

操作审计

API 文档

产品文档



腾讯云

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History

最近更新时间：2023-01-04 11:44:58

Release 6

Release time: 2023-01-04 11:41:15

Release updates:

Improvement to existing documentation.

New APIs:

- [DescribeAuditTrack](#)

Modified APIs:

- [CreateAuditTrack](#)
 - New input parameters:Name, ActionType, ResourceType, Status, EventNames, Storage, TrackForAllMembers
 - New output parameters:TrackId
- [DeleteAuditTrack](#)
 - New input parameters:TrackId
- [DescribeAuditTracks](#)
 - New input parameters:PageNumber, PageSize
 - New output parameters:Tracks, TotalCount
- [ModifyAuditTrack](#)
 - New input parameters:TrackId, Name, ActionType, ResourceType, Status, EventNames, Storage, TrackForAllMembers

New data structures:

- [Storage](#)
- [Tracks](#)

Release 5

Release time: 2022-03-16 10:50:28

Release updates:

Improvement to existing documentation.

New APIs:

- [CreateAudit](#)
- [CreateAuditTrack](#)
- [DeleteAudit](#)
- [DeleteAuditTrack](#)
- [DescribeAudit](#)
- [GetAttributeKey](#)
- [InquireAuditCredit](#)
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- [UpdateAudit](#)

New data structures:

- [AttributeKeyDetail](#)
- [AuditSummary](#)
- [CmqRegionInfo](#)
- [CosRegionInfo](#)

Release 4

Release time: 2022-02-25 14:26:43

Release updates:

Improvement to existing documentation.

New APIs:

- [DescribeAuditTracks](#)

Release 3

Release time: 2021-11-24 17:13:52

Release updates:

Improvement to existing documentation.

Modified APIs:

- [DescribeEvents](#)
 - New output parameters:TotalCount

Release 2

Release time: 2021-10-21 16:13:08

Release updates:

Improvement to existing documentation.

New APIs:

- [DescribeEvents](#)

Deleted APIs:

- CreateRecorder
- DeleteRecorder
- DescribeDiscoveredResource
- DescribeRecorder
- GetConfigurationItems
- ListDiscoveredResources
- ListSupportResourceTypes
- UpdateRecorder

New data structures:

- [Event](#)
- [LookupAttribute](#)
- [Resource](#)

Deleted data structures:

- ConfigurationItems
- RecordResourceType
- RelatedEvent
- Resources
- SupportResourceType

Existing Release

Release time: 2020-12-17 16:59:56

Existing APIs/data structures are as follows:

Improvement to existing documentation.

Existing APIs:

- CreateRecorder
- DeleteRecorder
- DescribeDiscoveredResource
- DescribeRecorder
- GetConfigurationItems
- ListDiscoveredResources
- ListSupportResourceTypes
- UpdateRecorder

Existing data structures:

- ConfigurationItems
- RecordResourceType
- RelatedEvent
- Resources
- SupportResourceType

Introduction

最近更新时间：2023-01-04 11:44:57

Tencent Cloud CloudAudit can be used to retrieve the historical records of API calls under your Tencent Cloud account, including API calls initiated via the Tencent Cloud console, Tencent Cloud SDKs, command line tools, and other Tencent Cloud services. This means that any deployment behavior on Tencent Cloud is monitored, and you can determine which sub-user or collaborator calls a Tencent Cloud API from which source IP address and when the API is called. You can set multiple tracking sets to track different logs and enable or disable log recording at any time.

Notes

- All CloudAudit APIs described here have been upgraded to API 3.0 and all new CloudAudit features will be updated here. We recommend that you use API 3.0.
- Legacy APIs remain available, but will not be updated.

API Category

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CloudAudit APIs

API Name	Feature
CreateAudit	Creates tracking set
CreateAuditTrack	Creating CloudAudit tracking set
DeleteAudit	Deletes tracking set
DeleteAuditTrack	Deletes CloudAudit tracking set
DescribeAudit	Queries the details of tracking set
DescribeAuditTrack	Queries the CloudAudit tracking set details
DescribeAuditTracks	Queries the CloudAudit tracking set list
DescribeEvents	Queries CloudAudit logs
GetAttributeKey	Queries the valid values of <code>AttributeKey</code>
InquireAuditCredit	Queries the number of tracking sets that can be created
ListAudits	Queries the summary of tracking sets
ListCmqEnableRegion	Queries CloudAudit-enabled CMQ AZs
ListCosEnableRegion	Queries CloudAudit-enabled COS AZs
LookUpEvents	Searches for logs
ModifyAuditTrack	Modifies CloudAudit tracking set
StartLogging	Enables tracking set
StopLogging	Disables tracking set
UpdateAudit	Updates tracking set

Calling Method

请求结构

最近更新时间：2020-05-21 14:50:02

1. 服务地址

API 支持就近地域接入，本产品就近地域接入域名为 `cvm.tencentcloudapi.com`，也支持指定地域域名访问，例如广州地域的域名为 `cvm.ap-guangzhou.tencentcloudapi.com`。

推荐使用就近地域接入域名。根据调用接口时客户端所在位置，会自动解析到最近的某个具体地域的服务器。例如在广州发起请求，会自动解析到广州的服务器，效果和指定 `cvm.ap-guangzhou.tencentcloudapi.com` 是一致的。

注意：对时延敏感的业务，建议指定带地域的域名。

目前支持的域名列表为：

接入地域	域名
就近地域接入（推荐，只支持非金融区）	<code>cvm.tencentcloudapi.com</code>
华南地区(广州)	<code>cvm.ap-guangzhou.tencentcloudapi.com</code>
华东地区(上海)	<code>cvm.ap-shanghai.tencentcloudapi.com</code>
华北地区(北京)	<code>cvm.ap-beijing.tencentcloudapi.com</code>
西南地区(成都)	<code>cvm.ap-chengdu.tencentcloudapi.com</code>
西南地区(重庆)	<code>cvm.ap-chongqing.tencentcloudapi.com</code>
港澳台地区(中国香港)	<code>cvm.ap-hongkong.tencentcloudapi.com</code>
亚太东南(新加坡)	<code>cvm.ap-singapore.tencentcloudapi.com</code>
亚太东南(曼谷)	<code>cvm.ap-bangkok.tencentcloudapi.com</code>
亚太南部(孟买)	<code>cvm.ap-mumbai.tencentcloudapi.com</code>
亚太东北(首尔)	<code>cvm.ap-seoul.tencentcloudapi.com</code>
亚太东北(东京)	<code>cvm.ap-tokyo.tencentcloudapi.com</code>
美国东部(弗吉尼亚)	<code>cvm.na-ashburn.tencentcloudapi.com</code>

接入地域	域名
美国西部(硅谷)	cvm.na-siliconvalley.tencentcloudapi.com
北美地区(多伦多)	cvm.na-toronto.tencentcloudapi.com
欧洲地区(法兰克福)	cvm.eu-frankfurt.tencentcloudapi.com
欧洲地区(莫斯科)	cvm.eu-moscow.tencentcloudapi.com

注意：由于金融区和非金融区是隔离不互通的，因此当访问金融区服务时（公共参数 **Region** 为金融区地域），需要同时指定带金融区地域的域名，最好和 **Region** 的地域保持一致。

金融区接入地域	金融区域名
华东地区(上海金融)	cvm.ap-shanghai-fsi.tencentcloudapi.com
华南地区(深圳金融)	cvm.ap-shenzhen-fsi.tencentcloudapi.com

2. 通信协议

腾讯云 API 的所有接口均通过 HTTPS 进行通信，提供高安全性的通信通道。

3. 请求方法

支持的 HTTP 请求方法:

- POST（推荐）
- GET

POST 请求支持的 Content-Type 类型：

- application/json（推荐），必须使用签名方法 v3（TC3-HMAC-SHA256）。
- application/x-www-form-urlencoded，必须使用签名方法 v1（HmacSHA1 或 HmacSHA256）。
- multipart/form-data（仅部分接口支持），必须使用签名方法 v3（TC3-HMAC-SHA256）。

GET 请求的请求包大小不得超过32KB。POST 请求使用签名方法 v1（HmacSHA1、HmacSHA256）时不得超过1MB。POST 请求使用签名方法 v3（TC3-HMAC-SHA256）时支持10MB。

4. 字符编码

均使用 UTF-8 编码。

公共参数

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公共参数是用于标识用户和接口签名的参数，如非必要，在每个接口单独的接口文档中不再对这些参数进行说明，但每次请求均需要携带这些参数，才能正常发起请求。

签名方法 v3

签名方法 v3（有时也称作 TC3-HMAC-SHA256）相比签名方法 v1（有些文档可能会简称签名方法），更安全，支持更大的请求包，支持 POST JSON 格式，性能有一定提升，推荐使用该签名方法计算签名。完整介绍详见[文档](#)。

