction ID      |              | Yes      | string                          |                                 |

**Response status:**

| State code | Description  | schema  |
|------------|--------------|---|
| 200        | OK           | ResultInfo«OutOaiOpbEosResourcesResultSearch» |
| 201        | Created      |   |
| 401        | Unauthorized |   |
| 403        | Forbidden    |   |
| 404        | Not Found    |   |

**Response parameter:**

| Name                  | Description   | Type                              | schema                            |
|-----------------------|---|-----------------------------------|-----------------------------------|
| code                  | Success: 0, Failure: -1   | integer(int32)                    | integer(int32)                    |
| data                  |   | OutOaiOpbEosResourcesResultSearch | OutOaiOpbEosResourcesResultSearch |
| opbChainClientAddress | Chain account address   | string                            |                                   |
| rechargeState         | Gas recharge status 1 = recharge in progress 5 = recharge failed 10 = recharge successful | integer(int32)                    |                                   |
| reqTransactionSn      | Third party transaction ID  | string                            |                                   |
| errorLogCode          | This marker is also written to the log file to make it easier to find                     | string                            |                                   |

|         |  |        |  |
|---------|--|--------|--|
| message | Message encoding, front-end internationalizes itself | string |  |
|---------|--|--------|--|

#### Response example:

```
{
  "code": 0,
  "data": {
    "opbChainClientAddress": "",
    "rechargeState": 0,
    "reqTransactionSn": ""
  },
  "errorLogCode": "0",
  "message": "0"
}
```

### DDC Chain Account Management – Query EOS Resource Price

**API URL:** /ddcoai/sys/v1/opb/account/eos/resource/price/search

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

#### Interface description:

Caller: Platform Owner

Service provider: OpenAPI

Description: Platform Owners can query the resource price of the Open Permissioned Blockchain framework to which the DDC chain account belongs through OpenAPI.

#### Request example:

```
{
  "opbChainId": 0
}
```

#### Request parameter:

| Name                           | Description                    | Request type | Required | Data type                      | schema                         |
|--------------------------------|--------------------------------|--------------|----------|--------------------------------|--------------------------------|
| apitoken                       | apitoken                       | header       | Yes      | string                         |                                |
| inOaiOpbEosResourcePriceSearch | InOaiOpbEosResourcePriceSearch | body         | Yes      | InOaiOpbEosResourcePriceSearch | InOaiOpbEosResourcePriceSearch |
| opbChainId                     | OPB chain ID                   |              | Yes      | integer(int32)                 |                                |

#### Response status:

| State code | Description | schema |
|------------|-------------|--------|
|------------|-------------|--------|

|     |              |   |
|-----|--------------|---|
| 200 | OK           | ResultInfo«OutOaiOpbEosResourcePriceSearch» |
| 201 | Created      |   |
| 401 | Unauthorized |   |
| 403 | Forbidden    |   |
| 404 | Not Found    |   |

**Response parameter:**

| Name         | Description   | Type                            | schema                          |
|--------------|---|---------------------------------|---------------------------------|
| code         | Success: 0, Failure: -1   | integer(int32)                  | integer(int32)                  |
| data         |   | OutOaiOpbEosResourcePriceSearch | OutOaiOpbEosResourcePriceSearch |
| opcCpuRmb    | CPU price of the current framework, unit: cent                        | integer(int64)                  |                                 |
| opcCpuValue  | CPU ratio of the current framework, unit: SYS                         | integer(int64)                  |                                 |
| opcNetRmb    | Net price of the current framework, unit: cent                        | integer(int64)                  |                                 |
| opcNetValue  | Net scale of the current framework, unit: SYS                         | integer(int64)                  |                                 |
| opcRamRmb    | RAM price of the current framework, unit: cent                        | integer(int64)                  |                                 |
| opcRamValue  | RAM scale of the current framework, unit: KB                          | integer(int64)                  |                                 |
| errorLogCode | This marker is also written to the log file to make it easier to find | string                          |                                 |
| message      | Message encoding, front-end internationalizes itself                  | string                          |                                 |

**Response example:**

```
{
  "code": 0,
  "data": {
    "opcCpuRmb": 0,
    "opcCpuValue": 0,
    "opcNetRmb": 0,
    "opcNetValue": 0,
    "opcRamRmb": 0,
    "opcRamValue": 0
  },
  "errorLogCode": "0",
```

```
"message": "0"
}
```

## DDC Chain Account Management – EOS Resource Allocation Price Calculation

**API URL:** /ddcoai/sys/v1/opb/eos/resource/price/calculate

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Platform Owners can calculate the cost of resources to be allocated to their DDC chain accounts via OpenAPI.

**Request example:**

```
{
  "cpuValue": 0,
  "netValue": 0,
  "opbChainClientAddress": "",
  "opbChainId": 0,
  "ramValue": 0,
  "validDate": ""
}
```

**Request parameter:**

| Name                              | Description                             | Request type | Required | Data type                         | schema                            |
|-----------------------------------|---|--------------|----------|-----------------------------------|-----------------------------------|
| apitoken                          | apitoken                                | header       | Yes      | string                            |                                   |
| inOaiOpbEosResourcePriceCalculate | InOaiOpbEosResourcePriceCalculate       | body         | Yes      | InOaiOpbEosResourcePriceCalculate | InOaiOpbEosResourcePriceCalculate |
| cpuValue                          | Number of CPUs to be recharged          |              | Yes      | integer(int64)                    |                                   |
| netValue                          | Amount of net to be recharged           |              | Yes      | integer(int64)                    |                                   |
| opbChainClientAddress             | Chain account address                   |              | Yes      | string                            |                                   |
| opbChainId                        | OPB chain ID                            |              | Yes      | integer(int32)                    |                                   |
| ramValue                          | Amount of RAM to be recharged           |              | Yes      | integer(int64)                    |                                   |
| validDate                         | Resource valid period (Minimum 30 days) |              | Yes      | string(date-time)                 |                                   |

**Response status:**

| State code | Description  | schema   |
|------------|--------------|--|
| 200        | OK           | ResultInfo«OutOaiOpbEosResourcePriceCalculate» |
| 201        | Created      |  |
| 401        | Unauthorized |  |
| 403        | Forbidden    |  |
| 404        | Not Found    |  |

