Alibaba Cloud
Object Storage Service

Product Introduction

Issue: 20181129

MORE THAN JUST CLOUD | Alibaba Cloud

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Generic conventions

Table -1: Style conventions

Style	Description	Example
	This warning information indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	**Danger:** Resetting will result in the loss of user configuration data.
	This warning information indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	**Warning:** Restarting will cause business interruption. About 10 minutes are required to restore business.
	This indicates warning information, supplementary instructions, and other content that the user must understand.	**Note:** Take the necessary precautions to save exported data containing sensitive information.
	This indicates supplemental instructions, best practices, tips, and other content that is good to know for the user.	**Note:** You can use **Ctrl** + **A** to select all files.
>	Multi-level menu cascade.	**Settings** > **Network** > **Set network type**
Bold	It is used for buttons, menus, page names, and other UI elements.	Click **OK**.
`Courier font`	It is used for commands.	Run the `cd /d C:/windows` command to enter the Windows system folder.
Italics	It is used for parameters and variables.	`bae log list --instanceid Instance_ID`
[] or [a|b]	It indicates that it is a optional value, and only one item can be selected.	`ipconfig [-all|-t]`
{} or {a|b}	It indicates that it is a required value, and only one item can be selected.	`swich {stand	slave}`

Contents

1 What is OSS?

Alibaba Cloud Object Storage Service (OSS) is a storage service that enables you to store, back up, and archive any amount of data in the cloud. OSS is a cost-effective, highly secure, and highly reliable cloud storage solution. It uses RESTful APIs and is designed for 99.999999999% (11 nines) durability and 99.99% availability. Using OSS, you can store and retrieve any type of data at any time, from anywhere on the web.

You can use API and SDK interfaces provided by Alibaba Cloud or OSS migration tools to transfer massive amounts of data into or out of Alibaba Cloud OSS. You can use the Standard storage class of OSS to store image, audio, and video files for apps and large websites. You can use the Infrequent Access (IA) or Archive storage class as a low-cost solution for backup and archiving of infrequently accessed data.

Concepts

- Storage Class

  OSS provides three storage classes: Standard, Infrequent Access, and Archive. These storage classes cover various data storage scenarios from hot data to cold data. For more information, see *Introduction to storage classes*.

- Bucket

  A bucket is a container for objects stored in OSS. Every object is contained in a bucket. The data model structure of Alibaba Cloud OSS is flat instead of hierarchical.

- Objects

  Objects, also known as files, are the fundamental entities stored in OSS. An object is composed of metadata, data, and key. The key is the unique object name in a bucket. Metadata defines the attributes of an object, such as the time last modified and the object size. You can also specify custom metadata of an object.

- Region

  A region represents the physical location of an OSS data center. You can choose the region where OSS will store the buckets you create. You may choose a region that has the least latency, lowest costs, or that meets certain regulatory requirements. Generally, the closer the user is in proximity to a region, the faster the access speed is. For more information, see *OSS regions and endpoints*.

- Endpoint

An endpoint is the domain name used to access the OSS. OSS provides external services through HTTP RESTful APIs. Different regions use different endpoints. For the same region, access through an intranet or through the Internet also uses different endpoints. For more information, see *OSS regions and endpoints*.

- AccessKey

An AccessKey (AK) is composed of an AccessKeyId and an AccessKeySecret. They work in pairs to perform access identity verification. OSS verifies the identity of a request sender by using the AccessKeyId/AccessKeySecret symmetric encryption method. The AccessKeyId is used to identify a user. The AccessKeySecret is used for the user to encrypt the signature and for OSS to verify the signature. The AccessKeySecret must be kept confidential.

Related services

After you load your data to OSS, you can use it with other Alibaba Cloud products and services.

The following services are frequently used with OSS:

- Elastic Compute Service (ECS)

An online computing service that offers elastic and secure virtual cloud servers to cater for all your cloud hosting needs. See the *ECS product details page*.

- Alibaba Cloud CDN

A scalable and high-performance content delivery service for accelerated distribution of content to users across the globe. See the *CDN product details page*.

- E-MapReduce

A Big Data service that uses Apache Hadoop and Spark to process and analyze data. See the *E-MapReduce product details page.*

- ApsaraVideo for Media Processing

A cloud service for transcoding multimedia data into various output resolutions, bit rates, and formats for unhindered playback. See the *ApsaraVideo for Media Processing product details page*.

