

盛大云存储 C 语言 SDK 使用说明

目录

1. 综述.....	- 2 -
2. 系统要求.....	- 2 -
3. 盛大云存储的基本概念.....	- 2 -
3.1 AccessKey	- 2 -
3.2 SecretAccessKey	- 2 -
3.3 Bucket.....	- 3 -
3.4 Bucket 的命名规则.....	- 3 -
3.5 Object.....	- 3 -
3.6 ObjectName 的命名规则	- 3 -
4. C-SDK 的简单使用说明.....	- 3 -
4.1 SDK 目录说明.....	- 3 -
4.2 安装部署	- 4 -
5. C-SDK 文档	- 6 -
5.1 通用说明	- 6 -
5.2 Service 相关接口	- 8 -
5.3 Bucket 相关接口.....	- 9 -
5.4 Object 相关接口	- 25 -

1. 综述

盛大云存储 C 语言 SDK 参照盛大云存储 REST API 文档 (https://cs-console.grandcloud.cn/public/docs/GrandCloud_Storage_Developer_Guide.pdf), 为用户提供标准 C 的本地接口, 通过使用 SDK, 用户可以方便的接入和访问盛大云存储服务。

2. 系统要求

当前版本的 C 语言 SDK 依赖于一些外部的库, 用户同样需要将这些库添加到自己的工程依赖中, 它们是:

- libcurl 7.25.0 download: <http://curl.haxx.se/download.html>
- openssl 1.0.1c download: <http://www.openssl.org/source/>
- libxml2 download: <http://www.xmlsoft.org/downloads.html>

用户需要根据自己的平台, 下载、编译、安装相应的库, 并将相应的头文件目录和库目录添加进编译、链接路径。

3. 盛大云存储的基本概念

3.1 AccessKey

AccessKey 由盛大云存储单独颁发。AccessKey 在所有的操作中都会被使用, 并且会以明文形式传输。用于标识用户身份。每位用户一个, 不会重复。

AccessKey 通过云计算网站的云存储用户信息管理获得: <http://www.grandcloud.cn> (需要登录)。

3.2 SecretAccessKey

SecretAccessKey 也由盛大云存储颁发, SecretAccessKey 总是随同 AccessKey 一起分发, 一个 AccessKey 对应一个 SecretAccessKey。

SecretAccessKey 通过云计算网站的云存储用户信息管理获得: <http://www.grandcloud.cn> (需要登录)。

出于安全问题的考虑, 对云存储的所有的操作都需要由 SecretAccessKey 签名摘要后才能有效, 摘要信息将成为请求的一部分, 发送给云系统。

任何时候 SecretAccessKey 都不应发送给盛大云存储系统。

SecretAccessKey 涉及您存储资料的安全问题, 所以请妥善保存您的 SecretAccessKey, 不要泄漏给第三方。如 SecretAccessKey 发生泄漏, 请立即登录盛大云计算网站, 云存储用户信息管理, 将原 SecretAccessKey 作废, 重新生成。

3.3 Bucket

在用户空间内，用户根据需要可以建立不同的 Bucket。

你可以把 Bucket 想象成文件系统内的目录，在盛大云存储系统中一个用户空间内最多只能有 100 个 Bucket。

Bucket 命名全局唯一，也就是说所有盛大云存储的用户的 Bucket 都是不一样的。例如有 A 用户建立了名为”aaa”的 Bucket，此时 B 用户希望创建名字同样为”aaa”的 Bucket 将会失败。

3.4 Bucket 的命名规则

- a) 由小写字母或数字或点号(.) 或下划线(_)或破折号(-)组合而成。
- b) 开头必须是 数字或者小写字母。
- c) 长度必须 大于等于 3 字节 小于等于 255 字节
- d) 不能是一个 IP 地址形式。比如 192.168.1.1 这样的格式是不允许的
- e) 不能以 snda 作为 Bucket 的开头
- f) 如果希望以后提供 DNS 解析，则 Bucket 命名还需符合 DNS 主机名的命名规则

3.5 Object

Object 是盛大云存储的主要对象。用户存储的内容都以 Object 形式存储在系统里。

1 个 Object 必须存储在盛大云存储系统的某个 Bucket 内。

1 个 Object 包含了 **ObjectName**，**ObjectMetadata** 以及 **ObjectData** 3 个部分。

ObjectName 就是 Object 的名字，在同一个 Bucket 下的 ObjectName 是唯一的。

3.6 ObjectName 的命名规则

- a) 使用 Utf-8 编码规则
- b) ObjectName 的长度大于等于 1 字节小于等于 1024 字节

4. C-SDK 的简单使用说明

当前版本的 C 语言 SDK 以源代码的形式提供给用户，用户可以直接将本 SDK 的源代码整合到自己的工程当中。SDK 支持 windows 和 Linux 2 个平台。

4.1 SDK 目录说明

当前版本的 SDK 包含 3 个目录：

src 目录下包含两个目录。其中 src/sdk 为 SDK 的所有文件源码，用户可以自行进行编译和并在自己的编写的程序中调用。src/example 为调用 SDK 的简单案例，其中 snda_ecs_console.c 是一个简单的例子，该例子完成了一个简单的客户端，可完成大部分云

存储操作；其它文件是 SDK 目前支持的云存储操作的简单案例，用户可模仿它们使用 SDK。

目录 libs 内的文件是 SDK 所需要的一些库，包括 windows 和 linux 下的库。

目录 doc 内的文件是 SDK 的使用文档。

4.2 安装部署

4.2.1 Linux 下的使用

编译安装系统要求中提及的依赖库后，Linux 下可通过类似如下命令行编译代码：

```
gcc src/sdk/*.c src/example/snda_ecs_console.c -I./sdk -I/usr/local/include/ -I/usr/local/ssl/include/  
-I/usr/local/include/libxml2/ -L/usr/local/ssl/lib -lcurl -lxml2 -lssl -lcrypto -o client
```

4.2.2 Windows 下的使用

Windows 下的使用较为复杂，以下以在 VS2008 中的使用为例。

- 新建 Project：选择新建【Visual C++/Win32】下的【Win32 Console Application】，在参数选择中选择创建空项目即可。
- 导入 SDK 代码：选中项目右击，选择【add】中的【 Existing Item.】，将 src/sdk 目录下的所有代码导入即可。
- 导入必要的库：需要导入五个库，五个库的相关资源可在 lib/windows 下找到。
 - a) 添加到附加的 include 目录：选中项目，右键，选择【properties】，在【Configuration Properties/C/C++/General】中作如下配置：

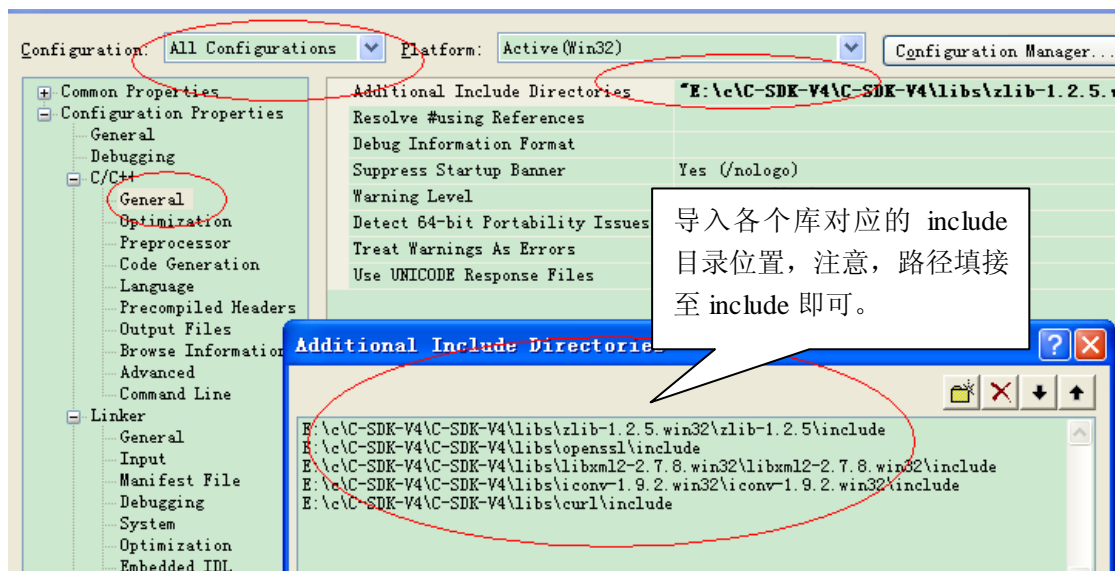


图 3.1 导入 include 目录

- b) 修改 Linker 配置：同上，在 properties 中，找到【 Configuration Properties/Linker/General】，将各个库对应的 lib 目录添加到 Additional Library Directory：

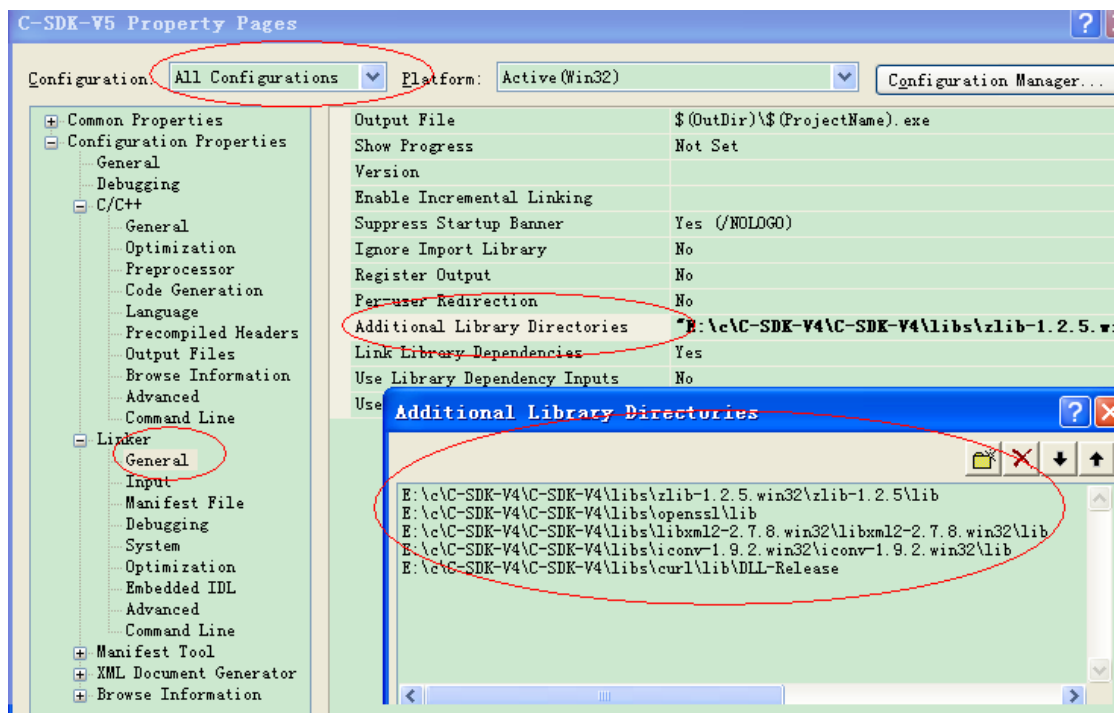


图 3.2 导入 lib 目录

c) 在【Input】的 Additional Dependencies 中加入各个 lib:

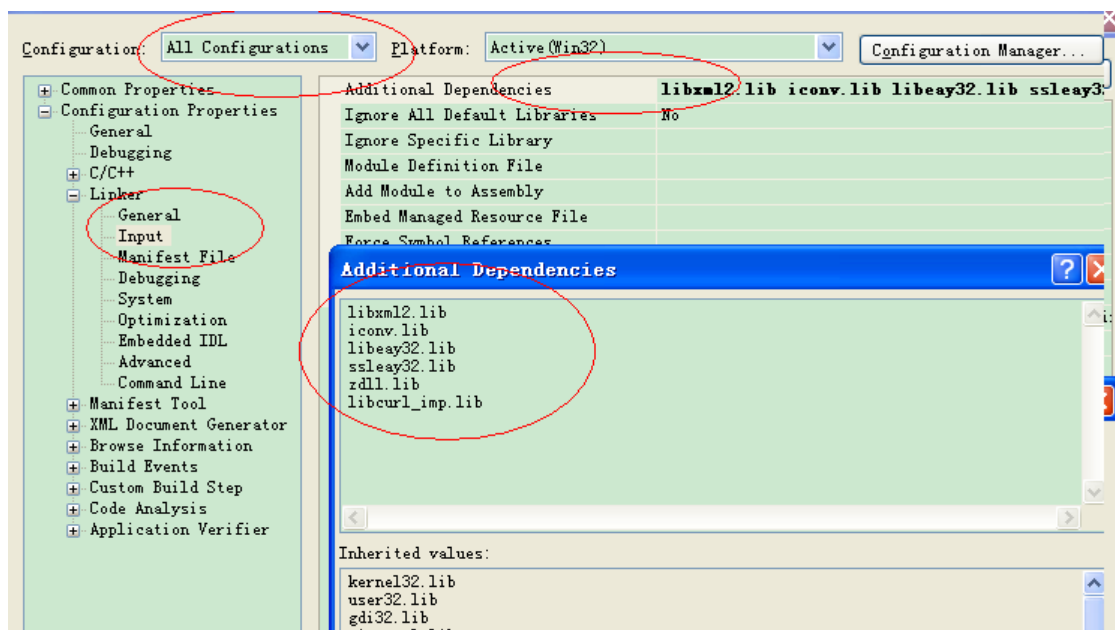


图 3.3: 添加附加的 lib 库

d) 配置 dll 文件: 编译项目, 编译完成后, 将各个库的 dll 文件拷贝至项目的 Debug 目录下即可。以下为 Debug 目录导入的 dll 文件。

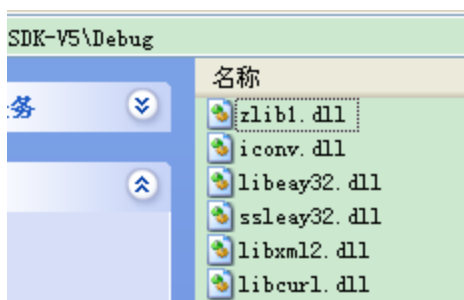


图 3.4 Debug 下的 dll 文件

5. C-SDK 文档

当前版本 C 语言 SDK 代码目录结构为：

```
sdk/
|-- snda_ecs_common_util.c
|-- snda_ecs_common_util.h
|-- snda_ecs_constants.h
|-- snda_ecs_encode.c
|-- snda_ecs_encode.h
|-- snda_ecs_http_util.c
|-- snda_ecs_http_util.h
|-- snda_ecs_sdk_bucket_impl.c
|-- snda_ecs_sdk_common_impl.c
|-- snda_ecs_sdk.h
|-- snda_ecs_sdk_multipart_upload.c
|-- snda_ecs_sdk_object_impl.c
|-- snda_ecs_sdk_service_impl.c
```

5.1 通用说明

snda_ecs_sdk.h 用户需要且仅需要包含的头文件，其中包含：

5.1.1 数据结构定义

在每一种数据结构的定义之后，都紧接着定义了初始化该结构指针和释放该结构指针的方法。例如：

```
typedef struct SNDAECSHandlerError {
    char * handlererrormsg;
} SNDAECSHandlerError;
```

```
SNDAECSHandlerError* snda_ecs_init_handler_error();
```

```
void snda_ecs_release_handler_error(SNDAECSHandlerError* error);
```

用户创建和销毁相应数据结构时，都**必须**使用本 SDK 提供的相应方法。

5.1.2 接口定义

盛大云存储 C 语言 SDK 相应接口都具有下面的格式：

```
SNDAECSErrorCode  
snda_ecs_{method}(  
    SNDAECSHandler* handler,  
    const char* accesskey,  
    const char* secretkey,  
    ... ..,  
    SNDAECSResult* ret);  
返回值: SNDAECSErrorCode
```

只有在该接口调用成功获得服务端响应（正确响应或者错误相应）时，返回 SNDA_ECS_SUCCESS，其他情况下返回其他值。

- 当返回 SNDA_ECS_SUCCESS 时，用户可以通过 `ret->serverresponse->httpcode` 来获得服务端返回的 http 状态码，并判断服务端是否成功响应请求。
 - a) 当服务端给出错误响应时，用户可以调用
`SNDAECSErrorResponseContent*snda_ecs_to_error_response(SNDAECSResult*)`
来获取服务端详细的错误响应信息。
 - b) 当服务端给出正确响应时，对于没有消息体的请求，操作结束；对于有消息体的请求，用户可以调用 `snda_ecs_to_xxx(SNDAECSResult*)` 来获得相应的消息结构。具体在接口介绍中会详细介绍。
- 当返回非 SNDA_ECS_SUCCESS 时，用户可以通过 `ret->error->handlererrmsg` 获取一个可读的客户端错误信息

参数说明：

输入参数: SNDAECSHandler* handler

盛大云存储 C 语言 SDK HTTP 请求句柄，用户需要通过 `snda_ecs_init_handler()` 获取该句柄指针，该句柄可以在单线程中多次重复使用，在确认不在使用后，通过调用 `snda_ecs_release_handler(SNDAECSHandler*)` 释放其占用资源。

输入参数: const char* accesskey

用户在盛大云存储申请的用来标识用户身份的标识。具体参见盛大云存储开发者文档。

输入参数: const char* secretkey

盛大云存储颁发给用户的密钥，和 accesskey 一一对应。

输出参数: SNDAECSResult* ret

盛大云存储 C 语言 SDK 通用输出结构，其结构体为：

```
typedef struct SNDAECSResult {  
    SNDAECSHandlerError* error;  
    SNDAECSServerResponse * serverresponse;  
} SNDAECSResult;
```

其中 SNDAECSHandlerError* error 在接口返回非 SNDA_ECS_SUCCESS 时，包含可读的错误信息。

SNDAECSServerResponse * serverresponse 在接口返回 SNDA_ECS_SUCCESS 时，包含相应的响应消息。

用户必须通过 `snda_ecs_init_result()` 来获取该结构体指针，并且在不再需要使用时调用

snda_ecs_release_result()来释放相应资源。

当用户希望在下一个调用中重用该结构体之前，**必须**调用

snda_ecs_reset_result(SNDAECSResult*)来重新初始化该结构体。

5.1.3 环境初始化

本 SDK 存在两个全局环境初始化和相应清理的函数。用户在使用本 SDK 之前，必须调用并且只能调用一次相应接口，它们是：

```
snda_ecs_global_init();           // init before any sdk action once and only once
```

```
snda_ecs_global_uninit();        // clear after any sdk action once and only once
```

5.2 Service 相关接口

5.2.1 获取所有 Bucket

该接口对应盛大云存储开发者文档中的 `GetService`，用户可以通过该操作列出所有 **Bucket** 信息。可通过设置参数 `ssl` 控制是否使用 **SSL** 安全加密操作。

接口定义：

```
/**
 * get service
 * @param SNDAECSHandler* handler, the handler you had initialized by
 invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param int ssl, whether to use https
 * @param SNDAECSResult* ret, SNDAECSResult* created from
 snda_ecs_init_result(), if you want to reuse this pointer, MAKE SURE
 invoke snda_ecs_reset_result(SNDAECSResult*) to reset this pointer
 to initial status.
 * return SNDAECSErrorCode
 */
SNDAECSErrorCode snda_ecs_get_service(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    int ssl,
    SNDAECSResult* ret);
```

详细使用实例：

```
void get_service_example(const char* accesskey, const char* secretkey, int ssl) {
    SNDAECSHandler* handler = 0;
    SNDAECSResult* ret = 0;
```



```
SNDAECSErrorCode retcode ;
snda_ecs_global_init();
handler = snda_ecs_init_handler();
ret = snda_ecs_init_result();
retcode = snda_ecs_get_service(handler, accesskey,secretkey, ssl, ret);
if (retcode != SNDA_ECS_SUCCESS) {
    printf ("ClientErrorMessage:%s\n", ret->error->handlererrmsg);
} else if (ret->serverresponse->httpcode == 200) {
    SNDAECSServiceResultContent* content =
        snda_ecs_to_get_service_result(ret);
    // show get service content
    for (; content; content = content->next) {
        printf ("BucketName:%s\n", content->bucketname);
        printf ("CreationTime:%s\n", content->creationtime);
    }
    // ALWAYS REMEMBER to release pointer resource by releated release method
    snda_ecs_release_get_service_result_content(content);
} else {
    SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
    printf ("ErrorCode:%s\n", content->code);
    printf ("ErrorMessage:%s\n", content->message);
    printf ("Resource:%s\n", content->resource);
    printf ("RequestId:%s\n", content->requestid);
    printf ("AllErrorMessage:%s\n", content->fullbody);
    snda_ecs_release_error_response_content(content);
}
snda_ecs_release_handler(handler);
snda_ecs_release_result(ret);
}
```

