物联网通信

API 文档

产品文档

腾讯云

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API 文档

History

最近更新时间：2022-09-28 10:37:20

Release 5

Release time: 2022-09-28 10:30:40

Release updates:

Improvement to existing documentation.

New APIs:

- DeleteDeviceShadow

Release 4

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Release updates:

Improvement to existing documentation.

New APIs:

- CreateProduct
- DescribeProducts

New data structures:

- ProductInfo

Release 3

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Release updates:

Improvement to existing documentation.

New APIs:

- UpdateProductDynamicRegister

Release 2

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Release updates:

Improvement to existing documentation.

New APIs:

- SetProductsForbiddenStatus

Release 1

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Release updates:

Improvement to existing documentation.

New APIs:

- CreateDevice
- CreatePrivateCA
- DeleteDevice
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New data structures:

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Introduction

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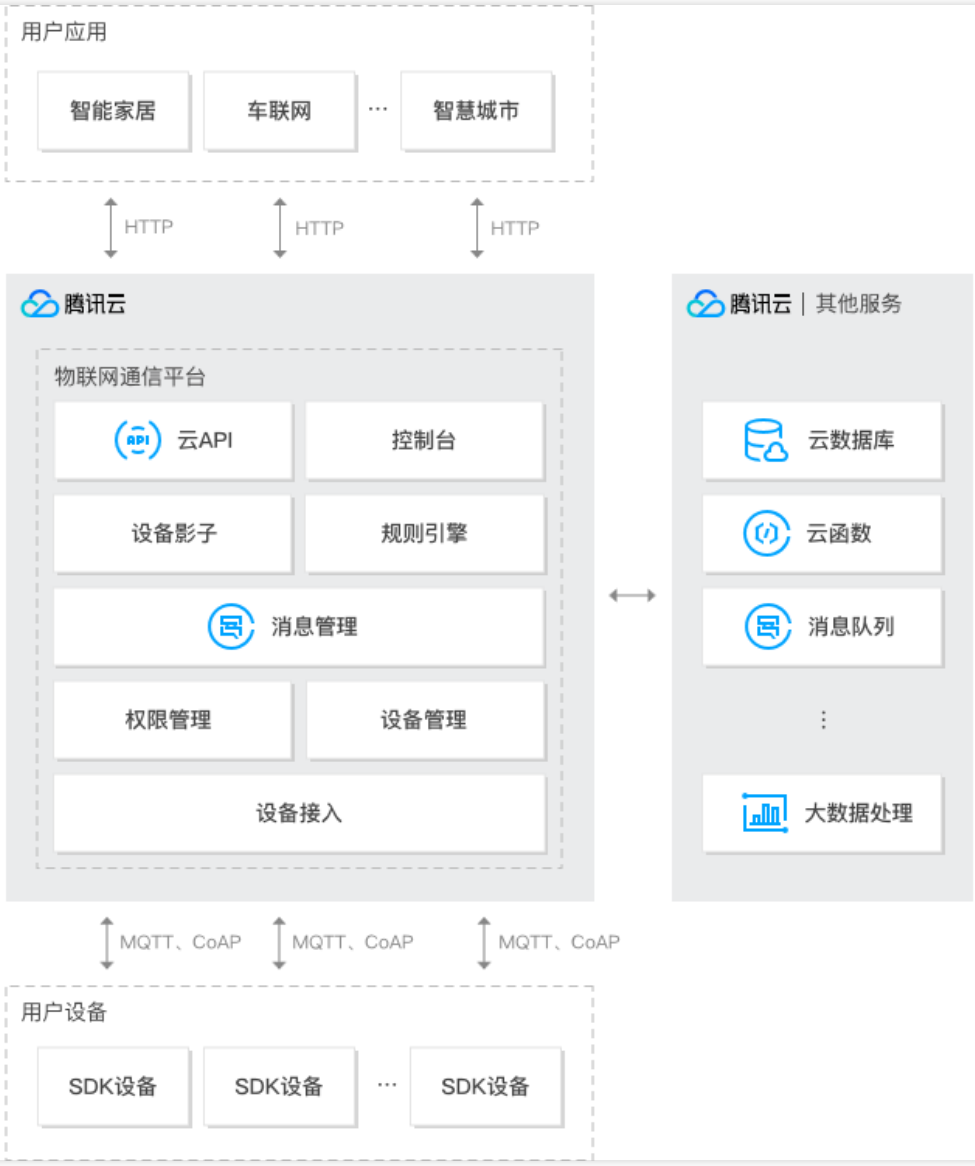
Tencent Cloud Internet of Things Hub (IoT Hub) aims to provide a secure, stable, and efficient connection platform that helps developers quickly achieve stable, high-concurrency, and omnidirectional data communications among devices, user applications, and cloud services at low costs. It can implement cross-device interaction, device data reporting, and configuration distribution. Further, by opening up the linkage between device data and Tencent Cloud services based on the rule engine, it allows for the storage, real-time computation, and smart processing and analysis of massive amounts of data with speed and ease. To sum up, with the aid of IoT Hub, you can connect devices, data, applications, and cloud services at low costs to quickly create an IoT application platform.

Product Architecture



- Connection to IoT Hub
  User devices can be connected to IoT Hub through SDKs. The underlying data transfer is based on MQTT or CoAP protocols, which effectively lowers the consumption of network bandwidth. Connection over HTTP and WebSocket is also supported. In terms of security, IoT Hub introduces secure network transfer protocols (TLS and DTLS) to prevent risks such as unauthorized access, and data theft and tampering. Taking into account the diversity of devices and use cases, it supports both asymmetric encryption (authentication based on device certificates for scenarios with high security requirements) and symmetric encryption (authentication based on keys for resource-constrained devices).

- Messages can be published and subscribed to by devices through SDKs
  In order to isolate device data for security purposes, IoT Hub currently limits that devices can only publish and

subscribe to messages in their own topics, but they can access messages of other entities by configuring the rule engine.

- The rule engine can be configured in the console to enable devices to access messages of other entities
  At present, the rule engine supports operations in SQL-like syntax, which implement message communication between devices through "repub" (republishing messages) and device message forwards to third-party services through "forward" (forwarding messages to servers). The interconnection between device messages and other Tencent Cloud services such as storage, function computing, and big data analysis is under development.

- Device messages can be interconnected with third-party services
  As devices are connected only to IoT Hub, IoT Hub can quickly write specified device messages to Tencent Cloud CMQ or CKafka queues, with the message queue feature enabled. From there, third-party services can get and consume the data through the SDK of CMQ or CKafka queues, achieving async message communication between devices and third-party services.

- Device shadows can effectively achieve two-way sync of configuration and status data between devices and applications
  On the one hand, configuration parameters can be set for device shadows through TencentCloud API, so that when devices are connected or online, they can get the configuration parameters from the shadows. When the status of a device is queried, it is sufficient to query its shadow without having to perform direct network communication with the device.

- Devices can be managed through TencentCloud API
  IoT Hub provides convenient SDK tools to enhance IoT device management capabilities. These tools enable quick and batch creating, querying, and operation on the backend, greatly improving the efficiency. Currently, Python, PHP, and Java toolkits are supported.

API Category

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CA Certificate APIs

API Name	Feature
CreatePrivateCA	Creates a private CA certificate
DeletePrivateCA	Deletes a private CA certificate
DescribePrivateCA	Queries private CA certificate details
DescribePrivateCABindedProducts	Queries the products bound to a private CA certificate
DescribePrivateCAs	Gets the list of private CA certificates
UpdatePrivateCA	Updates a private CA certificate

Product APIs

API Name	Feature
CreateProduct	Creates a product
DeleteProduct	Deletes a product
DescribeProduct	Queries product details
DescribeProductCA	Queries the CA certificates bound to a product
DescribeProducts	Obtains the product list
SetProductsForbiddenStatus	Enables or disables multiple products at a time
UpdateProductDynamicRegister	Updates product dynamic registration

Device APIs

API Name	Feature

CreateDevice	Creates a device
DeleteDevice	Deletes a device
DescribeDevice	Queries device details
DescribeDevices	Gets the device list
UpdateDeviceLogLevel	Sets the device log level
UpdateDevicesEnableState	Enables or disables multiple devices

Device Shadow APIs

API Name	Feature
DeleteDeviceShadow	Deletes a device shadow

Making API Requests
Request Structure

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1. Service Address

The API supports access from either a nearby region (at iotcloud.tencentcloudapi.com) or a specified region (at iotcloud.ap-guangzhou.tencentcloudapi.com for Guangzhou, for example).

We recommend using the domain name to access the nearest server. When you call an API, the request is automatically resolved to a server in the region **nearest** to the location where the API is initiated. For example, when you initiate an API request in Guangzhou, this domain name is automatically resolved to a Guangzhou server, the result is the same as that of specifying the region in the domain like "iotcloud.ap-guangzhou.tencentcloudapi.com".

Note: For latency-sensitive businesses, we recommend that you specify the region in the domain name.

Tencent Cloud currently supports the following regions:

Hosted Region	Domain Name
Local access region (recommended, only for non-financial availability zones)	iotcloud.tencentcloudapi.com
South China (Guangzhou)	iotcloud.ap-guangzhou.tencentcloudapi.com
East China (Shanghai)	iotcloud.ap-shanghai.tencentcloudapi.com
North China (Beijing)	iotcloud.ap-beijing.tencentcloudapi.com
Southwest China (Chengdu)	iotcloud.ap-chengdu.tencentcloudapi.com
Southwest China (Chongqing)	iotcloud.ap-chongqing.tencentcloudapi.com
Hong Kong, Macao, Taiwan (Hong Kong, China)	iotcloud.ap-hongkong.tencentcloudapi.com
Southeast Asia (Singapore)	iotcloud.ap-singapore.tencentcloudapi.com

Hosted Region	Domain Name
Southeast Asia (Bangkok)	iotcloud.ap-bangkok.tencentcloudapi.com
South Asia (Mumbai)	iotcloud.ap-mumbai.tencentcloudapi.com
Northeast Asia (Seoul)	iotcloud.ap-seoul.tencentcloudapi.com
Northeast Asia (Tokyo)	iotcloud.ap-tokyo.tencentcloudapi.com
U.S. East Coast (Virginia)	iotcloud.na-ashburn.tencentcloudapi.com
U.S. West Coast (Silicon Valley)	iotcloud.na-siliconvalley.tencentcloudapi.com
North America (Toronto)	iotcloud.na-toronto.tencentcloudapi.com
Europe (Frankfurt)	iotcloud.eu-frankfurt.tencentcloudapi.com
Europe (Moscow)	iotcloud.eu-moscow.tencentcloudapi.com

2. Communications Protocol

All the Tencent Cloud APIs communicate via HTTPS, providing highly secure communication tunnels.

3. Request Methods

Supported HTTP request methods:

- POST (recommended)
- GET

The Content-Type types supported by POST requests:

- application/json (recommended). The TC3-HMAC-SHA256 signature algorithm must be used.
- application/x-www-form-urlencoded. The HmacSHA1 or HmacSHA256 signature algorithm must be used.
- multipart/form-data (only supported by certain APIs). You must use TC3-HMAC-SHA256 to calculate the signature.

The size of a GET request packet is up to 32 KB. The size of a POST request is up to 1 MB when the HmacSHA1 or HmacSHA256 signature algorithm is used, and up to 10 MB when TC3-HMAC-SHA256 is used.

4. Character Encoding

Only UTF-8 encoding is used.

Common Parameters

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Common parameters are used for all APIs authenticating requestors. Common parameters must be included in all API requests, and they will not be described in individual API documents.

The exact contents of the common parameters will vary depending on the version of the signature method you use.

Common parameters for Signature Algorithm v3

When the TC3-HMAC-SHA256 algorithm is used, the common parameters should be uniformly placed in the HTTP request header, as shown below:

Parameter Name	Type	Required	Description
X-TC-Action	String	Yes	The name of the API for the desired operation. For the specific value, see description of common parameter `Action` in the input parameters in r documentation. For example, the API for querying the CVM instance list i `DescribeInstances` .
X-TC-Region	String	Yes	Region parameter, which is used to identify the region to which the data y work with belongs. For values supported for an API, see the description c parameter `Region` in the input parameters in related API documentati parameter is not required for some APIs (which will be indicated in relate documentation), and will not take effect even it is passed.
X-TC-Timestamp	Integer	Yes	The current UNIX timestamp that records the time when the API request for example, 1529223702. Note: If the difference between the UNIX times server time is greater than 5 minutes, a signature expiration error may oc
X-TC-Version	String	Yes	API version of the action. For the valid values, see the description of the c parameter `Version` in the API documentation. For example, the versi 2017-03-12.
Authorization	String	Yes	The HTTP authentication request header, for example: TC3-HMAC-SHA256 Credential=AKIDEXAMPLE/Date/service/tc3_requ SignedHeaders=content-type;host, Signature=fe5f80f77d5fa3beca038a248ff027d0445342fe2855ddc96317 Here: - TC3-HMAC-SHA256: Signature method, currently fixed as this value; - Credential: Signature credential; AKIDEXAMPLE is the SecretId; Date is UTC time, and this value must match the value of X-TC-Timestamp (a co

			parameter) in UTC time format; service is the name of the product/service generally a domain name prefix. For example, a domain name cvm.tencen refers to the CVM product and the value would be cvm; - SignedHeaders: The headers that contains the authentication informatic type and host are the required headers; - Signature: Signature digest.
X-TC-Token	String	No	The token used for a temporary certificate. It must be used with a tempor can obtain the temporary key and token by calling a CAM API. No token i a long-term key.

Assuming you want to query the list of Cloud Virtual Machine instances in the Guangzhou region, the request structure in the form of request URL, request header and request body may be as follows:

Example of an HTTP GET request structure:

```
https://cvm.tencentcloudapi.com/?Limit=10&Offset=0

Authorization: TC3-HMAC-SHA256 Credential=AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE/20
18-10-09/cvm/tc3_request, SignedHeaders=content-type;host, Signature=5da7a33f6993
f0614b047e5df4582db9e9bf4672ba50567dba16c6ccf174c474
Content-Type: application/x-www-form-urlencoded
Host: cvm.tencentcloudapi.com
X-TC-Action: DescribeInstances
X-TC-Version: 2017-03-12
X-TC-Timestamp: 1539084154
X-TC-Region: ap-guangzhou
```

The following example shows you how to structure an HTTP POST (application/json) request:

```
https://cvm.tencentcloudapi.com/

Authorization: TC3-HMAC-SHA256 Credential=AKIDEXAMPLE/2018-05-30/cvm/tc3_request,
SignedHeaders=content-type;host, Signature=582c400e06b5924a6f2b5d7d672d79c15b1316
2d9279b0855cfba6789a8edb4c
Content-Type: application/json
Host: cvm.tencentcloudapi.com
X-TC-Action: DescribeInstances
X-TC-Version: 2017-03-12
X-TC-Timestamp: 1527672334
X-TC-Region: ap-guangzhou

{"Offset":0,"Limit":10}
```

Example of an HTTP POST (multipart/form-data) request structure (only supported by specific APIs):

```
https://cvm.tencentcloudapi.com/

Authorization: TC3-HMAC-SHA256 Credential=AKIDEXAMPLE/2018-05-30/cvm/tc3_request,
SignedHeaders=content-type;host, Signature=582c400e06b5924a6f2b5d7d672d79c15b1316
2d9279b0855cfba6789a8edb4c
Content-Type: multipart/form-data; boundary=58731222010402
Host: cvm.tencentcloudapi.com
X-TC-Action: DescribeInstances
X-TC-Version: 2017-03-12
X-TC-Timestamp: 1527672334
X-TC-Region: ap-guangzhou

--58731222010402
Content-Disposition: form-data; name="Offset"

0
--58731222010402
Content-Disposition: form-data; name="Limit"

10
--58731222010402--
```

Common parameters for Signature Algorithm v1

To adopt the HmacSHA1 and HmacSHA256 signature methods, common parameters must be put into the request string, as shown below:

Parameter Name	Type	Required	Description
Action	String	Yes	The name of the API for the desired operation. For the specific value, see the description of common parameter `Action` in the input parameters in related API documentation. For example, the API for querying the CVM instance list is `DescribeInstances`.
Region	String	Yes	Region parameter, which is used to identify the region to which the data you want to work with belongs. For values supported for an API, see the description of common parameter `Region` in the input parameters in related API documentation. Note: This parameter is not required for some APIs (which will be indicated in related API documentation), and will not take effect even if it is passed.