**Response parameter:**

| Name          | Description   | Type                               | schema                             |
|---------------|---|------------------------------------|------------------------------------|
| code          | Success: 0, Failure: -1   | integer(int32)                     | integer(int32)                     |
| data          |   | OutOaiOpbEosResourcePriceCalculate | OutOaiOpbEosResourcePriceCalculate |
| resourcePrice | Resource price, unit: cent  | integer(int64)                     |                                    |
| errorLogCode  | This marker is also written to the log file to make it easier to find | string                             |                                    |
| message       | Message encoding, front-end internationalizes itself                  | string                             |                                    |

**Response example:**

```
{
  "code": 0,
  "data": {
    "resourcePrice": 0
  },
  "errorLogCode": "0",
  "message": "0"
}
```

**DDC Chain Account Management – Freeze BSN-DDC Business**

**API URL:** /ddcoai/sys/v1/opb/account/freeze

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Freeze the chain accounts of end-users. The freezing and unfreezing operations only change the availability of end-user's official BSN-DDC business, and shall not affect the



transactions that have occurred and the BSN-DDC service fees and gas balance in the frozen chain accounts.

#### Request example:

```
{  
  "opbChainClientAddress": "",  
  "opbChainClientFrozenDesc": "",  
  "opbChainId": 0  
}
```

#### Request parameter:

| Name                     | Description               | Request type | Required | Data type             | schema                |
|--------------------------|---------------------------|--------------|----------|-----------------------|-----------------------|
| apitoken                 | apitoken                  | header       | Yes      | string                |                       |
| inOaiOpbAccountFreeze    | InOaiOpbAccountFreeze     | body         | Yes      | InOaiOpbAccountFreeze | InOaiOpbAccountFreeze |
| opbChainClientAddress    | DDC chain account address |              | Yes      | string                |                       |
| opbChainClientFrozenDesc | Reason                    |              | Yes      | string                |                       |
| opbChainId               | OPB chain ID              |              | Yes      | integer(int32)        |                       |

#### Response status:

| State code | Description  | schema             |
|------------|--------------|--------------------|
| 200        | OK           | ResultInfo«string» |
| 201        | Created      |                    |
| 401        | Unauthorized |                    |
| 403        | Forbidden    |                    |
| 404        | Not Found    |                    |

#### Response parameter:

| Name         | Description   | Type           | schema         |
|--------------|---|----------------|----------------|
| code         | Success: 0, Failure: -1   | integer(int32) | integer(int32) |
| data         |   | string         |                |
| errorLogCode | This marker is also written to the log file to make it easier to find | string         |                |
| message      | Message encoding, front-end internationalizes itself                  | string         |                |

#### Response example:

```
{  
  "code": 0,  
  "data": "",  
  "errorLogCode": "0",  
}
```

```
    "message": "0"
}
```

## DDC Chain Account Management – Unfreeze BSN-DDC Business

**API URL:** /ddcoai/sys/v1/opb/account/unfreeze

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Unfreeze the chain accounts of end-users. The freezing and unfreezing operations only change the availability of end-user's official BSN-DDC business, and shall not affect the transactions that have occurred and the BSN-DDC service fees and gas balance in the frozen chain accounts.

**Request example:**

```
{
  "opbChainClientAddress": "",
  "opbChainClientFrozenDesc": "",
  "opbChainId": 0
}
```

**Request parameter:**

| Name                     | Description               | Request type | Required | Data type             | schema                |
|--------------------------|---------------------------|--------------|----------|-----------------------|-----------------------|
| apitoken                 | apitoken                  | header       | Yes      | string                |                       |
| inOaiOpbAccountFreeze    | InOaiOpbAccountFreeze     | body         | Yes      | InOaiOpbAccountFreeze | InOaiOpbAccountFreeze |
| opbChainClientAddress    | DDC chain account address |              | Yes      | string                |                       |
| opbChainClientFrozenDesc | Reason                    |              | Yes      | string                |                       |
| opbChainId               | OPB chain ID              |              | Yes      | integer(int32)        |                       |

**Response status:**

| State code | Description  | schema             |
|------------|--------------|--------------------|
| 200        | OK           | ResultInfo«string» |
| 201        | Created      |                    |
| 401        | Unauthorized |                    |
| 403        | Forbidden    |                    |
| 404        | Not Found    |                    |

**Response parameter:**

| Name         | Description   | Type           | schema         |
|--------------|---|----------------|----------------|
| code         | Success: 0, Failure: -1   | integer(int32) | integer(int32) |
| data         |   | string         |                |
| errorLogCode | This marker is also written to the log file to make it easier to find | string         |                |
| message      | Message encoding, front-end internationalizes itself                  | string         |                |

#### Response example:

```
{
  "code": 0,
  "data": "",
  "errorLogCode": "0",
  "message": "0"
}
```

### DDC Chain Account Management – Query BSN-DDC Business Status

**API URL:** /ddcoai/sys/v1/opb/account/freeze/status

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

#### Interface description:

Caller: Platform Owner

Service provider: OpenAPI

Description: This interface can check the frozen and unfrozen status of the chain accounts belonging to the platform. Mainly divided into the operation of the operator and the operation of Platform Owners.

#### Request example:

```
{
  "opbChainClientAddress": "",
  "opbChainId": 0
}
```

#### Request parameter:

| Name                        | Description                 | Request type | Required | Data type                   | schema                      |
|-----------------------------|-----------------------------|--------------|----------|-----------------------------|-----------------------------|
| apitoken                    | apitoken                    | header       | Yes      | string                      |                             |
| inOaiOpbAccountFreezeStatus | InOaiOpbAccountFreezeStatus | body         | Yes      | InOaiOpbAccountFreezeStatus | InOaiOpbAccountFreezeStatus |
| opbChainClientAddress       | DDC chain account address   |              | Yes      | string                      |                             |

|            |              |  |     |                |  |
|------------|--------------|--|-----|----------------|--|
| opbChainId | OPB chain ID |  | Yes | integer(int32) |  |
|------------|--------------|--|-----|----------------|--|

#### Response status:

| State code | Description  | schema                                   |
|------------|--------------|--|
| 200        | OK           | ResultInfo«OutOaiOpbAccountFreezeStatus» |
| 201        | Created      |  |
| 401        | Unauthorized |  |
| 403        | Forbidden    |  |
| 404        | Not Found    |  |

