

# Alibaba Cloud Object Storage Service

## Image Processing Guide

Issue: 20180807

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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.	 <b>Danger:</b> 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.	 <b>Warning:</b> 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.	 <b>Note:</b> 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.	 <b>Note:</b> You can use <b>Ctrl + A</b> to select all files.
>	Multi-level menu cascade.	<b>Settings &gt; Network &gt; Set network type</b>
<b>Bold</b>	It is used for buttons, menus, page names, and other UI elements.	Click <b>OK</b> .
Courier font	It is used for commands.	Run the <code>cd /d C:/windows</code> command to enter the Windows system folder.
<i>Italics</i>	It is used for parameters and variables.	<code>bae log list --instanceid Instance_ID</code>
[] or [a b]	It indicates that it is a optional value, and only one item can be selected.	<code>ipconfig [-all -t]</code>
{ } or {a b}	It indicates that it is a required value, and only one item can be selected.	<code>swich {stand / slave}</code>

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# 1 Image processing

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Alibaba Cloud OSS Image Processing (IMG) is an image processing service that features massive capacity, high security, low costs, and high reliability. By uploading and storing original images in OSS, you can process images anytime, anywhere, on any Internet device through a simple RESTful API. IMG offers image processing APIs. To upload images, use the OSS upload API. IMG is a great solution for you to build image-related services.

**Note:**

IMG is activated automatically when you activate OSS.

## Basic features

IMG provides the following features:

- Retrieving image information
- Converting image formats
- Scaling, cropping, and rotating images
- Adding images, texts, and text-and-image watermarks to images
- Customizing image processing styles
- Calling multiple image processing features in a set sequence through pipelines

## Previous versions

IMG now has two API versions.

**Note:**

This article introduces the features of the new version. Features of the old APIs will not be updated. For compatibility details, see [FAQs on using old and new versions of APIs and domain names](#).

## Quick start

### Create an image style

1. Log on to the [OSS console](#).
2. Click your bucket name to go to the **Overview** page of the bucket.
3. On the **Overview** page, click **Image Processing**, and then click **Create Style**.
4. Create an image style in the **Image Style** page.

Details about the Image Style page:

- **Style Name:** Name of the image style to create. We recommend you give the style a meaningful name so that you can remember it easily, such as XX watermark image rotation.
  - The length of the name must be within 1-64 characters.
  - A name can only include numbers, letters, underscores ( \_ ), short crosslines (-), and the decimal point (.).
- **Editing Type:** You can select "Basic editing" to edit the image style with graphical operations. You can also select "Advanced editing" to edit the image style using an SDK or parameters.
- **Resize Mode:** Set the scaling mode for the image.



**Note:**

The "long side" refers the side with a bigger source size to target size ratio. The same applies to the "short side". For example, for an original image that is scaled from 400x200 to 800x100, the original-to-target ratios are 0.5 (400/800) and 2 (200/100). Because 0.5 is less than 2, the 200 side is the longer side, and the 400 side the shorter one.

- **Adaptive Orientation:** Set the adaptive orientation for the image.

It is recommended that you enabled it by default. An image is firstly rotated and then resized based on the EXIF information.

- **Save format:** the original format, JPG, PNG, webp, and BMP formats are available for selection.
- **Image Sharpening:** Set whether the image needs to be sharpened.
- **Image Quality:** Set the image quality.
- **Watermark:** Set the image watermark mode.

5. Edit the image style and click **OK** to save the style.

After creating the new image style, you can apply it to your images through OSS.

### Apply an image style

1. Log on to the [OSS console](#).
2. Click your bucket name to go to the **Overview** page of the bucket.
3. On the Overview page, click **Files** to select an existing image or upload a new image to open the **Preview** page.

For new image uploading, see [Upload objects](#).



4. Select a picture style from the **Image Style** drop-down list.

You can view the processed image in the preview window immediately. A public network access address with the image style is generated at the same time. You only need to click **Copy File URL** to get the access address to the file.

### Demo

For image style operations, see the following [video](#).

## 2 Apply effects

### 2.1 Blur

This feature allows you to apply the blur effect to an image.

#### Parameters

This table provides the description and values for parameters when applying the `blur` operation.

Parameter	Description	Value
<code>r</code>	Blur radius	[1,50] The greater the value of <code>r</code> , the blurrier the image.
<code>s</code>	Standard deviation of a normal distribution	[1,50] The greater the value of <code>s</code> , the blurrier the image.

#### Example

- Blur an image, with the radius being 3 and standard deviation being 2. To see this example, follow the following link:

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/blur,r\\_3,s\\_2](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/blur,r_3,s_2)



- Scale down an image to 200 in width, and blur it with the radius being 3 and standard deviation being 2. To see this example, follow the following link:

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_200/blur,r\\_3,s\\_2](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_200/blur,r_3,s_2)



## 2.2 Brightness

This feature allows you to adjust the brightness of a processed image.

### Parameters

This table provides a description and value range of the parameters for the `bright` operation.

Parameter	Description	Value range
<code>value</code>	Brightness adjustment. 0 indicates the original brightness. A value smaller than 0 indicates a brightness lower than the original brightness, and a value greater than 0 indicates a brightness higher than the original brightness.	[-100, 100]

### Example

- Adjust only the brightness of the source image. To see this example, follow the following link:

<http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/bright,50>



- Scale down an image to 200 in width and adjust its brightness. To see this example, follow the following link:

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_200/bright,50](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_200/bright,50)



## 2.3 Sharpen

This feature allows you to sharpen a processed image to make it clearer.

### Parameters

This table provides a description and value range of the value parameter for the `sharpen` operation.

Parameter	Description	Value range
<code>value</code>	Sharpens an image. The parameter value indicates the degree of sharpness. The greater the value, the clearer the image.	[50, 399] We recommend that you set this parameter to 100 for optimal effect.

### Example

- Sharpen an image, with the parameter set to 100. To see this example, follow the following link:

<http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/sharpen,100>



- Scale down an image to 200 in width and sharpen the image with the parameter set to 100. To see this example, follow the following link:

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_200/sharpen,100](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_200/sharpen,100)



## 2.4 Contrast

This feature allows you to adjust the contrast of a processed image.

### Parameters

This table provides a description and value range of the value parameter for the `contrast` operation.

Parameter	Description	Value range
value	Contrast adjustment. 0 indicates the original contrast. A value smaller than 0 indicates a contrast lower than the original contrast, and a value greater than 0 indicates a contrast higher than the original contrast.	[-100, 100]

### Example

- Adjust only the contrast of the source image. To see this example, follow the following link:

<http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/contrast,-50>



- Scale down an image to 200 in width and adjust its contrast. To see this example, follow the following link:

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_200/contrast,-50](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_200/contrast,-50)



## 3 Image style

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Adding all the changes to the image after the URL makes the URL too long and inconvenient for management and reading. IMG allows you to save common operations as an alias, that is, a style. With the style, a complicated operation can be performed through a short URL.

Multiple styles (50 at most) are grouped under a bucket. Each style is effective only within the bucket.

### Style access rules

#### URL parameters

```
<File URL>? x-oss-process=style/<StyleName>
```

Example:

```
bucket.aliyuncs.com/sample.jpg? x-oss-process=style/stylename
```

This is the default style access method supported by IMG.