5.3 Bucket 相关接口

5.3.1 创建 Bucket

该接口对应于盛大云存储 API 中的 PUT Bucket 接口，该接口可以创建一个新的 Bucket。
接口定义：

```
/**
 * put bucket
 * @param SNDAECShandler* handler, the handler you had initialized by
 invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
```

```
* @param const char* bucketname, your bucketname
* @param const char* region, region of your bucket, region currently
support "huadong-1", "huabei-1"
* @param int ssl, whether to use https
* @param SNDAECSResult* ret, SNDAECSResult* created from
snda_ecs_init_result(), if you want to reuse this pointer, MAKE SURE
invoke snda_ecs_reset_result(SNDAECSResult*)
* to reset this pointer to initial status.
* return SNDAECSErrorCode
*/
SNDAECSErrorCode snda_ecs_put_bucket(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* region,
    int ssl,
    SNDAECSResult* ret);
```

详细使用实例:

```
void put_bucket_example( const char* accesskey,const char* secretkey,const char* bucketname,const char*
region, int ssl) {
    SNDAECSHandler* handler = 0;
    SNDAECSResult* ret = 0;
    SNDAECSErrorCode retcode;
    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();
    // when put bucket successfully, no value returned
    retcode = snda_ecs_put_bucket(handler, accesskey, secretkey, bucketname, region, ssl, ret);
    if (retcode != SNDA_ECS_SUCCESS) {
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
    } else if (ret->serverresponse->httpcode >= 300){
        SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
        printf ("ErrorCode:%s\n", content->code);
        printf ("ErrorMessage:%s\n", content->message);
        printf ("Resource:%s\n", content->resource);
        printf ("RequestId:%s\n", content->requestid);
        printf ("AllErrorMessage:%s\n", content->fullbody);
        snda_ecs_release_error_response_content(content);
    } else {
        printf ("Put bucket success and the http code is:%d\n", ret->serverresponse->httpcode);
    }
```

```
}

snda_ecs_release_handler(handler);

snda_ecs_release_result(ret);

}
```

5.3.2 列出指定 Bucket 下所有 Objects

该接口对应于盛大云存储 API 的 Get Bucket 接口，通过该接口可以获得指定 Bucket 中的 Object 信息列表，请求时可以通过一些查询条件来限制返回的结果。

接口定义：

```
/**
 * Get bucket
 * @param SNDAECSHandler* handler, the handler you had
 *      initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param const char* prefix, the prefix parameter to the
 *      key of the object you want to retrieve
 * @param const char* marker, the key to start with
 * @param const char* delimiter, the character your use to
 *      group keys
 * @param int maxkeys, the maximum number of keys returned
 *      in the response body
 * @param const char* region, region of your bucket, region
 *      currently support "huadong-1", "huabei-1"
 * @param int ssl, whether to use https
 * @param SNDAECSFollowLocation followlocation, whether to
 *      follow any "Location: " header that the server
 *      sends as part of the HTTP header
 * @param long maxredirects, the maximum amount of HTTP
 *      redirections to follow. Use this option alongside
 *      followlocation.
 * @param SNDAECSResult* ret, SNDAECSResult* created from
 *      snda_ecs_init_result(), if you want to reuse this
 *      pointer, MAKE SURE invoke snda_ecs_reset_result
 *      (SNDAECSResult*) to reset this pointer to initial status.
 * return SNDAECSErrorCode
 */
SNDAECSErrorCode snda_ecs_get_bucket(
    SNDAECSHandler* handler,
```

```
const char* accesskey,  
const char* secretkey,  
const char* bucketname,  
const char* prefix,  
const char* marker,  
const char* delimiter,  
int maxkeys,  
const char* region,  
int ssl,  
SNDAECSFollowLocation followlocation,  
long maxredirects,  
SNDAECSResult* ret);
```

详细使用实例：

```
void get_bucket_example(const char* accesskey, const char* secretkey,  
                        const char* bucketname, const char* prefix, const char* marker,  
                        const char* delimiter, int maxkeys, const char* region, int ssl,  
                        SNDAECSFollowLocation followlocation, long maxredirects) {  
  
    SNDAECShandler* handler = 0;  
    SNDAECSResult* ret = 0;  
    SNDAECSErrorCode retcode;  
    SNDAECSGetBucketResultContent* content = 0;  
    snda_ecs_global_init();  
    handler = snda_ecs_init_handler();  
    ret = snda_ecs_init_result();  
    retcode = snda_ecs_get_bucket(handler, accesskey,  
                                  secretkey, bucketname, prefix, marker, delimiter, maxkeys, region,  
                                  ssl, followlocation, maxredirects, ret);  
    if (retcode != SNDA_ECS_SUCCESS) {  
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);  
    } else if (ret->serverresponse->httpcode == 200) {  
        content = snda_ecs_to_get_bucket_result(ret);  
        if (content) {  
            if (content->bucketname) {  
                printf("bucket:%s\n", content->bucketname);  
            }  
            if (content->prefix) {  
                printf("prefix:%s\n", content->prefix);  
            }  
            if (content->marker) {  
                printf("marker:%s\n", content->marker);  
            }  
        }  
    }  
}
```

```
        if (content->delimiter) {
            printf("delimiter:%s\n", content->delimiter);
        }
        if (content->nextmarker) {
            printf("nextmarker:%s\n", content->nextmarker);
        }
        printf("maxkeys:%d\n", content->maxkeys);
        printf("istruncated:%s\n", content->istruncated ? "true" : "false");

        printf("CONTENTS\n");
        if (content->objects) {
            SNDAECSErrorContent* object = content->objects;
            while (object) {
                printf("\tCONTENT\n");
                printf("\t\tobjectname:%s\n", object->objectname);
                printf("\t\tlastmodified:%s\n", object->lastmodified);
                printf("\t\tetag:%s\n", object->etag);
                printf("\t\tsize:%ld\n", object->size);
                object = object->next;
                printf("\t/CONTENT\n");
            }
        }
        printf("/CONTENTS\n");

        printf("COMMONPREFIXES\n");
        if (content->commonprefixes) {
            SNDAECSErrorPrefix* object = content->commonprefixes;
            while (object) {
                printf("\tCOMMONPREFIX\n");
                printf("\t\tcommonprefix:%s\n", object->commonprefix);
                object = object->next;
                printf("\t/COMMONPREFIX\n");
            }
        }
        printf("/COMMONPREFIXES\n");
    }

    snda_ecs_release_get_bucket_result_content(content);
} else if (ret->serverresponse->httpcode >= 300) {
    SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
    printf("ErrorCode:%s\n", content->code);
    printf("ErrorMessage:%s\n", content->message);
    printf("Resource:%s\n", content->resource);
    printf("RequestId:%s\n", content->requestid);
}
```

```
        printf("AllErrorMessage:%s\n", content->fullbody);
        snda_ecs_release_error_response_content(content);
    } else {
        printf("The http code is:%d\n", ret->serverresponse->httpcode);
    }

    snda_ecs_release_handler(handler);
    snda_ecs_release_result(ret);
}
```

5.3.3 删除指定 Bucket

该接口对应于盛大云存储 API 中的 DELETE Bucket 接口,可通过该接口删除指定的 Bucket,注意: 必须确保要删除的 Bucket 中没有任何数据。

接口定义:

```
/**
 * Delete bucket
 * @param SNDAECSHandler* handler, the handler you had
 *         initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param const char* region, region of your bucket, region
 *         currently support "huadong-1", "huabei-1"
 * @param int ssl, whether to use https
 * @param SNDAECSFollowLocation followlocation, whether to
 *         follow any "Location: " header that the server
 *         sends as part of the HTTP header
 * @param long maxredirects, the maximum amount of HTTP
 *         redirections to follow. Use this option alongside
 *         followlocation.
 * @param SNDAECSResult* ret, SNDAECSResult* created from
 *         snda_ecs_init_result(), if you want to reuse this
 *         pointer, MAKE SURE invoke snda_ecs_reset_result
 *         (SNDAECSResult*) to reset this pointer to initial status.
 * return SNDAECSErrorCode
 */
SNDAECSErrorCode snda_ecs_delete_bucket(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* region,
```

```
int ssl,  
SNDAECSFollowLocation followlocation,  
long maxredirects,  
SNDAECSResult* ret);
```

详细使用实例：

```
void delete_bucket_example(const char* accesskey, const char* secretkey,  
    const char* bucketname, const char* region, int ssl,  
    SNDAECSFollowLocation followlocation, long maxredirects) {  
  
    SNDAECSHandler* handler = 0;  
    SNDAECSResult* ret = 0;  
    SNDAECSErrorCode retcode;  
    SNDAECSErrorResponseContent* content = 0;  
    snda_ecs_global_init();  
    handler = snda_ecs_init_handler();  
    ret = snda_ecs_init_result();  
    retcode = snda_ecs_delete_bucket(handler, accesskey,  
        secretkey, bucketname, region, ssl, followlocation, maxredirects,  
        ret);  
  
    if (retcode != SNDA_ECS_SUCCESS) {  
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);  
    } else if (ret->serverresponse->httpcode >= 300) {  
        content = snda_ecs_to_error_response(ret);  
        printf("HttpCode:%d\n", ret->serverresponse->httpcode);  
        printf("ErrorCode:%s\n", content->code);  
        printf("ErrorMessage:%s\n", content->message);  
        printf("Resource:%s\n", content->resource);  
        printf("RequestId:%s\n", content->requestid);  
        printf("AllErrorMessage:%s\n", content->fullbody);  
        snda_ecs_release_error_response_content(content);  
    } else {  
        printf("Delete bucket success and the http code is:%d\n",  
            ret->serverresponse->httpcode);  
    }  
  
    snda_ecs_release_handler(handler);  
    snda_ecs_release_result(ret);  
}
```

5.3.4 设置 Bucket Policy

该接口对应于盛大云存储 API 中的 PUT Bucket Policy 接口，该接口通过 policy 子资源来增加或替换指定的 Bucket 的 Policy。如果该 Bucket 已经存在了 Policy,那么该操作会替换原有的 Policy。

接口定义:

```
/**
 * Put bucket policy
 * @param SNDAECSHandler* handler, the handler you had
 *         initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param const char* policy, your bucket policy
 * @param int ssl, whether to use https
 * @param SNDAECSResult* ret, SNDAECSResult* created from
 *         snda_ecs_init_result(), if you want to reuse this
 *         pointer, MAKE SURE invoke snda_ecs_reset_result
 *         (SNDAECSResult*) to reset this pointer to initial status.
 * return SNDAECSErrorCode
 */
SNDAECSErrorCode snda_ecs_put_bucket_policy(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* policy,
    int ssl,
    SNDAECSResult* ret);
```

