

# Optical Character Recognition

## FAQs

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# 1 General Consulting

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## 1.1 How Do I Purchase an API That Best Suits My Needs?

The following four types of OCR APIs are made available: general, card, receipt, and auto classification.

In addition, you can use the [OCR suite](#) provided by ModelArts Pro to build a dedicated OCR system without the need to write code.

- **General OCR**
  - **General Table OCR:** extracts text and row and column locations from table images.
  - **General Text OCR:** extracts text and locations from images.
  - **Handwritten Text OCR:** extracts handwritten and printed text from images.
  - **Web Image OCR:** extracts text and locations from web images.
- **Card OCR**
  - ID Card OCR, Passport OCR, and Bank Card OCR
  - Driving License OCR, Vehicle License OCR, Transportation License OCR, Plate Number OCR, and VIN OCR
  - Business License OCR and Business Card OCR
- **Receipt OCR**
  - VAT Invoice OCR (Special VAT Invoice OCR, General VAT Invoice OCR, General VAT E-invoice OCR, Toll Invoice OCR, and Roll Invoice OCR)
  - Quota Invoice OCR, Train Ticket OCR, and Taxi Invoice OCR
  - Motor Vehicle Sales Invoice OCR and Toll Invoice OCR
  - Flight Itinerary OCR
- **Auto Classification OCR**
  - If an image to be recognized contains multiple cards and invoices, auto classification OCR is required.

- An image to be recognized contains multiple same type of invoices.
- An image to be recognized contains multiple different types of invoices.

For details about the pricing, see [OCR Price Calculator](#). For details about the billing, see [OCR Billing](#).

## 1.2 Can the OCR Results Be Converted into Word, TXT, or PDF Files?

OCR results are returned in JSON format, but they can be saved to Word, TXT, or PDF format.

## 1.3 Can OCR Export Recognition Results Right After Images Are Uploaded?

After uploading images, you can export recognition results by calling the service API. For details, see the [Optical Character Recognition Getting Started](#).

## 1.4 Can OCR Recognize Text Files?

OCR detects and recognizes characters in images and do not recognize Word, PDF, and Excel files.

## 1.5 How Do I Disable a Service?

OCR cannot be disabled once being enabled. An enabled service is paid on a pay-per-use basis by default. No fees will be deducted if you do not call the service.

## 1.6 Why Is the Service Subscription Button Unavailable on the Console?

### Symptom

After logging in to the OCR console, the button for subscribing for the service is unavailable.

### Possible Cause

The possible cause is that the current user is an IAM user who does not have permission to enable the service. An account pays and owns the resources and has full access permissions for the resources.

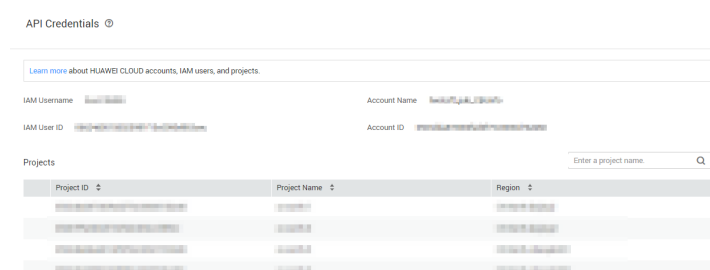
### Solution

Log in to the OCR management console using an account and subscribe to OCR.

## 1.7 What Are the Username, Domain Name, and Project Name in the Token Message Body?

**Username** indicates the name of the user, and **Domain Name** indicates the name of the account to which the user belongs. If the token is obtained by an account, the username and domain name are the same. If the token is obtained by an IAM user (multiple IAM users can be created under an account), the username is a real-world username and is different from the domain name.

The project name can be set to **cn-north-4**. For details about how to obtain a project name, see [Obtaining the Username, User ID, Project Name, and Project ID](#).



## 1.8 How Do I Accelerate the Response to a Service Call?

1. Check the image size. If the image size is too large, it takes a long time to transmit the image over the network. You are advised to zoom in or out the image in proportion without changing the image quality.
2. Check whether the network bandwidth is stable and whether the network fluctuates. You are advised to increase the network bandwidth to avoid long network delay.