#### Response parameter:

| Name             | Description   | Type                         | schema                       |
|------------------|---|------------------------------|------------------------------|
| code             | Success: 0, Failure: -1   | integer(int32)               | integer(int32)               |
| data             |   | OutOaiOpbAccountFreezeStatus | OutOaiOpbAccountFreezeStatus |
| opsPlatformState | Operator setting status (0=not connected to the BSN-DDC contract 1=frozen 2=enabled (not frozen) 3=freezing 4=unfreezing)       | integer(int32)               |                              |
| platformSetState | Platform Owner setting status (0=not connected to the BSN-DDC contract 1=frozen 2=enabled (not frozen) 3=freezing 4=unfreezing) | integer(int32)               |                              |
| errorLogCode     | This marker is also written to the log file to make it easier to find   | string                       |                              |
| message          | Message encoding, front-end internationalizes itself  | string                       |                              |

#### Response example:

```
{
  "code": 0,
  "data": {
    "opsPlatformState": 0,
    "platformSetState": 0
  },
  "errorLogCode": "0",
  "message": "0"
}
```

## DDC Chain Account Management – Recharge Gas Fee

**API URL:** /ddcoai/sys/v1/opb/account/gas/save

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Platform Owners recharge the gas fee to their end users' chain accounts through OpenAPI.

**Request example:**

```
{
  "businessMoney": 0,
  "opbChainClientAddress": "",
  "opbChainId": 0,
  "proof": "",
  "reqTransactionSn": ""
}
```

**Request parameter:**

| Name                   | Description  | Request type | Required | Data type              | schema                 |
|------------------------|--|--------------|----------|------------------------|------------------------|
| apitoken               | apitoken   | header       | Yes      | string                 |                        |
| inOaiOpbAccountGasSave | InOaiOpbAccountGasSave   | body         | Yes      | InOaiOpbAccountGasSave | InOaiOpbAccountGasSave |
| businessMoney          | The amount of recharged gas  |              | Yes      | integer(int64)         |                        |
| opbChainClientAddress  | DDC chain account address  |              | Yes      | string                 |                        |
| opbChainId             | OPB chain ID   |              | Yes      | integer(int32)         |                        |
| proof                  | DDC Service Certificate. The content is a JSON string and needs to be escaped. |              | Yes      | string                 |                        |
| reqTransactionSn       | Third party transaction ID (Composed of numbers, letters and underline)        |              | Yes      | string                 |                        |

**Response status:**

| State code | Description | schema             |
|------------|-------------|--------------------|
| 200        | OK          | ResultInfo«string» |
| 201        | Created     |                    |

|     |              |  |
|-----|--------------|--|
| 401 | Unauthorized |  |
| 403 | Forbidden    |  |
| 404 | Not Found    |  |

#### Response parameter:

| Name         | Description   | Type           | schema         |
|--------------|---|----------------|----------------|
| code         | Success: 0, Failure: -1   | integer(int32) | integer(int32) |
| data         |   | string         |                |
| errorLogCode | This marker is also written to the log file to make it easier to find | string         |                |
| message      | Message encoding, front-end internationalizes itself                  | string         |                |

#### Response example:

```
{
  "code": 0,
  "data": "",
  "errorLogCode": "0",
  "message": "0"
}
```

### DDC Chain Account Management – Query Gas Fee Recharge Result

**API URL:** /ddcoai/sys/v1/opb/account/gas/result/search

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

#### Interface description:

Caller: Platform Owner

Service provider: OpenAPI

Description: Platform Owners can query the gas recharge results of the DDC chain account to which it belongs through OpenAPI.

#### Request example:

```
{
  "opbChainClientAddress": "",
  "reqTransactionSn": ""
}
```

#### Request parameter:

| Name                           | Description                    | Request type | Required | Data type                      | schema                         |
|--------------------------------|--------------------------------|--------------|----------|--------------------------------|--------------------------------|
| apitoken                       | apitoken                       | header       | Yes      | string                         |                                |
| inOaiOpbAccountGasResultSearch | InOaiOpbAccountGasResultSearch | body         | Yes      | InOaiOpbAccountGasResultSearch | InOaiOpbAccountGasResultSearch |
| opbChainClientAddress          | Chain account address          |              | Yes      | string                         |                                |
| reqTransactionSn               | Third party transaction ID     |              | Yes      | string                         |                                |

#### Response status:

| State code | Description  | schema                                      |
|------------|--------------|---|
| 200        | OK           | ResultInfo«OutOaiOpbAccountGasResultSearch» |
| 201        | Created      |   |
| 401        | Unauthorized |   |
| 403        | Forbidden    |   |
| 404        | Not Found    |   |

#### Response parameter:

| Name                  | Description   | Type                            | schema                          |
|-----------------------|---|---------------------------------|---------------------------------|
| code                  | Success: 0, Failure: -1   | integer(int32)                  | integer(int32)                  |
| data                  |   | OutOaiOpbAccountGasResultSearch | OutOaiOpbAccountGasResultSearch |
| opbChainClientAddress | Chain account address   | string                          |                                 |
| rechargeState         | Gas recharge status 1 - recharge in progress 5 - recharge failed 10 - recharge successful | integer(int32)                  |                                 |
| reqTransactionSn      | Third party transaction ID  | string                          |                                 |
| errorLogCode          | This marker is also written to the log file to make it easier to find                     | string                          |                                 |
| message               | Message encoding, front-end internationalizes itself                                      | string                          |                                 |

#### Response example:

```
{
  "code": 0,
  "data": {
    "opbChainClientAddress": "",
    "rechargeState": 0,
    "reqTransactionSn": ""
  },
}
```

```

    "errorCode": "0",
    "message": "0"
}

```

## DDC Chain Account Management – Recharge BSN-DDC Service Fee

**API URL:** /ddcoai/sys/v1/opb/account/business/save

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: If Platform Owners use the BSN-DDC contract to initiate DDC transactions, they should first recharge BSN-DDC service fees to their chain accounts through OpenAPI.