Timestamp	Integer	Yes	The current UNIX timestamp that records the time when the API request was initiated, for example, 1529223702. If the difference between the value and the current system time is too large, a signature expiration error may occur.
Nonce	Integer	Yes	A random positive integer used along with `Timestamp` to prevent replay attacks.
SecretId	String	Yes	The identifying SecretId obtained on the Cloud API Key page. A SecretId corresponds to a unique SecretKey which is used to generate the request signature (Signature).
Signature	String	Yes	Request signature used to verify the validity of this request. This is calculated based on the actual input parameters. For more information about how this is calculated, see the API authentication documentation.
Version	String	Yes	API version of the action. For the valid values, see the description of the common input parameter `Version` in the API documentation. For example, the version of CVM is 2017-03-12.
SignatureMethod	String	No	Signature method. Currently, only HmacSHA256 and HmacSHA1 are supported. The HmacSHA256 algorithm is used to verify the signature only when this parameter is specified as HmacSHA256. In other cases, the signature is verified with HmacSHA1.
Token	String	No	The token used for a temporary certificate. It must be used with a temporary key. You can obtain the temporary key and token by calling a CAM API. No token is required for a long-term key.

Assuming you want to query the list of Cloud Virtual Machine instances in the Guangzhou region, the request structure in the form of request URL, request header and request body may be as follows:

Example of an HTTP GET request structure:

```
https://cvm.tencentcloudapi.com/?Action=DescribeInstances&Version=2017-03-12&SignatureMethod=HmacSHA256&Timestamp=1527672334&Signature=37ac2f4fde00b0ac9bd9eadeb459b1bbee224158d66e7ae5fcadb70b2d181d02&Region=ap-guangzhou&Nonce=23823223&SecretId=AKIDEXAMPLE

Host: cvm.tencentcloudapi.com
Content-Type: application/x-www-form-urlencoded
```

Example of an HTTP POST request structure:

```
https://cvm.tencentcloudapi.com/

Host: cvm.tencentcloudapi.com
Content-Type: application/x-www-form-urlencoded

Action=DescribeInstances&Version=2017-03-12&SignatureMethod=HmacSHA256&Timestamp=
1527672334&Signature=37ac2f4fde00b0ac9bd9eadeb459b1bbee224158d66e7ae5fcadb70b2d18
1d02&Region=ap-guangzhou&Nonce=23823223&SecretId=AKIDEXAMPLE
```

Region List

The supported Region field values for all APIs in this product are listed as below. For any API that does not support any of the following regions, this field will be described additionally in the relevant API document.

Region	Value
Southeast Asia Pacific (Bangkok)	ap-bangkok
South China (Guangzhou)	ap-guangzhou
East China (Shanghai Finance)	ap-shanghai-fsi
Europe (Frankfurt)	eu-frankfurt
Eastern U.S. (Virginia)	na-ashburn

Signature v3

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TencentCloud API authenticates every single request, i.e., the request must be signed using the security credentials in the designated steps. Each request has to contain the signature information (Signature) in the common request parameters and be sent in the specified way and format.

Applying for Security Credentials

The security credential used in this document is a key, which includes a SecretId and a SecretKey. Each user can have up to two pairs of keys.

- SecretId: Used to identify the API caller, which is just like a username.
- SecretKey: Used to authenticate the API caller, which is just like a password.
- **You must keep your security credentials private and avoid disclosure; otherwise, your assets may be compromised. If they are disclosed, please disable them as soon as possible.**

You can apply for the security credentials through the following steps:

1. Log in to the Tencent Cloud Console.
2. Go to the TencentCloud API Key console page.
3. On the TencentCloud API Key page, click **Create** to create a SecretId/SecretKey pair.

Using the Resources for Developers

TencentCloud API comes with SDKs for seven commonly used programming languages, including Python, Java, PHP, Go, NodeJS and .NET. In addition, it provides API Explorer which enables online call, signature verification, and SDK code generation. If you have any troubles calculating a signature, consult these resources.

TC3-HMAC-SHA256 Signature Algorithm

Compatible with the previous HmacSHA1 and HmacSHA256 signature algorithms, the TC3-HMAC-SHA256 signature algorithm is more secure and supports larger requests and JSON format with better performance. We recommend using TC3-HMAC-SHA256 to calculate the signature.

TencentCloud API supports both GET and POST requests. For the GET method, only the Content-Type: application/x-www-form-urlencoded protocol format is supported. For the POST method, two protocol formats,

Content-Type: application/json and Content-Type: multipart/form-data, are supported. The JSON format is supported by default for all business APIs, and the multipart format is supported only for specific business APIs. In this case, the API cannot be called in JSON format. See the specific business API documentation for more information. The POST method is recommended, as there is no difference in the results of both the methods, but the GET method only supports request packets up to 32 KB.

The following uses querying the list of CVM instances in the Guangzhou region as an example to describe the steps of signature splicing. We chose this API because:

1. CVM is activated by default, and this API is often used;
2. It is read-only and does not change the status of existing resources;
3. It covers many types of parameters, which allows it to be used to demonstrate how to use arrays containing data structures.

In the example, we try to choose common parameters and API parameters that are prone to mistakes. When you actually call an API, please use parameters based on the actual conditions. The parameters vary by API. Do not copy the parameters and values in this example.

Assuming that your SecretId and SecretKey are `AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******` and `Gu5t9xGARNpq86cd98joQYCN3*******`, respectively, if you want to view the status of the instance in the Guangzhou region whose CVM instance name is "unnamed" and have only one data entry returned, then the request may be:

```
curl -X POST https://cvm.tencentcloudapi.com \
-H "Authorization: TC3-HMAC-SHA256 Credential=AKIDz8krbsJ5yKBZQpn74WFkmLPx3******
*/2019-02-25/cvm/tc3_request, SignedHeaders=content-type;host, Signature=c492e8e4
1437e97a620b728c301bb8d17e7dc0c17eeabce80c20cd70fc3a78ff" \
-H "Content-Type: application/json; charset=utf-8" \
-H "Host: cvm.tencentcloudapi.com" \
-H "X-TC-Action: DescribeInstances" \
-H "X-TC-Timestamp: 1551113065" \
-H "X-TC-Version: 2017-03-12" \
-H "X-TC-Region: ap-guangzhou" \
-d '{"Limit": 1, "Filters": [{"Values": ["unnamed"], "Name": "instance-name"}]}'
```

The signature calculation process is explained in detail below.

1. Concatenating the CanonicalRequest String

Concatenate the canonical request string (CanonicalRequest) in the following pseudocode format:

```
CanonicalRequest =
HTTPRequestMethod + '\n' +
CanonicalURI + '\n' +
```

```
CanonicalQueryString + '\n' +
CanonicalHeaders + '\n' +
SignedHeaders + '\n' +
HashedRequestPayload
```

Field Name	Explanation
HTTPRequestMethod	HTTP request method (GET or POST). This example uses `POST` .
CanonicalURI	URI parameter. Slash ("/") is used for API 3.0.
CanonicalQueryString	The query string in the URL of the originating HTTP request. This is always an empty st “” for POST requests, and is the string after the question mark (?) for GET requests. Fo example: Limit=10&Offset=0。 Note: `CanonicalQueryString` must be URL-encoded, referencing RFC3986, the UTF8 character set. We recommend using the programming language library. All speci characters must be encoded and capitalized.
CanonicalHeaders	Header information for signature calculation, including at least two headers of `host` `content-type` . Custom headers can be added to participate in the signature proce improve the uniqueness and security of the request. Concatenation rules: 1. Both the key and value of the header should be converted to lowercase with the lead and trailing spaces removed, so they are concatenated in the format of key:value\n format; 2. If there are multiple headers, they should be sorted in ASCII ascending order by the header keys (lowercase). The calculation result in this example is `content-type:application/json; charset=utf-8\nhost:cvm.tencentcloudapi.com\n` . Note: `content-type` must match the actually sent content. In some programming languages, a charset value would be added even if it is not specified. In this case, the request sent is different from the one signed, and the sever will return an error indicating signature verification failed.
SignedHeaders	Header information for signature calculation, indicating which headers of the request participate in the signature process (they must each individually correspond to the heac in CanonicalHeaders). `Content-type` and `host` are required headers. Concatenation rules: 1. Both the key and value of the header should be converted to lowercase; 2. If there are multiple headers, they should be sorted in ASCII ascending order by the header keys (lowercase) and separated by semicolons (;). The value in this example is `content-type;host`

Field Name	Explanation
HashedRequestPayload	Hash value of the request payload (i.e., the body, such as `{"Limit": 1, "Filter` `[{"Values": ["unnamed"], "Name": "instance-name"}]}` in this exampl The pseudocode for calculation is Lowercase(HexEncode(Hash.SHA256(RequestPayload))) by SHA256 hashing the pay of the HTTP request, performing hexadecimal encoding, and finally converting the enco string to lowercase letters. For GET requests, `RequestPayload` is always an empt string. The calculation result in this example is `99d58dfbc6745f6747f36bfca17dee5e6881dc0428a0a36f96199342bc5b4`

According to the rules above, the `CanonicalRequest` string obtained in the example is as follows:

```
POST
/
content-type:application/json; charset=utf-8
host:cvm.tencentcloudapi.com
content-type;host
99d58dfbc6745f6747f36bfca17dee5e6881dc0428a0a36f96199342bc5b4907
```

2. Concatenating the String to Be Signed

The string to sign is concatenated as follows:

```
StringToSign =
Algorithm + \n +
RequestTimestamp + \n +
CredentialScope + \n +
HashedCanonicalRequest
```

Field Name	Explanation
Algorithm	Signature algorithm, which is currently always `TC3-HMAC-SHA256` .
RequestTimestamp	Request timestamp, i.e., the value of the common parameter `X-TC-Timestamp` ir request header, which is the UNIX timestamp of the current time in seconds, such as `1551113065` in this example.

Field Name	Explanation
CredentialScope	Scope of the credential in the format of `Date/service/tc3_request`, including date, requested service and termination string (tc3_request). **`Date` is a date in UTC time, whose value should match the UTC date converted by the common parameter `X-TC-Timestamp`;** `service` is the product name, which should match the domain name of the product called. The calculation result in this example is `2019-02-25/cvm/tc3_request`.
HashedCanonicalRequest	Hash value of the CanonicalRequest string concatenated in the steps above. The pseudocode for calculation is Lowercase(HexEncode(Hash.SHA256(CanonicalRequ The calculation result in this example is `2815843035062fffda5fd6f2a44ea8a34818b0dc46f024b8b3786976a3ad`

Note：

1. Date has to be calculated from the timestamp "X-TC-Timestamp" and the time zone is UTC+0. If you add the system's local time zone information (such as UTC+8), calls can succeed both day and night but will definitely fail at 00:00. For example, if the timestamp is 1551113065 and the time in UTC+8 is 2019-02-26 00:44:25, the UTC+0 date in the calculated Date value should be 2019-02-25 instead of 2019-02-26.
2. Timestamp must be the same as your current system time, and your system time and standard time must be synced; if the difference between Timestamp and your current system time is larger than five minutes, the request will fail. If your system time is out of sync with the standard time for a while, the request will fail and return a signature expiration error.

According to the preceding rules, the string to be signed obtained in the example is as follows:

```
TC3-HMAC-SHA256
1551113065
2019-02-25/cvm/tc3_request
2815843035062fffda5fd6f2a44ea8a34818b0dc46f024b8b3786976a3adda7a
```

3. Calculating the Signature

1) Calculate the derived signature key with the following pseudocode:

```
SecretKey = "Gu5t9xGARNpq86cd98joQYCN3*******"
SecretDate = HMAC_SHA256("TC3" + SecretKey, Date)
SecretService = HMAC_SHA256(SecretDate, Service)
SecretSigning = HMAC_SHA256(SecretService, "tc3_request")
```

Field Name	Explanation
SecretKey	The original SecretKey, i.e., `Gu5t9xGARNpq86cd98joQYCN3*******` .
Date	The Date field information in `Credential` , such as `2019-02-25` in this example.
Service	Value in the Service field in `Credential` , such as `cvm` in this example.

2) Calculate the signature with the following pseudocode:

```
Signature = HexEncode(HMAC_SHA256(SecretSigning, StringToSign))
```

4. Concatenating the Authorization

The Authorization is concatenated as follows:

```
Authorization =
Algorithm + ' ' +
'Credential=' + SecretId + '/' + CredentialScope + ', ' +
'SignedHeaders=' + SignedHeaders + ', ' +
'Signature=' + Signature
```

Field Name	Explanation
Algorithm	Signature algorithm, which is always `TC3-HMAC-SHA256` .
SecretId	The SecretId in the key pair, i.e., `AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******` .
CredentialScope	Credential scope (see above). The calculation result in this example is `2019-02-25/cvm/tc3_request` .
SignedHeaders	Header information for signature calculation (see above), such as `content-type;host` in this example.
Signature	Signature value. The calculation result in this example is `c492e8e41437e97a620b728c301bb8d17e7dc0c17eeabce80c20cd70fc3a78ff` .

According to the rules above, the value obtained in the example is:

```
TC3-HMAC-SHA256 Credential=AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******/2019-02-25/cvm/tc3_request, SignedHeaders=content-type;host, Signature=c492e8e41437e97a620b728c301bb8d17e7dc0c17eeabce80c20cd70fc3a78ff
```

The following example shows a finished authorization header:

```
POST https://cvm.tencentcloudapi.com/
Authorization: TC3-HMAC-SHA256 Credential=AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******/20
19-02-25/cvm/tc3_request, SignedHeaders=content-type;host, Signature=c492e8e41437
e97a620b728c301bb8d17e7dc0c17eeabce80c20cd70fc3a78ff
Content-Type: application/json; charset=utf-8
Host: cvm.tencentcloudapi.com
X-TC-Action: DescribeInstances
X-TC-Version: 2017-03-12
X-TC-Timestamp: 1551113065
X-TC-Region: ap-guangzhou
{"Limit": 1, "Filters": [{"Values": ["unnamed"], "Name": "instance-name"}]}
```

5. Signature Demo

When calling API 3.0, you are recommended to use the corresponding Tencent Cloud SDK 3.0 which encapsulates the signature process, enabling you to focus on only the specific APIs provided by the product when developing. See SDK Center for more information. Currently, the following programming languages are supported:

- Python
- Java
- PHP
- Go
- NodeJS
- .NET

To further explain the signing process, we will use a programming language to implement the process described above. The request domain name, API and parameter values in the sample are used here. This goal of this example is only to provide additional clarification for the signature process, please see the SDK for actual usage.

The final output URL might be: https://cvm.tencentcloudapi.com/?Action=DescribeInstances&InstanceIds.0=ins-09dx96dg&Limit=20&Nonce=11886&Offset=0&Region=ap-guangzhou&SecretId=AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******&Signature=EliP9YW3pW28FpsEdkXt%2F%2BWcGeI%3D&Timestamp=1465185768&Version=2017-03-12.

Note: The key in the example is fictitious, and the timestamp is not the current time of the system, so if this URL is opened in the browser or called using commands such as curl, an authentication error will be returned: Signature expired. In order to get a URL that can work properly, you need to replace the SecretId and SecretKey in the example with your real credentials and use the current time of the system as the Timestamp.

Note: In the example below, even if you use the same programming language, the order of the parameters in the URL may be different for each execution. However, the order does not matter, as long as all the parameters are included in the URL and the signature is calculated correctly.

Note: The following code is only applicable to API 3.0. It cannot be directly used in other signature processes. Even with an older API, signature calculation errors may occur due to the differences in details. Please refer to the corresponding documentation.