详细使用实例:

```
void put_bucket_policy_example(const char* accesskey, const char* secretkey,
    const char* bucketname, const char * policy, int ssl) {
    SNDAECSHandler* handler = 0;
    SNDAECSResult* ret = 0;
    SNDAECSErrorCode retcode ;
    SNDAECSErrorResponseContent* content = 0;

    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();
    retcode = snda_ecs_put_bucket_policy(handler, accesskey,
```



```
        secretkey, bucketname, policy, ssl, ret);
    if (retcode != SNDA_ECS_SUCCESS) {
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
    } else if (ret->serverresponse->httpcode >= 300) {
        content = snda_ecs_to_error_response(ret);
        printf("ErrorCode:%s\n", content->code);
        printf("ErrorMessage:%s\n", content->message);
        printf("Resource:%s\n", content->resource);
        printf("RequestId:%s\n", content->requestid);
        printf("AllErrorMessage:%s\n", content->fullbody);
        snda_ecs_release_error_response_content(content);
    } else {
        printf("Put bucket policy success and the http code is:%d\n",
            ret->serverresponse->httpcode);
    }

    snda_ecs_release_handler(handler);
    snda_ecs_release_result(ret);
}
```

5.3.5 获取 Bucket Policy

该接口对应于盛大云存储 API 的 GET Bucket Policy 接口，该接口用于获取指定 Bucket 的 Policy。

接口定义：

```
/**
 * Get bucket policy
 * @param SNDAECSHandler* handler, the handler you had
 *         initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param int ssl, whether to use https
 * @param SNDAECSResult* ret, SNDAECSResult* created from
 *         snda_ecs_init_result(), if you want to reuse this
 *         pointer, MAKE SURE invoke snda_ecs_reset_result
 *         (SNDAECSResult*) to reset this pointer to initial status.
 * return SNDAECSErrorCode
 */
SNDAECSErrorCode snda_ecs_get_bucket_policy(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
```

```
const char* bucketname,  
int ssl,  
SNDAECSResult* ret);
```

详细使用实例:

```
void get_bucket_policy_example(const char* accesskey, const char* secretkey,  
    const char* bucketname, int ssl) {  
    SNDAECSHandler* handler = 0;  
    SNDAECSResult* ret = 0;  
    SNDAECSErrorCode retcode;  
    SNDAECSErrorResponseContent* content = 0;  
  
    snda_ecs_global_init();  
    handler = snda_ecs_init_handler();  
    ret = snda_ecs_init_result();  
    retcode = snda_ecs_get_bucket_policy(handler, accesskey,  
        secretkey, bucketname, ssl, ret);  
    if (retcode != SNDA_ECS_SUCCESS) {  
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);  
    } else if (ret->serverresponse->httpcode >= 300) {  
        content = snda_ecs_to_error_response(ret);  
        printf("ErrorCode:%s\n", content->code);  
        printf("ErrorMessage:%s\n", content->message);  
        printf("Resource:%s\n", content->resource);  
        printf("RequestId:%s\n", content->requestid);  
        printf("AllErrorMessage:%s\n", content->fullbody);  
        snda_ecs_release_error_response_content(content);  
    } else if (ret->serverresponse->httpcode == 200) {  
  
        char* policy = (char*)malloc(ret->serverresponse->responsebody->retbodysize + 1);  
        policy[ret->serverresponse->responsebody->retbodysize] = '\0';  
  
        memcpy(policy, (char*)(ret->serverresponse->responsebody->retbody),  
            ret->serverresponse->responsebody->retbodysize  
        );  
        printf("bucket:%s\n", bucketname);  
        printf("policy:%s\n", policy);  
        snda_ecs_free_char_ptr(policy);  
  
    } else {  
        printf("Get bucket policy success and the http code is:%d\n",  
            ret->serverresponse->httpcode);  
    }  
}
```

```
}

    snda_ecs_release_handler(handler);

    snda_ecs_release_result(ret);

}
```

5.3.6 删除 Bucket Policy

该接口对应于盛大云存储 API 中的 Delete Bucket Policy，用户可以通过该操作删除指定的 Bucket 的 policy。

接口定义：

```
/**
 * Delete bucket policy
 * @param SNDAECShandler* handler, the handler you had
 *         initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param int ssl, whether to use https
 * @param SNDAECSError* ret, SNDAECSError* created from
 *         snda_ecs_init_result(), if you want to reuse this
 *         pointer, MAKE SURE invoke snda_ecs_reset_result
 *         (SNDAECSError*) to reset this pointer to initial status.
 * return SNDAECSErrorCode
 */
SNDAECSErrorCode snda_ecs_delete_bucket_policy(
    SNDAECShandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    int ssl,
    SNDAECSError* ret);
```

详细使用实例：

```
void delete_bucket_policy_example(const char* accesskey, const char* secretkey,
    const char* bucketname, int ssl) {
    SNDAECShandler* handler = 0;
    SNDAECSError* ret = 0;
    SNDAECSErrorCode retcode;
    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();
```

```
retcode = snda_ecs_delete_bucket_policy(handler,
    accesskey, secretkey, bucketname, ssl, ret);

if (retcode != SNDA_ECS_SUCCESS) {
    printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
} else if (ret->serverresponse->httpcode >= 300) {

    SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
    printf("HTTP Code:%d\n",ret->serverresponse->httpcode);
    printf("hello");
    if(content){
        printf("ErrorCode:%s\n", content->code);
        printf("ErrorMessage:%s\n", content->message);
        printf("Resource:%s\n", content->resource);
        printf("RequestId:%s\n", content->requestid);
        printf("AllErrorMessage:%s\n", content->fullbody);
        snda_ecs_release_error_response_content(content);
    }
} else {
    printf("Delete bucket policy success and the http code is:%d\n",
        ret->serverresponse->httpcode);
}

snda_ecs_release_handler(handler);
snda_ecs_release_result(ret);
}
```

5.3.7 获取 Bucket Location

该接口对应于 API 中的 GET Bucket Location,通过该请求可以获取目标 Bucket 所在的区域 (Region) 信息

接口定义:

```
/**
 * Get bucket location
 * @param SNDAECSEHandler* handler, the handler you had
 *         initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param int ssl, whether to use https
 * @param SNDAECSResult* ret, SNDAECSResult* created from
 *         snda_ecs_init_result(), if you want to reuse this
 *         pointer, MAKE SURE invoke snda_ecs_reset_result
```

```
*      (SNDAECSResult*) to reset this pointer to initial status.
* return SNDAECSErrorCode
*/
SNDAECSErrorCode snda_ecs_get_bucket_location(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    int ssl,
    SNDAECSResult* ret);
```

详细使用实例:

```
void get_bucket_location_example(const char* accesskey, const char* secretkey,
    const char* bucketname, int ssl) {
    SNDAECSHandler* handler;
    SNDAECSResult* ret;
    SNDAECSErrorCode retcode ;

    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();
    retcode = snda_ecs_get_bucket_location(handler, accesskey,
        secretkey, bucketname, ssl, ret);
    if (retcode != SNDA_ECS_SUCCESS) {
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
    } else if (ret->serverresponse->httpcode >= 300) {
        SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
        if(content){
            printf("ErrorCode:%s\n", content->code);
            printf("ErrorMessage:%s\n", content->message);
            printf("Resource:%s\n", content->resource);
            printf("RequestId:%s\n", content->requestid);
            printf("AllErrorMessage:%s\n", content->fullbody);
            snda_ecs_release_error_response_content(content);
        }
        if(ret->serverresponse->httpcode == 505) {
            printf("Please check your bucketname,accessKey,SecretAccessKey!\n");
        }
    } else if (ret->serverresponse->httpcode == 200) {
        SNDAECSBucketLocation* location = snda_ecs_to_bucket_location(ret);
        printf("bucket:%s\n", bucketname);
        printf("location:%s\n", location->location);
        snda_ecs_release_bucket_location(location);
    }
```

```
} else {  
    printf("Get bucket location success and the http code is:%d\n",  
        ret->serverresponse->httpcode);  
}  
  
snda_ecs_release_handler(handler);  
snda_ecs_release_result(ret);  
}
```

5.3.8 列出指定 Bucket 下的所有未完成的 Multipart Upload

该接口对应于盛大云存储 API 的 List Multipart Upload 接口，通过该接口可列出指定 Bucket 下的所有未完成的 Multipart Upload。可通过设置查询字符来限制返回结果。

接口的定义：

```
/**  
 * List_multipart_uploads  
 * @param SNDAECSHandler* handler, the handler you had  
 *     initialized by invoking snda_ecs_init_handler()  
 * @param const char* accesskey, your accessKey  
 * @param const char* secretkey, your secretKey  
 * @param const char* bucketname, your bucketname  
 * @param const char* prefix, the prefix parameter to the  
 *     key of the multipart upload you want to retrieve  
 * @param const char* keymarker, the key to start with  
 * @param const char* uploadidmarker, the uploadid to start with  
 * @param const char* delimiter, the character your use to  
 *     group keys  
 * @param int maxuploads, the maximum number of keys returned  
 *     in the response body  
 * @param const char* region, region of your bucket, region  
 *     currently support "huadong-1", "huabei-1"  
 * @param int ssl, whether to use https  
 * @param SNDAECSFollowLocation followlocation, whether to  
 *     follow any "Location: " header that the server  
 *     sends as part of the HTTP header  
 * @param long maxredirects, the maximum amount of HTTP  
 *     redirections to follow. Use this option alongside  
 *     followlocation.  
 * @param SNDAECSResult* ret, SNDAECSResult* created from  
 *     snda_ecs_init_result(), if you want to reuse this  
 *     pointer, MAKE SURE invoke snda_ecs_reset_result  
 *     (SNDAECSResult*) to reset this pointer to initial status.
```

```
* return SNDAECSErrorCode
*/
SNDAECSErrorCode snda_ecs_list_multipart_uploads(
    SNDAECShandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* prefix,
    const char* keymarker,
    const char* uploadidmarker,
    const char* delimiter,
    int maxuploads,
    const char* region,
    int ssl,
    SNDAECSTFollowLocation followlocation,
    long maxredirects,
    SNDAECSTResult* ret)
```