## 1.9 Can QR Codes Be Recognized by OCR?

No. QR codes cannot be recognized.

## 1.10 Can OCR Be Used Offline?

No, OCR cannot be used offline. Calling SDKs must ensure that you can access the public network. OCR APIs are deployed on HUAWEI CLOUD and you can call OCR APIs only when the public network can be accessed.

## 1.11 Can Multiple ID Cards Be Recognized by OCR at a Time?

When you use the [EI Experience Center](#) or Postman to call the ID card recognition API, only one ID card can be recognized at a time. You can use the following methods to recognize multiple ID cards at a time:

- Modify the SDK calling code to cyclically call the ID card recognition API so that the API can recognize multiple ID card images at a time.
- Use the [Auto Classification OCR](#) API to recognize multiple ID cards in an image at a time.

## 1.12 What VAT Invoices Can Be Recognized by VAT Invoice OCR?

Currently, the API supports the special and plain VAT invoices (including plain electronic VAT invoices). Volume invoices and toll invoices, as well as fields such as the invoice remarks, supervision seal, special seal, and serial number of voucher form will be supported soon. For details, see [VAT Invoice OCR](#).

## 1.13 Can I Export General Table OCR Data to an Excel File?

General Table OCR can convert the table content into an editable Excel file. If `return_excel` is `true`, the returned table is converted to the Base64 code of the Microsoft Excel. You can use the Python function `base64.b64decode` to decode the table content and save it as an .xlsx file.

## 1.14 Can ID Card OCR Identify Whether an ID Card Is Real or Fake?

ID Card OCR recognizes the text on an ID card and returns the recognition result in JSON format. The service cannot identify whether the ID card is real or fake.

## 1.15 Must I Use HUAWEI CLOUD to Store Images When I Use OCR?

OCR allows you to input images by entering the Base64 codes or URLs of images.

If you use URLs, you can upload the images to OBS and use the URLs provided by OBS.

In addition, you can use HTTP or HTTPS URLs to input images.

# 2 Billing

## 2.1 Can a Package Be Refunded After Being Purchased?

The package cannot be refunded after being purchased.

## 2.2 Am I Billed After the Service Quota Is Used Up? How Do I View the Package Balance?

After the package quota is used up, the billing mode changes to pay-per-use. In pay-per-use mode, you are charged based on the tiered price of the number of API calls. The number of API calls is accumulated by month. After a calendar month ends, the number of API calls is cleared and accumulated again. If the service is not used, it will not be charged. For details about the pricing, see [Product Pricing Details](#).