**Request example:**

```

{
  "businessMoney": 0,
  "opbChainClientAddress": "",
  "opbChainId": 0,
  "proof": "",
  "reqTransactionSn": ""
}

```

**Request parameter:**

| Name                        | Description  | Request type | Required | Data type                   | schema                      |
|-----------------------------|--|--------------|----------|-----------------------------|-----------------------------|
| apitoken                    | apitoken   | header       | Yes      | string                      |                             |
| inOaiOpbAccountBusinessSave | InOaiOpbAccountBusinessSave  | body         | Yes      | InOaiOpbAccountBusinessSave | InOaiOpbAccountBusinessSave |
| businessMoney               | The amount of recharged BSN-DDC service fee (unit: cent)                       |              | Yes      | integer(int64)              |                             |
| opbChainClientAddress       | DDC chain account address  |              | Yes      | string                      |                             |
| opbChainId                  | OPB chain ID   |              | Yes      | integer(int32)              |                             |
| proof                       | DDC Service Certificate. The content is a JSON string and needs to be escaped. |              | Yes      | string                      |                             |
| reqTransactionSn            | Third party transaction ID (Composed of numbers, letters and underline)        |              | Yes      | string                      |                             |



**Response status:**

| State code | Description  | schema             |
|------------|--------------|--------------------|
| 200        | OK           | ResultInfo«string» |
| 201        | Created      |                    |
| 401        | Unauthorized |                    |
| 403        | Forbidden    |                    |
| 404        | Not Found    |                    |

**Response parameter:**

| Name         | Description   | Type           | schema         |
|--------------|---|----------------|----------------|
| code         | Success: 0, Failure: -1   | integer(int32) | integer(int32) |
| data         |   | string         |                |
| errorLogCode | This marker is also written to the log file to make it easier to find | string         |                |
| message      | Message encoding, front-end internationalizes itself                  | string         |                |

**Response example:**

```
{
  "code": 0,
  "data": "",
  "errorLogCode": "0",
  "message": "0"
}
```

**DDC Chain Account Management – Query BSN-DDC Service Fee Recharge Result**

**API URL:** /ddcoai/sys/v1/opb/account/business/result/search

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Platform Owners can query the BSN-DDC service fee recharge results of the DDC chain account to which it belongs through OpenAPI.

**Request example:**

```
{
  "opbChainClientAddress": "",
}
```

```
"reqTransactionSn": ""
}
```

#### Request parameter:

| Name                                | Description                         | Request type | Required | Data type                           | schema                              |
|-------------------------------------|-------------------------------------|--------------|----------|-------------------------------------|-------------------------------------|
| apitoken                            | apitoken                            | header       | Yes      | string                              |                                     |
| inOaiOpbAccountBusinessResultSearch | InOaiOpbAccountBusinessResultSearch | body         | Yes      | InOaiOpbAccountBusinessResultSearch | InOaiOpbAccountBusinessResultSearch |
| opbChainClientAddress               | Chain account address               |              | Yes      | string                              |                                     |
| reqTransactionSn                    | Third party transaction ID          |              | Yes      | string                              |                                     |

#### Response status:

| State code | Description  | schema   |
|------------|--------------|--|
| 200        | OK           | ResultInfo«OutOaiOpbAccountBusinessResultSearch» |
| 201        | Created      |  |
| 401        | Unauthorized |  |
| 403        | Forbidden    |  |
| 404        | Not Found    |  |

#### Response parameter:

| Name                  | Description   | Type                                 | schema                               |
|-----------------------|---|--------------------------------------|--------------------------------------|
| code                  | Success: 0, Failure: -1   | integer(int32)                       | integer(int32)                       |
| data                  |   | OutOaiOpbAccountBusinessResultSearch | OutOaiOpbAccountBusinessResultSearch |
| opbChainClientAddress | Chain account address   | string                               |                                      |
| rechargeState         | BSN-DDC service fee recharge status 1 = recharge in progress 5 = recharge failed 10 = recharge successful | integer(int32)                       |                                      |
| reqTransactionSn      | Third party transaction ID  | string                               |                                      |
| errorLogCode          | This marker is also written to the log file to make it easier to find                                     | string                               |                                      |
| message               | Message encoding, front-end internationalizes itself  | string                               |                                      |

#### Response example:

```
{
  "code": 0,
  "data": {
```

```

        "opbChainClientAddress": "",
        "rechargeState": 0,
        "reqTransactionSn": ""
    },
    "errorLogCode": "0",
    "message": "0"
}

```

## 4. DDC Chain Account – Transaction Details

### DDC Chain Account Management – BSN-DDC Service Fee Details

**API URL:** /ddcoai/sys/v1/opb/free/business/cost/searches

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Calling the BSN-DDC contract will generate BSN-DDC service fees and the BSN-DDC service fee details for each transaction can be checked through OpenAPI.

**Request example:**

```

{
  "data": {
    "opbChainClientAddress": "",
    "opbChainClientName": "",
    "opbChainId": 0,
    "serialNumber": "",
    "tradingEndTime": "",
    "tradingStartTime": "",
    "tradingType": ""
  },
  "page": {
    "pageNum": 1,
    "pageSize": 5
  }
}

```

**Request parameter:**

| Name   | Description   | Request type | Required | Data type  | schema   |
|--|---|--------------|----------|--|--|
| apitoken   | apitoken  | header       | Yes      | string   |  |
| requestPageInfo«InOaiOpbAccountBusinessCostSearches» | RequestPageInfo«InOaiOpbAccountBusinessCostSearches»  | body         | Yes      | RequestPageInfo«InOaiOpbAccountBusinessCostSearches» | RequestPageInfo«InOaiOpbAccountBusinessCostSearches» |
| data   | The request message body cannot be null, but can be an empty object                                 |              | Yes      | InOaiOpbAccountBusinessCostSearches                  | InOaiOpbAccountBusinessCostSearches                  |
| opbChainClientAddress                                | Chain account address   |              | No       | string   |  |
| opbChainClientName                                   | Chain account name  |              | No       | string   |  |
| opbChainId   | OPB chain ID  |              | No       | integer  |  |
| serialNumber   | Transaction ID  |              | No       | string   |  |
| tradingEndTime                                       | End date of transaction yyyy-MM-dd  |              | No       | string   |  |
| tradingStartTime                                     | Start date of transaction yyyy-MM-dd  |              | No       | string   |  |
| tradingType  | Transaction type<br>1 = recharge 2 = deduction of BSN-DDC service fee                               |              | No       | string   |  |
| page   | Send parameters by page   |              | Yes      | InPage   | InPage   |
| pageNum  | Page: start with 1, example (1)   |              | Yes      | integer  |  |
| pageSize   | The size of each page, controlled by the front end. If not passed then query all pages, example (5) |              | No       | integer  |  |