注意：接口文档中的示例由于目的是展示接口参数用法，简化起见，使用的是签名方法 v1 GET 请求，如果依旧想使用签名方法 v1 请参考下文章节。

使用签名方法 v3 时，公共参数需要统一放到 HTTP Header 请求头部中，如下：

参数名称	类型	必选	描述
X-TC-Action	String	是	操作的接口名称。取值参考接口文档中输入参数公共参数 Action 的说明。例如器的查询实例列表接口，取值为 DescribeInstances。
X-TC-Region	String	-	地域参数，用来标识希望操作哪个地域的数据。接口接受的地域取值参考接口文档中输入参数公共参数 Region 的说明。注意：某些接口不需要传递该参数，接口对此特别说明，此时即使传递该参数也不会生效。
X-TC-Timestamp	Integer	是	当前 UNIX 时间戳，可记录发起 API 请求的时间。例如 1529223702。注意：服务器时间相差超过5分钟，会引起签名过期错误。
X-TC-Version	String	是	操作的 API 的版本。取值参考接口文档中输入公共参数 Version 的说明。例如的版本 2017-03-12。
Authorization	String	是	HTTP 标准身份认证头部字段，例如： TC3-HMAC-SHA256 Credential=AKIDEXAMPLE/Date/service/tc3_request, SignedHeaders=content-type;host, Signature=fe5f80f77d5fa3beca038a248ff027d0445342fe2855ddc96317663f 其中， - TC3-HMAC-SHA256：签名方法，目前固定取该值； - Credential：签名凭证，AKIDEXAMPLE 是 SecretId；Date 是 UTC 标准时间日期，取值需要和公共参数 X-TC-Timestamp 换算的 UTC 标准时间日期一致； 为产品名，通常为域名前缀，例如域名 cvm.tencentcloudapi.com 意味着产品 cvm。本产品取值为 cloudaudit； - SignedHeaders：参与签名计算的头部信息，content-type 和 host 为必选头 - Signature：签名摘要，计算过程详见 文档 。

参数名称	类型	必选	描述
X-TC-Token	String	否	临时证书所用的 Token，需要结合临时密钥一起使用。临时密钥和 Token 需管理服务调用接口获取。长期密钥不需要 Token。

假设用户想要查询广州地域的云服务器实例列表，则其请求结构按照请求 URL、请求头部、请求体示例如下：

HTTP GET 请求结构示例：

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

Authorization: TC3-HMAC-SHA256 Credential=AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE/2018-10-09/cvm/tc3_request, SignedHeaders=content-type;host, Signature=5da7a33f6993f0614b047e5df4582db9e9bf4672ba50567dba16c6ccf174c474
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
```

HTTP POST (application/json) 请求结构示例：

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

Authorization: TC3-HMAC-SHA256 Credential=AKIDEXAMPLE/2018-05-30/cvm/tc3_request, SignedHeaders=content-type;host, Signature=582c400e06b5924a6f2b5d7d672d79c15b13162d9279b0855cfba6789a8edb4c
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}
```

HTTP POST (multipart/form-data) 请求结构示例（仅特定的接口支持）：

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

Authorization: TC3-HMAC-SHA256 Credential=AKIDEXAMPLE/2018-05-30/cvm/tc3_request, SignedHeaders=content-type;host, Signature=582c400e06b5924a6f2b5d7d672d79c15b13162d9279b0855cfba6789a8edb4c
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--
```

签名方法 v1

使用签名方法 v1（有时会称作 HmacSHA256 和 HmacSHA1），公共参数需要统一放到请求串中，完整介绍详见[文档](#)

参数名称	类型	必选	描述
Action	String	是	操作的接口名称。取值参考接口文档中输入参数公共参数 Action 的说明。例如云服务器的查询实例列表接口，取值为 DescribeInstances。
Region	String	-	地域参数，用来标识希望操作哪个地域的数据。接口接受的地域取值参考接口文档中输入参数公共参数 Region 的说明。注意：某些接口不需要传递该参数，接口文档中会对此特别说明，此时即使传递该参数也不会生效。
Timestamp	Integer	是	当前 UNIX 时间戳，可记录发起 API 请求的时间。例如1529223702，如果与当前时间相差过大，会引起签名过期错误。
Nonce	Integer	是	随机正整数，与 Timestamp 联合起来，用于防止重放攻击。
SecretId	String	是	在 云API密钥 上申请的标识身份的 SecretId，一个 SecretId 对应唯一的 SecretKey，而 SecretKey 会用来生成请求签名 Signature。
Signature	String	是	请求签名，用来验证此次请求的合法性，需要用户根据实际的输入参数计算得出。具体计算方法参见 文档 。
Version	String	是	操作的 API 的版本。取值参考接口文档中入参公共参数 Version 的说明。例如云服务器的版本 2017-03-12。

参数名称	类型	必选	描述
SignatureMethod	String	否	签名方式，目前支持 HmacSHA256 和 HmacSHA1。只有指定此参数为 HmacSHA256 时，才使用 HmacSHA256 算法验证签名，其他情况均使用 HmacSHA1 验证签名。
Token	String	否	临时证书所用的 Token，需要结合临时密钥一起使用。临时密钥和 Token 需要到访问管理服务调用接口获取。长期密钥不需要 Token。

假设用户想要查询广州地域的云服务器实例列表，其请求结构按照请求 URL、请求头部、请求体示例如下：

HTTP GET 请求结构示例：

```
https://cvm.tencentcloudapi.com/?Action=DescribeInstances&Version=2017-03-12&SignatureMethod=HmacSHA256&Timestamp=1527672334&Signature=37ac2f4fde00b0ac9bd9eadeb459b1bb224158d66e7ae5fcadb70b2d181d02&Region=ap-guangzhou&Nonce=23823223&SecretId=AKIDEXAMPLE

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

HTTP POST 请求结构示例：

```
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=37ac2f4fde00b0ac9bd9eadeb459b1bb224158d66e7ae5fcadb70b2d181d02&Region=ap-guangzhou&Nonce=23823223&SecretId=AKIDEXAMPLE
```

地域列表

本产品所有接口 Region 字段的可选值如下表所示。如果接口不支持该表中的所有地域，则会在接口文档中单独说明。

区域	取值
华南地区(广州)	ap-guangzhou

签名方法 v3

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签名方法 v3（TC3-HMAC-SHA256）功能上覆盖了以前的签名方法 v1，而且更安全，支持更大的请求，支持 json 格式，性能有一定提升，推荐使用该签名方法计算签名。

首次接触，建议使用 [API Explorer](#) 中的“签名串生成”功能，选择签名版本为“API 3.0 签名 v3”，可以生成签名过程进行验证，也可直接生成 SDK 代码。推荐使用腾讯云 API 配套的 7 种常见的编程语言 SDK，已经封装了签名和请求过程，均已开源，支持 [Python](#)、[Java](#)、[PHP](#)、[Go](#)、[NodeJS](#)、[.NET](#)、[C++](#)。

腾讯云 API 会对每个请求进行身份验证，用户需要使用安全凭证，经过特定的步骤对请求进行签名（Signature），每个请求都需要在公共请求参数中指定该签名结果并以指定的方式和格式发送请求。

申请安全凭证

本文使用的安全凭证为密钥，密钥包括 `SecretId` 和 `SecretKey`。每个用户最多可以拥有两对密钥。

- `SecretId`：用于标识 API 调用者身份，可以简单类比为用户名。
- `SecretKey`：用于验证 API 调用者的身份，可以简单类比为密码。
- 用户必须严格保管安全凭证，避免泄露，否则将危及财产安全。如已泄漏，请立刻禁用该安全凭证。

申请安全凭证的具体步骤如下：

1. 登录 [腾讯云管理中心控制台](#)。
2. 前往 [云API密钥](#) 的控制台页面。
3. 在 [云API密钥](#) 页面，单击【新建密钥】即可以创建一对密钥。

签名过程

云 API 支持 GET 和 POST 请求。对于 GET 方法，只支持 `Content-Type: application/x-www-form-urlencoded` 协议格式。对于 POST 方法，目前支持 `Content-Type: application/json` 以及 `Content-Type: multipart/form-data` 两种协议格式，json 格式绝大多数接口均支持，multipart 格式只有特定接口支持，此时该接口不能使用 json 格式调用，参考具体业务接口文档说明。推荐使用 POST 请求，因为两者的结果并无差异，但 GET 请求只支持 32 KB 以内的请求包。