#### Separators

```
<File URL><Separator><StyleName>
```

Example:

```
bucket.aliyuncs.com/sample.jpg{separator}stylename
```

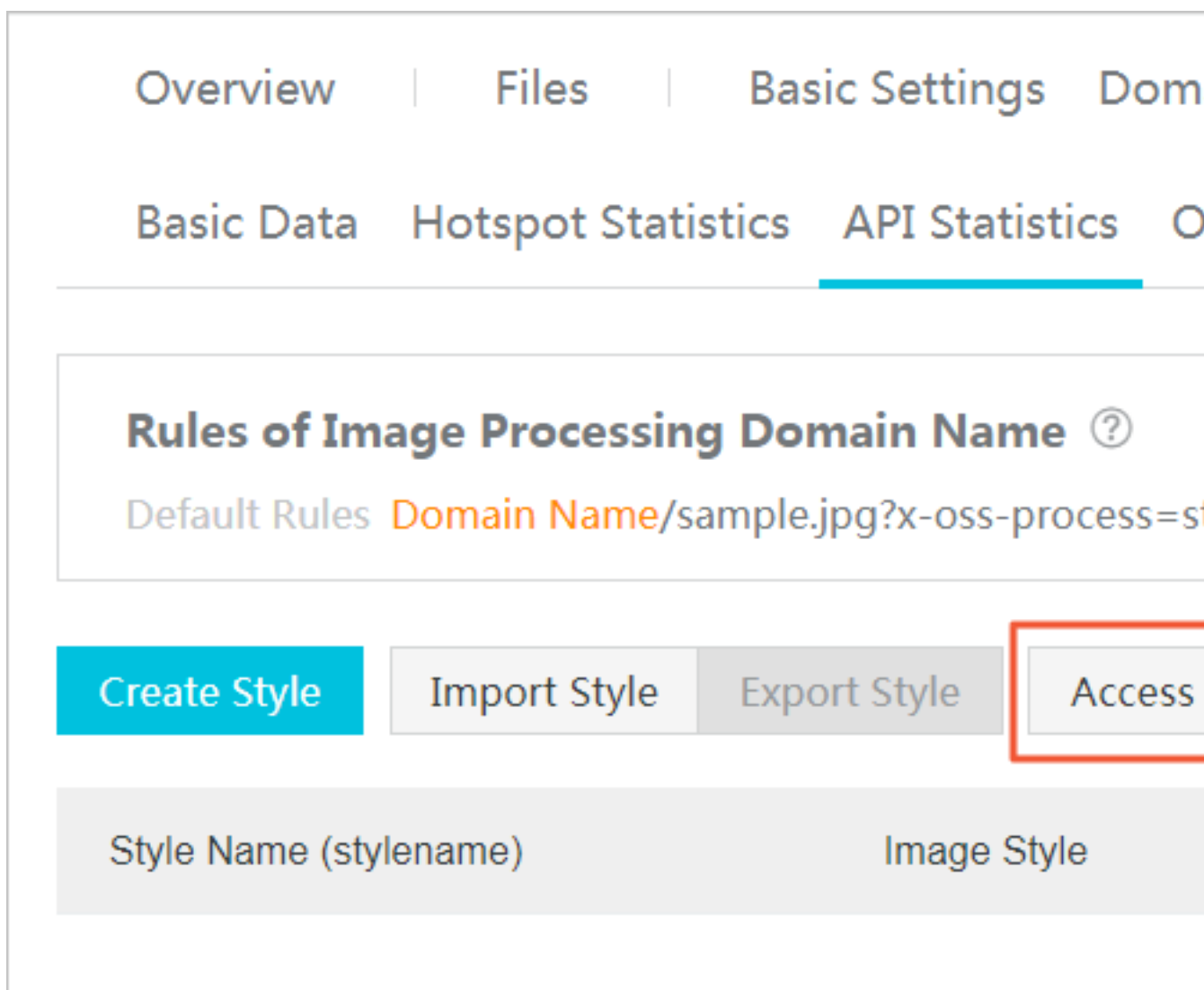
IMG regards the content after the separator in a URL as the style name. This is an optional method provided by IMG. You must set separators in the console. Separators such as `-`, `_`, `/`, and `!` are supported.

- *StyleName* indicates the name of a style.
- Style creations, deletions, and modifications are all performed in the console.
- When the requested style does not exist in the specified bucket, the system returns the error `NotSuchStyle`.

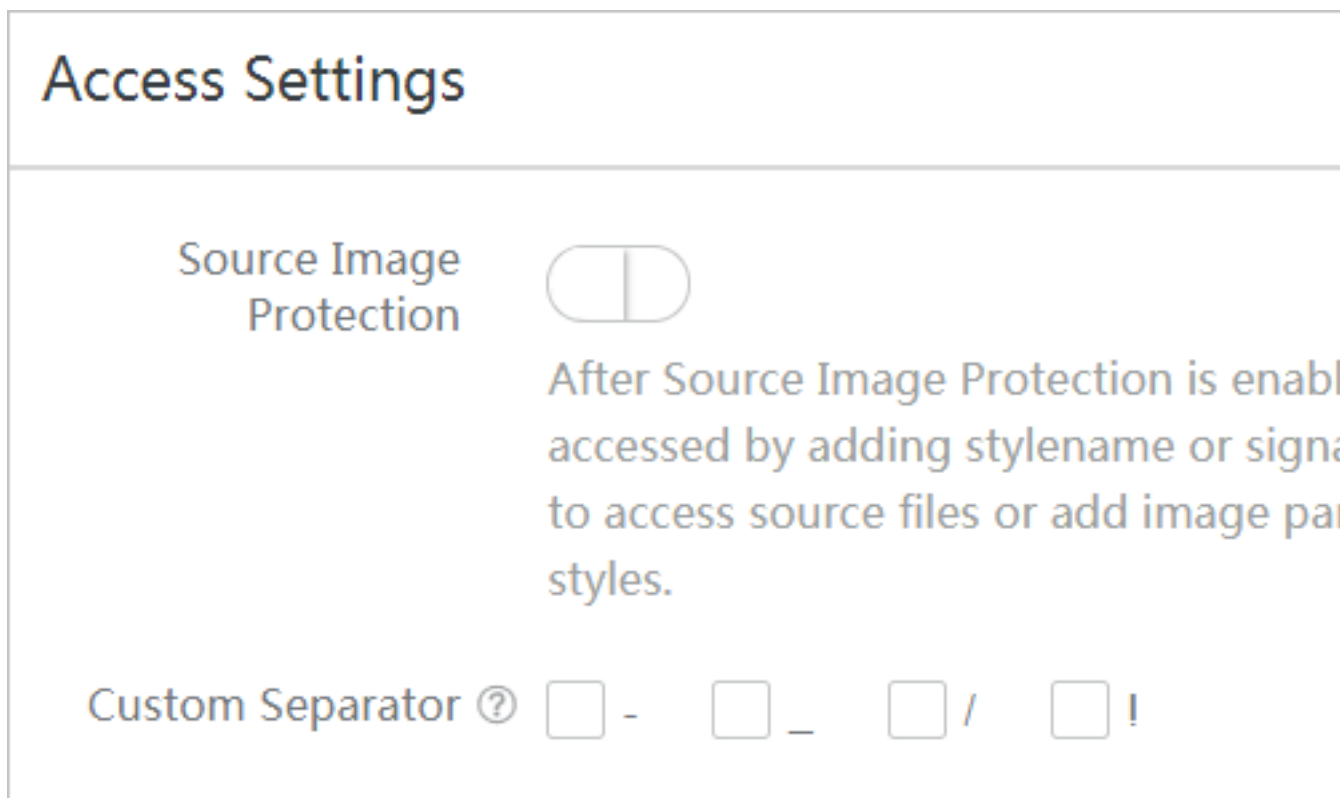
### Set separators

1. In the left-side bucket list of the [OSS console](#), click the bucket to which you want to set separators.
2. Click the **Image Processing** tab, and then click **Access Settings**. As shown in the following figure:





3. In the **Access Settings** dialog box, set the following parameters:



- **Source Image Protection:** After enabling the original image protection, you can only access the image file by passing in the StyleName or using a signature-based method. Direct accesses to the OSS original file or accesses by passing in image parameters and modifying the image style are not allowed.
- **Customize separator**

Click **OK**.

### Example

In this example, a style is created in the bucket image-demo.

Style name	Style content
panda_sytle	image/resize,m_fill,w_300,h_300,limit_0/auto-orient,0/quality,q_90/watermark,image_cGFuZGEucG5n,t_61,g_se,y_10,x_10

- **Access through parameters**

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m\\_fill,w\\_300,h\\_300,limit\\_0/auto-orient,0/quality,q\\_90/watermark,image\\_cGFuZGEucG5n,t\\_61,g\\_se,y\\_10,x\\_10](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m_fill,w_300,h_300,limit_0/auto-orient,0/quality,q_90/watermark,image_cGFuZGEucG5n,t_61,g_se,y_10,x_10)



- Access through URL parameters in style mode

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=style/panda\\_style](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=style/panda_style)



- Access through style separators in style mode

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg@!panda\\_style](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg@!panda_style)

These three methods bring the same result.

## 4 FAQs on using old and new versions of APIs and domain names

There are major differences between new and old versions of APIs:

- New version API: `http://bucket.<endpoint>/object?x-oss-process=image/action,parame_value`

All image manipulation operations are passed via `x-oss-process`. Each action is executed sequentially without any need for channel management.

- Old version API: `http://channel.<endpoint>/object@action.format`

It can be processed as a separator by @.

What are the advantages of OSS domain names when used with the Image Service?