详细使用实例:

```
void list_multipart_uploads_example(const char* accesskey,
    const char* secretkey, const char* bucketname, const char* prefix,
    const char* keymarker, const char * uploadidmarker,
    const char* delimiter, int maxuploads, const char* region, int ssl,
    SNDAECSTFollowLocation followlocation, long maxredirects) {

    SNDAECSThandler* handler = 0;
    SNDAECSTResult* ret = 0;
    SNDAECSTErrorCode retcode;

    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();

    retcode = snda_ecs_list_multipart_uploads(handler,
        accesskey, secretkey, bucketname, prefix, keymarker,
        uploadidmarker, delimiter, maxuploads, region, ssl, followlocation,
        maxredirects, ret);
    if (retcode != SNDA_ECS_SUCCESS) {
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
    } else if (ret->serverresponse->httpcode < 300) {
        SNDAECSTmultipartUploadsContent* content =
            snda_ecs_to_multipart_uploads_content(ret);
        if (content) {
```

```
    SNDAECSMultipartUpload* upload = 0;
    SNDAECSCCommonPrefix* object = 0;
    printf("Bucket:%s\n", content->bucket);
    printf("Prefix:%s\n", content->prefix);
    printf("Delimiter:%s\n", content->delimiter);
    printf("KeyMarker:%s\n", content->keymarker);
    printf("UploadIdMarker:%s\n", content->uploadidmarker);
    printf("NextKeyMarker:%s\n", content->nextkeymarker);
    printf("NextUploadIdMarker:%s\n", content->nextuploadidmarker);
    printf("IsTruncated:%d\n", content->istruncated);
    printf("MaxUploads:%d\n", content->maxuploads);

    printf("UPLOADS\n");
    upload = content->upload;
    while (upload) {
        printf("\tUPLOAD\n");
        printf("\t\tKey:%s\n", upload->key);
        printf("\t\tUploadId:%s\n", upload->uploadid);
        printf("\t\tInitiatedTime:%s\n", upload->initiatedtime);
        upload = upload->next;
        printf("\t/UPLOAD\n");
    }
    printf("/UPLOADS\n");

    printf("COMMONPREFIXES\n");
    object = content->commonprefixes;
    while (object) {
        printf("\tCOMMONPREFIX\n");
        printf("\t\tPrefix:%s\n", object->commonprefix);
        object = object->next;
        printf("\tCOMMONPREFIX\n");
    }
    printf("/COMMONPREFIXES\n");
}

snda_ecs_release_multipart_uploads_content(content);
} else if (ret->serverresponse->httpcode >= 300) {
    SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
    if (content) {
        if (content->code) {
            printf("ErrorCode:%s\n", content->code);
        }
        if (content->message) {
            printf("ErrorMessage:%s\n", content->message);
        }
    }
}
```



```
    }
    if (content->resource) {
        printf("Resource:%s\n", content->resource);
    }
    if (content->requestid) {
        printf("RequestId:%s\n", content->requestid);
    }
    if (content->fullbody) {
        printf("AllErrorMessage:%s\n", content->fullbody);
    }
}
snd_a_ecs_release_error_response_content(content);
if (ret->serverresponse->httpcode == 505) {
    printf("Please check your bucketname,accessKey,SecretAccessKey!\n");
}
} else {
    printf("The http code is:%d\n", ret->serverresponse->httpcode);
}

snd_a_ecs_release_handler(handler);
snd_a_ecs_release_result(ret);
}
```

5.4 Object 相关接口

5.4.1 新建 Object

该接口对应于盛大云存储 API 中的 PUT OBJECT 接口，该接口用来上传一个新的 Object 到指定的 Bucket 中，数据的最大长度限制为 5GB。

接口定义：

```
/**
 * Put Object
 * @param SNDAECSHandler* handler, the handler you had
 *         initialized by invoking snd_a_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param const char* objectname, your object name
 * @param CallbackFunPtr readFun, used as CURLOPT_READDATA, usually
 * is snd_a_ecs_put_object_body
 * @param void* inputstream, data stream for upload, usually a pointer
 * of file opened with "rb"
```

```
* @param long contentlength,the size of the object,in bytes
* @param const SNDAECSUserObjectMeta* userobjectmeta,used in request
headers
* @param const char* region,region of your bucket,region
*      currently support "huadong-1", "huabei-1"
* @param int ssl,whether to use https
* @param SNDAECSResult* ret,SNDAECSResult* created from
*      snda_ecs_init_result(), if you want to reuse this
*      pointer, MAKE SURE invoke snda_ecs_reset_result
*      (SNDAECSResult*) to reset this pointer to initial status.
* return SNDAECSErrorCode
*/
SNDAECSErrorCode snda_ecs_put_object(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* objectname,
    CallbackFunPtr readFun,
    void* inputstream,
    long contentlength,
    const SNDAECSUserObjectMeta*
    userobjectmeta,
    const char* region, int ssl,
    SNDAECSResult* ret)
```

详细使用实例：

```
void put_object_example(const char* accesskey, const char* secretkey,
    const char* bucketname, const char *region, const char *localfile,
    const char *objectname, int ssl) {
    SNDAECSHandler* handler = 0;
    SNDAECSResult* ret = 0;
    SNDAECSUserObjectMeta* objectmeta = 0;
    FILE* fd = 0;
    long flength ;
    SNDAECSErrorCode retcode;

    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();
    objectmeta = snda_ecs_init_user_object_meta();
    snda_ecs_set_object_type(objectmeta, "binary/octet-stream");
```

```
// furthermore, user can set user metas with snda_ecs_add_object_user_metas()
// all key of user metas must begin with "x-snda-meta-", and case insensitive
snda_ecs_add_object_user_metas(objectmeta, "x-snda-meta-1",
    "this is my user meta 1");
snda_ecs_add_object_user_metas(objectmeta, "x-SNDA-metA-2",
    "WOO, the seconde user meta");

fd = fopen(localfile, "rb");
if(!fd) {
    printf("Please check your file!\n");
    return ;
}
fseek(fd, 0L, SEEK_END);
flength = ftell(fd);
fseek(fd, 0, 0);
retcode = snda_ecs_put_object(handler, accesskey,
    secretkey, bucketname, objectname, snda_ecs_put_object_body, fd,
    flength, objectmeta, region, ssl, ret);
snda_ecs_release_user_object_meta(objectmeta);
if (retcode != SNDA_ECS_SUCCESS) {
    printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
} else if (ret->serverresponse->httpcode >= 300) {
    SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
    if(content) {
        printf("ErrorCode:%s\n", content->code);
        printf("ErrorMessage:%s\n", content->message);
        printf("Resource:%s\n", content->resource);
        printf("RequestId:%s\n", content->requestid);
        printf("AllErrorMessage:%s\n", content->fullbody);
        snda_ecs_release_error_response_content(content);
    }
    if(ret->serverresponse->httpcode == 505) {
        printf("Please check your bucketname,accessKey,SecretAccessKey!\n");
    }
} else {
    printf("Put Object success and the http code is:%d\n",
        ret->serverresponse->httpcode);
}

snda_ecs_release_handler(handler);
snda_ecs_relase_result(ret);
}
```

5.4.2 获取 Object 的 meta 信息

该接口对应于盛大云存储 API 的 HEAD Object 接口，通过该接口可以获取指定 Object 的元数据信息。

接口定义：

```
/**
 * Head Object
 * @param SNDAECSHandler* handler, the handler you had
 *           initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param const char* objectname, your object name
 * @param SNDAECSByteRange* byterange, the specified range bytes of
 the object.
 * @param const char* region, region of your bucket, region
 *           currently support "huadong-1", "huabei-1"
 * @param int ssl, whether to use https
 * @param SNDAECSFollowLocation followlocation, whether to
 *           follow any "Location: " header that the server
 *           sends as part of the HTTP header
 * @param long maxredirects, the maximum amount of HTTP
 *           redirections to follow. Use this option alongside
 *           followlocation.
 * @param SNDAECSResult* ret, SNDAECSResult* created from
 *           snda_ecs_init_result(), if you want to reuse this
 *           pointer, MAKE SURE invoke snda_ecs_reset_result
 *           (SNDAECSResult*) to reset this pointer to initial status.
 * return SNDAECSErrorCode
 */
SNDAECSErrorCode snda_ecs_head_object(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* objectname,
    SNDAECSByteRange* byterange,
    const char* region,
    int ssl,
    SNDAECSFollowLocation followlocation,
    long maxredirects,
    SNDAECSResult* ret);
```

详细使用实例:

```
void head_object_example(const char* accesskey, const char* secretkey,
    const char* bucketname, const char *region, const char * objectname,
    long byterangefirst, long byterangelast, int ssl, int followlocation,
    int maxredirects) {
    SNDAECShandler* handler = snda_ecs_init_handler();
    SNDAECSError* ret = snda_ecs_init_result();
    SNDAECSTypeRange* byterangeptr = 0;
    SNDAECSErrorCode retcode ;

    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();
    byterangeptr = snda_ecs_init_byte_range();
    byterangeptr->first = byterangefirst;
    byterangeptr->last = byterangelast;

    retcode = snda_ecs_head_object(handler, accesskey,
        secretkey, bucketname, objectname, byterangeptr, region, ssl,
        followlocation, maxredirects, ret);
    snda_ecs_release_byte_range(byterangeptr);
    if (retcode != SNDA_ECS_SUCCESS) {
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
    } else if (ret->serverresponse->httpcode >= 300) {
        SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
        if(content) {
            printf("ErrorCode:%s\n", content->code);
            printf("ErrorMessage:%s\n", content->message);
            printf("Resource:%s\n", content->resource);
            printf("RequestId:%s\n", content->requestid);
            printf("AllErrorMessage:%s\n", content->fullbody);
            snda_ecs_release_error_response_content(content);
        }
        if(ret->serverresponse->httpcode == 505) {
            printf("Please check your bucketname,accessKey,SecretAccessKey!\n");
        }
    } else {
        SNDAECSTypeMeta* objectmeta = snda_ecs_to_object_meta(ret);
        SNDAECSTypeList* p = 0;
        printf("Etag:%s\n", objectmeta->etag);
        printf("Content-Type:%s\n", objectmeta->contenttype);
        printf("Content-Length:%s\n", objectmeta->lastmodified);
    }
}
```

```
printf("Last-Modified:%s\n", objectmeta->lastmodified);
p = objectmeta->usermetas;
for (; p; p = p->next) {
    printf("p->key:%s\n", p->value);
}

snda_ecs_release_object_meta(objectmeta);
}

snda_ecs_release_handler(handler);
snda_ecs_release_result(ret);
}
```

5.4.3 获取（下载）Object

该接口对应盛大云存储 API 的 GET OBJECT 接口，可通过该接口获取指定 Object 内容。
接口定义：

```
/**
 * Get Object
 * @param SNDAECSHandler* handler, the handler you had
 *         initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param const char* objectname, your object name
 * @param SNDAECSByteRange* byterange, the specified range bytes of
the object.
 * @param CallbackFunPtr writeFun, used as
CURLOPT_READFUNCTION, usually is snda_ecs_write_fun();
 * @param void* outputstream, usually a pointer of file open with
"wb";
 * @param const char* region, region of your bucket, region
currently support "huadong-1", "huabei-1"
 * @param int ssl, whether to use https
 * @param SNDAECSFollowLocation followlocation, whether to
follow any "Location: " header that the server
sends as part of the HTTP header
 * @param long maxredirects, the maximum amount of HTTP
redirections to follow. Use this option alongside
followlocation.
 * @param SNDAECSResult* ret, SNDAECSResult* created from
snda_ecs_init_result(), if you want to reuse this
```

```
*      pointer, MAKE SURE invoke snda_ecs_reset_result
*      (SNDAECSResult*) to reset this pointer to initial status.
* return SNDAECSErrorCode
*/
SNDAECSErrorCode snda_ecs_get_object(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* objectname,
    SNDAECSByteRange* byterange,
    CallbackFunPtr writeFun,
    void* outputstream,
    const char* region, int ssl,
    SNDAECSFollowLocation followlocation,
    long maxredirects,
    SNDAECSResult* ret)
```