Java

```
import java.nio.charset.Charset;
import java.nio.charset.StandardCharsets;
import java.security.MessageDigest;
import java.text.SimpleDateFormat;
import java.util.Date;
import java.util.TimeZone;
import java.util.TreeMap;
import javax.crypto.Mac;
import javax.crypto.spec.SecretKeySpec;
import javax.xml.bind.DatatypeConverter;
public class TencentCloudAPITC3Demo {
private final static Charset UTF8 = StandardCharsets.UTF_8;
private final static String SECRET_ID = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******";
private final static String SECRET_KEY = "Gu5t9xGARNpq86cd98joQYCN3*******";
private final static String CT_JSON = "application/json; charset=utf-8";
public static byte[] hmac256(byte[] key, String msg) throws Exception {
Mac mac = Mac.getInstance("HmacSHA256");
SecretKeySpec secretKeySpec = new SecretKeySpec(key, mac.getAlgorithm());
mac.init(secretKeySpec);
return mac.doFinal(msg.getBytes(UTF8));
}
public static String sha256Hex(String s) throws Exception {
MessageDigest md = MessageDigest.getInstance("SHA-256");
byte[] d = md.digest(s.getBytes(UTF8));
return DatatypeConverter.printHexBinary(d).toLowerCase();
}
public static void main(String[] args) throws Exception {
String service = "cvm";
String host = "cvm.tencentcloudapi.com";
String region = "ap-guangzhou";
String action = "DescribeInstances";
String version = "2017-03-12";
String algorithm = "TC3-HMAC-SHA256";
String timestamp = "1551113065";
//String timestamp = String.valueOf(System.currentTimeMillis() / 1000);
SimpleDateFormat sdf = new SimpleDateFormat("yyyy-MM-dd");
// Pay attention to the time zone; otherwise, errors may occur
sdf.setTimeZone(TimeZone.getTimeZone("UTC"));
String date = sdf.format(new Date(Long.valueOf(timestamp + "000")));
// ************ Step 1: Concatenate the CanonicalRequest string ************
```

```
String httpRequestMethod = "POST";
String canonicalUri = "/";
String canonicalQueryString = "";
String canonicalHeaders = "content-type:application/json; charset=utf-8\n" + "hos
t:" + host + "\n";
String signedHeaders = "content-type;host";
String payload = "{\"Limit\": 1, \"Filters\": [{\"Values\": [\"unnamed\"], \"Name
\": \"instance-name\"}]}";
String hashedRequestPayload = sha256Hex(payload);
String canonicalRequest = httpRequestMethod + "\n" + canonicalUri + "\n" + canoni
calQueryString + "\n"
+ canonicalHeaders + "\n" + signedHeaders + "\n" + hashedRequestPayload;
System.out.println(canonicalRequest);
// ************* Step 2: Concatenate the string to sign *************
String credentialScope = date + "/" + service + "/" + "tc3_request";
String hashedCanonicalRequest = sha256Hex(canonicalRequest);
String stringToSign = algorithm + "\n" + timestamp + "\n" + credentialScope +
"\n" + hashedCanonicalRequest;
System.out.println(stringToSign);
// ************* Step 3: Calculate the signature *************
byte[] secretDate = hmac256(("TC3" + SECRET_KEY).getBytes(UTF8), date);
byte[] secretService = hmac256(secretDate, service);
byte[] secretSigning = hmac256(secretService, "tc3_request");
String signature = DatatypeConverter.printHexBinary(hmac256(secretSigning, string
ToSign)).toLowerCase();
System.out.println(signature);
// ************* Step 4: Concatenate the Authorization *************
String authorization = algorithm + " " + "Credential=" + SECRET_ID + "/" + creden
tialScope + ", "
+ "SignedHeaders=" + signedHeaders + ", " + "Signature=" + signature;
System.out.println(authorization);
TreeMap<String, String> headers = new TreeMap<String, String>();
headers.put("Authorization", authorization);
headers.put("Content-Type", CT_JSON);
headers.put("Host", host);
headers.put("X-TC-Action", action);
headers.put("X-TC-Timestamp", timestamp);
headers.put("X-TC-Version", version);
headers.put("X-TC-Region", region);
StringBuilder sb = new StringBuilder();
sb.append("curl -X POST https://").append(host)
.append(" -H \"Authorization: ").append(authorization).append("\"")
.append(" -H \"Content-Type: application/json; charset=utf-8\"")
.append(" -H \"Host: ").append(host).append("\"")
.append(" -H \"X-TC-Action: ").append(action).append("\"")
.append(" -H \"X-TC-Timestamp: ").append(timestamp).append("\"")
.append(" -H \"X-TC-Version: ").append(version).append("\"")
```

```
.append(" -H \"X-TC-Region: ").append(region).append("\"")
.append(" -d '").append(payload).append("'");
System.out.println(sb.toString());
}
}
```

Python

```
# -*- coding: utf-8 -*-
import hashlib, hmac, json, os, sys, time
from datetime import datetime
# Key Parameters
secret_id = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******"
secret_key = "Gu5t9xGARNpq86cd98joQYCN3*******"
service = "cvm"
host = "cvm.tencentcloudapi.com"
endpoint = "https://" + host
region = "ap-guangzhou"
action = "DescribeInstances"
version = "2017-03-12"
algorithm = "TC3-HMAC-SHA256"
#timestamp = int(time.time())
timestamp = 1551113065
date = datetime.utcfromtimestamp(timestamp).strftime("%Y-%m-%d")
params = {"Limit": 1, "Filters": [{"Name": "instance-name", "Values": ["unnamed"
]}]}
# ************* Step 1: Concatenate the CanonicalRequest string *************
http_request_method = "POST"
canonical_uri = "/"
canonical_querystring = ""
ct = "application/json; charset=utf-8"
payload = json.dumps(params)
canonical_headers = "content-type:%s\nhost:%s\n" % (ct, host)
signed_headers = "content-type;host"
hashed_request_payload = hashlib.sha256(payload.encode("utf-8")).hexdigest()
canonical_request = (http_request_method + "\n" +
canonical_uri + "\n" +
canonical_querystring + "\n" +
canonical_headers + "\n" +
signed_headers + "\n" +
hashed_request_payload)
print(canonical_request)
# ************* Step 2: Concatenate the string to sign *************
credential_scope = date + "/" + service + "/" + "tc3_request"
hashed_canonical_request = hashlib.sha256(canonical_request.encode("utf-8")).hexd
igest()
```

```
string_to_sign = (algorithm + "\n" +
str(timestamp) + "\n" +
credential_scope + "\n" +
hashed_canonical_request)
print(string_to_sign)
# ************* Step 3: Calculate the Signature *************
# Function for computing signature digest
def sign(key, msg):
return hmac.new(key, msg.encode("utf-8"), hashlib.sha256).digest()
secret_date = sign(("TC3" + secret_key).encode("utf-8"), date)
secret_service = sign(secret_date, service)
secret_signing = sign(secret_service, "tc3_request")
signature = hmac.new(secret_signing, string_to_sign.encode("utf-8"), hashlib.sha2
56).hexdigest()
print(signature)
# ************* Step 4: Concatenate the Authorization *************
authorization = (algorithm + " " +
"Credential=" + secret_id + "/" + credential_scope + ", " +
"SignedHeaders=" + signed_headers + ", " +
"Signature=" + signature)
print(authorization)
print('curl -X POST ' + endpoint
+ ' -H "Authorization: ' + authorization + '"'
+ ' -H "Content-Type: application/json; charset=utf-8"'
+ ' -H "Host: ' + host + '"'
+ ' -H "X-TC-Action: ' + action + '"'
+ ' -H "X-TC-Timestamp: ' + str(timestamp) + '"'
+ ' -H "X-TC-Version: ' + version + '"'
+ ' -H "X-TC-Region: ' + region + '"'
+ " -d '" + payload + "'")
```

Golang

```
package main
import (
"crypto/hmac"
"crypto/sha256"
"encoding/hex"
"fmt"
"time"
)
func sha256hex(s string) string {
b := sha256.Sum256([]byte(s))
return hex.EncodeToString(b[:])
}
func hmacsha256(s, key string) string {
```

```
hashed := hmac.New(sha256.New, []byte(key))
hashed.Write([]byte(s))
return string(hashed.Sum(nil))
}
func main() {
secretId := "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******"
secretKey := "Gu5t9xGARNpq86cd98joQYCN3*******"
host := "cvm.tencentcloudapi.com"
algorithm := "TC3-HMAC-SHA256"
service := "cvm"
version := "2017-03-12"
action := "DescribeInstances"
region := "ap-guangzhou"
//var timestamp int64 = time.Now().Unix()
var timestamp int64 = 1551113065
// step 1: build canonical request string
httpRequestMethod := "POST"
canonicalURI := "/"
canonicalQueryString := ""
canonicalHeaders := "content-type:application/json; charset=utf-8\n" + "host:" +
host + "\n"
signedHeaders := "content-type;host"
payload := `{"Limit": 1, "Filters": [{"Values": ["unnamed"], "Name": "instance-na
me"}]}`
hashedRequestPayload := sha256hex(payload)
canonicalRequest := fmt.Sprintf("%s\n%s\n%s\n%s\n%s\n%s",
httpRequestMethod,
canonicalURI,
canonicalQueryString,
canonicalHeaders,
signedHeaders,
hashedRequestPayload)
fmt.Println(canonicalRequest)
// step 2: build string to sign
date := time.Unix(timestamp, 0).UTC().Format("2006-01-02")
credentialScope := fmt.Sprintf("%s/%s/tc3_request", date, service)
hashedCanonicalRequest := sha256hex(canonicalRequest)
string2sign := fmt.Sprintf("%s\n%d\n%s\n%s",
algorithm,
timestamp,
credentialScope,
hashedCanonicalRequest)
fmt.Println(string2sign)
// step 3: sign string
secretDate := hmacsha256(date, "TC3"+secretKey)
secretService := hmacsha256(service, secretDate)
secretSigning := hmacsha256("tc3_request", secretService)
```

```
signature := hex.EncodeToString([]byte(hmacsha256(string2sign, secretSigning)))
fmt.Println(signature)
// step 4: build authorization
authorization := fmt.Sprintf("%s Credential=%s/%s, SignedHeaders=%s, Signature=%
s",
algorithm,
secretId,
credentialScope,
signedHeaders,
signature)
fmt.Println(authorization)
curl := fmt.Sprintf(`curl -X POST https://%s\
-H "Authorization: %s"\
-H "Content-Type: application/json; charset=utf-8"\
-H "Host: %s" -H "X-TC-Action: %s"\
-H "X-TC-Timestamp: %d"\
-H "X-TC-Version: %s"\
-H "X-TC-Region: %s"\
-d '%s'`, host, authorization, host, action, timestamp, version, region, payload)
fmt.Println(curl)
}
```

PHP

```
<?php
$secretId = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******";
$secretKey = "Gu5t9xGARNpq86cd98joQYCN3*******";
$host = "cvm.tencentcloudapi.com";
$service = "cvm";
$version = "2017-03-12";
$action = "DescribeInstances";
$region = "ap-guangzhou";
// $timestamp = time();
$timestamp = 1551113065;
$algorithm = "TC3-HMAC-SHA256";
// step 1: build canonical request string
$httpRequestMethod = "POST";
$canonicalUri = "/";
$canonicalQueryString = "";
$canonicalHeaders = "content-type:application/json; charset=utf-8\n"."host:".$hos
t."\n";
$signedHeaders = "content-type;host";
$payload = '{"Limit": 1, "Filters": [{"Values": ["unnamed"], "Name": "instance-na
me"}]}';
$hashedRequestPayload = hash("SHA256", $payload);
$canonicalRequest = $httpRequestMethod."\n"
```

```
.$canonicalUri."\n"
.$canonicalQueryString."\n"
.$canonicalHeaders."\n"
.$signedHeaders."\n"
.$hashedRequestPayload;
echo $canonicalRequest.PHP_EOL;
// step 2: build string to sign
$date = gmdate("Y-m-d", $timestamp);
$credentialScope = $date."/".$service."/tc3_request";
$hashedCanonicalRequest = hash("SHA256", $canonicalRequest);
$stringToSign = $algorithm."\n"
.$timestamp."\n"
.$credentialScope."\n"
.$hashedCanonicalRequest;
echo $stringToSign.PHP_EOL;
// step 3: sign string
$secretDate = hash_hmac("SHA256", $date, "TC3".$secretKey, true);
$secretService = hash_hmac("SHA256", $service, $secretDate, true);
$secretSigning = hash_hmac("SHA256", "tc3_request", $secretService, true);
$signature = hash_hmac("SHA256", $stringToSign, $secretSigning);
echo $signature.PHP_EOL;
// step 4: build authorization
$authorization = $algorithm
." Credential=".$secretId."/".$credentialScope
.", SignedHeaders=content-type;host, Signature=".$signature;
echo $authorization.PHP_EOL;
$curl = "curl -X POST https://".$host
.' -H "Authorization: '.$authorization.'"'
.' -H "Content-Type: application/json; charset=utf-8"'
.' -H "Host: '.$host.'"'
.' -H "X-TC-Action: '.$action.'"'
.' -H "X-TC-Timestamp: '.$timestamp.'"'
.' -H "X-TC-Version: '.$version.'"'
.' -H "X-TC-Region: '.$region.'"'
." -d '".$payload."'";
echo $curl.PHP_EOL;
```

Ruby

```
# -*- coding: UTF-8 -*-
# require ruby>=2.3.0
require 'digest'
require 'json'
require 'time'
require 'openssl'
# Key Parameters
```

```
secret_id = 'AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******'
secret_key = 'Gu5t9xGARNpq86cd98joQYCN3*******'
service = 'cvm'
host = 'cvm.tencentcloudapi.com'
endpoint = 'https://' + host
region = 'ap-guangzhou'
action = 'DescribeInstances'
version = '2017-03-12'
algorithm = 'TC3-HMAC-SHA256'
# timestamp = Time.now.to_i
timestamp = 1551113065
date = Time.at(timestamp).utc.strftime('%Y-%m-%d')
# ************* Step 1: Concatenate the CanonicalRequest string *************
http_request_method = 'POST'
canonical_uri = '/'
canonical_querystring = ''
canonical_headers = "content-type:application/json; charset=utf-8\nhost:#{host}
\n"
signed_headers = 'content-type;host'
# params = { 'Limit' => 1, 'Filters' => [{ 'Name' => 'instance-name', 'Values' =>
['unnamed'] }] }
# payload = JSON.generate(params, { 'ascii_only' => true, 'space' => ' ' })
# json will generate in random order, to get specified result in example, we hard
-code it here.
payload = '{"Limit": 1, "Filters": [{"Values": ["unnamed"], "Name": "instance-nam
e"}]}'
hashed_request_payload = Digest::SHA256.hexdigest(payload)
canonical_request = [
http_request_method,
canonical_uri,
canonical_querystring,
canonical_headers,
signed_headers,
hashed_request_payload,
].join("\n")
puts canonical_request
# ************* Step 2: Concatenate the string to sign *************
credential_scope = date + '/' + service + '/' + 'tc3_request'
hashed_request_payload = Digest::SHA256.hexdigest(canonical_request)
string_to_sign = [
algorithm,
timestamp.to_s,
credential_scope,
hashed_request_payload,
].join("\n")
puts string_to_sign
# ************* Step 3: Calculate the Signature *************
```

```
digest = OpenSSL::Digest.new('sha256')
secret_date = OpenSSL::HMAC.digest(digest, 'TC3' + secret_key, date)
secret_service = OpenSSL::HMAC.digest(digest, secret_date, service)
secret_signing = OpenSSL::HMAC.digest(digest, secret_service, 'tc3_request')
signature = OpenSSL::HMAC.hexdigest(digest, secret_signing, string_to_sign)
puts signature
# ************* Step 4: Concatenate the Authorization *************
authorization = "#{algorithm} Credential=#{secret_id}/#{credential_scope}, Signed
Headers=#{signed_headers}, Signature=#{signature}"
puts authorization
puts 'curl -X POST ' + endpoint \
+ ' -H "Authorization: ' + authorization + '"' \
+ ' -H "Content-Type: application/json; charset=utf-8"' \
+ ' -H "Host: ' + host + '"' \
+ ' -H "X-TC-Action: ' + action + '"' \
+ ' -H "X-TC-Timestamp: ' + timestamp.to_s + '"' \
+ ' -H "X-TC-Version: ' + version + '"' \
+ ' -H "X-TC-Region: ' + region + '"' \
+ " -d '" + payload + "'"
```