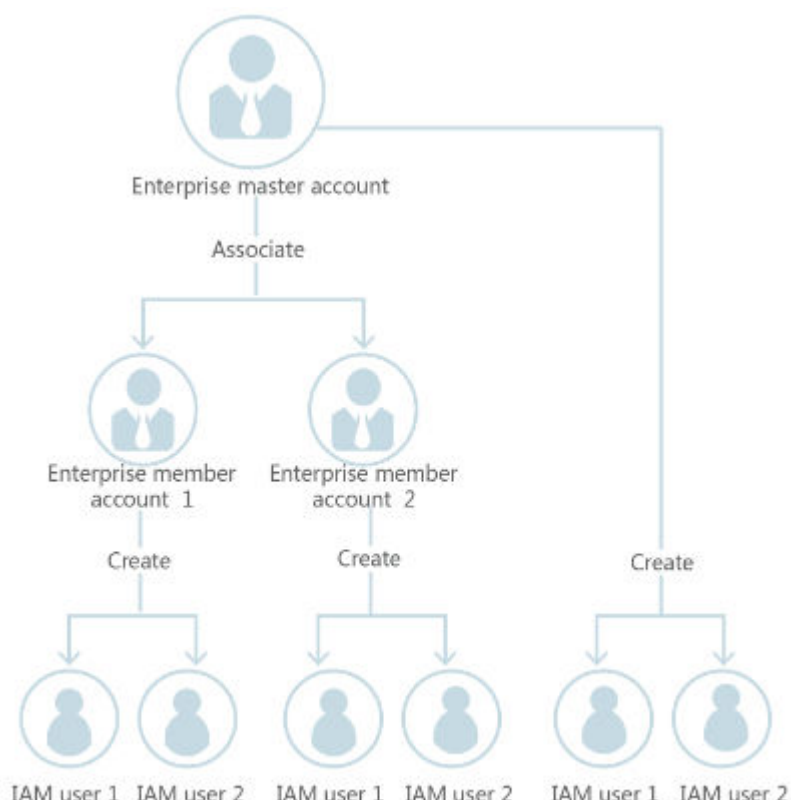
### Viewing the Package Balance

1. Log in to the OCR console.
2. Choose **Resources** > **My Packages** to view the remaining quota of the package.

Package Type	Total	Deduction Option...	Remarks	Operation
Web Image OCR PKG (times)	500 (amount)	Resettable package	Cleared every day	<a href="#">View Details</a>

## 2.3 How Does a Member Account Use a Package Purchased by an Enterprise Master Account?

The enterprise master account and its member accounts are accurately named the account and the IAM users. The account pays and owns the resources and has full access permissions for these resources. IAM users are created by the account, and only have the permissions granted by the account. The account can modify or cancel the IAM users' permissions at any time. Fees generated by IAM users are paid by the account. An account can be used to **create IAM users** and **assign permissions to the IAM users**. IAM users can view and use the resources authorized by the account after logging in to the system.



## 2.4 What Is the Package Deduction Sequence?

If you have purchased multiple packages, the deduction rules are as follows:

- Fees are deducted based on the package source type. The deduction priority is as follows in descending order: free > promotion > subscription.
- Fees are deducted based on the package creation time, effective time, and expiration time.
  - If multiple packages are created at the same time, the package that takes effect first is deducted first.
  - If multiple packages take effect at the same time, the package that expires first is deducted first.

- If multiple packages will expire at the same time, the package that is created first is deducted first.
- The data package is preferentially deducted during off-peak hours.
- The package for a specified enterprise project is preferentially deducted. If this package is insufficient, the package applicable to all enterprise projects will be deducted.

**NOTE**

- The preceding rules apply only to package deduction.
- In pay-per-use billing mode, the 1,000 free calls per month are not included in the package discount and do not need to comply with the preceding deduction rules.

## 2.5 Why Am I Still Able to Call Services Even Though My Account Balance Is 0?

- If your account balance is insufficient, you cannot use your account balance for payment. If you continue to generate charges in this scenario, your account will fall into arrears and enter the grace period and then later, a **retention period**. During the grace period, you can access and use cloud services. To avoid an interruption in services, make sure to top up your account in a timely fashion.
- After the free API calls are used up, you will be charged based on the tiered pricing of API calls. For details, see **Product Pricing Details**.

## 2.6 What Are a Grace Period and a Retention Period?

**Grace period:** Once a monthly/yearly subscription has expired or a pay-per-use resource becomes in arrears, HUAWEI CLOUD provides a period of time during which you can renew the resource or top up your account. Within the grace period, you can still access and use your cloud service.

**Retention period:** If you do not renew the yearly/monthly subscription or pay off the arrears within the grace period, the resource enters a retention period after the grace period has expired. During the retention period, you cannot access the resource but data stored in the cloud service will be retained. After a resource enters a grace period or retention period, HUAWEI CLOUD will notify you of this by email or text message. If you still do not complete the renewal or payment after the retention period has ended, your data stored in the cloud service will be deleted and the resource will be released.

## 2.7 Why Can't I Use the 1,000 Free API Calls Per Month After I Purchase a Discount Package?

OCR supports two billing modes: pay-per-use and discount package. The 1,000 free API calls per month are billed in pay-per-use mode, which is different from the discount package. You can also purchase a discount resource package for a better price. However, if your usage exceeds the package quota, you will be billed for the subsequently used resources on a pay-per-use basis.