下面以云服务器查询广州实例列表作为例子，分步骤介绍签名的计算过程。我们选择该接口是因为：

1. 云服务器默认已开通，该接口很常用；
2. 该接口是只读的，不会改变现有资源的状态；

3. 接口覆盖的参数种类较全，可以演示包含数据结构的数组如何使用。

在示例中，不论公共参数或者接口的参数，我们尽量选择容易犯错的情况。在实际调用接口时，请根据实际情况来，每个接口的参数并不相同，不要照抄这个例子的参数和值。

假设用户的 SecretId 和 SecretKey 分别是：AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE 和 Gu5t9xGARNpq86cd98joQYCN3EXAMPLE。用户想查看广州区云服务器名为“未命名”的主机状态，只返回一条数据。则请求可能为：

```
curl -X POST https://cvm.tencentcloudapi.com \
-H "Authorization: TC3-HMAC-SHA256 Credential=AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE/2019-02-25/cvm/tc3_request, SignedHeaders=content-type;host, Signature=72e494ea809ad7a8c8f7a4507b9bddcbaa8e581f516e8da2f66e2c5a96525168" \
-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": ["\u672a\u547d\u540d"], "Name": "instance-name"}]}'
```

下面详细解释签名计算过程。

1. 拼接规范请求串

按如下伪代码格式拼接规范请求串（CanonicalRequest）：

```
CanonicalRequest =
HTTPRequestMethod + '\n' +
CanonicalURI + '\n' +
CanonicalQueryString + '\n' +
CanonicalHeaders + '\n' +
SignedHeaders + '\n' +
HashedRequestPayload
```

字段名称	解释
HTTPRequestMethod	HTTP 请求方法（GET、POST）。此示例取值为 POST。
CanonicalURI	URI 参数，API 3.0 固定为正斜杠 (/)。

字段名称	解释
CanonicalQueryString	发起 HTTP 请求 URL 中的查询字符串，对于 POST 请求，固定为空字符串""，对于 GET 请求，则为 URL 中间号（?）后面的字符串内容，例如：Limit=10&Offset=0。 注意：CanonicalQueryString 需要参考 RFC3986 进行 URLEncode，字符集 UTF8，引用编程语言标准库，所有特殊字符均需编码，大写形式。
CanonicalHeaders	参与签名的头部信息，至少包含 host 和 content-type 两个头部，也可加入自定义的头部签名以提高自身请求的唯一性和安全性。 拼接规则： 1. 头部 key 和 value 统一转成小写，并去掉首尾空格，按照 key:value\n 格式拼接； 2. 多个头部，按照头部 key（小写）的 ASCII 升序进行拼接。 此示例计算结果是 content-type:application/json; charset=utf-8\nhost:cvm.tencentcloudapi.com\n。 注意：content-type 必须和实际发送的相符合，有些编程语言网络库即使未指定也会自带 charset 值，如果签名时和发送时不一致，服务器会返回签名校验失败。
SignedHeaders	参与签名的头部信息，说明此次请求有哪些头部参与了签名，和 CanonicalHeaders 包部内容是一一对应的。content-type 和 host 为必选头部。 拼接规则： 1. 头部 key 统一转成小写； 2. 多个头部 key（小写）按照 ASCII 升序进行拼接，并且以分号（;）分隔。 此示例为 content-type;host
HashedRequestPayload	请求正文（payload，即 body，此示例为 {"Limit": 1, "Filters": [{"Value": "\u672a\u547d\u540d"}, {"Name": "instance-name"}]}）的哈希值，计算码为 Lowercase(HexEncode(Hash.SHA256(RequestPayload)))，即对 HTTP 请求正文 SHA256 哈希，然后十六进制编码，最后编码串转换成小写字母。对于 GET 请求，RequestPayload 固定为空字符串。此示例计算结果是 35e9c5b0e3ae67532d3c9f17ead6c90222632e5b1ff7f6e89887f1398934f064

根据以上规则，示例中得到的规范请求串如下：

```
POST
/
content-type:application/json; charset=utf-8
host:cvm.tencentcloudapi.com
content-type;host
35e9c5b0e3ae67532d3c9f17ead6c90222632e5b1ff7f6e89887f1398934f064
```

2. 拼接待签名字符串

按如下格式拼接待签名字符串：

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

字段名称	解释
Algorithm	签名算法，目前固定为 <code>TC3-HMAC-SHA256</code> 。
RequestTimestamp	请求时间戳，即请求头部的公共参数 <code>X-TC-Timestamp</code> 取值，取当前时间 UNIX 时间戳到秒。此示例取值为 <code>1551113065</code> 。
CredentialScope	凭证范围，格式为 <code>Date/service/tc3_request</code> ，包含日期、所请求的服务和终止字符 <code>E</code> （ <code>tc3_request</code> ）。 Date 为 UTC 标准时间的日期，取值需要和公共参数 X-TC-Time 换算的 UTC 标准时间日期一致；service 为产品名，必须与调用的产品域名一致。此 算结果是 <code>2019-02-25/cvm/tc3_request</code> 。
HashedCanonicalRequest	前述步骤拼接所得规范请求串的哈希值，计算伪代码为 <code>Lowercase(HexEncode(Hash.SHA256(CanonicalRequest)))</code> 。此示例计算结果是 <code>5ffe6a04c0664d6b969fab9a13bdab201d63ee709638e2749d62a09ca18d</code>

注意：

1. Date 必须从时间戳 `X-TC-Timestamp` 计算得到，且时区为 `UTC+0`。如果加入系统本地时区信息，例如东八区，将导致白天和晚上调用成功，但是凌晨时调用必定失败。假设时间戳为 `1551113065`，在东八区的时间是 `2019-02-26 00:44:25`，但是计算得到的 Date 取 `UTC+0` 的日期应为 `2019-02-25`，而不是 `2019-02-26`。
2. Timestamp 必须是当前系统时间，且需确保系统时间和标准时间是同步的，如果相差超过五分钟则必定失败。如果长时间不和标准时间同步，可能导致运行一段时间后，请求必定失败，返回签名过期错误。

根据以上规则，示例中得到的待签名字符串如下：

```
TC3-HMAC-SHA256  
1551113065  
2019-02-25/cvm/tc3_request  
5ffe6a04c0664d6b969fab9a13bdab201d63ee709638e2749d62a09ca18d7031
```

3. 计算签名

1) 计算派生签名密钥，伪代码如下：

```
SecretKey = "Gu5t9xGARNpq86cd98joQYCN3EXAMPLE"
SecretDate = HMAC_SHA256("TC3" + SecretKey, Date)
SecretService = HMAC_SHA256(SecretDate, Service)
SecretSigning = HMAC_SHA256(SecretService, "tc3_request")
```

派生出的密钥 `SecretDate`、`SecretService` 和 `SecretSigning` 是二进制的数
据，可能包含不可打印字符，此处不展示中间结果。

请注意，不同的编程语言，HMAC 库函数中参数顺序可能不一样，此处的伪代码密钥参数在后，请以实际编程语言为准。通常标准库函数会提供二进制格式的计算值，也即此处使用的，也会提供打印友好的十六进制格式的计算值，将在下面计算签名结果时使用。

字段名称	解释
SecretKey	原始的 SecretKey，即 Gu5t9xGARNpq86cd98joQYCN3EXAMPLE。
Date	即 Credential 中的 Date 字段信息。此示例取值为 2019-02-25。
Service	即 Credential 中的 Service 字段信息。此示例取值为 cvm。

2) 计算签名，伪代码如下：

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

此示例计算结果是 72e494ea809ad7a8c8f7a4507b9bddcbaa8e581f516e8da2f66e2c5a96525168。

4. 拼接 Authorization

按如下格式拼接 Authorization：

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

字段名称	解释
Algorithm	签名方法，固定为 TC3-HMAC-SHA256。
SecretId	密钥对中的 SecretId，即 AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE。
CredentialScope	见上文，凭证范围。此示例计算结果是 2019-02-25/cvm/tc3_request。

字段名称	解释
SignedHeaders	见上文，参与签名的头部信息。此示例取值为 <code>content-type;host</code> 。
Signature	签名值。此示例计算结果是 <code>72e494ea809ad7a8c8f7a4507b9bddcbaa8e581f516e8da2f66e2c5a96525168</code> 。

根据以上规则，示例中得到的值为：

```
TC3-HMAC-SHA256 Credential=AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE/2019-02-25/cvm/tc3_request, SignedHeaders=content-type;host, Signature=72e494ea809ad7a8c8f7a4507b9bddcbaa8e581f516e8da2f66e2c5a96525168
```

最终完整的调用信息如下：

```
POST https://cvm.tencentcloudapi.com/
Authorization: TC3-HMAC-SHA256 Credential=AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE/2019-02-25/cvm/tc3_request, SignedHeaders=content-type;host, Signature=72e494ea809ad7a8c8f7a4507b9bddcbaa8e581f516e8da2f66e2c5a96525168
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": ["\u672a\u547d\u540d"], "Name": "instance-name"}]}
```