详细使用实例：

```
void get_object_example(const char* accesskey, const char* secretkey,
    const char* bucket, const char *region, const char * objectname,
    const char * locafile, long byterangefirst, long byterangelast,
    int ssl, int followlocation, int maxredirects) {

    SNDAECSHandler* handler = 0;
    SNDAECSResult* ret = 0;
    SNDAECSByteRange* byterangeptr = 0;
    FILE* writefd = 0;
    SNDAECSErrorCode retcode;

    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();
    byterangeptr = snda_ecs_init_byte_range();

    byterangeptr->first = byterangefirst;
    byterangeptr->last = byterangelast;

    writefd = fopen(locafile, "wb");
    if(!writefd) {
        printf("Please check your localfile path!\n");
        return;
    }
```

```
}
retcode = snda_ecs_get_object(handler, accesskey,
                             secretkey, bucket, objectname, byterangeptr, snda_ecs_write_fun,
                             writefd, region, ssl, followlocation, maxredirects, ret);
fclose(writefd);
snda_ecs_release_byte_range(byterangeptr);
if (retcode != SNDA_ECS_SUCCESS) {
    printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
} else if (ret->serverresponse->httpcode >= 300) {
    SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
    printf("Get Object failed and the http code is:%d\n",
          ret->serverresponse->httpcode);

    if (content) {
        if (content->code) {
            printf("ErrorCode:%s\n", content->code);
        }
        if (content->message) {
            printf("ErrorMessage:%s\n", content->message);
        }
        if (content->resource) {
            printf("Resource:%s\n", content->resource);
        }
        if (content->requestid) {
            printf("RequestId:%s\n", content->requestid);
        }
        if (content->fullbody) {
            printf("AllErrorMessage:%s\n", content->fullbody);
        }
    }
    if (ret->serverresponse->httpcode == 505) {
        printf("Please check your bucketname,accessKey,SecretAccessKey!\n");
    }
    snda_ecs_release_error_response_content(content);
} else {
    printf("Get Object success and the http code is:%d\n",
          ret->serverresponse->httpcode);
}

snda_ecs_release_handler(handler);
snda_ecs_release_result(ret);
}
```


5.4.4 删除 Object

该接口对应于盛大云存储 API 的 DELETE Object 接口，用于删除指定的 Object
接口定义：

```
/**
 * Delete Object
 * @param SNDAECShandler* handler, the handler you had
 *      initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param const char* objectname, your object name
 * @param const char* region, region of your bucket, region
 *      currently support "huadong-1", "huabei-1"
 * @param int ssl, whether to use https
 * @param SNDAECSTFollowLocation followlocation, whether to
 *      follow any "Location: " header that the server
 *      sends as part of the HTTP header
 * @param long maxredirects, the maximum amount of HTTP
 *      redirections to follow. Use this option alongside
 *      followlocation.
 * @param SNDAECSTResult* ret, SNDAECSTResult* created from
 *      snda_ecs_init_result(), if you want to reuse this
 *      pointer, MAKE SURE invoke snda_ecs_reset_result
 *      (SNDAECSTResult*) to reset this pointer to initial status.
 * return SNDAECSTErrorCode
 */
SNDAECSTErrorCode snda_ecs_delete_object(
    SNDAECSTHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* objectname,
    const char* region,
    int ssl,
    SNDAECSTFollowLocation followlocation,
    long maxredirects,
    SNDAECSTResult* ret);
```

详细使用实例：

```
void delete_object_example(const char* accesskey, const char* secretkey,
```

```
const char* bucket, const char *region, const char * objectname,
int ssl, int followlocation, int maxredirects) {
    SNDAECShandler* handler = 0;
    SNDAECsResult* ret = 0;

    SNDAECSErrorCode retcode ;

    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();
    retcode = snda_ecs_delete_object(handler, accesskey,
        secretkey, bucket, objectname, region, ssl, followlocation,
        maxredirects, ret);
    if (retcode != SNDA_ECS_SUCCESS) {
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
    } else if (ret->serverresponse->httpcode >= 300) {
        SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
        if (content) {
            if (content->code) {
                printf("ErrorCode:%s\n", content->code);
            }
            if (content->message) {
                printf("ErrorMessage:%s\n", content->message);
            }
            if (content->resource) {
                printf("Resource:%s\n", content->resource);
            }
            if (content->requestid) {
                printf("RequestId:%s\n", content->requestid);
            }
            if (content->fullbody) {
                printf("AllErrorMessage:%s\n", content->fullbody);
            }
        }
        snda_ecs_release_error_response_content(content);
    } else {
        printf("Delete Object success and the http code is:%d\n",
            ret->serverresponse->httpcode);
    }

    snda_ecs_release_handler(handler);
    snda_ecs_release_result(ret);
}
```

5.4.5 拷贝 Object

该接口对应盛大云存储开发者文档中的 Copy Object，用户可以通过该操作将已经存在于存储上的 Object 拷贝至指定 Bucket 下。

接口定义：

```
/**
 * @param SNDAECSHandler* handler, the handler you had
 *         initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* destbucketname, the name of the destination
bucket
 * @param const char* destobjectname, the key of the destination
object
 * @param const char* srcbucketname, the name of the source bucket
 * @param const char* srcobjectname, the key of the source object
 * @param const SNDAECSUserObjectMeta* userobjectmeta, used in
request headers
 * @param const char* region, region of your bucket, region
 *         currently support "huadong-1", "huabei-1"
 * @param int ssl, whether to use https
 * @param SNDAECSResult* ret, SNDAECSResult* created from
 *         snda_ecs_init_result(), if you want to reuse this
 *         pointer, MAKE SURE invoke snda_ecs_reset_result
 *         (SNDAECSResult*) to reset this pointer to initial status.
 * return SNDAECSErrorCode
 */
SNDAECSErrorCode snda_ecs_copy_object(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* destbucketname,
    const char* destobjectname,
    const char* srcbucketname,
    const char* srcobjectname,
    const SNDAECSUserObjectMeta*
userobjectmeta,
    const char* region, int ssl,
    SNDAECSResult* ret);
```

详细使用实例：

```
void copy_object_example(const char* accesskey, const char* secretkey,
```

```
const char* destbucketname, const char * destobjectname,
const char * srcbucketname, const char * srcobjectname,
const char *region, int ssl) {

    SNDAECSHandler* handler = 0;
    SNDAECSResult* ret = 0;
    SNDAECSUserObjectMeta* objectmeta = 0;
    SNDAECSErrorCode retcode;

    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();
    objectmeta = snda_ecs_init_user_object_meta();
    snda_ecs_set_object_type(objectmeta, "binary/octet-stream");
    // furthermore, user can set user metas with snda_ecs_add_object_user_metas()
    // all key of user metas must begin with "x-snda-meta-", and case insensitive
    snda_ecs_add_object_user_metas(objectmeta, "x-snda-meta-1",
        "this is my user meta 1");
    snda_ecs_add_object_user_metas(objectmeta, "x-SNDA-metA-2",
        "WOO, the seconde user meta");

    retcode = snda_ecs_copy_object(handler, accesskey,
        secretkey, destbucketname, destobjectname, srcbucketname,
        srcobjectname, objectmeta, region, ssl, ret);
    snda_ecs_release_user_object_meta(objectmeta);
    if (retcode != SNDA_ECS_SUCCESS) {
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
    } else if (ret->serverresponse->httpcode >= 300) {
        SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
        if(content) {
            printf("ErrorCode:%s\n", content->code);
            printf("ErrorMessage:%s\n", content->message);
            printf("Resource:%s\n", content->resource);
            printf("RequestId:%s\n", content->requestid);
            printf("AllErrorMessage:%s\n", content->fullbody);
        }
        if(ret->serverresponse->httpcode == 505) {
            printf("Please check y our bucketname,accessKey,SecretAccessKey !\n");
        }
        snda_ecs_release_error_response_content(content);
    } else {
        printf("Copy Object success and the http code is:%d\n",
            ret->serverresponse->httpcode);
    }
}
```

```
    }

    snda_ecs_release_handler(handler);

    snda_ecs_release_result(ret);

}
```

5.4.6 初始化一个 Multipart Upload

该接口对应于盛大云存储 API 的 Initiate Multipart Upload, 用于初始化一个 Multipart Upload。
接口定义:

```
/**
 * Initiate Multipart upload
 * @param SNDAECShandler* handler, the handler you had
 *          initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param const char* objectname, your object name
 * @param const char* region, region of your bucket, region
 *          currently support "huadong-1", "huabei-1"
 * @param const SNDAECShandler* userobjectmeta, used
 *          in request headers
 * @param int ssl, whether to use https
 * @param SNDAECShandler* followlocation, whether to
 *          follow any "Location: " header that the server
 *          sends as part of the HTTP header
 * @param long maxredirects, the maximum amount of HTTP
 *          redirections to follow. Use this option alongside
 *          followlocation.
 * @param SNDAECShandler* ret, SNDAECShandler* created from
 *          snda_ecs_init_result(), if you want to reuse this
 *          pointer, MAKE SURE invoke snda_ecs_reset_result
 *          (SNDAECShandler*) to reset this pointer to initial status.
 * return SNDAECSErrorCode
 */
SNDAECSErrorCode snda_ecs_initiate_multipart_upload(
    SNDAECShandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* objectname,
    const SNDAECShandler* userobjectmeta)
```

```
userobjectmeta,  
    const char* region,  
    int ssl,  
    SNDAECSFollowLocation followlocation,  
    long maxredirects,  
    SNDAECSResult* ret)
```