**Response status:**

| State code | Description  | schema   |
|------------|--------------|--|
| 200        | OK           | ResultInfoPage«List«OutOaiOpbAccountBusinessCostSearches»» |
| 201        | Created      |  |
| 401        | Unauthorized |  |
| 403        | Forbidden    |  |
| 404        | Not Found    |  |

**Response parameter:**

| Name | Description             | Type           | schema           |
|------|-------------------------|----------------|------------------|
| code | Success: 0, Failure: -1 | integer(int32) | integer(int32)   |
| data |                         | array          | OutOaiOpbAccount |

|                       |   |                |                      |
|-----------------------|---|----------------|----------------------|
|                       |   |                | BusinessCostSearches |
| businessMoney         | BSN-DDC service fee (cent)  | integer(int64) |                      |
| opbChainClientAddress | Chain account address   | string         |                      |
| opbChainClientName    | Chain account name  | string         |                      |
| opbChainName          | OPB framework name  | string         |                      |
| serialNumber          | Transaction ID  | string         |                      |
| tradingTime           | Transaction time yyyy-MM-dd HH:mm:ss                                  | string         |                      |
| tradingType           | Transaction type 1 = recharge 2 = deduction of BSN-DDC service fee    | integer(int32) |                      |
| errorLogCode          | This marker is also written to the log file to make it easier to find | string         |                      |
| message               | Message encoding, front-end internationalizes itself                  | string         |                      |
| resultPageInfo        |   | PageInfo       | PageInfo             |
| firstPage             |   | boolean        |                      |
| lastPage              |   | boolean        |                      |
| pageNum               |   | integer(int32) |                      |
| pageSize              |   | integer(int32) |                      |
| pages                 |   | integer(int32) |                      |
| total                 |   | integer(int64) |                      |

#### Response example:

```
{
  "code": 0,
  "data": [
    {
      "businessMoney": 0,
      "opbChainClientAddress": "",
      "opbChainClientName": "",
      "opbChainName": "",
      "serialNumber": "",
      "tradingTime": "",
      "tradingType": 0
    }
  ],
}
```

```

    "errorLogCode": "0",
    "message": "0",
    "resultPageInfo": {
        "firstPage": Yes,
        "lastPage": Yes,
        "pageNum": 0,
        "pageSize": 0,
        "pages": 0,
        "total": 0
    }
}

```

## DDC Chain Account Management – BSN-DDC Gas Fee Details

**API URL:** /ddcoai/sys/v1/opb/free/gas/cost/searches

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Calling the BSN-DDC contract will generate gas fees and the gas fee details for each transaction can be checked through OpenAPI.

**Request example:**

```

{
  "data": {
    "opbChainClientAddress": "",
    "opbChainClientName": "",
    "opbChainId": 0,
    "serialNumber": "",
    "tradingEndTime": "",
    "tradingStartTime": "",
    "tradingType": ""
  },
  "page": {
    "pageNum": 1,
    "pageSize": 5
  }
}

```

```

    }
}

```

#### Request parameter:

| Name  | Description   | Request type | Required | Data type                                       | schema  |
|---|---|--------------|----------|---|---|
| apitoken  | apitoken  | header       | Yes      | string  |   |
| requestPageInfo«InOaiOpbAccountGasCostSearches» | RequestPageInfo«InOaiOpbAccountGasCostSearches»   | body         | Yes      | RequestPageInfo«InOaiOpbAccountGasCostSearches» | RequestPageInfo«InOaiOpbAccountGasCostSearches» |
| data  | The request message body cannot be null, but can be an empty object                                 |              | Yes      | InOaiOpbAccountGasCostSearches                  | InOaiOpbAccountGasCostSearches                  |
| opbChainClientAddress                           | Chain account address   |              | No       | string  |   |
| opbChainClientName                              | Chain account name  |              | No       | string  |   |
| opbChainId                                      | OPB chain ID  |              | No       | integer   |   |
| serialNumber                                    | Transaction ID  |              | No       | string  |   |
| tradingEndTime                                  | End date of Transaction yyyy-MM-dd  |              | No       | string  |   |
| tradingStartTime                                | Start date of transaction yyyy-MM-dd  |              | No       | string  |   |
| tradingType                                     | Transaction type<br>1 = recharge 2 = deduction  |              | No       | string  |   |
| page  | Send parameters by page   |              | Yes      | InPage  | InPage  |
| pageNum   | Page: start with 1, example (1)   |              | Yes      | integer   |   |
| pageSize  | The size of each page, controlled by the front end. If not passed then query all pages, example (5) |              | No       | integer   |   |

#### Response status:

| State code | Description  | schema  |
|------------|--------------|---|
| 200        | OK           | ResultInfoPage«List«OutOaiOpbAccountGasCostSearches»» |
| 201        | Created      |   |
| 401        | Unauthorized |   |
| 403        | Forbidden    |   |
| 404        | Not Found    |   |

#### Response parameter:

| Name | Description | Type | schema |
|------|-------------|------|--------|
|------|-------------|------|--------|

|                       |   |                |                                     |
|-----------------------|---|----------------|-------------------------------------|
| code                  | Success: 0, Failure: -1   | integer(int32) | integer(int32)                      |
| data                  |   | array          | OutOaiOpbAccount<br>GasCostSearches |
| gasNum                | Gas (50 length 8 decimal points: 50,8)                                | string         |                                     |
| opbChainClientAddress | Chain account address   | string         |                                     |
| opbChainClientName    | Chain account name  | string         |                                     |
| opbChainId            | OPB chain ID  | integer(int32) |                                     |
| opbChainName          | OPB framework name  | string         |                                     |
| serialNumber          | Transaction ID  | string         |                                     |
| tradingTime           | Transaction time yyyy-MM-dd HH:mm:ss                                  | string         |                                     |
| tradingType           | Transaction type (1= recharge 2 = deduction)                          | integer(int32) |                                     |
| errorLogCode          | This marker is also written to the log file to make it easier to find | string         |                                     |
| message               | Message encoding, front-end internationalizes itself                  | string         |                                     |
| resultPageInfo        |   | PageInfo       | PageInfo                            |
| firstPage             |   | boolean        |                                     |
| lastPage              |   | boolean        |                                     |
| pageNum               |   | integer(int32) |                                     |
| pageSize              |   | integer(int32) |                                     |
| pages                 |   | integer(int32) |                                     |
| total                 |   | integer(int64) |                                     |