DotNet

```
using System;
using System.Collections.Generic;
using System.Security.Cryptography;
using System.Text;
public class Application
{
public static string SHA256Hex(string s)
{
using (SHA256 algo = SHA256.Create())
{
byte[] hashbytes = algo.ComputeHash(Encoding.UTF8.GetBytes(s));
StringBuilder builder = new StringBuilder();
for (int i = 0; i < hashbytes.Length; ++i)
{
builder.Append(hashbytes[i].ToString("x2"));
}
return builder.ToString();
}
}
public static byte[] HmacSHA256(byte[] key, byte[] msg)
{
using (HMACSHA256 mac = new HMACSHA256(key))
{
return mac.ComputeHash(msg);
```

```
}
}
public static Dictionary<String, String> BuildHeaders(string secretid,
string secretkey, string service, string endpoint, string region,
string action, string version, DateTime date, string requestPayload)
{
string datestr = date.ToString("yyyy-MM-dd");
DateTime startTime = new DateTime(1970, 1, 1, 0, 0, 0, 0, DateTimeKind.Utc);
long requestTimestamp = (long)Math.Round((date - startTime).TotalMilliseconds, Mi
dpointRounding.AwayFromZero) / 1000;
// ************* Step 1: Concatenate the CanonicalRequest string *************
string algorithm = "TC3-HMAC-SHA256";
string httpRequestMethod = "POST";
string canonicalUri = "/";
string canonicalQueryString = "";
string contentType = "application/json";
string canonicalHeaders = "content-type:" + contentType + "; charset=utf-8\n" +
"host:" + endpoint + "\n";
string signedHeaders = "content-type;host";
string hashedRequestPayload = SHA256Hex(requestPayload);
string canonicalRequest = httpRequestMethod + "\n"
+ canonicalUri + "\n"
+ canonicalQueryString + "\n"
+ canonicalHeaders + "\n"
+ signedHeaders + "\n"
+ hashedRequestPayload;
Console.WriteLine(canonicalRequest);
Console.WriteLine("-----------------------------------");
// ************* Step 2: Concatenate the string to sign *************
string credentialScope = datestr + "/" + service + "/" + "tc3_request";
string hashedCanonicalRequest = SHA256Hex(canonicalRequest);
string stringToSign = algorithm + "\n" + requestTimestamp.ToString() + "\n" + cre
dentialScope + "\n" + hashedCanonicalRequest;
Console.WriteLine(stringToSign);
Console.WriteLine("-----------------------------------");
// ************* Step 3: Calculate the signature *************
byte[] tc3SecretKey = Encoding.UTF8.GetBytes("TC3" + secretkey);
byte[] secretDate = HmacSHA256(tc3SecretKey, Encoding.UTF8.GetBytes(datestr));
byte[] secretService = HmacSHA256(secretDate, Encoding.UTF8.GetBytes(service));
byte[] secretSigning = HmacSHA256(secretService, Encoding.UTF8.GetBytes("tc3_requ
est"));
byte[] signatureBytes = HmacSHA256(secretSigning, Encoding.UTF8.GetBytes(stringTo
Sign));
string signature = BitConverter.ToString(signatureBytes).Replace("-", "").ToLower
();
Console.WriteLine(signature);
Console.WriteLine("-----------------------------------");
```

```
// ************* Step 4: Concatenate the Authorization *************
string authorization = algorithm + " "
+ "Credential=" + secretid + "/" + credentialScope + ", "
+ "SignedHeaders=" + signedHeaders + ", "
+ "Signature=" + signature;
Console.WriteLine(authorization);
Console.WriteLine("-----------------------------------");
Dictionary<string, string> headers = new Dictionary<string, string>();
headers.Add("Authorization", authorization);
headers.Add("Host", endpoint);
headers.Add("Content-Type", contentType + "; charset=utf-8");
headers.Add("X-TC-Timestamp", requestTimestamp.ToString());
headers.Add("X-TC-Version", version);
headers.Add("X-TC-Action", action);
headers.Add("X-TC-Region", region);
return headers;
}
public static void Main(string[] args)
{
// SecretID and SecretKey
string SECRET_ID = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******";
string SECRET_KEY = "Gu5t9xGARNpq86cd98joQYCN3*******";
string service = "cvm";
string endpoint = "cvm.tencentcloudapi.com";
string region = "ap-guangzhou";
string action = "DescribeInstances";
string version = "2017-03-12";
// The timestamp `2019-02-26 00:44:25` used here is only for reference. In a proj
ect, use the following parameter:
// DateTime date = DateTime.UtcNow;
// Enter the correct time zone. We recommend using UTC timestamp to avoid errors.
DateTime date = new DateTime(1970, 1, 1, 0, 0, 0, 0, DateTimeKind.Utc).AddSeconds
(1551113065);
string requestPayload = "{\"Limit\": 1, \"Filters\": [{\"Values\": [\"\\u672a\\u5
47d\\u540d\"], \"Name\": \"instance-name\"}]}";
Dictionary<string, string> headers = BuildHeaders(SECRET_ID, SECRET_KEY, service
, endpoint, region, action, version, date, requestPayload);
Console.WriteLine("POST https://cvm.tencentcloudapi.com");
foreach (KeyValuePair<string, string> kv in headers)
{
Console.WriteLine(kv.Key + ": " + kv.Value);
}
Console.WriteLine();
Console.WriteLine(requestPayload);
}
}
```

NodeJS

```
const crypto = require('crypto');
function sha256(message, secret = '', encoding) {
const hmac = crypto.createHmac('sha256', secret)
return hmac.update(message).digest(encoding)
}
function getHash(message, encoding = 'hex') {
const hash = crypto.createHash('sha256')
return hash.update(message).digest(encoding)
}
function getDate(timestamp) {
const date = new Date(timestamp * 1000)
const year = date.getUTCFullYear()
const month = ('0' + (date.getUTCMonth() + 1)).slice(-2)
const day = ('0' + date.getUTCDate()).slice(-2)
return `${year}-${month}-${day}`
}
function main(){
const SECRET_ID = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******"
const SECRET_KEY = "Gu5t9xGARNpq86cd98joQYCN3*******"
const endpoint = "cvm.tencentcloudapi.com"
const service = "cvm"
const region = "ap-guangzhou"
const action = "DescribeInstances"
const version = "2017-03-12"
//const timestamp = getTime()
const timestamp = 1551113065
const date = getDate(timestamp)
// ************* Step 1: Concatenate the CanonicalRequest string *************
const signedHeaders = "content-type;host"
const payload = "{\"Limit\": 1, \"Filters\": [{\"Values\": [\"unnamed\"], \"Name
\": \"instance-name\"}]}"
const hashedRequestPayload = getHash(payload);
const httpRequestMethod = "POST"
const canonicalUri = "/"
const canonicalQueryString = ""
const canonicalHeaders = "content-type:application/json; charset=utf-8\n" + "hos
t:" + endpoint + "\n"
const canonicalRequest = httpRequestMethod + "\n"
+ canonicalUri + "\n"
+ canonicalQueryString + "\n"
+ canonicalHeaders + "\n"
+ signedHeaders + "\n"
+ hashedRequestPayload
console.log(canonicalRequest)
console.log("----------------------------")
```

```
// ************* Step 2: Concatenate the string to sign *************
const algorithm = "TC3-HMAC-SHA256"
const hashedCanonicalRequest = getHash(canonicalRequest);
const credentialScope = date + "/" + service + "/" + "tc3_request"
const stringToSign = algorithm + "\n" +
timestamp + "\n" +
credentialScope + "\n" +
hashedCanonicalRequest
console.log(stringToSign)
console.log("----------------------------")
// ************* Step 3: Calculate the signature *************
const kDate = sha256(date, 'TC3' + SECRET_KEY)
const kService = sha256(service, kDate)
const kSigning = sha256('tc3_request', kService)
const signature = sha256(stringToSign, kSigning, 'hex')
console.log(signature)
console.log("----------------------------")
// ************* Step 4: Concatenate the Authorization *************
const authorization = algorithm + " " +
"Credential=" + SECRET_ID + "/" + credentialScope + ", " +
"SignedHeaders=" + signedHeaders + ", " +
"Signature=" + signature
console.log(authorization)
console.log("----------------------------")
const Call_Information = 'curl -X POST ' + "https://" + endpoint
+ ' -H "Authorization: ' + authorization + '"'
+ ' -H "Content-Type: application/json; charset=utf-8"'
+ ' -H "Host: ' + endpoint + '"'
+ ' -H "X-TC-Action: ' + action + '"'
+ ' -H "X-TC-Timestamp: ' + timestamp.toString() + '"'
+ ' -H "X-TC-Version: ' + version + '"'
+ ' -H "X-TC-Region: ' + region + '"'
+ " -d '" + payload + "'"
console.log(Call_Information)
}
main()
```

C++

```
#include <iostream>
#include <iomanip>
#include <sstream>
#include <string>
#include <stdio.h>
#include <time.h>
#include <openssl/sha.h>
```

```
#include <openssl/hmac.h>
using namespace std;
string get_data(int64_t &timestamp)
{
string utcDate;
char buff[20] = {0};
// time_t timenow;
struct tm sttime;
sttime = *gmtime(&timestamp);
strftime(buff, sizeof(buff), "%Y-%m-%d", &sttime);
utcDate = string(buff);
return utcDate;
}
string int2str(int64_t n)
{
std::stringstream ss;
ss << n;
return ss.str();
}
string sha256Hex(const string &str)
{
char buf[3];
unsigned char hash[SHA256_DIGEST_LENGTH];
SHA256_CTX sha256;
SHA256_Init(&sha256);
SHA256_Update(&sha256, str.c_str(), str.size());
SHA256_Final(hash, &sha256);
std::string NewString = "";
for(int i = 0; i < SHA256_DIGEST_LENGTH; i++)
{
snprintf(buf, sizeof(buf), "%02x", hash[i]);
NewString = NewString + buf;
}
return NewString;
}
string HmacSha256(const string &key, const string &input)
{
unsigned char hash[32];
HMAC_CTX *h;
#if OPENSSL_VERSION_NUMBER < 0x10100000L
HMAC_CTX hmac;
HMAC_CTX_init(&hmac);
h = &hmac;
#else
h = HMAC_CTX_new();
#endif
HMAC_Init_ex(h, &key[0], key.length(), EVP_sha256(), NULL);
```

```
HMAC_Update(h, ( unsigned char* )&input[0], input.length());
unsigned int len = 32;
HMAC_Final(h, hash, &len);
#if OPENSSL_VERSION_NUMBER < 0x10100000L
HMAC_CTX_cleanup(h);
#else
HMAC_CTX_free(h);
#endif
std::stringstream ss;
ss << std::setfill('0');
for (int i = 0; i < len; i++)
{
ss << hash[i];
}
return (ss.str());
}
string HexEncode(const string &input)
{
static const char* const lut = "0123456789abcdef";
size_t len = input.length();
string output;
output.reserve(2 * len);
for (size_t i = 0; i < len; ++i)
{
const unsigned char c = input[i];
output.push_back(lut[c >> 4]);
output.push_back(lut[c & 15]);
}
return output;
}
int main()
{
string SECRET_ID = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******";
string SECRET_KEY = "Gu5t9xGARNpq86cd98joQYCN3*******";
string service = "cvm";
string host = "cvm.tencentcloudapi.com";
string region = "ap-guangzhou";
string action = "DescribeInstances";
string version = "2017-03-12";
int64_t timestamp = 1551113065;
string date = get_data(timestamp);
// ************* Step 1: Concatenate the CanonicalRequest string *************
string httpRequestMethod = "POST";
string canonicalUri = "/";
string canonicalQueryString = "";
string canonicalHeaders = "content-type:application/json; charset=utf-8\nhost:" +
host + "\n";
```

```
string signedHeaders = "content-type;host";
string payload = "{\"Limit\": 1, \"Filters\": [{\"Values\": [\"unnamed\"], \"Name
\": \"instance-name\"}]}";
string hashedRequestPayload = sha256Hex(payload);
string canonicalRequest = httpRequestMethod + "\n" + canonicalUri + "\n" + canoni
calQueryString + "\n"
+ canonicalHeaders + "\n" + signedHeaders + "\n" + hashedRequestPayload;
cout << canonicalRequest << endl;
cout << "-----------------------" << endl;
// ************* Step 2: Concatenate the string to sign *************
string algorithm = "TC3-HMAC-SHA256";
string RequestTimestamp = int2str(timestamp);
string credentialScope = date + "/" + service + "/" + "tc3_request";
string hashedCanonicalRequest = sha256Hex(canonicalRequest);
string stringToSign = algorithm + "\n" + RequestTimestamp + "\n" + credentialScop
e + "\n" + hashedCanonicalRequest;
cout << stringToSign << endl;
cout << "-----------------------" << endl;
// ************* Step 3: Calculate the signature ***************
string kKey = "TC3" + SECRET_KEY;
string kDate = HmacSha256(kKey, date);
string kService = HmacSha256(kDate, service);
string kSigning = HmacSha256(kService, "tc3_request");
string signature = HexEncode(HmacSha256(kSigning, stringToSign));
cout << signature << endl;
cout << "-----------------------" << endl;
// ************* Step 4: Concatenate the Authorization *************
string authorization = algorithm + " " + "Credential=" + SECRET_ID + "/" + creden
tialScope + ", "
+ "SignedHeaders=" + signedHeaders + ", " + "Signature=" + signature;
cout << authorization << endl;
cout << "-----------------------" << endl;
string headers = "curl -X POST https://" + host + "\n"
+ " -H \"Authorization: " + authorization + "\n"
+ " -H \"Content-Type: application/json; charset=utf-8\"" + "\n"
+ " -H \"Host: " + host + "\n"
+ " -H \"X-TC-Action: " + action + "\n"
+ " -H \"X-TC-Timestamp: " + RequestTimestamp + "\n"
+ " -H \"X-TC-Version: " + version + "\n"
+ " -H \"X-TC-Region: " + region + "\n"
+ " -d '" + payload;
cout << headers << endl;
return 0;
};
```

Signature Failure

The following situational error codes for signature failure may occur. Please resolve the errors accordingly.

Error Code	Description
AuthFailure.SignatureExpire	Signature expired. Timestamp and server time cannot differ by more than five minutes.
AuthFailure.SecretIdNotFound	The key does not exist. Please go to the console to check whether it is disabled or you copied fewer or more characters.
AuthFailure.SignatureFailure	Signature error. It is possible that the signature was calculated incorrectly, the signature does not match the content actually sent, or the SecretKey is incorrect.
AuthFailure.TokenFailure	Temporary certificate token error.
AuthFailure.InvalidSecretId	Invalid key (not a TencentCloud API key type).

Signature

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Tencent Cloud API authenticates each access request, i.e. each request needs to include authentication information (Signature) in the common parameters to verify the identity of the requester.
The Signature is generated by the security credentials which include SecretId and SecretKey. If you don't have the security credentials yet, go to the TencentCloud API Key page to apply for them; otherwise, you cannot invoke the TencentCloud API.

1. Applying for Security Credentials

Before using the TencentCloud API for the first time, go to the TencentCloud API Key page to apply for security credentials.
Security credentials consist of SecretId and SecretKey:

- SecretId is used to identify the API requester.
- SecretKey is used to encrypt the signature string and verify it on the server.
- **You must keep your security credentials private and avoid disclosure.**

You can apply for the security credentials through the following steps:

1. Log in to the Tencent Cloud Console.
2. Go to the TencentCloud API Key page.
3. On the API Key Management page, click **Create Key** to create a SecretId/SecretKey pair.

Note: Each account can have up to two pairs of SecretId/SecretKey.

2. Generating a Signature

With the SecretId and SecretKey, a signature can be generated. The following describes how to generate a signature:

Assume that the SecretId and SecretKey are:

- SecretId: `AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******`
- SecretKey: `Gu5t9xGARNpq86cd98joQYCN3*******`

Note: This is just an example. For actual operations, please use your own SecretId and SecretKey.

Take the Cloud Virtual Machine's request to view the instance list (DescribeInstances) as an example. When you invoke this API, the request parameters may be as follows:

Parameter name	Description	Parameter value
Action	Method name	DescribeInstances
SecretId	Key ID	`AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******`
Timestamp	Current timestamp	1465185768
Nonce	Random positive integer	11886
Region	Region where the instance is located	ap-guangzhou
InstanceIds.0	ID of the instance to query	ins-09dx96dg
Offset	Offset	0
Limit	Allowed maximum output	20
Version	API version number	2017-03-12

2.1. Sorting Parameters

First, sort all the request parameters in an ascending lexicographical order (ASCII code) by their names. Notes: (1) Parameters are sorted by their names instead of their values; (2) The parameters are sorted based on ASCII code, not in an alphabetical order or by values. For example, InstanceIds.2 should be arranged after InstanceIds.12. You can complete the sorting process using a sorting function in a programming language, such as the ksort function in PHP. The parameters in the example are sorted as follows:

```
{
'Action' : 'DescribeInstances',
'InstanceIds.0' : 'ins-09dx96dg',
'Limit' : 20,
'Nonce' : 11886,
'Offset' : 0,
'Region' : 'ap-guangzhou',
'SecretId' : 'AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******',
'Timestamp' : 1465185768,
'Version': '2017-03-12',
}
```

When developing in another programming language, you can sort these sample parameters and it will work as long as you obtain the same results.

2.2. Concatenating a Request String

This step generates a request string.

Format the request parameters sorted in the previous step into the form of "parameter name"="parameter value". For example, for the Action parameter, its parameter name is "Action" and its parameter value is "DescribeInstances", so it will become Action=DescribeInstances after formatted.

Note: The "parameter value" is the original value but not the value after URL encoding.

Then, concatenate the formatted parameters with "&". The resulting request string is as follows:

```
Action=DescribeInstances&InstanceIds.0=ins-09dx96dg&Limit=20&Nonce=11886&Offset=0
&Region=ap-guangzhou&SecretId=AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******&Timestamp=1465
185768&Version=2017-03-12
```

2.3. Concatenating the Signature Original String

This step generates a signature original string.

The signature original string consists of the following parameters:

1. HTTP method: POST and GET modes are supported, and GET is used here for the request. Please note that the method name should be in all capital letters.
2. Request server: the domain name of the request to view the list of instances (DescribeInstances) is cvm.tencentcloudapi.com. The actual request domain name varies by the module to which the API belongs. For more information, see the instructions of the specific API.
3. Request path: The request path in the current version of TencentCloud API is fixed to /.
4. Request string: the request string generated in the previous step.