详细使用实例：

```
void initiate_multipart_upload_example( const char* accesskey,const char* secretkey,const char* bucket,  
                                       const char *region,const char * objectname,int ssl,  
                                       int followlocation,int maxredirects){  
  
    SNDAECSHandler* handler = 0;  
    SNDAECSResult* ret = 0;  
    SNDAECSUserObjectMeta* objectmeta = 0;  
    char contenttype[S_SNDA_ECS_CONTENT_TYPE_LEN];  
    SNDAECSErrorCode retcode ;  
  
    snda_ecs_global_init();  
    handler = snda_ecs_init_handler();  
    ret = snda_ecs_init_result();  
    objectmeta = snda_ecs_init_user_object_meta();  
  
    snda_ecs_set_object_type(objectmeta, snda_ecs_get_content_type(objectname, contenttype));  
    retcode = snda_ecs_initiate_multipart_upload(handler, accesskey, secretkey,  
                                                bucket, objectname,objectmeta, region, ssl, followlocation, maxredirects,ret);  
    snda_ecs_release_user_object_meta(objectmeta);  
    if (retcode != SNDA_ECS_SUCCESS) {  
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);  
    } else if (ret->serverresponse->httpcode >= 300){  
        SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);  
        if(content) {  
            if(content->code) {  
                printf ("ErrorCode:%s\n", content->code);  
            }  
            if(content->message) {  
                printf ("ErrorMessage:%s\n", content->message);  
            }  
            if(content->resource) {  
                printf ("Resource:%s\n", content->resource);  
            }  
            if(content->requestid) {
```

```
        printf("RequestId:%s\n", content->requestid);
    }
    if(content->fullbody) {
        printf("AllErrorMessage:%s\n", content->fullbody);
    }
}

if(ret->serverresponse->httpcode == 505) {
    printf("Please check your bucketname,accessKey,SecretAccessKey!\n");
}

sndaece_release_error_response_content(content);
} else {
    SNDAECSInitiateMultipartUploadResult* content =
sndaece_to_initiate_multipart_upload_result(ret);
    printf("Initiate multipart upload success and the http code is:%d\n", ret->serverresponse->httpcode);
    if(content) {
        if(content->bucket) {
            printf("Bucket:%s\n", content->bucket);
        }
        if(content->key) {
            printf("Key:%s\n", content->key);
        }
        if(content->uploadid) {
            printf("UploadId:%s\n", content->uploadid);
        }
    }
    sndaece_release_initiate_multipart_upload_result(content);
}

sndaece_release_handler(handler);
sndaece_release_result(ret);
}
```

5.4.7 终止一个 Multipart Upload

该接口对应于盛大云存储 API 中的 Abort Multipart Upload 接口，可通过该接口终止一个指定的 Multipart Upload。当一个 Multipart Upload 被终止后，其 UploadId 也一同作废，且该 Multipart Upload 中的所有 Part 所占用的存储空间均会被释放。

接口定义：

```
/**
 * Abort_multipart_uploads
```

```
* @param SNDAECShandler* handler, the handler you had
*     initialized by invoking snda_ecs_init_handler()
* @param const char* accesskey, your accessKey
* @param const char* secretkey, your secretKey
* @param const char* bucketname, your bucketname
* @param const char* objectname, your object name
* @param const char* uploadid, your uploadid for
*     the multipart upload
* @param const char* region, region of your bucket, region
*     currently support "huadong-1", "huabei-1"
* @param int ssl, whether to use https
* @param SNDAECSTFollowLocation followlocation, whether to
*     follow any "Location: " header that the server
*     sends as part of the HTTP header
* @param long maxredirects, the maximum amount of HTTP
*     redirections to follow. Use this option alongside
*     followlocation.
* @param SNDAECSTResult* ret, SNDAECSTResult* created from
*     snda_ecs_init_result(), if you want to reuse this
*     pointer, MAKE SURE invoke snda_ecs_reset_result
*     (SNDAECSTResult*) to reset this pointer to initial status.
* return SNDAECSTErrorCode
*/
SNDAECSTErrorCode snda_ecs_abort_multipart_upload(
    SNDAECSTHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* objectname,
    const char* uploadid,
    const char* region,
    int ssl,
    SNDAECSTFollowLocation followlocation,
    long maxredirects,
    SNDAECSTResult* ret)
```

详细使用实例:

```
void abort_multipart_upload_example(const char* accesskey,
    const char* secretkey, const char* bucket, const char *region,
    const char * objectname, const char * uploadid, int ssl,
    int followlocation, int maxredirects) {

    SNDAECSTHandler* handler = 0;
```



```
SNDAECSResult* ret = 0;
SNDAECSErrorCode retcode ;

snda_ecs_global_init();
handler = snda_ecs_init_handler();
ret = snda_ecs_init_result();

retcode = snda_ecs_abort_multipart_upload(handler,
    accesskey, secretkey, bucket, objectname, uploadid, region, ssl,
    followlocation, maxredirects, ret);

if (retcode != SNDA_ECS_SUCCESS) {
    printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
} else if (ret->serverresponse->httpcode >= 300) {
    SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
    if (content) {
        if (content->code) {
            printf("ErrorCode:%s\n", content->code);
        }
        if (content->message) {
            printf("ErrorMessage:%s\n", content->message);
        }
        if (content->resource) {
            printf("Resource:%s\n", content->resource);
        }
        if (content->requestid) {
            printf("RequestId:%s\n", content->requestid);
        }
        if (content->fullbody) {
            printf("AllErrorMessage:%s\n", content->fullbody);
        }
    }
    if (ret->serverresponse->httpcode == 505) {
        printf("Please check y our bucketname,accessKey,SecretAccessKey,uploadid!\n");
    }
    snda_ecs_release_error_response_content(content);
} else {
    printf("Abort multipart upload success and the http code is %d\n",
        ret->serverresponse->httpcode);
}

snda_ecs_release_handler(handler);
snda_ecs_release_result(ret);
}
```

5.4.8 上传一个 Part

该接口对应盛大云存储开发者文档中的 Upload Part，用户可以通过该操作上传一个 Part 到指定的 Multipart Upload 中。

接口定义：

```
/**
 * Upload Part
 * @param SNDAECSHandler* handler, the handler you had
 *         initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
 * @param const char* objectname, your object name
 * @param const char* uploadid, your uploadid for multipart upload
 * @param int partnumber, partnumber of this part
 * @param CallbackFunPtr readFun, used as CURLOPT_READDATA, usually
is snda_ecs_put_object_body
 * @param void* inputstream, data stream for upload, usually a pointer
of file opened with "rb"
 * @param long contentlength, the size of the object, in bytes
 * @param const char* contentmd5, contentmd5 of this part (can be null)
 * @param const char* region, region of your bucket, region
 *         currently support "huadong-1", "huabei-1"
 * @param int ssl, whether to use https
 * @param SNDAECSResult* ret, SNDAECSResult* created from
 *         snda_ecs_init_result(), if you want to reuse this
 *         pointer, MAKE SURE invoke snda_ecs_reset_result
 *         (SNDAECSResult*) to reset this pointer to initial status.
 * return SNDAECSErrorCode
 */
SNDAECSErrorCode snda_ecs_upload_part(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* objectname,
    const char* uploadid,
    int partnumber,
    CallbackFunPtr readFun,
    void* inputstream,
    long contentlength,
    const char* contentmd5,
    const char* region,
```

```
int ssl,  
SNDAECSResult* ret);
```

详细使用实例：

```
void upload_part_example(const char* accesskey, const char* secretkey,  
    const char* bucket, const char *region, const char * objectname,  
    const char * uploadid, const char * localfile, int ssl, int partnumber) {  
    SNDAECSHandler* handler = 0;  
    SNDAECSResult* ret = 0;  
    FILE* fd = 0;  
    long filelength;  
    char * contentmd5 = 0;  
    SNDAECSErrorCode retcode;  
  
    snda_ecs_global_init();  
    handler = snda_ecs_init_handler();  
    ret = snda_ecs_init_result();  
    fd = fopen(localfile, "rb");  
    if(!fd) {  
        printf("please check your localfile path!\n");  
        return ;  
    }  
    fseek(fd, 0L, SEEK_END);  
    filelength = ftell(fd);  
    fseek(fd, 0, 0);  
  
    retcode = snda_ecs_upload_part(handler, accesskey,  
        secretkey, bucket, objectname, uploadid, partnumber,  
        snda_ecs_put_object_body, fd, filelength, contentmd5, region, ssl,  
        ret);  
  
    if (retcode != SNDA_ECS_SUCCESS) {  
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);  
    } else if (ret->serverresponse->httpcode >= 300) {  
        SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);  
        if (content) {  
            if (content->code) {  
                printf("ErrorCode:%s\n", content->code);  
            }  
            if (content->message) {  
                printf("ErrorMessage:%s\n", content->message);  
            }  
        }  
    }  
}
```

```
        if (content->resource) {
            printf("Resource:%s\n", content->resource);
        }
        if (content->requestid) {
            printf("RequestId:%s\n", content->requestid);
        }
        if (content->fullbody) {
            printf("AllErrorMessage:%s\n", content->fullbody);
        }
    }

    if(ret->serverresponse->httpcode == 505) {
        printf("Please check your bucketname,accessKey,SecretAccessKey,uploadid!\n");
    }
    snda_ecs_release_error_response_content(content);
} else {
    printf("Upload part success and the http code is %d\n",
        ret->serverresponse->httpcode);
}
snda_ecs_release_handler(handler);
snda_ecs_release_result(ret);
}
```

5.4.9 拷贝上传一个 Part

该接口对应于盛大云存储 API 中的 Upload Part – copy,通过该接口可完成将一个云存储中已存在的 Object 拷贝给指定的 Multipart upload part 的一个 part,可通过对应参数的设置修改该 part 的属性。

接口定义:

```
/**
 * Upload Part - Copy
 * @param SNDAECSHandler* handler, the handler you had
 *         initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, the name of the destination bucket
 * @param const char* objectname, the key of the destination object
 * @param const char* uploadid, your uploadid for multipart upload
 * @param int partnumber, partnumber of this part
 * @param const char * region, your destination bucket's region
 * @param const SNDAECSUserObjectMeta* userobjectmeta, used in
 * request headers
 * @param const char* srcbucketname, the name of the source bucket
```

```
* @param const char* srcobjectname, the key of the source object
* @param int ssl, whether to use https
* @param SNDAECSResult* ret, SNDAECSResult* created from
*      snda_ecs_init_result(), if you want to reuse this
*      pointer, MAKE SURE invoke snda_ecs_reset_result
*      (SNDAECSResult*) to reset this pointer to initial status.
* return SNDAECSErrorCode
*/
SNDAECSErrorCode snda_ecs_upload_part_copy(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* objectname,
    const char* uploadid,
    int partnumber,
    const char* region,
    const SNDAECSUserObjectMeta* userobjectmeta,
    const char* sbucket,
    const char* sobjectname,
    int ssl,
    SNDAECSResult* ret);
```