Item	Use IMG domain access	Direct use of OSS domain name access
Use	Store and process two Domain Name Systems	One-stop processing for upload, management, process , distribution.
Is new version of API supported?	Supported	Supported
Is old version of API supported ?	Supported	Not supported by default
Is https supported?	Not supported.	Supported
Is VPC Network supported?	Not supported	Supported
Is multi-domain binding supported?	Not supported	Supported
Is source station update automatically refresh Alibaba CDN supported?	Not supported	Supported



**Note:**

- When OSS domain names are being used, only APIs for the new version of the IMG service can be used. When IMG domain names are being used, APIs for the old and new versions of the IMG service can be used.

- If the IMG domain name is expected to be capable of multi-CDN acceleration, the IMG domain name can be directly accessed by configuring the CDN to go back to the source host, and domain name binding is not required to complete the CDN acceleration.

### **What is the logic here for the two API methods and the two domain name access methods on the console?**

Bucket processed before enabling the old version of image

- To keep the logic consistent with the original, the user sees the Domain Name of the old version of IMG, and custom domain names that have previously been bound.
- The user's original graph protection configuration on the IMG domain name has no effect on the OSS domain name. When you start the same step in cross-region replication, the original graph protection and style separator are synchronized to the OSS domain name.
- When the user closes the image processing service for the current bucket, the style configuration and domain name binding are cleared, and automatically jump to the new page.

Newly created bucket or a bucket that has not previously opened the IMG service:

- The default is to be able to use the image processing service, which does not need to be up or turned off.
- No need to bind domain names, the domain name binding operation is directly consistent with the domain name management of the bucket itself.

### **If I'm currently using APIs for the old version of the IMG service, how do I switch to OSS domain names?**

Currently, APIs for the old version of the IMG service cannot be used with OSS domain names without a request being sent to Alibaba Cloud. To request use of APIs for the old version, submit a ticket to Alibaba Cloud asking for this service. For style-based access, both OSS and IMG domain names can be used. If all your images are accessed by style, follow these steps to switch to the use of OSS domain names:

1. Enable configuration synchronization in the current Image Service configurations, so that style separators and the source image protection feature can be synchronized to OSS domain names.
2. If you use a custom domain name, direct its CNAME to the OSS domain name.

**Are style configurations the same for IMG and OSS domain names?**

All style configurations are shared by IMG and OSS domain names. Style configurations for IMG domain names can be applied to OSS domains.

## 5 Image Service access rules

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In Image Service, URLs are accessed with standard HTTP GET requests, and all processing parameters are in the QueryString of the URL.

### Request for thumbnails through processing parameters

If you want to have a source image processed and then returned, the following two formats are available:

- URL

Access through a third-level domain name: `http://bucket.<endpoint>/object?x-oss-process=image/action,parame_value`

— *Bucket*: your Image Service channel.

— *endpoint*: the access domain name for a Bucket's data center.

— *Object*: In Image Service, an Object is the basic data unit for operating images. It is the same as the Object specified for the OSS instance. The maximum size of a single Object (that is, each image) is 20 MB.

— *action*: the operation to be performed on the image.

— *parame*: the parameter which indicates the operation to be performed on the image.

- Combination of multiple actions

Multiple actions are executed in sequence. For example, `image/resize,w_200/rotate,90` has the effect of scaling down an image to 200 in width and then rotating the image 90 degrees.

### Example



Assume that the requested Bucket is *image-demo* and located in *China East 1* (*Hangzhou*), with the domain name *oss-cn-hangzhou.aliyuncs.com*, and the requested image is *example.jpg*. The URL format for scaling down the image to 200 in width is:

```
http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_200
```

The URL format for HTTPS access is:

```
https://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_200
```

The URL format for access through a custom domain name is:

```
http://userdomain/object?x-oss-process=image/action,param_value
```

## Request for thumbnails through styles

### Style

Image Service allows you to save image processing operations and parameters as an alias, that is , a style. With styles, a series of operations can be achieved through a short URL.

- A Channel can have multiple styles. Currently, a Channel is allowed to have up to 50 styles.
- A style can be applied to change all Objects in a Channel. For example, if style abc is in Channel A and the style content is 100w.jpg (scaled to 100 in width and saved as a .jpg file ), style abc can be applied to all the Objects in Channel A to scale them to 100 in width and saved them as .jpg files.
- A style is only effective within a Channel, that is, the Objects in Channel A cannot use any style in Channel B.

Style naming rules:

- A name can be 1 to 63 characters in length.
- Only numbers, upper-case or lower-case letters, underscores (`_`), hyphens (`-`), and periods (`.`) are permitted.

### Channel

For more information about open data centers and domain names, see [####](#). A Channel is a namespace of Image Service, and the management entity for billing, permission control, logging, and other advanced functions. An image name is globally unique in Image Service and cannot be modified. You can create up to 10 Channels, but the number of Objects in each Channel is not limited.

Image Service data centers correspond to the OSS data centers. If you create a Bucket in an OSS data center and then activate Image Service, the corresponding Channel belongs to this data center. **Currently, a Channel corresponds to a Bucket in the OSS instance, that is, you can only create a Channel of the same name as a Bucket that you have created on the OSS instance.**

Channel naming rules:

- Only lower-case letters, numbers, and hyphens (-) are permitted.
- It must start and end with a lower-case letter or number.
- The length must be 3–63 bytes.

To simplify the process, you can save a specific processing method as a style. Later, you only need to specify a style to call the same processing method. The URL format for image processing by style is as follows:

```
http://userdomain/object?x-oss-process=style/name
```

### Example

The preceding processing parameters can be saved as the style *style-example*. Assume that the requested Bucket is *image-demo* and located in *China East 1 (Hangzhou)*, with the domain name *oss-cn-hangzhou.aliyuncs.com*, the requested image is *example.jpg*, and the image access style is *style-example*, the URL format is constructed as follows:

]

```
http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=style/style-example
```

The URL format for HTTPS access is:

```
https://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=style/style-example
```

### Access through SDK

Public buckets can be accessed using URLs, whereas private files are typically accessed using SDKs. Because in Image Service, URLs are accessed with standard GET operations, only the process parameter needs to be added to the Get Object.

The Python SDK is used as an example:

```
bucket = oss2. Bucket(oss2. Auth(access_key_id, access_key_secret),  
endpoint, bucket_name)  
key = 'example.jpg'  
new_pic = 'new-example.jpg'
```

```
process = "image/resize,m_fixed,w_100,h_100" //Scale down the image
based on the target width and height
bucket.get_object_to_file(key, new_pic, process=process)
```

For more information about Image Service used for OSS SDKs, see Image Service in the SDK documentation. The following table lists links of Image Service used for some SDKs.

SDK	Image Service documentat ion	Example
Java SDK	<a href="#">Image Service</a>	<a href="#">ImageSample.java</a>
Python SDK	Image Service <a href="#">Image Service</a>	<a href="#">image.py</a>
C# SDK	<a href="#">Image Service</a>	<a href="#">ImageProcessSample.cs</a>
PHP SDK	<a href="#">Image Service</a>	<a href="#">Image.php</a>
JS SDK	<a href="#">Image Service</a>	<a href="#">object.test.js</a>
C SDK	<a href="#">Image Service</a>	<a href="#">oss_image_sample.c</a>
iOS SDK	<a href="#">Image Service access rules</a>	<a href="#">AliyunOSSiOSTests.m</a> <a href="#">testGetImage</a>
Android SDK	<a href="#">Image Service access rules</a>	<a href="#">OSSGetObjectTest</a> . <a href="#">testAsyncGetImageWithXOssProcess</a>

### Image Service restrictions

- The supported formats include JPG, PNG, BMP, GIF, WEBP, and TIFF.
- When the width or height of a thumbnail is specified, the image is scaled by a single side by default in the case of proportional scaling. With fixed width and height, the image is scaled down by assuming equal width and height.
- The scaled image size is restricted. The product of the width and height of the target thumbnail cannot exceed 4096 x 4096, and the length of a single side cannot exceed 4096 x 4.
- When resize is called, the image cannot be enlarged by default. That is, if the requested image is larger than the source image, the source image is returned. If you want to enlarge the image, add the parameter `limit,0`.
- Currently, GIF and WEBP images can be processed once at a time to reduce resource consumption. For example, you cannot crop a GIF or WEBP image immediately after resizing it.

## 6 Convert formats

### 6.1 Format conversion

You can convert an image to different formats, such as JPG, PNG, BMP, WebP, and GIF. By default, no format is specified and images are returned in the source format.