The concatenation rule of the signature original string is: Request method + request host + request path + ? + request string

The concatenation result of the example is:

```
GETcvm.tencentcloudapi.com/?Action=DescribeInstances&InstanceIds.0=ins-09dx96dg&L
imit=20&Nonce=11886&Offset=0&Region=ap-guangzhou&SecretId=AKIDz8krbsJ5yKBZQpn74WF
kmLPx3*******&Timestamp=1465185768&Version=2017-03-12
```

2.4. Generating a Signature String

This step generates a signature string.

First, use the HMAC-SHA1 algorithm to sign the **signature original string** obtained in the previous step, and then

encode the generated signature using Base64 to obtain the final signature.

The specific code is as follows with the PHP language being used as an example:

```
$secretKey = 'Gu5t9xGARNpq86cd98joQYCN3*******';
$srcStr = 'GETcvm.tencentcloudapi.com/?Action=DescribeInstances&InstanceIds.0=ins-09dx96dg&Limit=20&Nonce=11886&Offset=0&Region=ap-guangzhou&SecretId=AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******&Timestamp=1465185768&Version=2017-03-12';
$signStr = base64_encode(hash_hmac('sha1', $srcStr, $secretKey, true));
echo $signStr;
```

The final signature is:

```
zmmjn35mikh6pM3V7sUEuX4wyYM=
```

When developing in another programming language, you can sign and verify the original in the example above and it works as long as you get the same results.

3. Encoding a Signature String

The generated signature string cannot be directly used as a request parameter and must be URL encoded.

For example, if the signature string generated in the previous step is zmmjn35mikh6pM3V7sUEuX4wyYM=, the final signature string request parameter (Signature) is zmmjn35mikh6pM3V7sUEuX4wyYM%3D, which will be used to generate the final request URL.

Note: If your request method is GET, or the request method is POST and the Content-Type is application/x-www-form-urlencoded, then all the request parameter values need to be URL encoded (except the parameter key and the symbol of =) when sending the request. Non-ASCII characters need to be encoded with UTF-8 before URL encoding.

Note: The network libraries of some programming languages automatically URL encode all parameters, in which case there is no need to URL encode the signature string; otherwise, two rounds of URL encoding will cause the signature to fail.

Note: Other parameter values also need to be encoded using RFC 3986. Use %XY in percent-encoding for special characters such as Chinese characters, where "X" and "Y" are hexadecimal characters (0-9 and uppercase A-F), and using lowercase will cause an error.

4. Signature Failure

The following situational error codes for signature failure may occur. Please resolve the errors accordingly.

Error code	Error description
AuthFailure.SignatureExpire	The signature is expired
AuthFailure.SecretIdNotFound	The key does not exist
AuthFailure.SignatureFailure	Signature error
AuthFailure.TokenFailure	Token error
AuthFailure.InvalidSecretId	Invalid key (not a TencentCloud API key type)

5. Signature Demo

When calling API 3.0, you are recommended to use the corresponding Tencent Cloud SDK 3.0 which encapsulates the signature process, enabling you to focus on only the specific APIs provided by the product when developing. See SDK Center for more information. Currently, the following programming languages are supported:

- Python
- Java
- PHP
- Go
- NodeJS
- .NET

To further explain the signing process, we will use a programming language to implement the process described above. The request domain name, API and parameter values in the sample are used here. This goal of this example is only to provide additional clarification for the signature process, please see the SDK for actual usage.

The final output URL might be:

```
https://cvm.tencentcloudapi.com/?Action=DescribeInstances&InstanceIds.0=ins-09dx96dg&Limit=20&Nonce=11886&Offset=0&Region=ap-guangzhou&SecretId=AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******&Signature=zmmjn35mikh6pM3V7sUEuX4wyYM%3D&Timestamp=1465185768&Version=2017-03-12
```

Note: The key in the example is fictitious, and the timestamp is not the current time of the system, so if this URL is opened in the browser or called using commands such as curl, an authentication error will be returned: Signature expired. In order to get a URL that can work properly, you need to replace the SecretId and SecretKey in the example with your real credentials and use the current time of the system as the Timestamp.

Note: In the example below, even if you use the same programming language, the order of the parameters in the URL may be different for each execution. However, the order does not matter, as long as all the parameters are included in the URL and the signature is calculated correctly.

Note: The following code is only applicable to API 3.0. It cannot be directly used in other signature processes. Even with an older API, signature calculation errors may occur due to the differences in details. Please refer to the corresponding documentation.

Java

```
import java.io.UnsupportedEncodingException;
import java.net.URLEncoder;
import java.util.Random;
import java.util.TreeMap;
import javax.crypto.Mac;
import javax.crypto.spec.SecretKeySpec;
import javax.xml.bind.DatatypeConverter;
public class TencentCloudAPIDemo {
private final static String CHARSET = "UTF-8";
public static String sign(String s, String key, String method) throws Exception {
Mac mac = Mac.getInstance(method);
SecretKeySpec secretKeySpec = new SecretKeySpec(key.getBytes(CHARSET), mac.getAlg
orithm());
mac.init(secretKeySpec);
byte[] hash = mac.doFinal(s.getBytes(CHARSET));
return DatatypeConverter.printBase64Binary(hash);
}
public static String getStringToSign(TreeMap<String, Object> params) {
StringBuilder s2s = new StringBuilder("GETcvm.tencentcloudapi.com/?");
// When signing, the parameters need to be sorted in lexicographical order. TreeM
ap is used here to guarantee the correct order.
for (String k : params.keySet()) {
s2s.append(k).append("=").append(params.get(k).toString()).append("&");
}
return s2s.toString().substring(0, s2s.length() - 1);
}
public static String getUrl(TreeMap<String, Object> params) throws UnsupportedEnc
odingException {
StringBuilder url = new StringBuilder("https://cvm.tencentcloudapi.com/?");
// There is no requirement for the order of the parameters in the actual request
URL.
for (String k : params.keySet()) {
// The request string needs to be URL encoded. As the Key is all in English lette
rs, only the value is URL encoded here.
url.append(k).append("=").append(URLEncoder.encode(params.get(k).toString(), CHAR
SET)).append("&");
```

```
}
return url.toString().substring(0, url.length() - 1);
}
public static void main(String[] args) throws Exception {
TreeMap<String, Object> params = new TreeMap<String, Object>(); // TreeMap enable
s automatic sorting
// A random number should be used when actually calling, for example: params.put
("Nonce", new Random().nextInt(java.lang.Integer.MAX_VALUE));
params.put("Nonce", 11886); // Common parameter
// The current time of the system should be used when actually calling, for examp
le: params.put("Timestamp", System.currentTimeMillis() / 1000);
params.put("Timestamp", 1465185768); // Common parameter
params.put("SecretId", "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******"); // Common paramet
er
params.put("Action", "DescribeInstances"); // Common parameter
params.put("Version", "2017-03-12"); // Common parameter
params.put("Region", "ap-guangzhou"); // Common parameter
params.put("Limit", 20); // Business parameter
params.put("Offset", 0); // Business parameter
params.put("InstanceIds.0", "ins-09dx96dg"); // Business parameter
params.put("Signature", sign(getStringToSign(params), "Gu5t9xGARNpq86cd98joQYCN3*
******", "HmacSHA1")); // Common parameter
System.out.println(getUrl(params));
}
}
```

Python

Note: If running in a Python 2 environment, the following requests dependency package must be installed first: `pip install requests`.

```
# -*- coding: utf8 -*-
import base64
import hashlib
import hmac
import time
import requests
secret_id = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******"
secret_key = "Gu5t9xGARNpq86cd98joQYCN3*******"
def get_string_to_sign(method, endpoint, params):
s = method + endpoint + "/?"
query_str = "&".join("%s=%s" % (k, params[k]) for k in sorted(params))
return s + query_str
def sign_str(key, s, method):
hmac_str = hmac.new(key.encode("utf8"), s.encode("utf8"), method).digest()
return base64.b64encode(hmac_str)
```

```
if __name__ == '__main__':
endpoint = "cvm.tencentcloudapi.com"
data = {
'Action' : 'DescribeInstances',
'InstanceIds.0' : 'ins-09dx96dg',
'Limit' : 20,
'Nonce' : 11886,
'Offset' : 0,
'Region' : 'ap-guangzhou',
'SecretId' : secret_id,
'Timestamp' : 1465185768, # int(time.time())
'Version': '2017-03-12'
}
s = get_string_to_sign("GET", endpoint, data)
data["Signature"] = sign_str(secret_key, s, hashlib.sha1)
print(data["Signature"])
# An actual invocation would occur here, which may incur fees after success
# resp = requests.get("https://" + endpoint, params=data)
# print(resp.url)
```

Golang

```
package main
import (
"bytes"
"crypto/hmac"
"crypto/sha1"
"encoding/base64"
"fmt"
"sort"
)
func main() {
secretId := "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******"
secretKey := "Gu5t9xGARNpq86cd98joQYCN3*******"
params := map[string]string{
"Nonce": "11886",
"Timestamp": "1465185768",
"Region": "ap-guangzhou",
"SecretId": secretId,
"Version": "2017-03-12",
"Action": "DescribeInstances",
"InstanceIds.0": "ins-09dx96dg",
"Limit": "20",
"Offset": "0",
}
var buf bytes.Buffer
```

```
buf.WriteString("GET")
buf.WriteString("cvm.tencentcloudapi.com")
buf.WriteString("/")
buf.WriteString("?")
// sort keys by ascii asc order
keys := make([]string, 0, len(params))
for k, _ := range params {
keys = append(keys, k)
}
sort.Strings(keys)
for i := range keys {
k := keys[i]
buf.WriteString(k)
buf.WriteString("=")
buf.WriteString(params[k])
buf.WriteString("&")
}
buf.Truncate(buf.Len() - 1)
hashed := hmac.New(sha1.New, []byte(secretKey))
hashed.Write(buf.Bytes())
fmt.Println(base64.StdEncoding.EncodeToString(hashed.Sum(nil)))
}
```

PHP

```
<?php
$secretId = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******";
$secretKey = "Gu5t9xGARNpq86cd98joQYCN3*******";
$param["Nonce"] = 11886;//rand();
$param["Timestamp"] = 1465185768;//time();
$param["Region"] = "ap-guangzhou";
$param["SecretId"] = $secretId;
$param["Version"] = "2017-03-12";
$param["Action"] = "DescribeInstances";
$param["InstanceIds.0"] = "ins-09dx96dg";
$param["Limit"] = 20;
$param["Offset"] = 0;
ksort($param);
$signStr = "GETcvm.tencentcloudapi.com/?";
foreach ( $param as $key => $value ) {
$signStr = $signStr . $key . "=" . $value . "&";
}
$signStr = substr($signStr, 0, -1);
$signature = base64_encode(hash_hmac("sha1", $signStr, $secretKey, true));
echo $signature.PHP_EOL;
// need to install and enable curl extension in php.ini
```

```
// $param["Signature"] = $signature;
// $url = "https://cvm.tencentcloudapi.com/?".http_build_query($param);
// echo $url.PHP_EOL;
// $ch = curl_init();
// curl_setopt($ch, CURLOPT_URL, $url);
// $output = curl_exec($ch);
// curl_close($ch);
// echo json_decode($output);
```

Ruby

```
# -*- coding: UTF-8 -*-
# require ruby>=2.3.0
require 'time'
require 'openssl'
require 'base64'
secret_id = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******"
secret_key = "Gu5t9xGARNpq86cd98joQYCN3*******"
method = 'GET'
endpoint = 'cvm.tencentcloudapi.com'
data = {
'Action' => 'DescribeInstances',
'InstanceIds.0' => 'ins-09dx96dg',
'Limit' => 20,
'Nonce' => 11886,
'Offset' => 0,
'Region' => 'ap-guangzhou',
'SecretId' => secret_id,
'Timestamp' => 1465185768, # Time.now.to_i
'Version' => '2017-03-12',
}
sign = method + endpoint + '/?'
params = []
data.sort.each do |item|
params << "#{item[0]}=#{item[1]}"
end
sign += params.join('&')
digest = OpenSSL::Digest.new('sha1')
data['Signature'] = Base64.encode64(OpenSSL::HMAC.digest(digest, secret_key, sig
n))
puts data['Signature']
# require 'net/http'
# uri = URI('https://' + endpoint)
# uri.query = URI.encode_www_form(data)
# p uri
```

```
# res = Net::HTTP.get_response(uri)
# puts res.body
```

DotNet

```
using System;
using System.Collections.Generic;
using System.Net;
using System.Security.Cryptography;
using System.Text;
public class Application {
public static string Sign(string signKey, string secret)
{
string signRet = string.Empty;
using (HMACSHA1 mac = new HMACSHA1(Encoding.UTF8.GetBytes(signKey)))
{
byte[] hash = mac.ComputeHash(Encoding.UTF8.GetBytes(secret));
signRet = Convert.ToBase64String(hash);
}
return signRet;
}
public static string MakeSignPlainText(SortedDictionary<string, string> requestPa
rams, string requestMethod, string requestHost, string requestPath)
{
string retStr = "";
retStr += requestMethod;
retStr += requestHost;
retStr += requestPath;
retStr += "?";
string v = "";
foreach (string key in requestParams.Keys)
{
v += string.Format("{0}={1}&", key, requestParams[key]);
}
retStr += v.TrimEnd('&');
return retStr;
}
public static void Main(string[] args)
{
string SECRET_ID = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******";
string SECRET_KEY = "Gu5t9xGARNpq86cd98joQYCN3*******";
string endpoint = "cvm.tencentcloudapi.com";
string region = "ap-guangzhou";
string action = "DescribeInstances";
string version = "2017-03-12";
double RequestTimestamp = 1465185768;
```

```
// long timestamp = ToTimestamp() / 1000;
// string requestTimestamp = timestamp.ToString();
Dictionary<string, string> param = new Dictionary<string, string>();
param.Add("Limit", "20");
param.Add("Offset", "0");
param.Add("InstanceIds.0", "ins-09dx96dg");
param.Add("Action", action);
param.Add("Nonce", "11886");
// param.Add("Nonce", Math.Abs(new Random().Next()).ToString());
param.Add("Timestamp", RequestTimestamp.ToString());
param.Add("Version", version);
param.Add("SecretId", SECRET_ID);
param.Add("Region", region);
SortedDictionary<string, string> headers = new SortedDictionary<string, string>(p
aram, StringComparer.Ordinal);
string sigInParam = MakeSignPlainText(headers, "GET", endpoint, "/");
Console.WriteLine(sigInParam);
string sigOutParam = Sign(SECRET_KEY, sigInParam);
Console.WriteLine("GET https://cvm.tencentcloudapi.com");
foreach (KeyValuePair<string, string> kv in headers)
{
Console.WriteLine(kv.Key + ": " + kv.Value);
}
Console.WriteLine("Signature" + ": " + WebUtility.UrlEncode(sigOutParam));
Console.WriteLine();
string result = "https://cvm.tencentcloudapi.com/?";
foreach (KeyValuePair<string, string> kv in headers)
{
result += WebUtility.UrlEncode(kv.Key) + "=" + WebUtility.UrlEncode(kv.Value) +
"&";
}
result += WebUtility.UrlEncode("Signature") + "=" + WebUtility.UrlEncode(sigOutPa
ram);
Console.WriteLine("GET " + result);
}
}
```

NodeJS

```
const crypto = require('crypto');
function get_req_url(params, endpoint){
params['Signature'] = escape(params['Signature']);
const url_strParam = sort_params(params)
return "https://" + endpoint + "/?" + url_strParam.slice(1);
}
function formatSignString(reqMethod, endpoint, path, strParam){
```

```
let strSign = reqMethod + endpoint + path + "?" + strParam.slice(1);
return strSign;
}
function sha1(secretKey, strsign){
let signMethodMap = {'HmacSHA1': "sha1"};
let hmac = crypto.createHmac(signMethodMap['HmacSHA1'], secretKey || "");
return hmac.update(Buffer.from(strsign, 'utf8')).digest('base64')
}
function sort_params(params){
let strParam = "";
let keys = Object.keys(params);
keys.sort();
for (let k in keys) {
//k = k.replace(/_/g, '.');
strParam += ("&" + keys[k] + "=" + params[keys[k]]);
}
return strParam
}
function main(){
const SECRET_ID = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3*******"
const SECRET_KEY = "Gu5t9xGARNpq86cd98joQYCN3*******"
const endpoint = "cvm.tencentcloudapi.com"
const Region = "ap-guangzhou"
const Version = "2017-03-12"
const Action = "DescribeInstances"
const Timestamp = 1465185768
// const Timestamp = Math.round(Date.now() / 1000)
const Nonce = 11886
//const nonce = Math.round(Math.random() * 65535)
let params = {};
params['Action'] = Action;
params['InstanceIds.0'] = 'ins-09dx96dg';
params['Limit'] = 20;
params['Offset'] = 0;
params['Nonce'] = Nonce;
params['Region'] = Region;
params['SecretId'] = SECRET_ID;
params['Timestamp'] = Timestamp;
params['Version'] = Version;
strParam = sort_params(params)
const reqMethod = "GET";
const path = "/";
strSign = formatSignString(reqMethod, endpoint, path, strParam)
console.log(strSign)
console.log("-----------------------")
params['Signature'] = sha1(SECRET_KEY, strSign)
console.log(params['Signature'])
```

```
console.log("-----------------------")
const req_url = get_req_url(params, endpoint)
console.log(params['Signature'])
console.log("-----------------------")
console.log(req_url)
}
main()
```

Responses

最近更新时间：2021-08-19 15:21:13

Response for Successful Requests

For example, when calling CAM API (version: 2017-03-12) to view the status of instances (DescribeInstancesStatus), if the request has succeeded, you may see the response as shown below:

```
{
"Response": {
"TotalCount": 0,
"InstanceStatusSet": [],
"RequestId": "b5b41468-520d-4192-b42f-595cc34b6c1c"
}
}
```

- The API will return `Response`, which contains `RequestId`, as long as it processes the request. It does not matter if the request is successful or not.
- RequestId is the unique ID of an API request. Contact us with this ID when an exception occurs.
- Except for the fixed fields, all fields are action-specified. For the definitions of action-specified fields, see the corresponding API documentation. In this example, `TotalCount` and `InstanceStatusSet` are the fields specified by the API `DescribeInstancesStatus`. 0 `TotalCount` means that the requester owns 0 CVM instance so the `InstanceStatusSet` is empty.