#### Response example:

```
{
  "code": 0,
  "data": [
    {
      "gasNum": "",
      "opbChainClientAddress": "",
      "opbChainClientName": "",
      "opbChainId": 0,
      "opbChainName": "",
      "serialNumber": "",
      "tradingTime": ""
    }
  ]
}
```



```

        "tradingType": 0
    }
],
    "errorCode": "0",
    "message": "0",
    "resultPageInfo": {
        "firstPage": Yes,
        "lastPage": Yes,
        "pageNum": 0,
        "pageSize": 0,
        "pages": 0,
        "total": 0
    }
}

```

## 5. Query BSN-DDCs

### Query BSN-DDC List

**API URL:** /ddcoai/sys/v1/ddcsearch/ddc/searches

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Query BSN-DDC lists.

Note that OpenAPI does not support the function of querying the DDCs generated by the contracts deployed by Platform Owners themselves.

**Request example:**

```

{
    "data": {
        "ddcIdOrDdcOwner": "0x1eb54d19fc9ef9f7494cbb24546ffe3dd417b08a",
        "ddcType": 1155,
        "opcChainId": 3
    },
    "page": {
        "pageNum": 1,
        "pageSize": 5
    }
}

```

```

    }
}

```

#### Request parameter:

| Name                                       | Description   | Request type | Required | Data type                                  | schema                                     |
|--|---|--------------|----------|--|--|
| apitoken                                   | apitoken  | header       | Yes      | string                                     |  |
| requestPageInfo«InOaiDdcSearchSearchesDdc» | RequestPageInfo«InOaiDdcSearchSearchesDdc»  | body         | Yes      | RequestPageInfo«InOaiDdcSearchSearchesDdc» | RequestPageInfo«InOaiDdcSearchSearchesDdc» |
| data                                       | The request message body cannot be null, but can be an empty object                 |              | Yes      | InOaiDdcSearchSearchesDdc                  | InOaiDdcSearchSearchesDdc                  |
| ddcIdOrDdcOwner                            | DDC ID or DDC owner's address, example (0x1eb54d19fc9ef9f7494cbb24546ffe3dd417b08a) |              | Yes      | string                                     |  |
| ddcType                                    | DDC type: ERC-1155/ERC-721, example (1155)  |              | No       | integer                                    |  |
| opcChainId                                 | OPB chain ID, example (3)   |              | No       | integer                                    |  |
| page                                       | Send parameters by page   |              | Yes      | InPage                                     | InPage                                     |
| pageNum                                    | Page: start with 1, example (1)   |              | Yes      | integer                                    |  |

#### Response status:

| State code | Description  | schema   |
|------------|--------------|--|
| 200        | OK           | ResultInfoPage«List«OutOaiDdcSearchSearchesDdc»» |
| 201        | Created      |  |
| 401        | Unauthorized |  |
| 403        | Forbidden    |  |
| 404        | Not Found    |  |

#### Response parameter:

| Name        | Description   | Type           | schema                     |
|-------------|---|----------------|----------------------------|
| code        | Success: 0, Failure: -1                                       | integer(int32) | integer(int32)             |
| data        |   | array          | OutOaiDdcSearchSearchesDdc |
| ddcId       | DDC ID  | string         |                            |
| ddcName     | DDC name  | string         |                            |
| ddcOwner    | DDC owner   | string         |                            |
| ddcPubTotal | Total number of issued DDCs: number of DDC 1155, DDC 721 is 1 | integer(int64) |                            |

|                |   |                |          |
|----------------|---|----------------|----------|
| ddcState       | DDC status: 1 = normal; 2 = destroyed; 0 = default                              | integer(int32) |          |
| ddcSymbol      | DDC symbol  | string         |          |
| ddcType        | DDC type: 721 = 721 contract; 1155 = 1155 contract; 0 = default                 | integer(int32) |          |
| ddcUri         | DDC URI   | string         |          |
| opsMgrState    | DDC operation management status: 1 = frozen; 2 = normal (unfrozen); 0 = default | integer(int32) |          |
| platformDdcId  | DDC ID issued by the platform   | string         |          |
| errorLogCode   | This marker is also written to the log file to make it easier to find           | string         |          |
| message        | Message encoding, front-end internationalizes itself                            | string         |          |
| resultPageInfo |   | PageInfo       | PageInfo |
| firstPage      |   | boolean        |          |
| lastPage       |   | boolean        |          |
| pageNum        |   | integer(int32) |          |
| pageSize       |   | integer(int32) |          |
| pages          |   | integer(int32) |          |
| total          |   | integer(int64) |          |

#### Response example:

```
{
  "code": 0,
  "data": [
    {
      "ddcId": "22",
      "ddcName": "DDC1",
      "ddcOwner": "0x1eb54d19fc9ef9f7494cbb24546ffe3dd417b08a",
      "ddcPubTotal": 0,
      "ddcState": 0,
      "ddcSymbol": "DDC-A",
      "ddcType": 0,
      "ddcUri": "https://ddc.reddate.com/{id}.json",
      "opsMgrState": 0,
      "platformDdcId": "22"
    }
  ]
}
```

```

    ],
    "errorLogCode": "0",
    "message": "0",
    "resultPageInfo": {
        "firstPage": Yes,
        "lastPage": Yes,
        "pageNum": 0,
        "pageSize": 0,
        "pages": 0,
        "total": 0
    }
}

```

## Query BSN-DDC Transfer Records

**API URL:** /ddcoai/sys/v1/ddcsearch/transfer/searches

**Request method:** POST

**Request data type:** application/json

**Response data type:** \*/\*

**Interface description:**

Query BSN-DDC transfer records.

Note that OpenAPI does not support the function of querying the DDCs generated by the contracts deployed by Platform Owners themselves.