#### Parameters

Name	Description
<code>jpg</code>	Saves the source image as JPG. If the source image is in PNG, WebP, or BMP format supporting transparent channels, the system fills the transparent section in white by default.
<code>png</code>	Saves the source image as PNG.
<code>webp</code>	Saves the source image as WebP.
<code>bmp</code>	Saves the source image as BMP.
<code>gif</code>	Saves the source image in GIF format as GIF. If the source image is in another format, it is saved in the source format.
<code>src</code>	Returns the source image in the source format. If the source image is in GIF format, the first GIF frame is returned and saved as JPG instead of GIF. If you want to save it as GIF, add the <code>1an</code> parameter.

#### Caveats

When an image is saved as JPG, it is saved as baseline JPEG by default. To save it as progressive JPEG, you can set the `interlace` parameter. For more information, see [Gradual display](#).

#### Example

- Save a PNG image as JPG.

Request URL: <http://image-demo.oss-cn-hangzhou.aliyuncs.com/panda.png?x-oss-process=image/format.jpg>



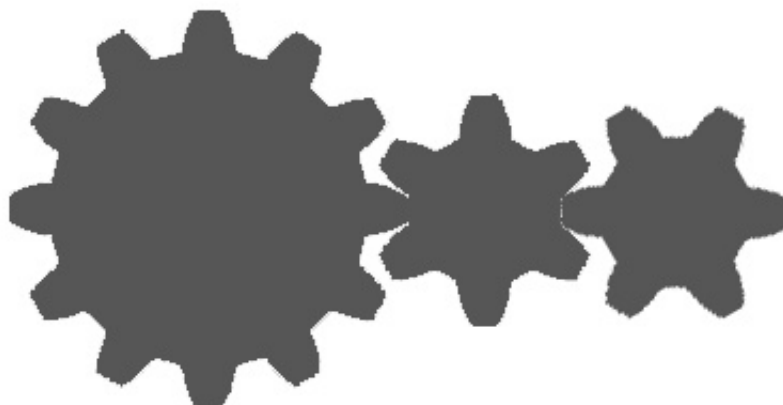
- Save a PNG image as JPG with progressive JPEG display.

Request URL: <http://image-demo.oss-cn-hangzhou.aliyuncs.com/panda.png?x-oss-process=image/interlace,1/format,jpg>



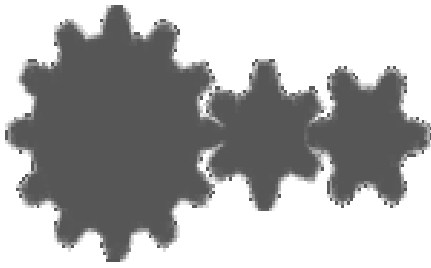
- Save a GIF image as JPEG.

Request URL: <http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.gif?x-oss-process=image/format,jpg>



Scale down the image to 200 in width.

Request URL: [http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.gif?x-oss-process=image/resize,w\\_200/format,gif](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.gif?x-oss-process=image/resize,w_200/format,gif)



- Save a GIF image as WEBP.

Request URL: [http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.gif?x-oss-process=image/resize,w\\_200/format,webp](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.gif?x-oss-process=image/resize,w_200/format,webp)

## 6.2 Gradual display

There are two ways to present a picture in JPG format:

- Top-down Scanning
- Fuzzy first and then gradually clear (when the network environment is poor)

The default is saved as the first, if you want to specify a presentation that is vague and clear, use the progressive display parameters.

### Parameter

Operation name: `interlace`

Name	Description	Value range
[value]	1 For JPG format saved as a progressive display 0 for a normal JPG format	[0, 1]



#### Note:

This parameter only makes sense if the effect graph is in JPG format.

### Examples

- Saves the photos in PNG format to a JPG format that is displayed incrementally.

<http://image-demo.oss-cn-hangzhou.aliyuncs.com/panda.png?x-oss-process=image/format,jpg/interlace,1>



- The image is reduced to a width of 200, and saved in a gradually displayed JPG format.

<http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/format,jpg/interlace,1>



## 6.3 Quality Transformation

If the image is saved as JPG or webp, the quality transformation can be supported.

### Parameter

Operation name: `quality`

Name	Description	Value range
q	Determine the relative quality of the picture and compress the original graph according to Q. If the original graph has a quality of 100%, use 90 Q to get an image of quality of 90% If the original image quality is 80%, the use of 90 Q will get a picture of the quality of 72. The concept of relative compression can only be used on images in the original image that are in JPG format. If the	1-100

Name	Description	Value range
	original diagram is webp, then the relative mass is equivalent to absolute mass.	
Q	To determine the absolute quality of the picture, press the original graph quality to Q %, if the original graph quality is less than the specified number, not compressed. If the original graph quality is 100 %, the use of "90q" will get a picture of the quality of 90; if the original graph quality is 95 %, the use of "90 Q" will also get a picture of the quality of 90; if the original graph quality is 80%, using "90q" does not compress and returns the original graph of quality 80. It can be used only on the SAVE as JPG/webp effects, and the other formats have no effect. If both Q and q are specified, press Q to process.	1-100

**Note:**

If you don't fill in Q parameter or q parameter, it may cause the image to take up more space. If you really want to get a picture of fixed quality, use the Q parameter.

**Examples**

- The original graph is reduced to a JPG graph of 80% relative to the original graph quality.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_100,h\\_100/quality,q\\_80](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_100,h_100/quality,q_80)



- The original graph is reduced to a JPG graph with an absolute quality of 80.



[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_100,h\\_100/quality,Q\\_80](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_100,h_100/quality,Q_80)



## 7 Source image protection

To avoid image piracy risks, the exposure to image URLs must be restricted so that only thumbnailed or watermarked images can be obtained. To do this, you can enable source image protection.

### Rule description

**After enabling the source image protection, you cannot access images in the following two ways::**

- Access directly with an OSS address: `http://bucket.<endpoint>/object`
- Request thumbnails with processing parameters: `http://bucket.<endpoint>/object?x-oss-process=image/action,parame_value`

**You can only access images in style mode::**

- Access through URL parameters: `http://bucket.<endpoint>/object?x-oss-process=style/<StyleName>`
- Access through separators: `http://bucket.<endpoint>/object<分隔符><StyleName>`



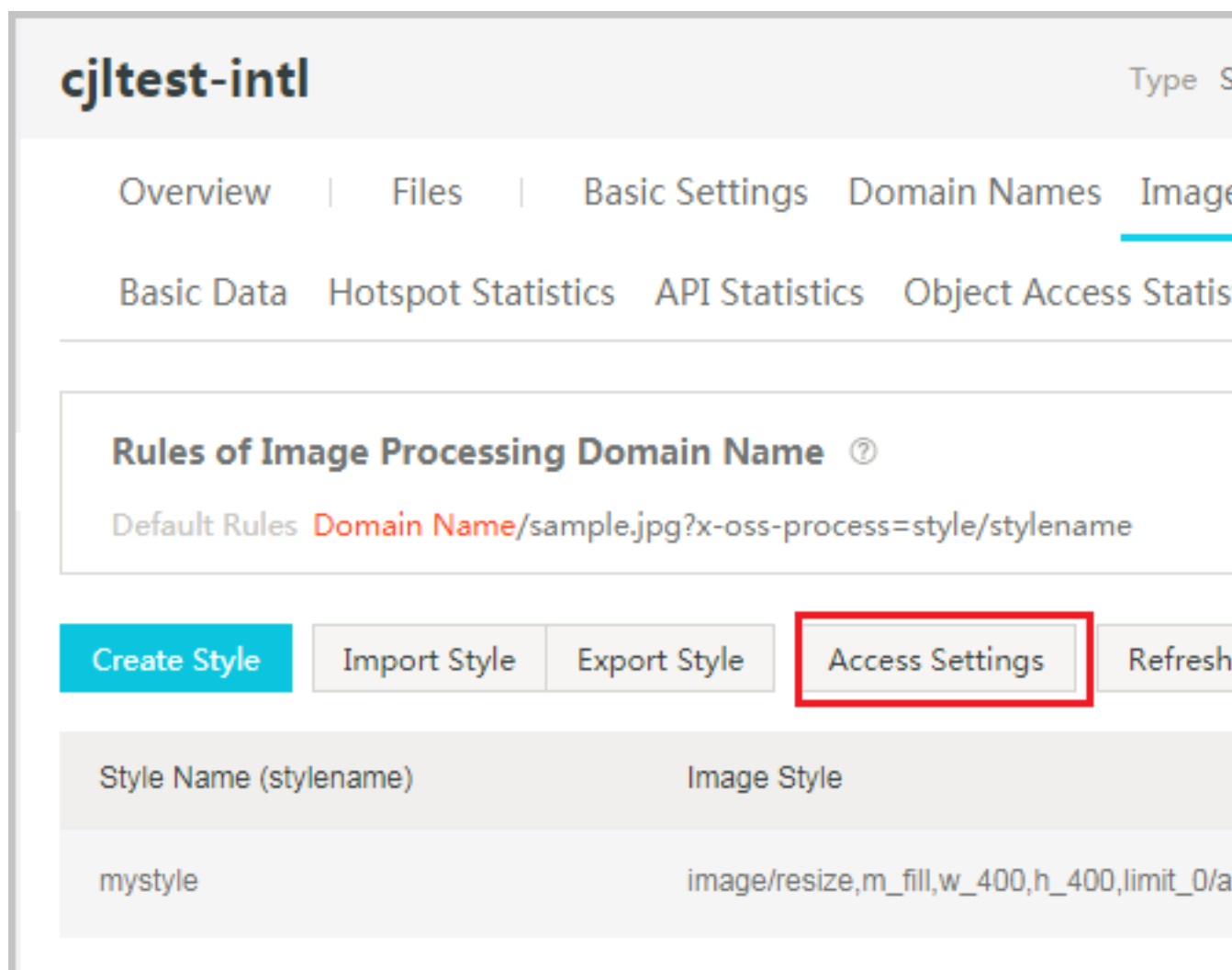
#### Note:

- The preceding rules only apply to anonymous accesses to public-read files. After enabling the source image protection, you can obtain source images using a signature-based method.
- The source image protection is designed for protecting image files, and the suffixes of the image files to be protected must be set. For example, if `.jpg` files are set for source image protection, you can still directly access the source images of `.png` files.

You can configure the **access rules** in the **Image Processing** module of the bucket in the console.

### Configure access rules

1. In the left-side bucket list of the [OSS console](#) , click the bucket for which you want to set the source image protection.
2. Click the **Image Processing** tab to locate the **Access Settings** button. See the following figure:



3. Click **Access Settings** to open the **Access Settings** dialog box, as shown in the following figure:

## Access Settings

[Documentation](#)

Source Image Protection

☒

After Source Image Protection is enabled, image files can only be accessed by adding `styleName` or `signature`. You are not allowed to access source files or add image parameters to modify image styles.

Suffix for Source Image Protection

Select

\*

png

jpg

jpeg

gif

bmp

svg

webp

Custom Separator ?

OK

In the **Settings** dialog box, perform the following settings:

- Enable source image protection: After enabling the source image protection, you can only access the image file by passing in the `styleName` or using a signature-based method.

Direct accesses to the OSS source file or accesses by passing in image parameters and modifying the image style are not allowed.

- Set the suffixes of the image files for source image protection.
- Customize separators.

4. Once you set the needed options, click **OK** to finish setting the source image protection.

## 8 Resize images

Generate a thumbnail of the image as required or make the specified scaling.

**Note:**

The supported formats include jpg, png, bmp, gif, webp, and tiff.

### Parameters

Operation name: `resize`

- Scale up and down with specified width and height

Name	Description	Value range
<code>m</code>	Specify the scaling mode: <ul style="list-style-type: none"><li><code>lfit</code>: proportional scaling. It refers to the maximum image that is limited in the rectangle of the specified <code>w</code> and <code>h</code>.</li><li><code>mfit</code>: proportional scaling. It refers to the minimum image extending out of the rectangle of the specified <code>w</code> and <code>h</code>.</li><li><code>fill</code>: fixed width and height. It refers to the cropped and centered minimum image extending out of the rectangle of the specified <code>w</code> and <code>h</code>.</li><li><code>pad</code>: fixed width and height, scaling down and filling.</li><li><code>fixed</code>: fixed width and height, enforced scaling down.</li></ul>	[ <code>lfit</code> , <code>mfit</code> , <code>fill</code> , <code>pad</code> , <code>fixed</code> ], the default value is <code>lfit</code> .
<code>w</code>	Specify the target width.	1-4096
<code>h</code>	Specify the target height.	1-4096
<code>l</code>	Specify the longer side of the target.	1-4096

Name	Description	Value range
<b>s</b>	Specify the shorter side of the target.	1-4096
<b>limit</b>	Specify whether to process the target thumbnail when it is larger than the original image . 1 indicates not to process, and 0 indicates to process.	0/1. The default value is 1
<b>color</b>	When you set the scaling mode as pad (scaling down and filling), you can select the filling color (The default is white). Filling format of parameters: use hexadecimal color codes, for example 00FF00 (green).	[000000-FFFFFF]

- Proportional scaling

- | Name     | Description  | Value range |
|----------|--|-------------|
| <b>p</b> | Percentage. If it is smaller than 100, it means to scale down; if it is bigger than 100, it means to scale up. | 1-1000      |

## Note

- For the original image:
  - Formats supported: jpg, png, bmp, gif, webp, and tiff.
  - File size cannot exceed 20 MB.
  - When using the image rotation, the width or height of the image cannot exceed 4096.
- For the thumbnail: The scaled image size is restricted. The product of the width and height of the target thumbnail cannot exceed 4096 x 4096, and the length of a single side cannot exceed 4096 x 4.
- When the width or height of a thumbnail is specified, the image is scaled by a single side by default in the case of proportional scaling. With fixed width and height, the image is scaled down by assuming equal width and height.

- When only the width or height of a thumbnail is specified, the image is returned in the same format as the original image. If you want to save the image into other formats, see [Quality Transformation](#) and [Format conversion](#).
- When `resize` is called, the image cannot be enlarged by default. That is, if the requested image is larger than the original image, the original image is returned. If you want to enlarge the image, add the parameter `limit_0` to be called (for example: `https://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_500,limit_0`)

### Example

#### Scaling-down by a single side (by width and height)

- Scale down an image to 100 in height, and the width is adjusted proportionally.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,h\\_100](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,h_100)



#### Scaling-down by a single side (by the longer side and shorter side)

- Limit the longer side of an image to 100, and the shorter side is adjusted proportionally.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,l\\_100](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,l_100)



#### Scaling-down based on target width or height

- Scale down an image to 100 x 100 (w x h).

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m\\_fixed,h\\_100,w\\_100](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m_fixed,h_100,w_100)





### Proportional scaling, restricted in a rectangle frame

- Scale down an image by the longer side to 100 x 100 (w x h).

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m\\_lfit,h\\_100,w\\_100](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m_lfit,h_100,w_100)



- Scale down an image by the longer side to 100 x 100 (w x h) and save it as png.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m\\_lfit,h\\_100,w\\_100/format,png](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m_lfit,h_100,w_100/format,png)



### Proportional scaling, restricted out of a rectangle frame

- Scale down an image by the shorter side to 100 x 100 (w x h)

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m\\_mfit,h\\_100,w\\_100](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m_mfit,h_100,w_100)



### Fixed width and height, automatic cropping

- Automatically crop an image to 100 x 100 (w x h)

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m\\_fill,h\\_100,w\\_100](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m_fill,h_100,w_100)



#### Fixed width and height, scaling down and filling

- Scale down an image by the shorter side to 100 x 100, and then fill the remaining area with a solid color.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m\\_pad,h\\_100,w\\_100](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m_pad,h_100,w_100)



- Scale down an image by the shorter side to 100 x 100, and then fill the remaining area with red.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m\\_pad,h\\_100,w\\_100,color\\_FF0000](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,m_pad,h_100,w_100,color_FF0000)



- Scale down an image to 1/2 of the original size.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,p\\_50](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,p_50)



## 9 Add watermarks

This feature allows you to add an image or text as a watermark to another image.