Response for Failed Requests

If the request has failed, you may see the response as shown below:

```
{
"Response": {
"Error": {
"Code": "AuthFailure.SignatureFailure",
"Message": "The provided credentials could not be validated. Please ensure your s
ignature is correct."
},
"RequestId": "ed93f3cb-f35e-473f-b9f3-0d451b8b79c6"
}
}
```

- The presence of the `Error` field indicates that the request has failed. A response for a failed request will include `Error`, `Code` and `Message` fields.
- `Code` is the code of the error that helps you identify the cause and solution. There are two types of error codes so you may find the code in either common error codes or API-specified error codes.
- Message explains the cause of the error. Note that the returned messages are subject to service updates. The information the messages provide may not be up-to-date and should not be the only source of reference.
- RequestId is the unique ID of an API request. Contact us with this ID when an exception occurs.

Common Error Codes

If there is an Error field in the response, it means that the API call failed. The Code field in Error indicates the error code. The following table lists the common error codes that all actions can return.

Error Code	Description
AuthFailure.InvalidSecretId	Invalid key (not a TencentCloud API key type).
AuthFailure.MFAFailure	MFA failed.
AuthFailure.SecretIdNotFound	The key does not exist.
AuthFailure.SignatureExpire	Signature expired.
AuthFailure.SignatureFailure	Signature error.
AuthFailure.TokenFailure	Token error.
AuthFailure.UnauthorizedOperation	The request does not have CAM authorization.
DryRunOperation	DryRun Operation. It means that the request would have succeeded, but the DryRun parameter was used.
FailedOperation	Operation failed.
InternalError	Internal error.
InvalidAction	The API does not exist.
InvalidParameter	Incorrect parameter.
InvalidParameterValue	Invalid parameter value.
LimitExceeded	Quota limit exceeded.
MissingParameter	A parameter is missing.

NoSuchVersion	The API version does not exist.
RequestLimitExceeded	The number of requests exceeds the frequency limit.
ResourceInUse	Resource is in use.
ResourceInsufficient	Insufficient resource.
ResourceNotFound	The resource does not exist.
ResourceUnavailable	Resource is unavailable.
UnauthorizedOperation	Unauthorized operation.
UnknownParameter	Unknown parameter.
UnsupportedOperation	Unsupported operation.
UnsupportedProtocol	HTTPS request method error. Only GET and POST requests are supported.
UnsupportedRegion	API does not support the requested region.

CA Certificate APIs
UpdatePrivateCA

最近更新时间：2022-09-28 10:37:23

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to update a private CA certificate.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: UpdatePrivateCA.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
CertName	Yes	String	CA certificate name
CertText	Yes	String	CA certificate content
VerifyCertText	Yes	String	Content verifying the CA certificate

3. Output Parameters

Parameter Name	Type	Description
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Updating a private CA certificate

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=UpdatePrivateCA
&CertName=cert_dev
&CertText=-----BEGIN CERTIFICATE-----\nMIID...\n-----END CERTIFICATE-----
&VerifyCertText=-----BEGIN CERTIFICATE-----\nMIID...\n-----END CERTIFICATE-----
&<Common request parameters>
```

Output Example

```
{
"Response": {
"RequestId": "xxxxxxxxxxxxxxxxxxxxxxx"
}
}
```

5. Developer Resources

SDK

TencentCloud API 3.0 integrates SDKs that support various programming languages to make it easier for you to call APIs.

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- Tencent Cloud SDK 3.0 for PHP
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- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InvalidParameterValue.CACertInvalid	Incorrect CA certificate content.
InvalidParameterValue.CACertNotMatch	CA certificate mismatch.
LimitExceeded.CARepeat	The CA certificate already exists.
ResourceNotFound.CACertNotExist	The CA certificate does not exist.

DescribePrivateCAs

最近更新时间：2022-09-28 10:37:23

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to get the list of private CA certificates.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: DescribePrivateCAs.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.

3. Output Parameters

Parameter Name	Type	Description
CAs	Array of CertInfo	List of private CA certificates

RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Getting the list of private CA certificates

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=DescribePrivateCAs
&<Common request parameters>
```

Output Example

```
{
"Response": {
"CAs": [
{
"EffectiveTime": 1622448592,
"ExpireTime": 1653984592,
"CertText": "-----BEGIN CERTIFICATE-----\nXyf+Eg==\n-----END CERTIFICATE-----",
"CertName": "certname",
"CertSN": "5ff69e4c8afce5d6de8d395b34672944f5b4765a",
"IssuerName": "CN=AAA,O=AAA,L=shenzhen,ST=guangdong,C=CN",
"Subject": "CN=AAA,O=AAA,L=shenzhen,ST=guangdong,C=CN",
"CreateTime": 1623070089
}
],
"RequestId": "xxxxxx"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError.DBOperationError	An internal database error occurred.

DescribePrivateCABindedProducts

最近更新时间：2022-09-28 10:37:24

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to query the products bound to a private CA certificate.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: DescribePrivateCABindedProducts.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
CertName	Yes	String	Certificate name
Offset	Yes	Integer	Offset for query
Limit	Yes	Integer	Maximum number of records to return, which is 20 by default and cannot exceed 200

3. Output Parameters

Parameter Name	Type	Description
Products	Array of BindProductInfo	List of the products bound to the private CA certificate
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Querying the products bound to a private CA certificate

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=DescribePrivateCABindedProducts
&CertName=CertName
&Limit=20
&Offset=0
&<Common request parameters>
```

Output Example

```
{
"Response": {
"Products": [
{
"ProductId": "XKFAWDE6LX",
"ProductName": "psk"
}
],
"RequestId": "xxxxxxxxx"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError.DBOperationError	An internal database error occurred.

DescribePrivateCA

最近更新时间：2022-09-28 10:37:24

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to query private CA certificate details.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: DescribePrivateCA.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
CertName	Yes	String	Name of the private CA certificate to query

3. Output Parameters

Parameter Name	Type	Description
CA	CertInfo	Details of the private CA certificate

RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Querying private CA certificate details

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=DescribePrivateCA
&CertName=testuuu
&<Common request parameters>
```

Output Example


```
{
"Response": {
"CA": {
"EffectiveTime": 1623210302,
"ExpireTime": 1654746302,
"CertText": "-----BEGIN CERTIFICATE-----\r\nMIIC3DCCAcSgAwIBAgIBATANBgkqhkiG9w0BA
QsFADAWMRQwEgYDVQQDDAtAMTYy\r\nMzIxMDMwMjAeFw0yMTA2MDkwMzQ1MDJaFw0yMjA2MDkwMzQ1MD
JaMBYxFDASBgNV\r\nBAMMC0AxNjIzMjEwMzAyMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQE
A\r\n4+iCByP5dpVPBEO3Fa6kvBTPZEMqcyPNrGl9sJOuX5v2sXy6BYbI4dxiRbLdkiqu\r\nOM/aUR+c
Y1/yA9NjtMsx7B1R7nNvuT4j2pZQfQ214HeGLuSFiw1OPYDKAlaBoG+x\r\nNWnEnTo2F2rNXddQ69tIc
iCLtqqP6CcO3F63/l6uGMhsR1QEQbdVG2+CjRYRO0Bf\r\nPPDyWT0W/CocVRBvnfMF7vNUpD+Nw7QcgK
waCzokvuUfBYRmRC5ah1FGktp7An+A\r\neQ4Vg948lzRKlYJB2CYTAp8TQqI+h2G8wHXT//5d220KrLa
+tQqnu6+4iufrBYm4\r\nc1tLOJaBQguUSyJv6/+cgQIDAQABozUwMzATBgNVHSUEDDAKBggrBgEFBQcD
AjAP\r\nBgNVHRMBAf8EBTADAQH/MAsGA1UdEQQEMAKCADANBgkqhkiG9w0BAQsFAAOCAQEA\r\njZFx2
FsxlvJotM10mCD2AkXOxGqIqy1KZcKxtF5ayDRERV1crvgnIHzpTX+pziRa\r\nAC1zAXbuudVnhBgeIA
2Hkm1Q1f3QeIWZsSABtV2WZt5YQ1JJ1fkqi22lF+SsxG5g\r\n/vJnI00YYYEdeoj4Bp5OOTolRIfZ0rn
fNzGt+CDcG02dC7qgdoVis/Rw1GYOC/h+\r\nLBN7xhM+ctEqLmiQSgmSqEfHgU2GB32ULdyCxWN91yws
g8VWsXo+bDkdpxhPbCuF\r\nziI6ef/JWtym4mkpdFjVjISaE7oaWm5gMLdcGi0G/Gysetil71QMHmacQ
vrrjMI4\r\nhsqtDwSvAU75hKKYSyTRdQ==\r\n-----END CERTIFICATE-----\r\n",
"CertName": "testuuu",
"CertSN": "1",
"IssuerName": "CN=@1623210302",
"Subject": "CN=@1623210302",
"CreateTime": 1623833012
},
"RequestId": "xxxxxx"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for PHP
- Tencent Cloud SDK 3.0 for Go
- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError.DBOperationError	An internal database error occurred.
ResourceNotFound.CACertNotExist	The CA certificate does not exist.

DeletePrivateCA

最近更新时间：2022-09-28 10:37:24

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to delete a private CA certificate.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: DeletePrivateCA.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
CertName	Yes	String	Private CA certificate name

3. Output Parameters

Parameter Name	Type	Description
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for

		locating a problem.

4. Example

Example1 Deleting a private CA certificate

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=DeletePrivateCA
&CertName=certName
&<Common request parameters>
```

Output Example

```
{
"Response": {
"RequestId": "xxxxxxxxxxxxxxxxxxxxxxxx"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError.DBOperationError	An internal database error occurred.
LimitExceeded.CAAlreadyBindProduct	Unable to operate because the CA certificate is already bound to a product.
ResourceNotFound.CACertNotExist	The CA certificate does not exist.

CreatePrivateCA

最近更新时间：2022-09-28 10:37:24

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to create a private CA certificate.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: CreatePrivateCA.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
CertName	Yes	String	CA certificate name
CertText	Yes	String	CA certificate content
VerifyCertText	Yes	String	Content verifying the CA certificate

3. Output Parameters

Parameter Name	Type	Description
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Creating a private CA certificate

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=CreatePrivateCA
&CertName=cert_dev
&CertText=-----BEGIN CERTIFICATE-----\nMIID...\n-----END CERTIFICATE-----
&VerifyCertText=-----BEGIN CERTIFICATE-----\nMIID...\n-----END CERTIFICATE-----
&<Common request parameters>
```

Output Example

```
{
"Response": {
"RequestId": "xxxxxxxxxxxxxxxxxxxxxxxx"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for Java
- Tencent Cloud SDK 3.0 for PHP
- Tencent Cloud SDK 3.0 for Go
- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError.DBOperationError	An internal database error occurred.
InvalidParameterValue.CACertInvalid	Incorrect CA certificate content.
InvalidParameterValue.CACertNotMatch	CA certificate mismatch.
LimitExceeded.CACertNameRepeat	The certificate name already exists.
LimitExceeded.CARepeat	The CA certificate already exists.

Device APIs
UpdateDeviceLogLevel

最近更新时间：2022-09-28 10:37:22

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to set the device log level.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: UpdateDeviceLogLevel.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId	Yes	String	Product ID
DeviceName	Yes	String	Device name
LogLevel	Yes	Integer	Log level. `0` : disable; `1` : error; `2` : warning; `3` : information; `4` : debugging

3. Output Parameters

Parameter Name	Type	Description
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Setting the device log level

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=UpdateDeviceLogLevel
&ProductId=ABCDE12345
&DeviceName=abc
&LogLevel=1
&<Common request parameters>
```

Output Example

```
{
"Response": {
"RequestId": "9e574269-093f-4a7f-bf90-24ef80b6528a"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for PHP
- Tencent Cloud SDK 3.0 for Go

- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError	Internal error.
InternalError.DBOperationError	An internal database error occurred.
ResourceNotFound.DeviceNotExist	The device does not exist.
UnauthorizedOperation.DeviceIsNotEnabled	The device is not enabled.

DescribeDevices

最近更新时间：2022-09-28 10:37:22

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to get the list of IoT Hub devices.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: DescribeDevices.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId	Yes	String	ID of the product whose devices are queried
Offset	Yes	Integer	Offset, which starts from 0
Limit	Yes	Integer	Page size. Value range: 10-250
FirmwareVersion	No	String	Device firmware version. If no value is passed in, devices of all firmware versions are returned. If `None-FirmwareVersion` is passed in, devices without version numbers are returned.
DeviceName	No	String	Device name to query

EnableState	No	Integer	Whether to query enabled or disabled devices. `0` : disabled devices; `1` : enabled devices. By default, both enabled and disabled devices are queried.

3. Output Parameters

Parameter Name	Type	Description
TotalCount	Integer	Total number of the devices returned
Devices	Array of DeviceInfo	List of device details
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Getting the device list

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=DescribeDevices
&ProductId=ABCDE12345
&Offset=0
&Limit=10
&FirmwareVersion=1.0.0
&<Common request parameters>
```

Output Example

```
{
"Response": {
"TotalCount": 1,
"RequestId": "xx",
"Devices": [
{
"EnableState": 1,
"LastOfflineTime": 1,
"Version": "xx",
```

```
"CertState": 1,
"Online": 1,
"FirmwareUpdateTime": 1,
"DeviceName": "xx",
"Tags": [
{
"Tag": "xx",
"Type": 1,
"Name": "xx",
"Value": "xx"
},
{
"Tag": "xx",
"Type": 1,
"Name": "xx",
"Value": "xx"
}
],
"LogLevel": 1,
"FirstOnlineTime": 1,
"DeviceCert": "xx",
"Imei": "xx",
"ClientIP": "xx",
"DevicePsk": "xx",
"Isp": 1,
"NbiotDeviceID": "xx",
"LoraDevEui": "xx",
"DeviceType": 1,
"LoginTime": 1,
"ConnIP": 1,
"LastUpdateTime": 1,
"Labels": [
{
"Value": "xx",
"Key": "xx"
}
],
"CreateTime": 1,
"LoraMoteType": 1
}
]
}
}
```

5. Developer Resources

SDK

TencentCloud API 3.0 integrates SDKs that support various programming languages to make it easier for you to call APIs.

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- Tencent Cloud SDK 3.0 for Java
- Tencent Cloud SDK 3.0 for PHP
- Tencent Cloud SDK 3.0 for Go
- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError	Internal error.
InternalError.DBOperationError	An internal database error occurred.
InvalidParameterValue	Invalid parameter value.
ResourceNotFound.ProductNotExist	The product does not exist.

DeleteDevice

最近更新时间：2022-09-28 10:37:23

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to delete an IoT Hub device.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: DeleteDevice.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId	Yes	String	ID of the product to which the device belongs
DeviceName	Yes	String	Name of the device to delete
Skey	No	String	Skey, which is required to delete a LoRa device or LoRa gateway device

3. Output Parameters

Parameter Name	Type	Description
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Deleting a device

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=DeleteDevice
&ProductId=ABCDE12345
&DeviceName=abc
&<Common request parameters>
```

Output Example

```
{
"Response": {
"RequestId": "xxxxxxxxxxxxxxxxxxxxxxx"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for Go
- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError	Internal error.
InternalError.DBOperationError	An internal database error occurred.
InvalidParameterValue	Invalid parameter value.
ResourceNotFound.DeviceNotExist	The device does not exist.
ResourceNotFound.ProductNotExist	The product does not exist.
UnauthorizedOperation.DeviceHasAlreadyBindGateway	Unable to delete this device as gateway devices have been bound to it.
UnauthorizedOperation.GatewayHasBindedDevices	There are still devices bound to this device.
UnsupportedOperation.DeviceOtaTaskInProgress	Device OTA update is in progress.