5. 签名演示

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 = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE";
private final static String SECRET_KEY = "Gu5t9xGARNpq86cd98joQYCN3EXAMPLE";
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");
    // 注意时区, 否则容易出错
    sdf.setTimeZone(TimeZone.getTimeZone("UTC"));
    String date = sdf.format(new Date(Long.valueOf(timestamp + "000")));
    // ***** 步骤 1: 拼接规范请求串 *****
    String httpRequestMethod = "POST";
    String canonicalUri = "/";
    String canonicalQueryString = "";
    String canonicalHeaders = "content-type:application/json; charset=utf-8\n" + "host:" + host + "\n";
    String signedHeaders = "content-type;host";
    String payload = "{\"Limit\": 1, \"Filters\": [{\"Values\": [\"\\u672a\\u547d\\u540d\"], \"Name\": \"instance-name\"}] }";
    String hashedRequestPayload = sha256Hex(payload);
    String canonicalRequest = httpRequestMethod + "\n" + canonicalUri + "\n" + canonicalQueryString + "\n"
    + canonicalHeaders + "\n" + signedHeaders + "\n" + hashedRequestPayload;
    System.out.println(canonicalRequest);
    // ***** 步骤 2: 拼接待签名字符串 *****
    String credentialScope = date + "/" + service + "/" + "tc3_request";
    String hashedCanonicalRequest = sha256Hex(canonicalRequest);
    String stringToSign = algorithm + "\n" + timestamp + "\n" + credentialScope +
    "\n" + hashedCanonicalRequest;
    System.out.println(stringToSign);
}
```

```
// ***** 步骤 3：计算签名 *****
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);
// ***** 步骤 4：拼接 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
# 密钥参数
secret_id = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE"
secret_key = "Gu5t9xGARNpq86cd98joQYCN3EXAMPLE"
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.utcnow().timestamp(timestamp).strftime("%Y-%m-%d")
params = {"Limit": 1, "Filters": [{"Name": "instance-name", "Values": [u"未命名"]}]}
# ***** 步骤 1：拼接规范请求串 *****
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)
# ***** 步骤 2：拼接待签名字符串 *****
credential_scope = date + "/" + service + "/" + "tc3_request"
hashed_canonical_request = hashlib.sha256(canonical_request.encode("utf-8")).hexdigest()
string_to_sign = (algorithm + "\n" +
str(timestamp) + "\n" +
credential_scope + "\n" +
hashed_canonical_request)
print(string_to_sign)
# ***** 步骤 3：计算签名 *****
# 计算签名摘要函数
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.sha256).hexdigest()
print(signature)
# ***** 步骤 4：拼接 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 + '"")
```

go

```
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 := "AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE"
    secretKey := "Gu5t9xGARNpq86cd98joQYCN3EXAMPLE"
    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": ["\u672a\u547d\u540d"], "Name":
"instance-name"}]}`
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 = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE";
$secretKey = "Gu5t9xGARNpq86cd98joQYCN3EXAMPLE";
$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:". $host. "\n";
$signedHeaders = "content-type;host";
$payload = '{"Limit": 1, "Filters": [{"Values": ["\u672a\u547d\u540d"], "Name": "instance-name"}]}' ;
$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;
```

签名失败

存在以下签名失败的错误码，请根据实际情况处理。

错误码	错误描述
AuthFailure.SignatureExpire	签名过期。Timestamp 与服务器接收到请求的时间相差不得超过五分钟。
AuthFailure.SecretIdNotFound	密钥不存在。请到控制台查看密钥是否被禁用，是否少复制了字符或者多了字符。
AuthFailure.SignatureFailure	签名错误。可能是签名计算错误，或者签名与实际发送的内容不相符合，也有可能是密钥 SecretKey 错误导致的。
AuthFailure.TokenFailure	临时证书 Token 错误。
AuthFailure.InvalidSecretId	密钥非法（不是云 API 密钥类型）。

签名方法

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签名方法 v1 简单易用，但是功能和安全性都不如签名方法 v3，推荐使用签名方法 v3。

首次接触，建议使用 [API Explorer](#) 中的“签名串生成”功能，选择签名版本为“API 3.0 签名 v1”，可以生成签名过程进行验证，并提供了部分编程语言的签名示例，也可直接生成 SDK 代码。推荐使用腾讯云 API 配套的 7 种常见的编程语言 SDK，已经封装了签名和请求过程，均已开源，支持 [Python](#)、[Java](#)、[PHP](#)、[Go](#)、[NodeJS](#)、[.NET](#)、[C++](#)。

腾讯云 API 会对每个访问请求进行身份验证，即每个请求都需要在公共请求参数中包含签名信息（Signature）以验证请求者身份。

签名信息由安全凭证生成，安全凭证包括 SecretId 和 SecretKey；若用户还没有安全凭证，请前往 [云API密钥页面](#) 申请，否则无法调用云 API 接口。

1. 申请安全凭证

在第一次使用云 API 之前，请前往 [云 API 密钥页面](#) 申请安全凭证。

安全凭证包括 SecretId 和 SecretKey：

- SecretId 用于标识 API 调用者身份
- SecretKey 用于加密签名字符串和服务器端验证签名字符串的密钥。
- 用户必须严格保管安全凭证，避免泄露。

申请安全凭证的具体步骤如下：

1. 登录 [腾讯云管理中心控制台](#)。
2. 前往 [云 API 密钥](#) 的控制台页面
3. 在 [云 API 密钥](#) 页面，单击【新建密钥】即可以创建一对 SecretId/SecretKey。

注意：每个账号最多可以拥有两对 SecretId/SecretKey。

2. 生成签名串

有了安全凭证 SecretId 和 SecretKey 后，就可以生成签名串了。以下是生成签名串的详细过程：

假设用户的 SecretId 和 SecretKey 分别是：

- SecretId: AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE
- SecretKey: Gu5t9xGARNpq86cd98joQYCN3EXAMPLE

注意：这里只是示例，请根据用户实际申请的 **SecretId** 和 **SecretKey** 进行后续操作！

以云服务器查看实例列表(DescribeInstances)请求为例，当用户调用这一接口时，其请求参数可能如下：

参数名称	中文	参数值
Action	方法名	DescribeInstances
SecretId	密钥 ID	AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE
Timestamp	当前时间戳	1465185768
Nonce	随机正整数	11886
Region	实例所在区域	ap-guangzhou
InstanceIds.0	待查询的实例 ID	ins-09dx96dg
Offset	偏移量	0
Limit	最大允许输出	20
Version	接口版本号	2017-03-12

2.1. 对参数排序

首先对所有请求参数按参数名的字典序（ASCII 码）升序排序。注意：1）只按参数名进行排序，参数值保持对应即可，不参与比大小；2）按 ASCII 码比大小，如 InstanceIds.2 要排在 InstanceIds.12 后面，不是按字母表，也不是按数值。用户可以借助编程语言中的相关排序函数来实现这一功能，如 PHP 中的 ksort 函数。上述示例参数的排序结果如下：

```
{
  'Action' : 'DescribeInstances',
  'InstanceIds.0' : 'ins-09dx96dg',
  'Limit' : 20,
  'Nonce' : 11886,
  'Offset' : 0,
  'Region' : 'ap-guangzhou',
  'SecretId' : 'AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE',
  'Timestamp' : 1465185768,
  'Version': '2017-03-12',
}
```

使用其它程序设计语言开发时，可对上面示例中的参数进行排序，得到的结果一致即可。

2.2. 拼接请求字符串

此步骤生成请求字符串。

将把上一步排序好的请求参数格式化成“参数名称=参数值”的形式，如对 Action 参数，其参数名称为 "Action"，参数值为 "DescribeInstances"，因此格式化后即为 Action=DescribeInstances。

注意：“参数值”为原始值而非 url 编码后的值。

然后将格式化后的各个参数用"&"拼接在一起，最终生成的请求字符串为：

```
Action=DescribeInstances&InstanceIds.0=ins-09dx96dg&Limit=20&Nonce=11886&Offset=0
&Region=ap-guangzhou&SecretId=AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE&Timestamp=1465
185768&Version=2017-03-12
```

2.3. 拼接签名原文字符串

此步骤生成签名原文字符串。

签名原文字符串由以下几个参数构成：

1. 请求方法: 支持 POST 和 GET 方式，这里使用 GET 请求，注意方法为全大写。
2. 请求主机: 查看实例列表(DescribeInstances)的请求域名为：cvm.tencentcloudapi.com。实际的请求域名根据接口所属模块的不同而不同，详见各接口说明。
3. 请求路径: 当前版本云API的请求路径固定为 /。
4. 请求字符串: 即上一步生成的请求字符串。

签名原文串的拼接规则为：请求方法 + 请求主机 + 请求路径 + ? + 请求字符串。

示例的拼接结果为：

```
GETcvm.tencentcloudapi.com/?Action=DescribeInstances&InstanceIds.0=ins-09dx96dg&L
imit=20&Nonce=11886&Offset=0&Region=ap-guangzhou&SecretId=AKIDz8krbsJ5yKBZQpn74WF
kmLPx3EXAMPLE&Timestamp=1465185768&Version=2017-03-12
```

2.4. 生成签名串

此步骤生成签名串。

首先使用 HMAC-SHA1 算法对上一步中获得的**签名原文字符串**进行签名，然后将生成的签名串使用 Base64 进行编码，即可获得最终的签名串。

具体代码如下，以 PHP 语言为例：