### Parameters

Operation name: `watermark`

#### Basic parameters

Name	Description	Parameter type
<code>t</code>	It indicates the transparency . This parameter makes the added image watermark or text watermark transparent. Default value: 100 (in the unit of %), indicating no transparency; value range: [0–100]	Optional
<code>g</code>	It indicates the position of a watermark on the target image . The position is shown in the following figure. Value range: [nw,north,ne,west,center,east,sw,south,se]	Optional
<code>x</code>	It indicates the horizontal margin, that is, the horizontal distance between the watermark and the image edge . This parameter is meaningful only when the watermark is in the upper left, middle left, lower-left corner, upper right, middle right, or lower-right corner corner of the image. Default value: 10 Value range: [0–4,096] Unit: pixel (px)	Optional
<code>y</code>	It indicates the vertical margin , that is, the vertical distance between the watermark and the image edge. This parameter is meaningful only	Optional


Name	Description	Parameter type
	when the watermark is in the upper left, top center, upper right, lower-left corner, bottom center, or lower-right corner of the image. Default value: 10 Value range: [0–4,096] Unit: pixel (px)	
<b>voffset</b>	It indicates the midline vertical offset. When the watermark is in the middle left, center, or middle right of the image, you can designate the vertical offset of the watermark along the midline. Default value: 0 Value range: [–1,000, 1,000] Unit: pixel (px)	Optional

**Note:**

- In addition to the position of a watermark on the image, the horizontal margin, vertical margin, and the midline vertical offset can regulate the watermark layout when the image has multiple watermarks.
- The URL-safe Base64 encoding can be used during image processing. For more information, see RFC4648 or the URL-safe Base64 encoding section.
- The Parameter-Position Mapping Table for the g parameter, is provided as follows:

nw	north	ne
west	center	east
sw	south	se

## Image watermark parameters

Name	Description	Parameter type
<b>image</b>	<p>It indicates the object name of an image watermark (which must be encoded).</p> <div>  <b>Note:</b>            The URL-safe base64 encoding is required:            encodedObject =            url_safe_base64_encode(object).            For example, if the object name is "panda.png", the encoded name is "cGFuZGEucG5n".         </div>	Required parameter

## Watermark image preprocessing

When a user applies a watermark, the watermark image can be preprocessed. Supported preprocessing operations include: Image scaling, Image cropping (incircle not supported) and Image rotation. Additionally, another parameter is supported for the “resize” operation:  $P$ .  $P$  indicates the watermark image scale relative to the master image. The value range is [1-100], indicating the scale percentage.

## Preprocessing examples

For example, if P\_10 is set, for a master image of 100x100, the size of the watermark is 10x10. For a master image of 200x200, the size of the watermark is 20x20. If the same watermark processing parameters are applied to images of different sizes, the watermark image may be too large or too small. The P parameter solves this problem. Using the P parameter, IMG dynamically adjusts the size of the watermark image according to the size of the master image.

If you scale panda.png to 30% in width, then the watermark file is: panda.png? x-oss-process= image/resize,P\_30 After adding URL-safe Base64 encoding this watermark file is: cGFuZGEucG5nP3qt b3NzLXB yb2Nlc3M9aW1hZ2Uvc mVzaXplLFBf mZaA)

If the watermark is placed in the lower-right corner and the source image width is reduced to 400, the watermark operation is: watermark=1&object=cGFuZGEucG5nQDMwUA&t=90&p=9&x=10&y=10 This is applied to the image as follows:

[Http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg? X-OSS-process = image/resize, WAP 400/watermark, maid, t\\_90, g\\_se, x\\_10, y\\_10](http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?X-OSS-process=image/resize,WAP 400/watermark,maid,t_90,g_se,x_10,y_10)





If the source image is reduced to 300 in width, the watermark operation is:

[http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize, w\\_300/watermark,image\\_cGFuZGEucG5nP3gtb3NzLXByb2Nlc3M9aW1hZ2UvcnVzaXplLFBfMzA,t\\_90,g\\_se,x\\_10,y\\_10](http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_300/watermark,image_cGFuZGEucG5nP3gtb3NzLXByb2Nlc3M9aW1hZ2UvcnVzaXplLFBfMzA,t_90,g_se,x_10,y_10)



**Text watermark**

Name	Description	Parameter type
<b>text</b>	<p>It indicates the text of the text watermark (encoding required).</p> <div>  <b>Note:</b>            The URL-safe base64 encoding is required:            encodeText =            url_safe_base64_encode(fontText)            Maximum length: 64 characters         </div>	Required
<b>type</b>	<p>It indicates the literal type of a text watermark (encoding required)</p> <div>  <b>Note:</b>            NOTE: The URL-safe base64 encoding is required: encodeText =            url_safe_base64_encode(fontType)         </div> <p>Value range: See the Literal Type Encoding Table as follows.            Default value: wqy-zenhei (encoded value: d3F5LXplbmhlaQ)</p>	Optional
<b>color</b>	<p>It indicates the color of the textual content of a text watermark (encoding required)</p> <p>The URL-safe base64 encoding is required:            EncodeFontColor = url_safe_base64_encode(fontColor). The parameter format must be # + six hexadecimal numbers. For example, #000000 indicates black. “#” indicates the prefix. Every two digits of 000000 constitute an RGB color. #</p>	Optional



Name	Description	Parameter type
	FFFFFF indicates the white color. Default value: #000000 (black); Base64-encoded value: lzAwMDAwMA	
<b>size</b>	It indicates the size (px) of the textual content of a text watermark. Value range: (0, 1,000] Default value: 40	Optional
<b>shadow</b>	It indicates the shadow transparency of a text watermark. Value range: (0, 100]	Optional
<b>rotate</b>	It indicates the clockwise rotation angle of the text. Value range: [0,360]	Optional
<b>fill</b>	It indicates the effect of filling the image with a watermark. Value range: [0,1]. 1 indicates that the image is filled with the watermark; 0 indicates no filling effect.	Optional

Literal type encoding table

Parameter value	Meaning	URL-safe Base64 encoded value	Remarks
wqy-zenhei	Wen quan yi zheng hei ti, a type of Chinese font	d3F5LXplbmhlaQ==	According to the RFC, the padding characters == can be omitted, that is, d3F5LXplbmhlaQ
wqy-microhei	Micro Hei font of the WenQuanYi Chinese font project	d3F5LW1pY3JvaGVp	
fangzhengshusong	Founder ShuSong, a Chinese Simplified font	ZmFuZ3poZW5nc2h1c29uZW==	According to the RFC, the padding characters == can be omitted,

Parameter value	Meaning	URL-safe Base64 encoded value	Remarks
			that is, ZmFuZ3poZW5nc2h1c29uZW
fangzhengkaiti	Founder Kai, a Chinese Simplified font	ZmFuZ3poZW5na2FpdGk=	According to the RFC, the padding character = can be omitted, that is, ZmFuZ3poZW5na2FpdGk
fangzhengheiti	Founder Hei, a Chinese Simplified font	ZmFuZ3poZW5naGVpdGk=	According to the RFC, the padding character = can be omitted, that is, ZmFuZ3poZW5naGVpdGk
fangzhengfangsong	Founder FangSong, a Chinese Simplified font	ZmFuZ3poZW5nZmFuZ3Nvbmc=	According to the RFC, the padding character = can be omitted, that is, ZmFuZ3poZW5nZmFuZ3Nvbmc
droidsansfallback	DroidSansFallback	ZHJvaWRzYW5zMmFsbGJhY2s=	According to the RFC, the padding character = can be omitted, that is, ZHJvaWRzYW5zMmFsbGJhY2s

### Text & image watermark

Name	Description	Parameter type
<b>order</b>	It indicates the order of the text watermark and image watermark of a text & image watermark. Value range: [0, 1]. 0 (default ) indicates that the image watermark is before the text watermark; 1 indicates that the text watermark is before the image watermark.	Optional
<b>align</b>	It indicates the alignment of the text watermark and image	Optional

Name	Description	Parameter type
	watermark of a text & image watermark. Value range: [0, 1, 2]. 0 (default): top alignment; 1: center alignment; 2: bottom alignment	
<b>interval</b>	It indicates the spacing between the text watermark and image watermark of a text & image watermark. Value range: [0, 1000]	Optional

### URL-safe Base64 encoding

Many parameters must be Base64 encoded during image processing. For more information, see [RFC4648](#). The URL-safe Base64 encoding is only applicable to some specific watermark parameters (text content, color, and font of a text watermark, and object of an image watermark). Do not use it in a signature. The encoding format is:

- Encode the content to produce a base64 result.
- Replace the plus sign (+) in the result with a minus sign (-).
- Replace the slash sign (/) in the result with an underscore (\_).
- Keep all equal signs (=) at the end of the result;

An example in Python is shown as follows:

```
import base64
input='wqy-microhei'
print(base64.urlsafe_b64encode(input))
```

### Example

- The following URL watermarks the file example.jpg with panda.png (after URL-safe base64 encoded: cGFuZGEucG5n).