详细使用实例:

```
void multipart_upload_copy_example(const char* accesskey, const char* secretkey,
    const char* destbucketname, const char* destobjectname, const char* uploadid,
    const int partnumber, const char* srcbucketname, const char* srcobjectname,
    const char* region, int ssl) {

    SNDAECSHandler* handler = 0;
    SNDAECSResult* ret = 0;
    SNDAECSUserObjectMeta* objectmeta = 0;
    SNDAECSErrorCode retcode;

    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();
    objectmeta = snda_ecs_init_user_object_meta();
    // furthermore, user can set user metas with snda_ecs_add_object_user_metas()
    // all key of user metas must begin with "x-snda-meta-", and case insensitive
    //snda_ecs_add_object_user_metas(objectmeta, "x-SNDA-metA-2",
```

```
// "WOO, the seconde user meta");

retcode = snda_ecs_upload_part_copy(handler,accesskey,secretkey, destbucketname,destobjectname,
    uploadid,partnumber,region,objectmeta,srcbucketname,srcobjectname, ssl,ret);
snda_ecs_release_user_object_meta(objectmeta);
if (retcode != SNDA_ECS_SUCCESS) {
    printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
} else if (ret->serverresponse->httpcode >= 300) {
    SNDAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
    printf("Error,HTTP code %d\n",ret->serverresponse->httpcode );
    if(content) {
        printf("ErrorCode:%s\n", content->code);
        printf("ErrorMessage:%s\n", content->message);
        printf("Resource:%s\n", content->resource);
        printf("RequestId:%s\n", content->requestid);
        printf("AllErrorMessage:%s\n", content->fullbody);
    }
    if(ret->serverresponse->httpcode == 505) {
        printf("Please check your bucketname,accessKey,SecretAccessKey!\n");
    }
    snda_ecs_release_error_response_content(content);
} else {
    char * result = snda_ecs_get_full_response(ret);

    printf("Upload Part - copy success and the http code is:%d\n",
        ret->serverresponse->httpcode);

    if(result){
        printf("Response:\n%s\n",result);
    }
}

snda_ecs_release_handler(handler);
snda_ecs_release_result(ret);
snda_ecs_global_uninit();
}
```

5.4.10 列出已上传的 Parts

该接口对应盛大云存储开发者文档中的 List Parts，用户可以通过该操作列出一个 Multipart Upload 已上传的 Part。

接口定义：

```
/**
```

```
* List_Parts
* @param SNDAECSHandler* handler, the handler you had
*     initialized by invoking snda_ecs_init_handler()
* @param const char* accesskey, your accessKey
* @param const char* secretkey, your secretKey
* @param const char* bucketname, your bucketname
* @param const char* objectname, the object name of the
*     multipart upload
* @param const char* uploadid, the uploadid of the multipart
*     upload
* @param const char* partnumbermarker, the part to start with
* @param int maxparts, the maximum number of parts returned
*     in the response body
* @param const char* region, region of your bucket, region
*     currently support "huadong-1", "huabei-1"
* @param int ssl, whether to use https
* @param SNDAECSFollowLocation followlocation, whether to
*     follow any "Location: " header that the server
*     sends as part of the HTTP header
* @param long maxredirects, the maximum amount of HTTP
*     redirections to follow. Use this option alongside
*     followlocation.
* @param SNDAECSResult* ret, SNDAECSResult* created from
*     snda_ecs_init_result(), if you want to reuse this
*     pointer, MAKE SURE invoke snda_ecs_reset_result
*     (SNDAECSResult*) to reset this pointer to initial status.
* return SNDAECSErrorCode
*/
SNDAECSErrorCode snda_ecs_list_parts(
    SNDAECSHandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* objectname,
    const char* uploadid,
    int partnumbermarker,
    int maxparts,
    const char* region,
    int ssl,
    SNDAECSFollowLocation followlocation,
    long maxredirects,
    SNDAECSResult* ret)
```

详细使用实例：

```
void list_parts_example(const char* accesskey, const char* secretkey,
    const char* bucket, const char *region, const char * objectname,
    const char * uploadid, int ssl, int followlocation,
    int partnumbermarker, int maxparts, int maxdirects) {

    SNDAECShandler* handler = 0;
    SNDAECsResult* ret = 0;
    SNDAECSErrorCode retcode;

    snda_ecs_global_init();
    handler = snda_ecs_init_handler();
    ret = snda_ecs_init_result();
    retcode = snda_ecs_list_parts(handler, accesskey,
        secretkey, bucket, objectname, uploadid, partnumbermarker,
        maxparts, region, ssl, followlocation, maxdirects, ret);
    if (retcode != SNDA_ECS_SUCCESS) {
        printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
    } else if (ret->serverresponse->httpcode < 300) {
        SNDAECsMultipartsContent* content = snda_ecs_to_multipart_parts(ret);
        SNDAECsMultipartsPart* part = 0;
        if (content) {
            printf("Bucket:%s\n", content->bucket);
            printf("Key:%s\n", content->key);
            printf("UploadId:%s\n", content->uploadid);
            printf("MaxParts:%d\n", content->maxparts);
            printf("IsTruncated:%d\n", content->istruncated);
            printf("PartNumberMarker:%d\n", content->partnumbermarker);
            printf("NextPartNumberMarker:%d\n", content->nextpartnumbermarker);

            printf("PARTS\n");
            part = content->parts;
            while (part) {
                printf("\tPART\n");
                printf("\t\tPartNumber:%d\n", part->partnumber);
                printf("\t\tSize:%ld\n", part->size);
                printf("\t\tLastModified:%s\n", part->lastmodified);
                printf("\t\tETag:%s\n", part->etag);
                part = part->next;
                printf("\t/PART\n");
            }
            printf("/PARTS\n");
        }
    }
}
```



```
    }
    snda_ecs_release_multipart_content(content);
} else {
    SNAECSErrorResponseContent* content = snda_ecs_to_error_response(ret);
    if (content) {
        if (content->code) {
            printf("ErrorCode:%s\n", content->code);
        }
        if (content->message) {
            printf("ErrorMessage:%s\n", content->message);
        }
        if (content->resource) {
            printf("Resource:%s\n", content->resource);
        }
        if (content->requestid) {
            printf("RequestId:%s\n", content->requestid);
        }
        if (content->fullbody) {
            printf("AllErrorMessage:%s\n", content->fullbody);
        }
    }
    if(ret->serverresponse->httpcode == 505) {
        printf("Please check your bucketname,accessKey,SecretAccessKey,uploadid!\n");
    }
    snda_ecs_release_error_response_content(content);
}
snda_ecs_release_handler(handler);
snda_ecs_release_result(ret);
}
```

5.4.11 完成一个 Multipart Upload

该接口对应盛大云存储开发者文档中的 Complete Multipart Upload，用户可以通过该操作来完成 Multipart Upload,合并其包含的所有 Part,并在云存储中产生一个新的 Object。
接口定义：

```
/**
 * Complete multipart upload
 * @param SNAECSEHandler* handler, the handler you had
 *         initialized by invoking snda_ecs_init_handler()
 * @param const char* accesskey, your accessKey
 * @param const char* secretkey, your secretKey
 * @param const char* bucketname, your bucketname
```

```
* @param const char* objectname,the object name of the
*
* multipart upload
* @param const char* uploadid,the uploadid of the multipart
*
* upload
* @param const SNDAECSMultipartsMeta* partsmeta,partsmetas of
*
* the multipart upload
* @param const char* region,region of your bucket,region
*
* currently support "huadong-1", "huabei-1"
* @param int ssl,whether to use https
* @param SNDAECSFollowLocation followlocation,whether to
*
* follow any "Location: " header that the server
*
* sends as part of the HTTP header
* @param long maxredirects,the maximum amount of HTTP
*
* redirections to follow. Use this option alongside
*
* followlocation.
* @param SNDAECSResult* ret,SNDAECSResult* created from
*
* snda_ecs_init_result(), if you want to reuse this
*
* pointer, MAKE SURE invoke snda_ecs_reset_result
*
* (SNDAECSResult*) to reset this pointer to initial status.
* return SNDAECSErrorCode
*/
SNDAECSErrorCode snda_ecs_complete_multipart_upload(
    SNDAECShandler* handler,
    const char* accesskey,
    const char* secretkey,
    const char* bucketname,
    const char* objectname,
    const char* uploadid,
    const SNDAECSMultipartsMeta* partsmeta,
    const char* region,
    int ssl,
    SNDAECSFollowLocation followlocation,
    long maxredirects,
    SNDAECSResult* ret)
```

详细使用实例:

```
void complete_multipart_upload_example(const char* accesskey,
    const char* secretkey, const char* bucket, const char *region,
    const char * objectname, const char * uploadid, int ssl,
    int followlocation, int maxdirects) {

    SNDAECShandler* handler = 0;
```

```
SNDAECSResult* ret = 0;
SNDAECSPart* metas = 0;
SNDAECSPart* p = 0;
SNDAECSErrorCode retcode;

snda_ecs_global_init();
handler = snda_ecs_init_handler();
ret = snda_ecs_init_result();
metas = snda_ecs_init_multipart_meta();
p = metas;
p->partnumber = 1;
snda_ecs_copy_string(&(p->etag), "\"58fda622140205b3d6a2457415d301f2\"");
p->next = snda_ecs_init_multipart_meta();
p = p->next;
p->partnumber = 2;
snda_ecs_copy_string(&(p->etag), "\"58fda622140205b3d6a2457415d301f2\"");
p->next = snda_ecs_init_multipart_meta();
p = p->next;
p->partnumber = 3;
snda_ecs_copy_string(&(p->etag), "\"296e2bd0ce7124b6fbda05873c261dfb\"");

retcode = snda_ecs_complete_multipart_upload(handler,
        accesskey, secretkey, bucket, objectname, uploadid, metas, region,
        ssl, followlocation, maxdirects, ret);

snda_ecs_release_multipart_meta(metas);

if (retcode != SNDA_ECS_SUCCESS) {
    printf("ClientErrorMessage:%s", ret->error->handlererrmsg);
} else if (ret->serverresponse->httpcode >= 300) {
    SNDAECSResponseContent* content = snda_ecs_to_error_response(ret);
    if (content) {
        if (content->code) {
            printf("ErrorCode:%s\n", content->code);
        }
        if (content->message) {
            printf("ErrorMessage:%s\n", content->message);
        }
        if (content->resource) {
            printf("Resource:%s\n", content->resource);
        }
        if (content->requestid) {
            printf("RequestId:%s\n", content->requestid);
        }
    }
}
```

```
    }
    if (content->fullbody) {
        printf("AllErrorMessage:%s\n", content->fullbody);
    }
}
if(ret->serverresponse->httpcode == 505) {
    printf("Please check your bucketname,accessKey,SecretAccessKey,uploadid!\n");
}
snda_ecs_release_error_response_content(content);
} else {
    printf("Complete multipart upload success and the http code is %d\n",
        ret->serverresponse->httpcode);
}
snda_ecs_release_handler(handler);
snda_ecs_release_result(ret);
}
```

如 果 在 使 用 中 遇 到 任 何 问 题 ， 请 在
<http://forum.grandcloud.cn/> 反 馈 ， 我 们 将 及 时 跟 进 。 谢 谢 ！