Use OSS

Alibaba Cloud provides an intuitive operation interface for you to manage your OSS resources. You can log on to the OSS console to operate your buckets and objects. For more information, see the *OSS Console User Guide*.

You can also use APIs and SDKs to manage your OSS resources. For more information, see *OSS API Reference* and *OSS SDK Reference*.

OSS pricing

Traditional storage providers require you to purchase a predetermined amount of storage and network transfer capacity. If you exceed the capacity, your service is shut off or you are charged excess fees. If you do not use the full capacity, you still pay as though you have used it all.

OSS charges you only for what you actually use, without excess fees. As your business grows, you can enjoy the cost advantages of the flexible infrastructure from Alibaba Cloud, which adapts to meet your ever-changing requirements.

For more information about OSS pricing, see the *OSS Pricing page*.

Learning path

Visit the *OSS Learning Path* for the knowledge you need to become an OSS expert!

2 Benefits

Benefits of OSS over traditional storage

Item	OSS	Traditional storage
Reliability	• Guarantees 99.99% designed service availability. • Offers automatic scaling without affecting external services. • Guarantees 99.999999999% (11 nines) designed durability. • Offers automatic redundant data backup.	• Depends on hardware reliability. Traditional storage has a relatively high failure rate. If a disk has bad sectors, data may be lost and cannot be recovered. • Manual data recovery is complex and involves a lot of time and technical resources.
Security	• Provides enterprise-grade, multilevel security. • Supports multi-user resource isolation and remote disaster recovery. • Provides authentication and authorization, as well as whitelist, anti-leeching, and RAM account features.	• Traffic cleaning service and black hole service must be purchased separately. • Security must be implemented independently.
Cost	• BGP backbone network without bandwidth restrictions. Upstream traffic is free of charge. • No maintenance staff or hosting fees required.	• Storage space is limited by hardware capacity. Manual scaling is required. • Access speeds are slow during single or double-line access. Bandwidth restrictions are imposed. Manual scaling is required during peak traffic periods. • Requires professional maintenance staff and high costs.
Data Processing Capabilities	Provides image processing, audio/video transcoding, accelerated content delivery	Must be purchased and deployed separately.

Item	OSS	Traditional storage
	, archive services, and other value-added data services.	

More benefits of OSS

- Easy to use

  — Provides RESTful APIs, a wide range of SDKs, client tools, and a web console. You can easily upload, download, retrieve, and manage massive amounts of data for websites and applications in the same way as for regular files in Windows.

  — Sets no limit on the number and size of files. Unlike the traditional hardware storage, OSS enables you to easily scale up (expand) your storage space as needed.

  — Supports streaming upload and download, which is suitable for business scenarios where you need to simultaneously read and write videos and other large files.

  — Offers lifecycle management. You can delete expired data in batches or transition the data to low-cost archive services.

- Powerful and flexible security

  — Provides flexible authentication and authorization, including STS, URL, whitelist, anti-leeching, and RAM account features.

  — Offers user-level resource isolation. You can also use the multi-cluster synchronization service.

- Rich and powerful value-added services

  — Image processing: Supports format conversion, thumbnails, cropping, watermarks, scaling , and other operations with a wide variety of file formats including jpg, png, bmp, gif, webp, and tiff.

  — Audio/video transcoding: Provides high-quality, high-speed, parallel audio/video transcoding capabilities for audio/video files stored in OSS. You can easily make your audio/video files compatible for different types of devices.

  — Accelerated content delivery: Content Delivery Network (CDN) can be used with OSS to speed up the delivery of content stored in OSS. This service features high stability, unlimited origin bandwidth, and easy configuration.

3 Functions

Before you start to use OSS, we recommend that you get familiar with some important OSS concepts, including buckets, objects, regions, endpoints, and AccessKey.

For more information about these concepts, see *Basic concepts*.

OSS provides the following functions to address your business needs in different scenarios.