CreateDevice

最近更新时间：2022-09-28 10:37:23

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to create an IoT Hub device.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: CreateDevice.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId	Yes	String	Product ID, globally unique ID assigned by Tencent Cloud during product creation
DeviceName	Yes	String	Device name. It is a string of 1 to 48 characters. Letters, digits, and :_- are allowed.
Attribute	No	Attribute	Device attribute
DefinedPsk	No	String	Whether to use custom PSK, no by default
Isp	No	Integer	ISP, required for a NB-IoT product. `1` : China Telecom; `2` :

			China Mobile; `3` : China Unicom
Imei	No	String	IMEI, required for a NB-IoT product
LoraDevEui	No	String	DevEUI of a LoRa device, required when you create a LoRa device
LoraMoteType	No	Integer	MoteType of a LoRa device
Skey	No	String	Skey, required when you create a LoRa device
LoraAppKey	No	String	AppKey of a LoRa device
TlsCrt	No	String	Private CA certificate

3. Output Parameters

Parameter Name	Type	Description
DeviceName	String	Device name
DevicePsk	String	Base64-encoded symmetric encryption key, which is returned if symmetric encryption is used
DeviceCert	String	Device certificate, which authenticates client identity during TLS connection establishment and is returned if asymmetric encryption is used
DevicePrivateKey	String	Device private key, which authenticates client identity during TLS connection establishment and is returned if asymmetric encryption is used. Tencent Cloud does not store the key. Please store it by yourself properly.
LoraDevEui	String	DevEUI of a LoRa device, which is returned for a LoRa device
LoraMoteType	Integer	MoteType of a LoRa device, which is returned for a LoRa device
LoraAppKey	String	AppKey of a LoRa device, which is returned for a LoRa device
LoraNwkKey	String	NwkKey of a LoRa device, which is returned for a LoRa device
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Creating a device (symmetric encryption)

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=CreateDevice
&ProductId=ABCDE12345
&DeviceName=test_device
&Attribute.Tags.0.Tag=note
&Attribute.Tags.0.Type=2
&Attribute.Tags.0.Value=test_note
&<Common request parameters>
```

Output Example

```
{
"Response": {
"DeviceName": "test_device",
"DevicePsk": "xxxxxxxxxxxx",
"DeviceCert": "",
"DevicePrivateKey": "",
"LoraDevEui": "",
"LoraMoteType": 1,
"LoraNwkKey": "",
"LoraAppKey": "xx",
"RequestId": "54f75f05-a87c-45fc-9520-6b59e251e91c"
}
}
```

Example2 Creating a device (asymmetric encryption)

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=CreateDevice
&ProductId=ABCDE12345
&DeviceName=test_device
&<Common request parameters>
```

Output Example

```
{
"Response": {
"DeviceName": "test_device",
"DevicePsk": "",
"DeviceCert": "xxxxxxxxxxxxxxxxxx",
"DevicePrivateKey": "xxxxxxxxxxxxxxxxxxxxx",
"LoraDevEui": "",
```

```
"LoraMoteType": 1,
"LoraNwkKey": "",
"LoraAppKey": "xx",
"RequestId": "54f75f05-a87c-45fc-9520-6b59e251e91c"
}
}
```


5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
FailedOperation.AlreadyDistributionDevice	This device has been transferred and cannot be created again.
FailedOperation.TidWhiteListNotOpen	You cannot create devices as allowlist authentication is not enabled. IoT Hub will create devices automatically by the names carried during authentication.

InternalError	Internal error.
InternalError.DBOperationError	An internal database error occurred.
InvalidParameterValue	Invalid parameter value.
InvalidParameterValue.DefinedPskNotBase64	Invalid format. `DefinedPsk` must be a Base64 string.
InvalidParameterValue.DeviceAlreadyExist	The device already exists.
InvalidParameterValue.ProductTypeNotSupport	Unsupported product type.
LimitExceeded.DeviceExceedLimit	Device quantity exceeded the limit.
ResourceNotFound.ProductNotExist	The product does not exist.
UnauthorizedOperation.ProductCantHaveLoRaDevice	You cannot create a LoRa device under this product type.
UnauthorizedOperation.ProductCantHaveNormalDevice	You cannot create a general device under a NB-IoT product.
UnauthorizedOperation.ProductCantHaveNotLoRaDevice	You can create only LoRa devices under this product type.
UnauthorizedOperation.ProductIsForbidden	This feature has been disabled for the product.
UnauthorizedOperation.ProductNotSupportPSK	The product does not support key authentication.
UnsupportedOperation.SuiteTokenNoCreate	You cannot create devices under a suite token product.

DescribeDevice

最近更新时间：2022-09-28 10:37:23

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to query device details.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: DescribeDevice.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId	Yes	String	Product ID
DeviceName	Yes	String	Device name

3. Output Parameters

Parameter Name	Type	Description

DeviceName	String	Device name
Online	Integer	Whether the device is online. `0` : offline; `1` : online
LoginTime	Integer	Device login time
Version	String	Device firmware version
LastUpdateTime	Integer	Last updated time of the device
DeviceCert	String	Device certificate
DevicePsk	String	Device key
Tags	Array of DeviceTag	Device attribute
DeviceType	Integer	Device type
Imei	String	International Mobile Equipment Identity (IMEI)
Isp	Integer	ISP
ConnIP	Integer	IP address
NbiotDeviceID	String	Device ID at the NB-IoT ISP
LoraDevEui	String	DevEUI of a LoRa device
LoraMoteType	Integer	MoteType of a LoRa device
LogLevel	Integer	SDK log level of the device Note: this field may return `null` , indicating that no valid value is obtained.
FirstOnlineTime	Integer	The first time when the device went online Note: this field may return `null` , indicating that no valid value is obtained.
LastOfflineTime	Integer	The last time when the device went offline Note: this field may return `null` , indicating that no valid value is obtained.
CreateTime	Integer	Device creation time Note: this field may return `null` , indicating that no valid value is obtained.
CertState	Integer	Whether the device certificate has been obtained. `0` : no; `1` : yes Note: this field may return `null` , indicating that no valid value is

		obtained.
EnableState	Integer	Whether the device is enabled Note: this field may return `null`, indicating that no valid value is obtained.
Labels	Array of DeviceLabel	Device tags Note: this field may return `null`, indicating that no valid value is obtained.
ClientIP	String	IP address of the MQTT client Note: this field may return `null`, indicating that no valid value is obtained.
FirmwareUpdateTime	Integer	Firmware update time of the device Note: this field may return `null`, indicating that no valid value is obtained.
CreateUserId	Integer	Account ID of the creator Note: this field may return `null`, indicating that no valid values can be obtained.
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Querying device details

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=DescribeDevice
&ProductId=ABCDE12345
&DeviceName=abc
&<Common request parameters>
```

Output Example

```
{
"Response": {
"EnableState": 1,
"LastOfflineTime": 1,
"Version": "xx",
"CertState": 1,
```

```
"Online": 1,
"FirmwareUpdateTime": 1,
"DeviceName": "xx",
"Tags": [
{
"Tag": "Key",
"Type": 1,
"Name": "Key",
"Value": "Key"
},
{
"Tag": "xx",
"Type": 1,
"Name": "xx",
"Value": "xx"
}
],
"LogLevel": 1,
"FirstOnlineTime": 1,
"DeviceCert": "xx",
"Imei": "Imei",
"ClientIP": "127.0.0.1",
"DevicePsk": "DevicePsk",
"Isp": 1,
"NbiotDeviceID": "123124",
"LoraDevEui": "xx",
"DeviceType": 1,
"RequestId": "xx",
"LoginTime": 1,
"ConnIP": 1,
"LastUpdateTime": 1,
"Labels": [
{
"Value": "xx",
"Key": "xx"
}
],
"CreateTime": 1,
"LoraMoteType": 1,
"CreateUserId": 0
}
}
```


5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError	Internal error.
InternalError.DBOperationError	An internal database error occurred.
InvalidParameterValue	Invalid parameter value.
ResourceNotFound.DeviceNotExist	The device does not exist.
ResourceNotFound.ProductNotExist	The product does not exist.

UpdateDevicesEnableState

最近更新时间：2022-09-28 10:37:22

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to enable or disable multiple devices.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: UpdateDevicesEnableState.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId	Yes	String	ID of the product to which the device belongs
DeviceNames.N	Yes	Array of String	Device names
Status	Yes	Integer	New status of the devices. `0` : disabled; `1` : enabled

3. Output Parameters

Parameter Name	Type	Description
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 UpdateDevicesEnableState

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=UpdateDevicesEnableState
&ProductId=SB9OJFCJ1C
&DeviceNames.0=test123
&Status=1
&<Common request parameters>
```

Output Example

```
{
"Response": {
"RequestId": "69f65618-600b-4ac4-b8e3-4528a6819078"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError	Internal error.
InternalError.DBOperationError	An internal database error occurred.
InvalidParameterValue.ProductTypeNotSupport	Unsupported product type.
ResourceNotFound.DeviceNotExist	The device does not exist.
ResourceNotFound.ProductNotExist	The product does not exist.
UnauthorizedOperation.DeviceHasAlreadyBindGateway	Unable to delete this device as gateway devices have been bound to it.
UnauthorizedOperation.ProductIsForbidden	This feature has been disabled for the product.

Product APIs
UpdateProductDynamicRegister

最近更新时间：2022-09-28 10:37:21

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to update the configuration of product dynamic registration.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: UpdateProductDynamicRegister.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId	Yes	String	Product ID
RegisterType	Yes	Integer	Dynamic registration type. Valid values: 0 - disabled; 1 - pre-create device; 2 - auto-create device.
RegisterLimit	Yes	Integer	Maximum dynamically registered devices

3. Output Parameters

Parameter Name	Type	Description
RegisterType	Integer	Dynamic registration type. Valid values: 0 - disabled; 1 - pre-create device; 2 - auto-create device.
ProductSecret	String	Product key for dynamic registration
RegisterLimit	Integer	Maximum dynamically registered devices
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Updating product dynamic registration

This example shows you how to update product dynamic registration.

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=UpdateProductDynamicRegister
&ProductId=ABCDE12345
&RegisterType=0
&RegisterLimit=10
&<Common request parameters>
```

Output Example

```
{
"Response": {
"RegisterType": 0,
"ProductSecret": "xxxx",
"RegisterLimit": 10000,
"RequestId": "d15b72a9-ab2b-4906-9632-52f7a31932a9"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError	Internal error.
InvalidParameterValue.ProductTypeNotSupport	Unsupported product type.
ResourceNotFound.ProductNotExist	The product does not exist.
UnauthorizedOperation.ProductIsForbidden	This feature has been disabled for the product.

SetProductsForbiddenStatus

最近更新时间：2022-09-28 10:37:21

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to enable or disable multiple products at a time.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: SetProductsForbiddenStatus.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId.N	Yes	Array of String	List of products to enable or disable
Status	Yes	Integer	`0` : enable; `1` : disable

3. Output Parameters

Parameter Name	Type	Description
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Disabling multiple products at a time

Input Example

```
POST / HTTP/1.1
Host: iotcloud.tencentcloudapi.com
Content-Type: application/json
X-TC-Action: SetProductsForbiddenStatus
<Common request parameters>

{
"ProductId": [
"productID1",
"productID2"
],
"Status": 1
}
```

Output Example

```
{
"Response": {
"RequestId": "be69a7a3-7315-40a7-9532-3316e4a3e97e"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError	Internal error.
InvalidParameter	Parameter error.
ResourceNotFound.ProductNotExist	The product does not exist.

DescribeProductCA

最近更新时间：2022-09-28 10:37:21

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to query the CA certificates bound to a product.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: DescribeProductCA.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId	Yes	String	Product ID

3. Output Parameters

Parameter Name	Type	Description
CAs	Array of	List of CA certificates bound to the product

	CertInfo	
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Querying the CA certificates bound to a product

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=DescribeProductCA
&ProductId=ABCDE12345
&<Common request parameters>
```

Output Example


```
{
"Response": {
"RequestId": "xxxxxxxxxxxxxxxx",
"CAs": [
{
"CreateTime": 1622619674,
"EffectiveTime": 1622448592,
"ExpireTime": 1653984592,
"CertText": "-----BEGIN CERTIFICATE-----\nMIIDgTCCAmmgAwIBAgIUX/aeTIr85dbejTlbNGc
pRPW0dlowDQYJKoZIhvcNAQEL\nBQAwUDELMAkGA1UEBhMCQ04xEjAQBgNVBAgMCWd1YW5nZG9uZzERMA
8GA1UEBwwI\nc2hlbnpoZW4xDDAKBgNVBAoMA0FBQTEMMAoGA1UEAwwDQUFBMB4XDTIxMDUzMTA4\nMDk
1MloXDTIyMDUzMTA4MDk1MlowUDELMAkGA1UEBhMCQ04xEjAQBgNVBAgMCWd1\nYW5nZG9uZzERMA8GA1
UEBwwIc2hlbnpoZW4xDDAKBgNVBAoMA0FBQTEMMAoGA1UE\nAwwDQUFBMIIBIjANBgkqhkiG9w0BAQEFA
AOCAQ8AMIIBCgKCAQEA65Rt1X/RBdG6\n24JYIJrsYOC8NALr/i7jA13v3EHEOjA2505G3YM7RL/NeHIM
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V\nNUUnkVC36BgWUKfLOTlmKkzlHOLecD/WAzgIJ55NC6QsjKWiKXBm5mtlz4uoZ7Bh\nhQGM/8Zax1YL
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G+fpqeA/fJQq/3LnKbL2b8Dm/SUFEUAsZs/MptXC5d7E++MwDaiVVQ5rNy\nemHpNrgHXoPZ9JdB4plFW
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flAanx8Ce1EeaZDbQZuqbRHt4FKS\nJoasx3KICfdGocM6PGA7smAYc7MFszAS4tGS9H75EZqNZdseKsc
t9vP3TCb4hE5x\nupDam8V9w/SQ9vMGzeW1FM91BfWuRXgsv/Bz4FQdeV1+Xyf+Eg==\n-----END CER
TIFICATE-----",
"CertName": "XKFAWDE6LX",
"CertSN": "5ff69e4c8afce5d6de8d395b34672944f5b4765a",
```

```
"IssuerName": "CN=AAA,O=AAA,L=shenzhen,ST=guangdong,C=CN",
"Subject": "CN=AAA,O=AAA,L=shenzhen,ST=guangdong,C=CN"
}
]
}
}
```

5. Developer Resources

SDK

TencentCloud API 3.0 integrates SDKs that support various programming languages to make it easier for you to call APIs.

- Tencent Cloud SDK 3.0 for Python
- Tencent Cloud SDK 3.0 for Java
- Tencent Cloud SDK 3.0 for PHP
- Tencent Cloud SDK 3.0 for Go
- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

There is no error code related to the API business logic. For other error codes, please see Common Error Codes.

DeleteProduct

最近更新时间：2022-09-28 10:37:21

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to delete an IoT Hub product.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: DeleteProduct.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId	Yes	String	ID of the product to delete
Skey	No	String	Skey, which is required to delete a LoRa product

3. Output Parameters

Parameter Name	Type	Description

RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Deleting a product

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=DeleteProduct
&ProductId=ABCDE12345
&<Common request parameters>
```

Output Example

```
{
"Response": {
"RequestId": "xxxxxxxxxxxxxxxxxxxxxxxx"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError	Internal error.
InternalError.DBOperationError	An internal database error occurred.
InvalidParameterValue	Invalid parameter value.
ResourceNotFound.ProductNotExist	The product does not exist.
UnauthorizedOperation.DeleteTidFail	There is already a TID application for this product, so it cannot be deleted.
UnauthorizedOperation.DevicesExistUnderProduct	There are still devices under this product.
UnsupportedOperation.GatewayProductHasBindedProduct	Unable to delete this gateway product as sub-products have been bound to it.
UnsupportedOperation.ProductHasBindGateway	Unable to delete this product as gateway devices have been bound to it.
UnsupportedOperation.ProductHasBindedGatewayProduct	Unable to delete this product as gateway products have been bound to it.

DescribeProduct

最近更新时间：2022-09-28 10:37:21

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to query product details.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: DescribeProduct.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId	Yes	String	Product ID

3. Output Parameters

Parameter Name	Type	Description
ProductId	String	Product ID

ProductName	String	Product name
ProductMetadata	ProductMetadata	Product metadata
ProductProperties	ProductProperties	Product properties
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Querying product details

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=DescribeProduct
&ProductId=ABCDE12345
&<Common request parameters>
```