[http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_300,h\\_300/auto-orient,1/quality,q\\_90/format,jpg/watermark,image\\_cGFuZGEucG5n,t\\_90,g\\_se,x\\_10,y\\_10](http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_300,h_300/auto-orient,1/quality,q_90/format,jpg/watermark,image_cGFuZGEucG5n,t_90,g_se,x_10,y_10)



- Scale panda.png to 50 in width. Then the watermark file is panda.png? x-oss-process=image/resize,w\_50 and (cGFuZGEucG5nP3gtb3NzLXByb2Nlc3M9aW1hZ2UvcnVzaXplLHdfNTA=) after URL-safe Base64 encoding.

[http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_300,h\\_300/auto-orient,1/quality,q\\_90/format,jpg/watermark,image\\_cGFuZGEucG5nP3gtb3NzLXByb2Nlc3M9aW1hZ2UvcnVzaXplLHdfNTA=,t\\_90,g\\_se,x\\_10,y\\_10](http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_300,h_300/auto-orient,1/quality,q_90/format,jpg/watermark,image_cGFuZGEucG5nP3gtb3NzLXByb2Nlc3M9aW1hZ2UvcnVzaXplLHdfNTA=,t_90,g_se,x_10,y_10)



- The simplest watermark: text content is: Hello, picture Service

[http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_300,h\\_300/watermark,type\\_d3F5LXplbmhlaQ,size\\_30,text\\_SGVsbG8g5Zu-54mH5pyN5YqhlQ](http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_300,h_300/watermark,type_d3F5LXplbmhlaQ,size_30,text_SGVsbG8g5Zu-54mH5pyN5YqhlQ)

- The font is black, the font size is 40, and the color is white (# ffgarda ), the text shadow is 50, the text watermark content is: Hello, picture service !, The watermark location is: Right Bottom, horizontal margin is: 10, midline vertical offset is: 10

[http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_300,h\\_300/watermark,type\\_d3F5LXplbmhlaQ,size\\_30,text\\_SGVsbG8g5Zu-54mH5pyN5YqhlQ,color\\_FFFFFFFF,shadow\\_50,t\\_100,g\\_se,x\\_10,y\\_10](http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_300,h_300/watermark,type_d3F5LXplbmhlaQ,size_30,text_SGVsbG8g5Zu-54mH5pyN5YqhlQ,color_FFFFFFFF,shadow_50,t_100,g_se,x_10,y_10)

- Text and image watermark, text content is: Hello, picture service! The shadow is 50, in the lower right corner, and the image object is panda.png. The horizontal and vertical margin are both 10, The watermark is 100 transparent, the layout is before the picture, the alignment is lower alignment, and the spacing is 10.

[http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_300,h\\_300/auto-orient,1/quality,q\\_90/format,jpg/watermark,image\\_cGFuZGEucG5nP3gtb3NzLXByb2Nlc3M9aW1hZ2UvcmlFBfMjU,type\\_d3F5LXplbmhlaQ,size\\_30,text\\_SGVsbG8g5Zu-54mH5pyN5YqhlQ,color\\_FFFFFFFF,shadow\\_50,order\\_0,align\\_2,interval\\_10,t\\_100,g\\_se,x\\_10,y\\_10](http://image-demo.img-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_300,h_300/auto-orient,1/quality,q_90/format,jpg/watermark,image_cGFuZGEucG5nP3gtb3NzLXByb2Nlc3M9aW1hZ2UvcmlFBfMjU,type_d3F5LXplbmhlaQ,size_30,text_SGVsbG8g5Zu-54mH5pyN5YqhlQ,color_FFFFFFFF,shadow_50,order_0,align_2,interval_10,t_100,g_se,x_10,y_10)

## 10 Crop images

### 10.1 Incircle

This feature allows you to save an image in a circular shape. If the final format of the image is PNG, WebP, or BMP supporting transparent channels, the area of the image outside the circular area is transparent. If the final format of the image is JPG, the area of the image outside the circular area is white.

#### Parameters

This table provides the description and values for parameters for the `circle` operation.

Parameter	Description	Value
<code>r</code>	Radius of the circular area of the image	The radius <code>r</code> cannot exceed half of the shorter side of the source image. If the radius <code>r</code> exceeds half of the shorter side of the source image, the circle is still the largest incircle of the source image.

#### Caveats

- If the final format of the image is PNG, WebP, or BMP supporting transparent channels, the area of the image outside the circular area is transparent. If the final format of the image is JPG, the area of the image outside the circular area is white. The PNG format is recommended.
- If the specified radius is greater than the radius of the largest incircle of the source image, the circle is still the largest incircle of the source image.

#### Example

- Crop an image with a crop radius of 100 and keep the original circular size. If the image is saved in JPEG format, the area of the image outside the circular area is white.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/circle,r\\_100](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/circle,r_100)



- Crop an image with a crop radius of 100 and save the circle as the smallest square that can enclose the circle. If the image is saved in PNG format, the area of the image outside the circular area is transparent.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/circle,r\\_100/format,png](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/circle,r_100/format,png)



## 10.2 Crop

This feature allows you to crop images by specifying the starting point of where you want to crop, and the width and height of the cropped area.

### Parameters

This table provides the description and values of the parameters for the `crop` operation.

Parameter	Description	Value range
W	Width of the cropped area	[0-image width]
h	Height of the cropped area	[0-image height]
x	X-axis of the crop starting point (the origin is located in the upper-left corner by default)	[0-image border]
y	Y-axis of the crop starting point (the origin is located in the upper-left corner by default)	[0-image border]
g	Location of the origin for cropping. The origin is located in the upper-left corner of any of nine fixed cells.	[nw, north, ne, west, center, east, sw, south, se]

Schematic view of the g parameter indicating the origin for cropping:

nw	north	ne
west	center	east
sw	south	se

### Caveats

- If the specified starting X-axis and Y-axis values exceed the source image, a BadRequest error is returned. You must specify different values to crop the image.
- If the width and height specified from the starting point exceed the source image size, the source image is cropped to its edges.

### Example

- Crop an image from the starting point (100, 50) to the edges.



[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/crop,x\\_100,y\\_50](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/crop,x_100,y_50)



- Crop an area of 100x100 from the starting point (100, 50).

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/crop,x\\_100,y\\_50,w\\_100,h\\_100](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/crop,x_100,y_50,w_100,h_100)



- Crop an area of 200x200 in the lower-right corner of the source image.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/crop,x\\_0,y\\_0,w\\_200,h\\_200,g\\_se](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/crop,x_0,y_0,w_200,h_200,g_se)



- Crop an area of 200x200 in the lower-right corner of an image and stretch the cropped area downward by 10x10.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/crop,x\\_10,y\\_10,w\\_200,h\\_200,g\\_se](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/crop,x_10,y_10,w_200,h_200,g_se)



## 10.3 Indexed cut

This feature allows you to define an x and y-axes coordinate system for an image, and then fetch a specific partition of the image by specifying the length and index.

### Parameters

This table provides the description and values for the parameters for the `indexcrop` operation.

Parameter	Description	Value
<b>x</b>	Length of each image partition during horizontal cutting. Either the x or y parameter must be used.	[1, image width]
<b>y</b>	Length of each image partition during vertical cutting. Either the x or y parameter must be used.	[1, image height]
<b>i</b>	Image partition selected after cutting. (The value 0 indicates the first partition.)	[0, maximum partition quantity ). If the maximum partition quantity is exceeded, the system returns the source image.

### Caveats

If the specified index exceeds the cut range, the system returns the source image.

### Example

Divide an image equally by 100 on the X-axis, and fetch the first partition.

- Divide an image equally by 100 on the X-axis, and fetch the first partition.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/indexcrop,x\\_100,i\\_0](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/indexcrop,x_100,i_0)



- Divide an image equally by 100 on the X-axis, fetch the 100th partition, and check whether the source image is returned.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/indexcrop,x\\_100,i\\_100](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/indexcrop,x_100,i_100)



## 10.4 Rounded rectangle

This feature allows you to save an image in a rounded oblong shape and specify the rounded corner size.

### Parameters

This table provides the description and values for parameters for the `rounded-corners` operation.

Parameter	Description	Value
<code>r</code>	Radius of the cropped rounded corner of an image.	[1, 4096] The radius of the largest rounded corner cannot exceed half of the shorter side of the source image.

### Caveats

- If the final format of the image is PNG, WebP, or BMP, and supports transparent channels, the area of the image outside the circular area is transparent. If the final format of the image is JPG, the area of the image outside the circular area is white. The PNG format is recommended.
- If the specified radius is greater than the radius of the largest incircle of the source image, the circle is still the largest incircle of the source image.