```
$secretKey = 'Gu5t9xGARNpq86cd98joQYCN3EXAMPLE';
$srcStr = 'GETcvm.tencentcloudapi.com/?Action=DescribeInstances&InstanceIds.0=ins
-09dx96dg&Limit=20&Nonce=11886&Offset=0&Region=ap-guangzhou&SecretId=AKIDz8krbsJ5
yKBZQpn74WFkmLPx3EXAMPLE&Timestamp=1465185768&Version=2017-03-12';
```



```
$signStr = base64_encode(hash_hmac('sha1', $srcStr, $secretKey, true));  
echo $signStr;
```

最终得到的签名串为：

```
EliP9YW3pW28FpsEdkXt/+WcGeI=
```

使用其它程序设计语言开发时，可用上面示例中的原文进行签名验证，得到的签名串与例子中的一致即可。

3. 签名串编码

生成的签名串并不能直接作为请求参数，需要对其进行 URL 编码。

如上一步生成的签名串为 EliP9YW3pW28FpsEdkXt/+WcGeI=，最终得到的签名串请求参数（Signature）为：
EliP9YW3pW28FpsEdkXt%2f%2bWcGeI%3d，它将用于生成最终的请求 URL。

注意：如果用户的请求方法是 GET，或者请求方法为 POST 同时 Content-Type 为 application/x-www-form-urlencoded，则发送请求时所有请求参数的值均需要做 URL 编码，参数键和=符号不需要编码。非 ASCII 字符在 URL 编码前需要先以 UTF-8 进行编码。

注意：有些编程语言的库会自动为所有参数进行 urlencode，在这种情况下，就不需要对签名串进行 URL 编码了，否则两次 URL 编码会导致签名失败。

注意：其他参数值也需要进行编码，编码采用 RFC 3986。使用 %XY 对特殊字符例如汉字进行百分比编码，其中“X”和“Y”为十六进制字符（0-9 和大写字母 A-F），使用小写将引发错误。

4. 签名失败

根据实际情况，存在以下签名失败的错误码，请根据实际情况处理。

错误代码	错误描述
AuthFailure.SignatureExpire	签名过期
AuthFailure.SecretIdNotFound	密钥不存在
AuthFailure.SignatureFailure	签名错误
AuthFailure.TokenFailure	token 错误
AuthFailure.InvalidSecretId	密钥非法（不是云 API 密钥类型）

5. 签名演示

在实际调用 API 3.0 时，推荐使用配套的腾讯云 SDK 3.0，SDK 封装了签名的过程，开发时只关注产品提供的具体接口即可。详细信息参见 [SDK 中心](#)。当前支持的编程语言有：

- [Python](#)
- [Java](#)
- [PHP](#)
- [Go](#)
- [JavaScript](#)
- [.NET](#)

为了更清楚的解释签名过程，下面以实际编程语言为例，将上述的签名过程具体实现。请求的域名、调用的接口和参数的取值都以上述签名过程为准，代码只为解释签名过程，并不具备通用性，实际开发请尽量使用 SDK。

最终输出的 url 可能为：

```
https://cvm.tencentcloudapi.com/?Action=DescribeInstances&InstanceIds.0=ins-09dx96dg&Limit=20&Nonce=11886&Offset=0&Region=ap-guangzhou&SecretId=AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE&Signature=Elip9YW3pW28FpsEdkXt%2F%2BWcGeI%3D&Timestamp=1465185768&Version=2017-03-12
```

注意：由于示例中的密钥是虚构的，时间戳也不是系统当前时间，因此如果将此 url 在浏览器中打开或者用 curl 等命令调用时会返回鉴权错误：签名过期。为了得到一个可以正常返回的 url，需要修改示例中的 SecretId 和 SecretKey 为真实的密钥，并使用系统当前时间戳作为 Timestamp。

注意：在下面的示例中，不同编程语言，甚至同一语言每次执行得到的 url 可能都有所不同，表现为参数的顺序不同，但这并不影响正确性。只要所有参数都在，且签名计算正确即可。

注意：以下代码仅适用于 API 3.0，不能直接用于其他的签名流程，即使是旧版的 API，由于存在细节差异也会导致签名计算错误，请以对应的实际文档为准。

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.getAlgorithm());
    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/?");
    // 签名时要求对参数进行字典排序, 此处用TreeMap保证顺序
    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 UnsupportedEncodingException {
    StringBuilder url = new StringBuilder("https://cvm.tencentcloudapi.com/?");
    // 实际请求的url中对参数顺序没有要求
    for (String k : params.keySet()) {
        // 需要对请求串进行urlencode, 由于key都是英文字母, 故此处仅对其value进行urlencode
        url.append(k).append("=").append(URLEncoder.encode(params.get(k).toString(), CHARSET)).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可以自动排序
    // 实际调用时应当使用随机数, 例如: params.put("Nonce", new Random().nextInt(java.lang.Integer.MAX_VALUE));
    params.put("Nonce", 11886); // 公共参数
    // 实际调用时应当使用系统当前时间, 例如: params.put("Timestamp", System.currentTimeMillis() / 1000);
    params.put("Timestamp", 1465185768); // 公共参数
    params.put("SecretId", "AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE"); // 公共参数
    params.put("Action", "DescribeInstances"); // 公共参数
    params.put("Version", "2017-03-12"); // 公共参数
    params.put("Region", "ap-guangzhou"); // 公共参数
    params.put("Limit", 20); // 业务参数
    params.put("Offset", 0); // 业务参数
    params.put("InstanceIds.0", "ins-09dx96dg"); // 业务参数
    params.put("Signature", sign(getStringToSign(params), "Gu5t9xGARNpq86cd98joQYCN3EXAMPLE", "HmacSHA1")); // 公共参数
    System.out.println(getUrl(params));
}
```

```
}  
}
```

Python

注意：如果是在 Python 2 环境中运行，需要先安装 requests 依赖包：`pip install requests`。

```
# -*- coding: utf8 -*-  
import base64  
import hashlib  
import hmac  
import time  
import requests  
secret_id = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE"  
secret_key = "Gu5t9xGARNpq86cd98joQYCN3EXAMPLE"  
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"])  
    # 此处会实际调用，成功后可能产生计费  
    # resp = requests.get("https://" + endpoint, params=data)  
    # print(resp.url)
```

Go

```
package main
import (
    "bytes"
    "crypto/hmac"
    "crypto/sha1"
    "encoding/base64"
    "fmt"
    "sort"
)
func main() {
    secretId := "AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE"
    secretKey := "Gu5t9xGARNpq86cd98joQYCN3EXAMPLE"
    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(sh1.New, []byte(secretKey))
    hashed.Write(buf.Bytes())
    fmt.Println(base64.StdEncoding.EncodeToString(hashed.Sum(nil)))
}
```

PHP

```
<?php
$secretId = "AKIDz8krbsJ5yKBZQpn74WFkmLPx3EXAMPLE";
$secretKey = "Gu5t9xGARNpq86cd98joQYCN3EXAMPLE";
$params["Nonce"] = 11886;//rand();
$params["Timestamp"] = 1465185768;//time();
$params["Region"] = "ap-guangzhou";
$params["SecretId"] = $secretId;
$params["Version"] = "2017-03-12";
$params["Action"] = "DescribeInstances";
$params["InstanceIds.0"] = "ins-09dx96dg";
$params["Limit"] = 20;
$params["Offset"] = 0;
ksort($params);
$signStr = "GETcvm.tencentcloudapi.com/?";
foreach ( $params 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
// $params["Signature"] = $signature;
// $url = "https://cvm.tencentcloudapi.com/?".http_build_query($params);
// echo $url.PHP_EOL;
// $ch = curl_init();
// curl_setopt($ch, CURLOPT_URL, $url);
// $output = curl_exec($ch);
// curl_close($ch);
// echo json_decode($output);
```

Responses

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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 signature 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.

Error Code	Description
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.

CloudAudit APIs

DescribeEvents

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1. API Description

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

This API is used to query CloudAudit logs.

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: DescribeEvents.
Version	Yes	String	Common Params . The value used for this API: 2019-03-19.
Region	Yes	String	Common Params . For more information, please see the list of regions supported by the product.
StartTime	Yes	Integer	Start timestamp in seconds (cannot be 90 days after the current time).
EndTime	Yes	Integer	End timestamp in seconds (the time range for query is less than 30 days).
NextToken	No	Integer	Credential for viewing more logs.