Output Example

```
{
"Response": {
"ProductMetadata": {
"CreationDate": 1509453755000
},
"ProductProperties": {
"ProductDescription": "description1"
},
"ProductName": "Test_1",
"ProductId": "ABCDE12345",
"RequestId": "8e0b3665-cfb5-4077-a535-0ed7f970cf3b"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for Go
- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError	Internal error.
InternalError.DBOperationError	An internal database error occurred.
InvalidParameterValue	Invalid parameter value.
ResourceNotFound.ProductNotExist	The product does not exist.

CreateProduct

最近更新时间：2022-09-28 10:37:22

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to create a new IoT communication product.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: CreateProduct.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductName	Yes	String	Product name, which cannot be same as that of an existing product. Naming rule: [a-zA-Z0-9:_-]{1,32}.
ProductProperties	No	ProductProperties	Product properties
Skey	No	String	Skey, which is required to create a CLAA product.

3. Output Parameters

Parameter Name	Type	Description
ProductName	String	Product name
ProductId	String	Product ID, the globally unique ID assigned by Tencent Cloud.
ProductProperties	ProductProperties	Product properties
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Creating a product

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=CreateProduct
&ProductName=fruit
&ProductProperties.ProductDescription=test
&ProductProperties.EncryptionType=1
&ProductProperties.Region=gz
&ProductProperties.ProductType=0
&ProductProperties.Format=json
&<Common request parameters>
```

Output Example

```
{
"Response": {
"ProductId": "ABCDE12345",
&ProductName=fruit
"ProductProperties": {
"ProductDescription": "test",
"EncryptionType": 1,
"Region": "gz",
"ProductType": 0,
"Format": "json",
"Platform": "DEFAULT",
"Appeui": ""
},
"RequestId": "xxxxxxxxxxxxxxxxxxxxxxx"
}
}
```

5. Developer Resources

SDK

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- Tencent Cloud SDK 3.0 for Java
- Tencent Cloud SDK 3.0 for PHP
- Tencent Cloud SDK 3.0 for Go
- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
FailedOperation.AccountIsolated	The operation failed as the account has been suspended due to overdue payments.
InternalError	Internal error.
InternalError.DBOperationError	An internal database error occurred.
InvalidParameterValue	Invalid parameter value.
InvalidParameterValue.ProductAlreadyExist	This product name already exists.
InvalidParameterValue.ProductTypeNotSupport	Unsupported product type.
InvalidParameterValue.TidProductAlreadyExist	This TID product already exists.

LimitExceeded.ProductExceedLimit	The number of products exceeds the limit.
ResourceNotFound.ThingModelNotExist	The TSL model does not exist.
UnauthorizedOperation.UserNotAuthenticaed	The user identity is not verified.

Device Shadow APIs
DeleteDeviceShadow

最近更新时间：2022-09-28 10:37:22

1. API Description

Domain name for API request: iotcloud.tencentcloudapi.com.

This API is used to delete a device shadow.

A maximum of 20 requests can be initiated per second for this API.

We recommend you to use API Explorer

Try it

API Explorer provides a range of capabilities, including online call, signature authentication, SDK code generation, and API quick search. It enables you to view the request, response, and auto-generated examples.

2. Input Parameters

The following request parameter list only provides API request parameters and some common parameters. For the complete common parameter list, see Common Request Parameters.

Parameter Name	Required	Type	Description
Action	Yes	String	Common Params. The value used for this API: DeleteDeviceShadow.
Version	Yes	String	Common Params. The value used for this API: 2021-04-08.
Region	Yes	String	Common Params. For more information, please see the list of regions supported by the product.
ProductId	Yes	String	Product ID
DeviceName	Yes	String	Device name

3. Output Parameters

Parameter Name	Type	Description
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Deleting a device shadow

Input Example

```
https://iotcloud.tencentcloudapi.com/?Action=DeleteDeviceShadow
&ProductId=ABCDE12345
&DeviceName=abc
&<Common request parameters>
```

Output Example

```
{
"Response": {
"RequestId": "xxxxxxxxxxxxxxxxxxxxxxx"
}
}
```

5. Developer Resources

SDK

TencentCloud API 3.0 integrates SDKs that support various programming languages to make it easier for you to call APIs.

- Tencent Cloud SDK 3.0 for Python
- Tencent Cloud SDK 3.0 for Java
- Tencent Cloud SDK 3.0 for PHP
- Tencent Cloud SDK 3.0 for Go
- Tencent Cloud SDK 3.0 for NodeJS
- Tencent Cloud SDK 3.0 for .NET
- Tencent Cloud SDK 3.0 for C++

Command Line Interface

- Tencent Cloud CLI 3.0

6. Error Code

The following only lists the error codes related to the API business logic. For other error codes, see Common Error Codes.

Error Code	Description
InternalError	Internal error.
InvalidParameterValue	Invalid parameter value.
ResourceNotFound.DeviceShadowNotExist	The device shadow does not exist.

Data Types

最近更新时间：2022-06-08 10:55:54

Attribute

Device attributes

Used by actions: CreateDevice.

Name	Type	Required	Description
Tags	Array of DeviceTag	No	Attribute list

BindProductInfo

Sub-product information

Used by actions: DescribePrivateCABindedProducts.

Name	Type	Description
ProductId	String	Product ID
ProductName	String	Product name

CertInfo

X.509 certificate information

Used by actions: DescribePrivateCA, DescribePrivateCAs, DescribeProductCA.

Name	Type	Required	Description
CertName	String	Yes	Certificate name
CertSN	String	Yes	Hex sequence number of a certificate
IssuerName	String	Yes	Certificate issuer
Subject	String	Yes	Certificate subject

CreateTime	Integer	Yes	Certificate creation time (timestamp in milliseconds)
EffectiveTime	Integer	Yes	Certificate effective time (timestamp in milliseconds)
ExpireTime	Integer	Yes	Certificate expiration time (timestamp in milliseconds)
CertText	String	Yes	X.509 certificate content

DeviceInfo

Device details

Used by actions: DescribeDevices.

Name	Type	Description
DeviceName	String	Device name
Online	Integer	Whether the device is online. `0` : offline; `1` : online
LoginTime	Integer	Device login time
Version	String	Device version
DeviceCert	String	Device certificate, which is returned for devices that use certificates for authentication
DevicePsk	String	Device key, which is returned for devices that use keys for authentication
Tags	Array of DeviceTag	Device attribute
DeviceType	Integer	Device type
Imei	String	International Mobile Equipment Identity (IMEI)
Isp	Integer	ISP
NbiotDeviceID	String	Device ID at the NB-IoT ISP
ConnIP	Integer	IP address
LastUpdateTime	Integer	Last updated time of the device
LoraDevEui	String	DevEUI of a LoRa device

LoraMoteType	Integer	MoteType of a LoRa device
FirstOnlineTime	Integer	The first time when the device went online Note: this field may return `null` , indicating that no valid value is obtained.
LastOfflineTime	Integer	The last time when the device went offline Note: this field may return `null` , indicating that no valid value is obtained.
CreateTime	Integer	Device creation time Note: this field may return `null` , indicating that no valid value is obtained.
LogLevel	Integer	Device log level Note: this field may return `null` , indicating that no valid value is obtained.
CertState	Integer	Whether the device certificate has been obtained. `0` : no; `1` : yes Note: this field may return `null` , indicating that no valid value is obtained.
EnableState	Integer	Whether the device is enabled. `0` : disabled; `1` : enabled Note: this field may return `null` , indicating that no valid value is obtained.
Labels	Array of DeviceLabel	Device tags Note: this field may return `null` , indicating that no valid value is obtained.
ClientIP	String	IP address of the MQTT client Note: this field may return `null` , indicating that no valid value is obtained.
FirmwareUpdateTime	Integer	Time of last OTA update Note: this field may return `null` , indicating that no valid value is obtained.

DeviceLabel

Device tags

Used by actions: DescribeDevice, DescribeDevices.

Name	Type	Required	Description
Key	String	Yes	Tag key
Value	String	Yes	Tag value

DeviceTag

Device attribute

Used by actions: CreateDevice, DescribeDevice, DescribeDevices.

Name	Type	Required	Description
Tag	String	Yes	Attribute name
Type	Integer	Yes	Attribute value type. `1` : integer; `2` : string
Value	String	Yes	Attribute value
Name	String	No	Attribute description Note: this field may return `null` , indicating that no valid value is obtained.

ProductInfo

Product details

Used by actions: DescribeProducts.

Name	Type	Description
ProductId	String	Product ID
ProductName	String	Product name
ProductMetadata	ProductMetadata	Product metadata
ProductProperties	ProductProperties	Product properties

ProductMetadata

Product metadata

Used by actions: DescribeProduct, DescribeProducts.

Name	Type	Description
CreationDate	Integer	Product creation time

ProductProperties

Product properties

Used by actions: CreateProduct, DescribeProduct, DescribeProducts.

Name	Type	Required	Description
ProductDescription	String	No	Product description
EncryptionType	String	No	Authentication type. `1` (default): certificate; `2` : signature
Region	String	No	Product region. Valid value: `gz` (Guangzhou)
ProductType	Integer	No	Product type. Valid values: `0` (default): general; `2` : NB-IoT; `3` : LoRa gateway; `4` : LoRa; `5` : general gateway
Format	String	No	Data format. Valid values: `json` (default), `custom`
Platform	String	No	Platform of the product. Default value: `0`
Appeui	String	No	AppEUI at the LoRa product operator, required only for LoRa products
ModelId	String	No	ID of the Thing Specification Language (TSL) model bound to the product. `-1` means no models are bound.
ModelName	String	No	Name of the TSL model bound to the product
ProductKey	String	No	Product key, which is specific to suite products
RegisterType	Integer	No	Dynamic registration type. `0` : disable; `1` : preset device names; `2` : generate device names dynamically
ProductSecret	String	No	Dynamic registration product key
RegisterLimit	Integer	No	The maximum number of devices that can be dynamically created when `RegisterType` is set to `2`

OriginProductId	String	No	Original product ID of a transferred product. This parameter is empty for products that are not transferred.
PrivateCAName	String	No	Private CA certificate name
OriginUserId	Integer	No	Original user ID of a transferred product. This parameter is empty for products that are not transferred.

Error Codes

最近更新时间：2022-09-28 10:37:24

Feature Description

If there is an Error field in the response, it means that the API call failed. For example:

```
{
"Response": {
"Error": {
"Code": "AuthFailure.SignatureFailure",
"Message": "The provided credentials could not be validated. Please check your signature is correct."
},
"RequestId": "ed93f3cb-f35e-473f-b9f3-0d451b8b79c6"
}
}
```

Code in Error indicates the error code, and Message indicates the specific information of the error.

Error Code List

Common Error Codes

Error Code	Description
ActionOffline	This API has been deprecated.
AuthFailure.InvalidAuthorization	`Authorization` in the request header is invalid.
AuthFailure.InvalidSecretId	Invalid key (not a TencentCloud API key type).
AuthFailure.MFAFailure	MFA failed.
AuthFailure.SecretIdNotFound	Key does not exist. Check if the key has been deleted or disabled in the console, and if not, check if the key is correctly entered. Note that whitespaces should not exist before or after the key.
AuthFailure.SignatureExpire	Signature expired. Timestamp and server time cannot differ by more than five minutes. Please

	ensure your current local time matches the standard time.
AuthFailure.SignatureFailure	Invalid signature. Signature calculation error. Please ensure you've followed the signature calculation process described in the Signature API documentation.
AuthFailure.TokenFailure	Token error.
AuthFailure.UnauthorizedOperation	The request is not authorized. For more information, see the CAM documentation.
DryRunOperation	DryRun Operation. It means that the request would have succeeded, but the DryRun parameter was used.
FailedOperation	Operation failed.
InternalError	Internal error.
InvalidAction	The API does not exist.
InvalidParameter	Incorrect parameter.
InvalidParameterValue	Invalid parameter value.
InvalidRequest	The multipart format of the request body is incorrect.
IpInBlacklist	Your IP is in uin IP blacklist.
IpNotInWhitelist	Your IP is not in uin IP whitelist.
LimitExceeded	Quota limit exceeded.
MissingParameter	A parameter is missing.
NoSuchProduct	The product does not exist.
NoSuchVersion	The API version does not exist.
RequestLimitExceeded	The number of requests exceeds the frequency limit.
RequestLimitExceeded.GlobalRegionUinLimitExceeded	Uin exceeds the frequency limit.
RequestLimitExceeded.IPLimitExceeded	The number of ip requests exceeds the frequency limit.
RequestLimitExceeded.UinLimitExceeded	The number of uin requests exceeds the frequency

	limit.
RequestSizeLimitExceeded	The request size exceeds the upper limit.
ResourceInUse	Resource is in use.
ResourceInsufficient	Insufficient resource.
ResourceNotFound	The resource does not exist.
ResourceUnavailable	Resource is unavailable.
ResponseSizeLimitExceeded	The response size exceeds the upper limit.
ServiceUnavailable	Service is unavailable now.
UnauthorizedOperation	Unauthorized operation.
UnknownParameter	Unknown parameter.
UnsupportedOperation	Unsupported operation.
UnsupportedProtocol	HTTP(S) request protocol error; only GET and POST requests are supported.
UnsupportedRegion	API does not support the requested region.

Service Error Codes

Error Code	Description
FailedOperation.AccountIsolated	The operation failed as the account has been suspended due to overdue payments.
FailedOperation.AlreadyDistributionDevice	This device has been transferred and cannot be created again.
FailedOperation.TidWhiteListNotOpen	You cannot create devices as allowlist authentication is not enabled. IoT Hub will create devices automatically by the names carried during authentication.
InternalError.DBOperationError	An internal database error occurred.
InvalidParameterValue.CACertInvalid	Incorrect CA certificate content.
InvalidParameterValue.CACertNotMatch	CA certificate mismatch.

InvalidParameterValue.DefinedPskNotBase64	Invalid format. `DefinedPsk` must be a Base64 string.
InvalidParameterValue.DeviceAlreadyExist	The device already exists.
InvalidParameterValue.ProductAlreadyExist	This product name already exists.
InvalidParameterValue.ProductTypeNotSupport	Unsupported product type.
InvalidParameterValue.TidProductAlreadyExist	This TID product already exists.
LimitExceeded.CAAlreadyBindProduct	Unable to operate because the CA certificate is already bound to a product.
LimitExceeded.CACertNameRepeat	The certificate name already exists.
LimitExceeded.CARepeat	The CA certificate already exists.
LimitExceeded.DeviceExceedLimit	Device quantity exceeded the limit.
LimitExceeded.ProductExceedLimit	The number of products exceeds the limit.
ResourceNotFound.CACertNotExist	The CA certificate does not exist.
ResourceNotFound.DeviceNotExist	The device does not exist.
ResourceNotFound.DeviceShadowNotExist	The device shadow does not exist.
ResourceNotFound.ProductNotExist	The product does not exist.
ResourceNotFound.ThingModelNotExist	The TSL model does not exist.
UnauthorizedOperation.DeleteTidFail	There is already a TID application for this product, so it cannot be deleted.
UnauthorizedOperation.DeviceHasAlreadyBindGateway	Unable to delete this device as gateway devices have been bound to it.
UnauthorizedOperation.DeviceIsNotEnabled	The device is not enabled.
UnauthorizedOperation.DevicesExistUnderProduct	There are still devices under this product.
UnauthorizedOperation.GatewayHasBindedDevices	There are still devices bound to this device.
UnauthorizedOperation.ProductCantHaveLoRaDevice	You cannot create a LoRa device under this product type.
UnauthorizedOperation.ProductCantHaveNormalDevice	You cannot create a general device under a NB-IoT product.

UnauthorizedOperation.ProductCantHaveNotLoRaDevice	You can create only LoRa devices under this product type.
UnauthorizedOperation.ProductIsForbidden	This feature has been disabled for the product.
UnauthorizedOperation.ProductNotSupportPSK	The product does not support key authentication.
UnauthorizedOperation.UserNotAuthenticaed	The user identity is not verified.
UnsupportedOperation.DeviceOtaTaskInProgress	Device OTA update is in progress.
UnsupportedOperation.GatewayProductHasBindedProduct	Unable to delete this gateway product as sub-products have been bound to it.
UnsupportedOperation.ProductHasBindGateway	Unable to delete this product as gateway devices have been bound to it.
UnsupportedOperation.ProductHasBindedGatewayProduct	Unable to delete this product as gateway products have been bound to it.
UnsupportedOperation.SuiteTokenNoCreate	You cannot create devices under a suite token product.