### Example

- Crop an image with the radius of the cropped rounded corner being 30, and save the cropped image as JPG.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/rounded-corners,r\\_30](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/rounded-corners,r_30)



- Crop an image to 100x100 in size, and save the image as PNG with the radius of the rounded corner being 10.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/crop,w\\_100,h\\_100/rounded-corners,r\\_10/format,png](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/crop,w_100,h_100/rounded-corners,r_10/format,png)



# 11 Obtain image information

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## 11.1 Retrieve dominant image tones

You can retrieve the average tones of images.

### Request operation

Operation name: `average-hue`

### Return format

0xRRGGBB (RR, GG, and BB are hexadecimal values respectively indicating red, green, and blue)

### Example

Access the following URL through a browser:

<http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/average-hue>

The following result is returned:

```
{ "RGB" : "0x5c783b" }
```

Source image:

<http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg>





0x5c783b corresponds to the color RGB (92,120,59).



## 11.2 Obtain information

### Obtain basic information and EXIF data

You can use `info` to obtain basic information about a file, including its width, length, file size, format. If the file contains exif information, exif information is returned. Otherwise, only basic information is returned. Results that are returned are in JSON format. For more information, see [EXIF2.31](#).

#### Request format

Operation name: `info`

#### Response format

JSON format



## Examples

- Example of a request for EXIF data under the condition that the source image does not have EXIF data

<http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/info>

```
"FileSize": {"value": "21839"},
"Format": {"value": "jpg"},
"ImageHeight": {"value": "267"},
"ImageWidth": {"value": "400"}
```

- Example of a request for EXIF data under the condition that the source image has EXIF data

<http://image-demo.oss-cn-hangzhou.aliyuncs.com/f.jpg?x-oss-process=image/info>

```
"Compression": {"value": "6"},
"DateTime": {"value": "2015:02:11 15:38:27"},
"ExifTag": {"value": "2212"},
"FileSize": {"value": "23471"},
"Format": {"value": "jpg"},
"GPSLatitude": {"value": "0deg "},
"GPSLatitudeRef": {"value": "North"},
"GPSLongitude": {"value": "0deg "},
"GPSLongitudeRef": {"value": "East"},
"GPSMapDatum": {"value": "WGS-84"},
"GPSTag": {"value": "4292"},
"GPSVersionID": {"value": "2 2 0 0"},
"ImageHeight": {"value": "333"},
"ImageWidth": {"value": "424"},
"JPEGInterchangeFormat": {"value": "4518"},
"JPEGInterchangeFormatLength": {"value": "3232"},
"Orientation": {"value": "7"},
"ResolutionUnit": {"value": "2"},
"Software": {"value": "Microsoft Windows Photo Viewer 6.1.7600.16385"},
"XResolution": {"value": "96/1"},
"YResolution": {"value": "96/1"}}
```

## 12 Rotate images

### 12.1 Adaptive orientation

The photos taken by some mobile phones may contain rotation parameters (saved as EXIF data of the photos). You can configure whether to rotate such photos. By default, adaptive orientation is configured.

#### Parameters

Operation name: `auto-orient`

Parameter	Description	Value range
<code>value</code>	Indicates whether to perform auto rotation. 0 indicates that the orientation of the source image is retained without auto rotation. 1 indicates rotating and then scaling down the image.	0 and 1

#### Caveats

- To apply adaptive orientation, make sure that the width and height of the source image are smaller than 4,096.
- If the source image does not contain rotation parameters, setting the parameter of `auto-orient` for the image does not affect the image.

#### Example

- Scale down an image to 100 in width without auto rotation

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/f.jpg?x-oss-process=image/resize,w\\_100/auto-orient,0](http://image-demo.oss-cn-hangzhou.aliyuncs.com/f.jpg?x-oss-process=image/resize,w_100/auto-orient,0)



- Scale down an image to 100 in width, and auto-rotate the image by setting the value parameter to 1.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/f.jpg?x-oss-process=image/resize,w\\_100/  
auto-orient,1](http://image-demo.oss-cn-hangzhou.aliyuncs.com/f.jpg?x-oss-process=image/resize,w_100/auto-orient,1)



The target image size is 100x127 (WxH).

## 12.2 Rotate

Images can be rotated in clockwise direction.

### Parameters

Operation name: `rotate`

Parameter	Description	Value range
value	Degrees of clockwise rotation	[0, 360] The default value is 0, indicating no rotation.

### Caveats

- The rotated image may become larger.
- The size of the image to be rotated is limited. The image width or height cannot exceed 4,096.

### Example

- Rotate an image 90 degrees clockwise.

<http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/rotate,90>



- Scale down an image to 200x200 (WxH) and then rotate it 90 degrees clockwise.

[http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w\\_200,h\\_200/rotate,90](http://image-demo.oss-cn-hangzhou.aliyuncs.com/example.jpg?x-oss-process=image/resize,w_200,h_200/rotate,90)



## 13 Response to errors

If an error occurs while accessing the Image Service, the Image Service returns an error code and error message. This enables you to locate and correct the error.

### Image Service error response format

An example of an error response message is given as follows:

```
<Error>
  <Code>BadRequest</Code>
  <Message>Input is not base64 decoding.</Message>
  <RequestId>52B155D2D8BD99A15D0005FF</RequestId>
  <HostId>userdomain</HostId>
</Error>
```

This error response message contains the following elements:

- **Code:** An error code that the Image Service returns to the user.
- **Message:** Detailed error information provided by the Image Service.
- **RequestId:** A unique UUID used to identify an error request. When a problem cannot be solved, this ID can be sent to the Image Service engineers to help locate the cause of the error.
- **HostId:** Used to identify the accessed Image Service cluster.

### Image Service error codes

Error code	Description	HTTP status code
InvalidArgument	Parameter error	400
Badrequest	Incorrect request	400
Missingargument	A parameter is missing	400
Imagetoolarge	Image size exceeds the limit	400
Watermarkerror	Watermark error	400
AccessDenied	Access is denied	403
Signaturedoesnotmatch	Signature does not match	403
Nosuchfile	Image does not exist	404
Nosuchstyle	Style does not exist	404
InternalServerError	Internal service error	500
NotImplemented	Method not implemented	501

**Processing parameter restrictions**

Image Service has the following restrictions:

- The source file size cannot exceed 20 MB.
- Scaling operation: The scaled image size is limited. The product of its width and height cannot exceed 4096 x 4096, and the length of a single side cannot exceed 4096 x 4.
- Rotation operation: The size of the image to be rotated is limited. The image width or height cannot exceed 4,096.
- A maximum of 4 channels are allowed.

## 14 Video intercept

The Image Service not only processes the existing image content but also captures the image at a specified point of the video to complete the video frame capturing.

### Parameters

Operation type: `video`

Operation name: `snapshot`

Parameter	Description	Value range
<code>t</code>	Screenshot time	Unit: ms. [0, video duration]
<code>w</code>	Screenshot width. If it is specified as 0, the value	is automatically calculated. Pixel value: [0, video width]
<code>h</code>	Screenshot height. If it is specified as 0, the value is automatically calculated. If both <code>w</code> and <code>h</code> are 0, the video is outputted in the original width and height.	Pixel value: [0, video width]
<code>m</code>	Screenshot mode. If not specified, use the default mode . The screenshot is captured accurately at a specified time . If it is set as fast, the most recent key frame before the specific time is captured.	Enumeration value: fast
<code>f</code>	Output image format	Enumeration value: jpg and png

### Example

- Find the video content at 7s, and set the output type as jpg.

[http://a-image-demo.oss-cn-qingdao.aliyuncs.com/demo.mp4?x-oss-process=video/snapshot,t\\_7000,f\\_jpg,w\\_800,h\\_600,m\\_fast](http://a-image-demo.oss-cn-qingdao.aliyuncs.com/demo.mp4?x-oss-process=video/snapshot,t_7000,f_jpg,w_800,h_600,m_fast)





- Find the video content at 50s, and set the output type as jpg. Accurate to the specific time.

[http://a-image-demo.oss-cn-qingdao.aliyuncs.com/demo.mp4?x-oss-process=video/snapshot,t\\_50000,f\\_jpg,w\\_800,h\\_600](http://a-image-demo.oss-cn-qingdao.aliyuncs.com/demo.mp4?x-oss-process=video/snapshot,t_50000,f_jpg,w_800,h_600)