Parameter Name	Required	Type	Description
MaxResults	No	Integer	Max number of returned logs (up to 50).
LookupAttributes.N	No	Array of LookupAttribute	Search condition. Valid values: <code>RequestId</code> , <code>EventName</code> , <code>ActionType</code> (write/read), <code>PrincipalId</code> (sub-account), <code>ResourceType</code> , <code>ResourceName</code> , <code>AccessKeyId</code> , <code>SensitiveAction</code> , <code>ApiErrorCode</code> , <code>CamErrorCode</code> , and <code>Tags</code> (Format of <code>AttributeValue</code> : [{"key": "", "value": ""}])
IsReturnLocation	No	Integer	Whether to return the IP location. <code>1</code> : yes, <code>0</code> : no.

3. Output Parameters

Parameter Name	Type	Description
ListOver	Boolean	Whether the log list has come to an end. <code>true</code> : Yes. Pagination is not required.
NextToken	Integer	Credential for viewing more logs.
Events	Array of Event	Logset. Note: <code>null</code> may be returned for this field, indicating that no valid values can be obtained.
TotalCount	Integer	This parameter has been deprecated. Please use <code>ListOver</code> and <code>NextToken</code> for pagination, and read data of the next page when the value of <code>ListOver</code> is <code>false</code> . 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 CloudAudit logs

Input Example

```
POST / HTTP/1.1
Host: cloudaudit.tencentcloudapi.com
Content-Type: application/json
X-TC-Action: DescribeEvents
<Common request parameters>
{
  "StartTime": 1610613170,
  "EndTime": 1610699570,
  "MaxResults": 1
}
```

Output Example

```
{
  "Response": {
    "ListOver": false,
    "TotalCount": 1,
    "Events": [
      {
        "CloudAuditEvent": "{\n\"userIdentity\":{\n\"principalId\":\n\"100000000000\", \"account\nId\":\n\"100000000000\", \"secretId\":\n\"xxx\", \"type\":\n\"Root\", \"userName\":\n\"root\n\", \"sessionContext\":\n\"{\n\"token\":\n\"xxx\", \"userIp\":\n\"163.177.\n68.30\", \"uin\":\n100000000000, \"ownerUin\":\n100000000000, \"appId\":\n100000000000, \"expireTime\":\n\"2021-01-15 17:35:55\", \"mfa\":\n0, \"mfaExpireTime\":\n\"0000-00-00 00:00:00\", \"interfaceName\":\n\"\", \"hasPolicyFilter\":\n0, \"policyFilter\":\n\"\", \"extraInfo\":\n\"\"}\", \"@timestamp\":\n\"2021-01-15T07:35:59.115042\", \"onlyRecordNotSeen\n\":\n\"0\", \"eventRegion\":\n\"ap-guangzhou\", \"eventVersion\":\n2, \"errorCode\":\n\"0\", \"errorMessage\":\n\"permission verify\", \"requestID\":\n\"c8c04477-eb9e-4703-84ae-f8\n758c6084ff\", \"eventID\":\n\"c8c04477-eb9e-4703-84ae-f8758c6084ff\", \"apiVersion\":\n\"3.0\", \"eventType\":\n\"ConsoleCall\", \"actionType\":\n\"Read\", \"authMode\":\n\"0\", \"isRisk\":\n\"0\", \"ruleId\":\n\"0\", \"httpMethod\":\n\"POST\", \"apiErrorCode\":\n\"0\", \"apiErrorMessage\":\n\"\", \"userAgent\":\n\"SDK_NODEJS_0.2.1\", \"eventTime\":\n1610696\n155, \"updateEsTime\":\n16106961641644206, \"sensitiveAction\":\n\"\", \"eventPlatform\":\n\"0\", \"sourceIPAddress\":\n\"9.83.55.32\", \"resourceType\":\n\"cloudaudit\", \"event\nName\":\n\"LookUpEvents\", \"eventSource\":\n\"cloudaudit.ap-chongqing.api.tencentyun.\ncom\", \"requestParameters\":\n\"{\n\"Region\":\n\"ap-guangzhou\", \"SecretId\n\":\n\"xxx\", \"Timestamp\":\n\"1610696155\", \"Nonce\":\n\"1128\n9\", \"RequestClient\":\n\"SDK_NODEJS_0.2.1\", \"StartTime\":\n\"16\n10121600\", \"EndTime\":\n\"1610726399\", \"MaxResults\":\n\"20\", \"Mode\":\n\"standard\", \"Version\":\n\"2019-03-19\", \"Action\n\":\n\"LookUpEvents\", \"RequestOperator\":\n\"100000000000\", \"To\nken\":\n\"xxx\", \"RequestSource\":\n\"MC\", \"seqId\":\n\"1be35\n142-f784-64d4-4502-a1250702edcd\"}\", \"resources\":\n\"[*]\", \"resourceNa\nme\":\n\"\", \"cloudapi\":\n1, \"auth\":\n1, \"signature\":\n\"0\"}",
        "eventRegion": "ap-guangzhou",
        "eventVersion": 2,
        "errorCode": "0",
        "errorMessage": "permission verify",
        "requestID": "c8c04477-eb9e-4703-84ae-f8758c6084ff",
        "eventID": "c8c04477-eb9e-4703-84ae-f8758c6084ff",
        "apiVersion": "3.0",
        "eventType": "ConsoleCall",
        "actionType": "Read",
        "authMode": "0",
        "isRisk": "0",
        "ruleId": "0",
        "httpMethod": "POST",
        "apiErrorCode": "0",
        "apiErrorMessage": "",
        "userAgent": "SDK_NODEJS_0.2.1",
        "eventTime": 1610696155,
        "updateEsTime": 16106961641644206,
        "sensitiveAction": "",
        "eventPlatform": "0",
        "sourceIPAddress": "9.83.55.32",
        "resourceType": "cloudaudit",
        "eventName": "LookUpEvents",
        "eventSource": "cloudaudit.ap-chongqing.api.tencentyun.com",
        "requestParameters": "{\n\"Region\":\n\"ap-guangzhou\", \"SecretId\n\":\n\"xxx\", \"Timestamp\":\n\"1610696155\", \"Nonce\":\n\"1128\n9\", \"RequestClient\":\n\"SDK_NODEJS_0.2.1\", \"StartTime\":\n\"16\n10121600\", \"EndTime\":\n\"1610726399\", \"MaxResults\":\n\"20\", \"Mode\":\n\"standard\", \"Version\":\n\"2019-03-19\", \"Action\n\":\n\"LookUpEvents\", \"RequestOperator\":\n\"100000000000\", \"To\nken\":\n\"xxx\", \"RequestSource\":\n\"MC\", \"seqId\":\n\"1be35\n142-f784-64d4-4502-a1250702edcd\"}\", \"resources\":\n\"[*]\", \"resourceNa\nme\":\n\"\", \"cloudapi\":\n1, \"auth\":\n1, \"signature\":\n\"0\"}"
      }
    ]
  }
}
```

```
"EventName": "LookUpEvents",
"EventTime": 1610696155,
"SecretId": "xxx",
"ErrorCode": "0",
"RequestId": "c8c04477-eb9e-4703-84ae-f8758c6084ff",
"SourceIPAddress": "9.83.55.32",
"EventSource": "cloudaudit.ap-chongqing.api.tencentyun.com",
"EventRegion": "ap-guangzhou",
"Resources": {
  "ResourceName": "",
  "ResourceType": "cloudaudit"
},
"Username": "root",
"EventNameCn": "",
"ResourceRegion": ""
},
"NextToken": 16106961641644206,
"RequestId": "2d4a7fba-bba8-452e-a99e-ccf11fdaa583"
}
```

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
FailedOperation	Operation failed.
InternalError	Internal error.
InvalidParameter	Parameter error.
LimitExceeded.OverAmount	The maximum number of tracking sets has been exceeded.

DescribeAuditTracks

最近更新时间：2023-01-04 11:45:00

1. API Description

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

This API is used to query the CloudAudit tracking set list.

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: DescribeAuditTracks.
Version	Yes	String	Common Params . The value used for this API: 2019-03-19.
Region	Yes	String	Common Params . For more information, please see the list of regions supported by the product.
PageNumber	Yes	Integer	Page number
PageSize	Yes	Integer	The number of tracking sets per page

3. Output Parameters

Parameter Name	Type	Description

Tracks	Array of Tracks	Tracking set list
TotalCount	Integer	Total number of tracking sets
RequestId	String	The unique request ID, which is returned for each request. RequestId is required for locating a problem.