How do I…?	Function description	Reference
Upload files	Before you can upload any data to OSS, you must create a bucket in an Alibaba Cloud *region* to store your data. After you create a bucket, you can upload an unlimited number of data objects to the bucket.	• *Create a bucket* • *Create a folder* • *Simple upload*
Search files	You can search for files in buckets or folders.	*Search for files*
View and download files	You can use the object URL to view and download the object, or share the object with others.	*Obtain the object URL*
Delete files and folders	You can delete single or multiple objects and folders. You can also delete fragments generated by multipart upload to save storage space.	• *Delete objects* • *Delete folders* • *Delete fragments*
Control access permissions for my OSS resources	OSS provides Access Control Lists (ACLs) for permission control. ACLs are access policies that grant access permissions to buckets and objects. You can configure the ACL when creating a bucket or uploading an object, and modify the ACL anytime after the bucket is created or the object is uploaded.	• *Set ACL bucket permissions* • *Set ACL object permissions*
Record the detailed information of requests made to my bucket	You can enable logging to automatically record the	*Set access logging*

| How do I…?	Function description	Reference
	detailed information of requests made to a bucket.	
Prevent data in OSS from being stolen by others	You can configure a referer whitelist for a bucket and configure whether to allow access requests with an empty referer field.	*Set anti-leech*
Use my own domain to access the data stored in my OSS bucket	You can bind a custom domain to your OSS bucket. Then you can use the custom domain to access data stored in the bucket. You can also enable Alibaba Cloud CDN to speed up the access to the data stored in the bucket.	*Bind a custom domain*
Enable my client web applications that are loaded in one domain to interact with resources in another domain	OSS provides Cross-Origin Resource Sharing (CORS) settings in the HTML5 protocol. CORS allows client web applications that are loaded in one domain to interact with resources in another domain.	*Configure CORS rules*
Automatically delete objects in batches at specific time	You can configure lifecycle rules to define actions you want OSS to take during the lifetime of specific objects, for example, transition objects to another storage class, archive them, or delete them after a specified period of time.	*Manage object lifecycle*
Synchronize newly created objects, object updates, and object deletions from one bucket to another bucket in a different region	Cross-region replication is the automatic, asynchronous copying of objects across buckets in different regions. It replicates changes (creation, update, and deletion) to objects in the source bucket to the target bucket across different regions.	*Create Cross-region replication rules*

How do I…?	Function description	Reference
Fetch content from the origin store	You can create back-to-origin rules to define whether to fetch origin data by mirroring or redirection. Back-to-origin rules are usually used for hot migration of data and redirection of specific requests.	*Create back-to-origin rules*
Modify HTTP headers	You can set single or multiple HTTP headers.	*Set object HTTP headers*
View resource usage	You can view real-time information about OSS service usage, such as the status and performance of basic system operations.	*Monitoring service overview*
Process images stored in OSS	You can perform different operations on the images stored on OSS, such as format conversion, cropping, scaling, rotation, watermarks, and style encapsulation.	*Image processing*
Use APIs and SDKs	OSS provides RESTful APIs and SDKs for the most popular programming languages.	• *API Reference* • *SDK Reference*

4 Scenarios

OSS can make an impact in the following scenarios:

Massive-scale storage for image and audio/video applications

OSS can be used to store massive-scale data, such as images, audios, videos, and logs. It supports various devices and direct data read/write to and from OSS by websites and apps. OSS supports file and streaming uploads.
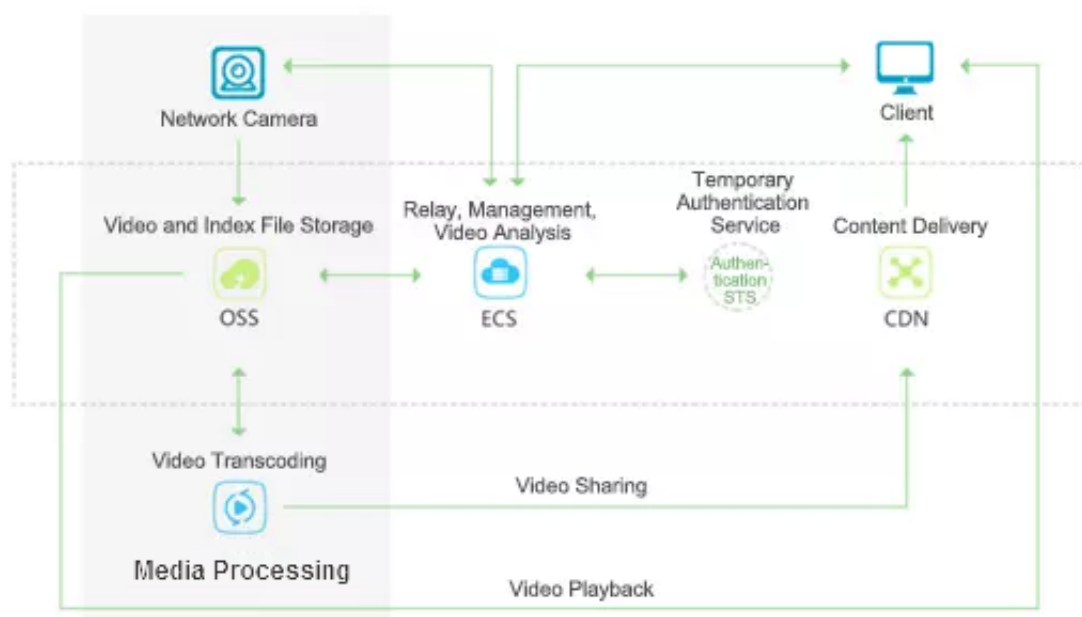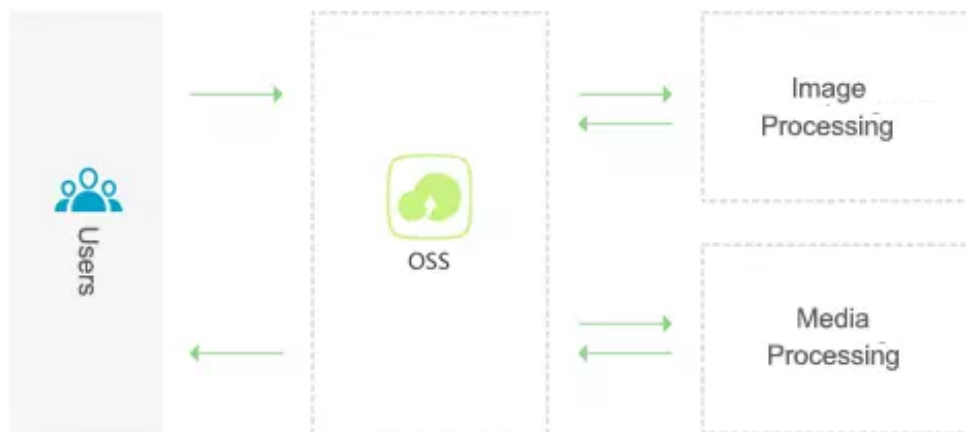

Static/dynamic resource separation for web pages and apps

OSS uses the BGP bandwidth to achieve ultra-low latency of direct data download. In addition, OSS can be used with Alibaba Cloud CDN to speed up the delivery of images, audios, videos, and app files. This enhances user experience.

Media file processing in the cloud

After you upload files to OSS, you can use the Image Processing service and Media Processing service to process them in the cloud.

5 Limits

OSS has the following restrictions for use:

Restricted item	Description
Archive storage	It takes about one minute to restore data from the frozen state to the readable state.
Bucket	• You can create a maximum of 30 buckets in a region. • The name, region, and storage class of a bucket cannot be modified. • The capacity of each bucket is unlimited.
File upload and download	• The size of each file uploaded by console upload, *simple upload*, *form upload*, and *append upload* cannot be greater than 5 GB. To upload a file greater than 5 GB, you must use *multipart upload*. • The size of each file uploaded by *multipart upload* cannot be greater than 48.8 TB. • The default bandwidth throttling of upload and download is 10 Gbit/s in Mainland China regions and 5 Gbit/s for International regions, Hong Kong, Macau, and Taiwan. Once the throttling is reached, the DownloadTrafficRateLimitExceeded or UploadTrafficRateLimitExceeded error response is returned. If you need a higher bandwidth, contact your local technical support. • If you upload a file with same name as an existing file, the original file is overwritten.
Deleting a file	• Deleted files cannot be restored. • You can delete up to 1,000 files in batches in the console. To delete more files in batches, you must use APIs or SDKs.
Domain name binding	• You must apply for an ICP license for your bound domain name to direct your website to servers located in Mainland China for public visits.

Restricted item	Description
	• You can bind up to 20 domain names for each bucket.
Lifecycle	You can configure up to 1,000 lifecycle rules for each bucket.
Image processing	For the original image: • Only jpg, png, bmp, gif, webp, and tiff formats are supported. • File size cannot exceed 20 MB. • For the image rotation, the width or height of the image cannot exceed 4096. For a thumbnail: • The product of the width and height cannot exceed 4096 x 4096. • The length of each side cannot exceed 4096 .