**Request example:**

```

{
  "data": {
    "ddcId": "22"
    "ddcType": 721,
    "opbChainId": 3
  },
  "page": {
    "pageNum": 1,
    "pageSize": 5
  }
}

```

**Request parameter:**

| Name | Description | Request type | Required | Data type | schema |
|------|-------------|--------------|----------|-----------|--------|
|------|-------------|--------------|----------|-----------|--------|

|   |   |        |     |   |   |
|---|---|--------|-----|---|---|
| apitoken  | apitoken  | header | Yes | string  |   |
| requestPageInfo«InOaiDdcSearchSearchesTransfer» | RequestPageInfo«InOaiDdcSearchSearchesTransfer»   | body   | Yes | RequestPageInfo«InOaiDdcSearchSearchesTransfer» | RequestPageInfo«InOaiDdcSearchSearchesTransfer» |
| data  | The request message body cannot be null, but can be an empty object                                 |        | Yes | InOaiDdcSearchSearchesTransfer                  | InOaiDdcSearchSearchesTransfer                  |
| ddcId   | DDC ID, example (22)  |        | Yes | string  |   |
| ddcType   | DDC type: ERC-1155/ERC-721, example (1155)  |        | Yes | integer   |   |
| opbChainId                                      | OPB chain ID  |        | Yes | integer   |   |
| page  | Send parameters by page   |        | Yes | InPage  | InPage  |
| pageNum   | Page: start with 1, example (1)   |        | Yes | integer   |   |
| pageSize  | The size of each page, controlled by the front end. If not passed then query all pages, example (5) |        | No  | integer   |   |

#### Response status:

| State code | Description  | schema  |
|------------|--------------|---|
| 200        | OK           | ResultInfoPage«List«OutOaiDdcSearchSearchesTransfer»» |
| 201        | Created      |   |
| 401        | Unauthorized |   |
| 403        | Forbidden    |   |
| 404        | Not Found    |   |

#### Response parameter:

| Name                      | Description  | Type           | schema                          |
|---------------------------|--|----------------|---------------------------------|
| code                      | Success: 0, Failure: -1  | integer(int32) | integer(int32)                  |
| data                      |  | array          | OutOaiDdcSearchSearchesTransfer |
| ddcId                     | DDC ID   | string         |                                 |
| ddcTransferId             | DDC transfer ID  | string         |                                 |
| ddcType                   | DDC type 721 = 721 contract; 1155 = 1155 contract; 0 = default | integer(int32) |                                 |
| fromOptChainClientAddress | Source chain account address                                   | string         |                                 |
| platformDdcId             | DDC ID issued by the platform                                  | string         |                                 |
| toOptChainClientAddress   | Destination chain account                                      | string         |                                 |

|                |   |                |          |
|----------------|---|----------------|----------|
| ess            | address   |                |          |
| tradeHash      | Transaction hash  | string         |          |
| tradeTime      | Transaction time  | object         |          |
| tradeType      | Transaction type: 1 = generation; 2 = transfer; 10 = destruction      | integer(int32) |          |
| transQuantity  | Number of transferred DDCs  | integer(int64) |          |
| errorLogCode   | This marker is also written to the log file to make it easier to find | string         |          |
| message        | Message encoding, front-end internationalizes itself                  | string         |          |
| resultPageInfo |   | PageInfo       | PageInfo |
| firstPage      |   | boolean        |          |
| lastPage       |   | boolean        |          |
| pageNum        |   | integer(int32) |          |
| pageSize       |   | integer(int32) |          |
| pages          |   | integer(int32) |          |
| total          |   | integer(int64) |          |

#### Response example:

```
{
  "code": 0,
  "data": [
    {
      "ddcId": "22",
      "ddcTransferId": "22",
      "ddcType": 0,
      "fromOptChainClientAddress":
"0x1eb54d19fc9ef9f7494cbb24546ffe3dd417b08a",
      "platformDdcId": "22",
      "toOptChainClientAddress": "0x1eb54d19fc9ef9f7494cbb24546ffe3dd417b08a",
      "tradeHash": "e3dd417b08a1eb54d19fc9ef9f7494cbb24546ffe3dd417b08a",
      "tradeTime": "2021-12-07 15:08:01",
      "tradeType": 1,
      "transQuantity": 1
    }
  ],
  "errorLogCode": "0",
  "message": "0",
}
```

```
    "resultPageInfo": {  
      "firstPage": Yes,  
      "lastPage": Yes,  
      "pageNum": 0,  
      "pageSize": 0,  
      "pages": 0,  
      "total": 0  
    }  
  }  
}
```

## 6. Platform Owner Information

### Query Chain Account Information of Platform Owners

**API URL:** /ddcoai/sys/v1/user/information

**Request method:** POST

**Request data type:** application/x-www-form-urlencoded

**Response data type:** \*/\*

**Interface description:**

Caller: Platform Owner

Service provider: OpenAPI

Description: Query Platform Owners information.

**Request parameter:**

| Name     | Description | Request type | Required | Data type | schema |
|----------|-------------|--------------|----------|-----------|--------|
| apitoken | apitoken    | header       | Yes      | String    |        |

**Response status:**

| State code | Description  | schema                          |
|------------|--------------|---------------------------------|
| 200        | OK           | ResultInfo«OutOaiLoginUserInfo» |
| 201        | Created      |                                 |
| 401        | Unauthorized |                                 |
| 403        | Forbidden    |                                 |
| 404        | Not Found    |                                 |

**Response parameter:**

| Name | Description             | Type           | schema             |
|------|-------------------------|----------------|--------------------|
| code | Success: 0, Failure: -1 | integer(int32) | integer(int32)     |
| data |                         | OutOaiLoginU   | OutOaiLoginUserInf |

|                   |   |                |   |
|-------------------|---|----------------|---|
|                   |   | serInfo        | o |
| accountBalance    | Account balance (unit: cent)  | integer(int64) |   |
| clientEmail       | Platform Owner's registered email   | string         |   |
| entName           | Enterprise name   | string         |   |
| loginName         | Username  | string         |   |
| opsAccessMgrState | The operator controls the service status of the Platform Owner; it can only be controlled after the DDC service is activated. If this field is not enabled, it does not participate in any business logic:<br>1 = frozen (Frozen, freezing and unfreezing means frozen)<br>2 = unfrozen (Unfrozen has no intermediate state judgment) | integer(int32) |   |
| errorLogCode      | This marker is also written to the log file to make it easier to find   | string         |   |
| message           | Message encoding, front-end internationalizes itself  | string         |   |

#### Response example:

```
{
  "code": 0,
  "data": {
    "accountBalance": 100,
    "clientEmail": "1865544788",
    "entName": "Red Date Tech",
    "loginName": "test",
    "opsAccessMgrState": 1
  },
  "errorLogCode": "0",
  "message": "0"
}
```

#### Query Offline Remittance Information

**API URL:** /ddcoai/sys/v1/account/search

**Request method:** POST

**Request data type:** application/x-www-form-urlencoded



**Response data type:** \*/\*

**Interface description:**

Query offline remittance information.