4. Example

Example1 Querying the CloudAudit tracking set list

Input Example

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

{
  "PageNumber": 1,
  "PageSize": 10
}
```

Output Example

```
{
  "Response": {
    "Tracks": [
      {
        "TrackId": 1,
        "Name": "audit",
        "ActionType": "Read",
        "ResourceType": "audit",
        "EventNames": [
          "LookUpEvents"
        ],
        "Storage": {
          "StorageName": "audit-cos",
          "StoragePrefix": "test",
          "StorageRegion": "ap-guangzhou",
          "StorageType": "cos"
        },
      }
    ]
  }
}
```



```
"Status": 1,
"CreateTime": "2021-01-14 14:43:38"
},
],
"TotalCount": 1,
"RequestId": "2d4a7fba-bba8-452e-a99e-ccf11fdaa583"
}
```

5. Developer Resources

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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
InternalServerError	Internal error.
InvalidParameter	Parameter error.
InvalidParameterValue.AliasAlreadyExists	The alias already exists.
LimitExceeded.OverAmount	The maximum number of tracking sets has been exceeded.

ModifyAuditTrack

最近更新时间：2023-01-04 11:44:59

1. API Description

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

This API is used to modify a CloudAudit tracking set.

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: ModifyAuditTrack.
Version	Yes	String	Common Params . The value used for this API: 2019-03-19.
Region	Yes	String	Common Params . For more information, please see the list of regions supported by the product.
TrackId	Yes	Integer	Tracking set ID
Name	No	String	Tracking set name, which can only contain 3-48 letters, digits, hyphens, and underscores.
ActionType	No	String	Tracking set event type (<code>Read</code> : Read; <code>Write</code> : Write; <code>*</code> : All)
ResourceType	No	String	The product to which the tracking set event belongs. The value can be a single product such as <code>cos</code> , or <code>*</code> that indicates all products.

Status	No	Integer	Tracking set status (0: Not enabled; 1: Enabled)
EventNames.N	No	Array of String	The list of API names of tracking set events. When <code>ResourceType</code> is <code>*</code> , the value of <code>EventNames</code> must be <code>*</code> . When <code>ResourceType</code> is a specified product, the value of <code>EventNames</code> can be <code>*</code> . When <code>ResourceType</code> is <code>cos</code> or <code>cls</code> , up to 10 APIs are supported.
Storage	No	Storage	Storage type of shipped data. Valid values: <code>cos</code> , <code>cls</code> .
TrackForAllMembers	No	Integer	Whether to enable the feature of shipping organization members' operation logs to the organization admin account or the trusted service admin account (0: Not enabled; 1: Enabled. This feature can only be enabled by the organization admin account or the trusted service admin account)

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 Modifying CloudAudit tracking set

Input Example

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

{
  "TrackId": 1,
  "Name": "audit",
```

```
"ActionType": "Read",
"ResourceType": "audit",
"Status": 0,
"TrackForAllMembers": 1,
"EventNames": [
  "LookUpEvents",
  "DeleteAudit"
],
"Storage": {
  "StorageType": "cos",
  "StorageRegion": "ap-guangzhou",
  "StorageName": "audit-cos",
  "StoragePrefix": "test"
}
```

Output Example

```
{
  "Response": {
    "RequestId": "2d4a7fba-bba8-452e-a99e-ccf11fdaa583"
  }
}
```

5. Developer Resources

SDK

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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.CheckClsTopicsExistFailed	Failed to check whether the CLS log topic exists
FailedOperation.CheckCosBucketExistFailed	Failed to check whether the COS bucket exists
FailedOperation.GetClsTopicFailed	Failed to pull the CLS log topic
FailedOperation.GetCosBucketListFailed	Failed to pull the COS bucket list
InternalServerError	Internal error.
InternalServerError.SearchError	An internal error occurred. Submit a ticket for assistance.
InvalidParameter	Parameter error.
InvalidParameterValue.AliasAlreadyExists	The alias already exists.
InvalidParameterValue.AuditTrackNameNotSupportModify	The tracking set name cannot be modified.
InvalidParameterValue.CosRegionError	CloudAudit currently does not support the entered COS region.
LimitExceeded.OverAmount	The maximum number of tracking sets has been exceeded.
ResourceNotFound	The resource doesn't exist.
ResourceNotFound.AuditNotExist	The tracking set does not exist.

DeleteAuditTrack

最近更新时间：2023-01-04 11:45:01

1. API Description

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

This API is used to delete a CloudAudit tracking set.

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: DeleteAuditTrack.
Version	Yes	String	Common Params . The value used for this API: 2019-03-19.
Region	Yes	String	Common Params . For more information, please see the list of regions supported by the product.
TrackId	Yes	Integer	Tracking set ID

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 CloudAudit tracking set

Input Example

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

{
  "TrackId": 1
}
```

Output Example

```
{
  "Response": {
    "RequestId": "2d4a7fba-bba8-452e-a99e-ccf11fdaa583"
  }
}
```

5. Developer Resources

SDK

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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.
InvalidParameterValue.AliasAlreadyExists	The alias already exists.
LimitExceeded.OverAmount	The maximum number of tracking sets has been exceeded.
ResourceNotFound.AuditNotExist	The tracking set does not exist.

CreateAuditTrack

最近更新时间：2023-01-04 11:45:01

1. API Description

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

This API is used to create a tracking set.

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: CreateAuditTrack.
Version	Yes	String	Common Params . The value used for this API: 2019-03-19.
Region	Yes	String	Common Params . For more information, please see the list of regions supported by the product.
Name	Yes	String	Tracking set name, which can only contain 3-48 letters, digits, hyphens, and underscores.
ActionType	Yes	String	Tracking set event type (<code>Read</code> : Read; <code>Write</code> : Write; <code>*</code> : All)
ResourceType	Yes	String	The product to which the tracking set event belongs. The value can be a single product such as <code>cos</code> , or <code>*</code> that indicates all products.
Status	Yes	Integer	Tracking set status (0: Not enabled; 1: Enabled)

EventNames.N	Yes	Array of String	The list of API names of tracking set events. When <code>ResourceType</code> is <code>*</code> , the value of <code>EventNames</code> must be <code>*</code> . When <code>ResourceType</code> is a specified product, the value of <code>EventNames</code> can be <code>*</code> . When <code>ResourceType</code> is <code>cos</code> or <code>cls</code> , up to 10 APIs are supported.
Storage	Yes	Storage	Storage type of shipped data. Valid values: <code>cos</code> , <code>cls</code> .
TrackForAllMembers	No	Integer	Whether to enable the feature of shipping organization members' operation logs to the organization admin account or the trusted service admin account (0: Not enabled; 1: Enabled. This feature can only be enabled by the organization admin account or the trusted service admin account)

3. Output Parameters

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

4. Example

Example1 Creating a tracking set

Input Example

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

{
  "Name": "audit",
  "ActionType": "Read",
```

```
"ResourceType": "audit",
"Status": 1,
"TrackForAllMembers": 1,
"EventNames": [
  "LookUpEvents",
  "DeleteAudit"
],
"Storage": {
  "StorageType": "cos",
  "StorageRegion": "ap-guangzhou",
  "StorageName": "audit-cos",
  "StoragePrefix": "test"
}
```

Output Example

```
{
  "Response": {
    "TrackId": 1,
    "RequestId": "2d4a7fba-bba8-452e-a99e-ccf11fdaa583"
  }
}
```

5. Developer Resources

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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.CheckClsTopicsExistFailed	Failed to check whether the CLS log topic exists
FailedOperation.CheckCosBucketIsExistFailed	Failed to check whether the COS bucket exists
FailedOperation.GetClsTopicFailed	Failed to pull the CLS log topic
FailedOperation.GetCosBucketListFailed	Failed to pull the COS bucket list
InternalServerError	Internal error.
InternalServerError.SearchError	An internal error occurred. Submit a ticket for assistance.
InvalidParameter	Parameter error.
InvalidParameterValue.AliasAlreadyExists	The alias already exists.
InvalidParameterValue.CosRegionError	CloudAudit currently does not support the entered COS region.
LimitExceeded.OverAmount	The maximum number of tracking sets has been exceeded.
ResourceNotFound	The resource doesn't exist.

DescribeAuditTrack

最近更新时间：2023-01-04 11:45:00

1. API Description

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

This API is used to query the CloudAudit tracking set 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: DescribeAuditTrack.
Version	Yes	String	Common Params . The value used for this API: 2019-03-19.
Region	Yes	String	Common Params . For more information, please see the list of regions supported by the product.
TrackId	Yes	Integer	Tracking set ID

3. Output Parameters

Parameter Name	Type	Description
Name	String	Tracking set name

ActionType	String	Tracking set event type (<code>Read</code> : Read; <code>Write</code> : Write; <code>*</code> : All)
ResourceType	String	The product to which the tracking set event belongs, such as <code>cos</code> , or <code>*</code> that indicates all products
Status	Integer	Tracking set status (0: Not enabled; 1: Enabled)
EventNames	Array of String	The list of API names of tracking set events (<code>*</code> : All)
Storage	Storage	Storage type of shipped data. Valid values: <code>cos</code> , <code>cls</code> .
CreateTime	String	Creation time of the tracking set
TrackForAllMembers	Integer	Whether to enable the feature of shipping organization members' operation logs to the organization admin account or the trusted service admin account 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 the CloudAudit tracking set details

Input Example

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

{
  "TrackId": 1
}
```

Output Example

```
{
  "Response": {
    "Name": "audit",
```

```
"ActionType": "Read",
"ResourceType": "audit",
"EventNames": [
  "LookUpEvents"
],
"Storage": {
  "StorageName": "audit-cos",
  "StoragePrefix": "test",
  "StorageRegion": "ap-guangzhou",
  "StorageType": "cos"
},
"TrackForAllMembers": 1,
"Status": 1,
"CreateTime": "2021-01-14 14:43:38",
"RequestId": "2d4a7fba-bba8-452e-a99e-ccf11fdaa583"
}
```

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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
InternalServerError	Internal error.
InvalidParameter	Parameter error.
InvalidParameterValue.AliasAlreadyExists	The alias already exists.
LimitExceeded.OverAmount	The maximum number of tracking sets has been exceeded.
ResourceNotFound.AuditNotExist	The tracking set does not exist.

数据结构

最近更新时间：2020-03-18 15:17:11

AttributeKeyDetail

AttributeKey值详情

被如下接口引用：GetAttributeKey。

名称	类型	必选	描述
Label	String	是	中文标签
LabelType	String	是	输入框类型
Order	Integer	是	展示排序
Starter	String	是	初始化展示
Value	String	是	AttributeKey值

AuditSummary

跟踪集概览

被如下接口引用：ListAudits。

名称	类型	必选	描述
AuditName	String	否	跟踪集名称
AuditStatus	Integer	否	跟踪集状态，1：开启，0：关闭
CosBucketName	String	否	COS存储桶名称
LogFilePrefix	String	否	日志前缀

CmqRegionInfo

cmq地域信息

被如下接口引用：ListCmqEnableRegion。

名称	类型	必选	描述
CmqRegion	String	否	cmq地域
CmqRegionName	String	否	地域描述

CosRegionInfo

cmq地域信息

被如下接口引用：ListCosEnableRegion。

名称	类型	必选	描述
CosRegion	String	否	cos地域
CosRegionName	String	否	地域描述

Event

日志详情

被如下接口引用：LookUpEvents。

名称	类型	必选	描述
Resources	Resource	否	资源对
AccountID	Integer	否	主账号ID
CloudAuditEvent	String	否	日志详情
ErrorCode	Integer	否	鉴权错误码
EventId	String	否	日志ID
EventName	String	否	事件名称
EventNameCn	String	否	事件名称中文描述（此字段请按需使用，如果您是其他语言使用者，可以忽略该字段描述）
EventRegion	String	否	事件地域

名称	类型	必选	描述
EventSource	String	否	请求来源
EventTime	String	否	事件时间
RequestId	String	否	请求ID
ResourceRegion	String	否	资源地域
ResourceTypeCn	String	否	资源类型中文描述（此字段请按需使用，如果您是其他语言使用者，可以忽略该字段描述）
SecretId	String	否	证书ID
SourceIPAddress	String	否	源IP
Username	String	否	用户名

LookupAttribute

检索条件

被如下接口引用：LookUpEvents。

名称	类型	必选	描述
AttributeKey	String	是	AttributeKey的有效取值范围是:RequestId、EventName、ReadOnly、Username、ResourceType、ResourceName和AccessKeyId, EventId
AttributeValue	String	否	AttributeValue

Resource

资源类型

被如下接口引用：LookUpEvents。

名称	类型	必选	描述
ResourceName	String	否	资源名称
ResourceType	String	否	资源类型

错误码

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功能说明

如果返回结果中存在 **Error** 字段，则表示调用 **API** 接口失败。例如：

```
{
  "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"
  }
}
```

Error 中的 **Code** 表示错误码，**Message** 表示该错误的具体信息。

错误码列表

公共错误码

错误码	说明
UnsupportedOperation	操作不支持。
ResourceInUse	资源被占用。
InternalError	内部错误。
RequestLimitExceeded	请求的次数超过了频率限制。
AuthFailure.SecretIdNotFound	密钥不存在。请在控制台检查密钥是否已被删除或者禁用，如状态正常，请检查密钥是否填写正确，注意前后不得有空格。
LimitExceeded	超过配额限制。
NoSuchVersion	接口版本不存在。
ResourceNotFound	资源不存在。

错误码	说明
AuthFailure.SignatureFailure	签名错误。签名计算错误，请对照调用方式中的签名方法文档检查签名计算过程。
AuthFailure.SignatureExpire	签名过期。 Timestamp 和服务器时间相差不得超过五分钟，请检查本地时间是否和标准时间同步。
UnsupportedRegion	接口不支持所传地域。
UnauthorizedOperation	未授权操作。
InvalidParameter	参数错误。
ResourceUnavailable	资源不可用。
AuthFailure.MFAFailure	MFA 错误。
AuthFailure.UnauthorizedOperation	请求未授权。请参考 CAM 文档对鉴权的说明。
AuthFailure.InvalidSecretId	密钥非法（不是云 API 密钥类型）。
AuthFailure.TokenFailure	token 错误。
DryRunOperation	DryRun 操作，代表请求将会是成功的，只是多传了 DryRun 参数。
FailedOperation	操作失败。
UnknownParameter	未知参数错误。
UnsupportedProtocol	HTTP(S)请求协议错误，只支持 GET 和 POST 请求。
InvalidParameterValue	参数取值错误。
InvalidAction	接口不存在。
MissingParameter	缺少参数错误。
ResourceInsufficient	资源不足。

业务错误码

错误码	说明
FailedOperation.CreateBucketFail	创建COS存储桶失败
InternalError.CmqError	创建cmq时发生异常，可能您准备创建的cmq队列已经存在，也有可能您没有权限或者欠费。

错误码	说明
InternalServerError.CreateAuditError	创建跟踪集错误，请联系开发人员。
InternalServerError.DeleteAuditError	删除跟踪集失败，请联系开发人员
InternalServerError.DescribeAuditError	查看跟踪集详情错误，请联系开发人员
InternalServerError.InquireAuditCreditError	查询可创建跟踪集的数量错误，请联系开发人员
InternalServerError.ListAuditsError	查询跟踪集概要内部错误，请联系开发人员。
InternalServerError.ListCmqEnableRegionError	内部错误，请联系开发人员
InternalServerError.ListCosEnableRegionError	内部错误，请联系开发人员
InternalServerError.SearchError	内部错误，请联系开发人员
InternalServerError.StartLoggingError	内部错误，请联系开发人员
InternalServerError.StopLoggingError	内部错误，请联系开发人员
InternalServerError.UpdateAuditError	内部错误，请联系开发人员
InvalidParameter.Time	必须包含开始时间和结束时间，且必须为整形时间戳（精确到秒）
InvalidParameterValue.AuditNameError	跟踪集名称不符合规则
InvalidParameterValue.CmqRegionError	云审计目前不支持输入的cmq地域
InvalidParameterValue.CosNameError	输入的cos存储桶名称不符合规范
InvalidParameterValue.CosRegionError	云审计目前不支持输入的cos地域
InvalidParameterValue.IsCreateNewBucketError	IsCreateNewBucket的有效取值范围是0和1，0代表不创建新的存储桶，1代表创建新的存储桶。
InvalidParameterValue.IsCreateNewQueueError	IsCreateNewQueue的有效取值范围是0和1，0代表不新建，1代表新建。
InvalidParameterValue.IsEnabledCmqNotifyError	IsEnableCmqNotify的有效取值范围是0和1，0代表不开启投递cmq,1代表开启cmq投递。
InvalidParameterValue.LogFilePrefixError	日志前缀格式错误
InvalidParameterValue.MaxResult	单次检索支持的最大返回条数是50
InvalidParameterValue.QueueNameError	输入的队列名称不符合规范

错误码	说明
InvalidParameterValue.ReadWriteAttributeError	读写属性值仅支持：1,2,3。1代表只读，2代表只写，3代表全部。
InvalidParameterValue.Time	开始时间不能大于结束时间
InvalidParameterValue.attributeKey	AttributeKey的有效取值范围是:RequestId、EventName、ReadOnly、Username、ResourceType、ResourceName和AccessKeyId
LimitExceeded.OverAmount	超过跟踪集的最大值
LimitExceeded.OverTime	检索支持的有效时间范围是7天
MissingParameter.MissAuditName	缺少跟踪集名称
MissingParameter.MissCosBucketName	缺少cos存储桶参数
MissingParameter.MissCosRegion	缺少cos地域参数
MissingParameter.cmq	IsEnableCmqNotify输入1的话，IsCreateNewQueue、CmqQueueName和CmqRegion都是必须参数。
ResourceInUse.AlreadyExistsSameAudit	已经存在相同名称的跟踪集
ResourceInUse.AlreadyExistsSameAuditCmqConfig	已经存在相同cmq投递配置的跟踪集
ResourceInUse.AlreadyExistsSameAuditCosConfig	已经存在相同cos投递配置的跟踪集
ResourceInUse.CosBucketExists	cos存储桶已经存在
ResourceNotFound.AuditNotExist	跟踪集不存在