**Request parameter:**

| Name     | Description | Request type | Required | Data type | schema |
|----------|-------------|--------------|----------|-----------|--------|
| apitoken | apitoken    | header       | Yes      | String    |        |

**Response status:**

| State code | Description  | schema                             |
|------------|--------------|------------------------------------|
| 200        | OK           | ResultInfo«OutCompRecvAccountInfo» |
| 201        | Created      |                                    |
| 401        | Unauthorized |                                    |
| 403        | Forbidden    |                                    |
| 404        | Not Found    |                                    |

**Response parameter:**

| Name               | Description   | Type                   | schema                 |
|--------------------|---|------------------------|------------------------|
| code               | Success: 0, Failure: -1   | integer(int32)         | integer(int32)         |
| data               |   | OutCompRecvAccountInfo | OutCompRecvAccountInfo |
| accountUserCode    | Account number  | string                 |                        |
| accountUserName    | Account name  | string                 |                        |
| recvBank           | Bank name   | string                 |                        |
| remittanceUserCode | Remittance ID   | string                 |                        |
| errorLogCode       | This marker is also written to the log file to make it easier to find | string                 |                        |
| message            | Message encoding, front-end internationalizes itself                  | string                 |                        |

**Response example:**

```
{
  "code": 0,
  "data": {
    "accountUserCode": "1111 3333 5555 6666 4562",
    "accountUserName": "XXX company",
    "recvBank": " China Construction Bank Wangjing Sub-branch",
    "remittanceUserCode": "xxxxxxxxxxxxxx"
  },
  "errorLogCode": "0",
}
```

```
    "message": "0"  
  }  
}
```

## Appendix

### Response exception message code

| Code                 | Description  |
|----------------------|--|
| MSG_20010005         | Failed to authorize apitoken   |
| MSG_200BALANCE_SHORT | Insufficient funds in the billing account  |
| MSG_10021000         | The private key password in key trust mode cannot be blank                         |
| MSG_10021001         | The private key password in key trust mode cannot be less than 8 digits            |
| MSG_10021002         | Uploaded public key cannot be empty  |
| MSG_10021003         | Uploaded chain account address cannot be empty                                     |
| MSG_10021004         | The amount of funds is not correct, please enter the amount with the unit of cents |
| MSG_10021005         | Chain account does not exist   |
| MSG_10021006         | Incorrect framework information  |
| MSG_10021007         | BSN-DDC service has not been activated yet   |
| MSG_10021008         | BSN-DDC service activation is not approved   |
| MSG_10021009         | The user has not created a platform chain account                                  |
| MSG_10021010         | Duplicate chain account name   |
| MSG_10021011         | Duplicate chain account address  |
| MSG_10021012         | Failed to create BSN-DDC chain account   |
| MSG_10021013         | Cannot operate the platform chain account  |
| MSG_10021014         | The chain account has been frozen by the Platform Owner                            |
| MSG_10021015         | This chain account is being unfrozen by the Platform Owner                         |
| MSG_10021016         | The chain account is frozen  |
| MSG_10021017         | The chain account is enabled   |
| MSG_10021018         | Failed to operate the chain account  |
| MSG_10021019         | Project does not exist   |
| MSG_10021020         | Project key is disabled  |
| MSG_10021038         | Project key is enabled   |
| MSG_10021039         | Invalid project key operation type   |
| MSG_10021021         | Insufficient chain account gas   |

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| MSG_10021024 | Access to BSN-DDC contract not allowed  |
| MSG_10021025 | Access to BSN-DDC contract allowed  |
| MSG_10021026 | Wrong type of BSN-DDC contract user   |
| MSG_10021027 | Chain account not found   |
| MSG_10021028 | The chain account is not enabled  |
| MSG_10021029 | Duplicate transaction ID  |
| MSG_10021030 | The BSN-DDC chain account has been created  |
| MSG_10021031 | The length of uploaded public key exceeds 128 bits  |
| MSG_10021032 | Chain account name already exists   |
| MSG_10021033 | Failed to generate an account address based on the public key   |
| MSG_10021034 | User's chain address already exists   |
| MSG_10022901 | Platform Owner's service has been deactivated   |
| MSG_10022014 | Platform Owner's service certificate verification failed - not current Platform Owner's certificate   |
| MSG_20022002 | DDC service is not activated yet  |
| MSG_10022013 | Cannot find the platform's DID  |
| MSG_10022905 | Invalid certificate, cannot be verified   |
| MSG_10021035 | Incorrect third party's transaction ID  |
| MSG_10021036 | Incorrect framework ID  |
| MSG_10021043 | China Mobile Chain is currently in beta test, if you wish to use it, please contact customer service to activate the service. Tel: 400-071-8215 |
| MSG_10027000 | Chain ID cannot be empty  |
| MSG_10027001 | Failed to generate the chain account online   |
| MSG_10027002 | Chain account name cannot be empty  |
| MSG_10027003 | Wrong price information   |
| MSG_10027004 | The framework does not support online generation of a chain account   |
| MSG_10027005 | Incorrect chain account format  |
| MSG_10027006 | Chain account already exists  |
| MSG_10027007 | The purchased resource must be valid for more than 30 days  |
| MSG_10027008 | Incorrect purchased resources size  |
| MSG_10021044 | Failed to search gas fee recharge result  |
| MSG_10021045 | Failed to search service fee recharge result  |
| MSG_10021047 | Failed to recharge service fee  |
| MSG_10021048 | BSN-DDC has been enabled, please wait for the result pushed by the system   |
| MSG_10021037 | Failed to verify the data   |

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| MSG_10021046 | The framework does not support this chain account type |
| MSG_10021056 | The project does not belong to the user                |
| MSG_10021040 | Incorrect chain account address                        |
| MSG_10021057 | Incorrect BSN-DDC type                                 |
| MSG_10021058 | The queried data is null                               |