The discount package provides a larger discount than pay-per-use. Therefore, it is highly cost-effective for long-term subscribers.

# 3 SDK

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## 3.1 What SDK Versions Does OCR Provide?

OCR provides SDK of various languages, including Java, Python, iOS, Android, and Node.js. For details about the versions supported by the SDK and the methods for using them, see [SDK Reference](#).

You can use other programming languages to call OCR APIs through token authentication. For details about the API calling methods and API parameters, see [API Reference](#).

## 3.2 Do OCR SDKs Need to Be Purchased?

OCR SDKs are provided for users to download and use free of charge. OCR is charged based on the number of API calls.

## 3.3 Do OCR SDKs Need Maven to Manage Dependency Packages?

- Some packages on which the Python SDK depends, such as **requests**, need to be installed in the local environment. If the Python SDK is connected to the external network, you can use the **pip install + package name** to install the packages.
- Java SDK does not need Maven to manage local dependency packages and can be directly used.

# 4 API

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## 4.1 Why Are Recognition Results of OCR Inaccurate?

The OCR recognition results may be inaccurate due to the following causes:

1. The image format is not supported.  
Only images in PNG, JPEG, BMP, or TIFF format can be recognized.
2. The image is too small to recognize.  
For details about constraints on the image size of each service, see section "Constraints."
3. The image quality is poor. For example, the image is too dark to recognize.
4. The image style is incorrect.  
Only special VAT invoices and plain VAT invoices (including electronic invoices) can be recognized. However, volume invoices and toll invoices are not included.
5. If error code is returned, locate the fault according to the error code.  
For details about error code, see the *Optical Character Recognition API Reference*.

## 4.2 Why Is Status Code 401 Returned After a Token Is Obtained?

If status code 401 is returned when OCR is called in token mode, the token has expired. The validity period of a token is 24 hours. You are advised to set a timely update mechanism.

The retry mechanism has been configured in the OCR SDK to update the token. If the token is invalid and status code 401 is returned, the OCR SDK sends a request to obtain a token again.

For details about how to use the Python programming language to obtain a token again when the existing one is expired, see the `HWOcrClientToken.py` code in the **SDK(Python)** file, as shown in the following figure.

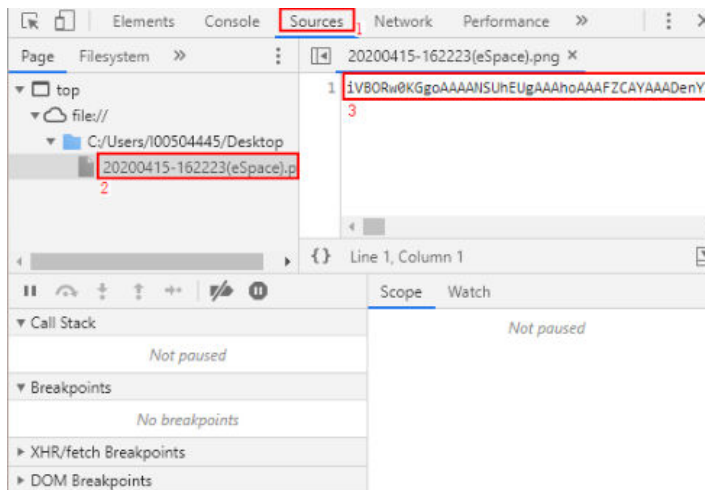
```
def request_ocr_service_base64(self,uri,filepath,options=None):
    """
    :param uri: the uri for the http request to be called
    :param filepath: the fullpath of the file to be recognized
    :param options: optional parameter in the ocr http request
    :return:None
    """
    if filepath == "" or uri == "":
        raise ValueError("the parameter for request_ocr_service_base64 cannot be empty")
    self.get_token()
    if self.token is not None:
        try:
            url="https://" +self.httppoint+uri
            headers = {
                'Content-Type' : 'application/json',
                'X-Auth-Token' : self.token
            }
            with open(filepath, 'rb') as bin_data:
                image_data=bin_data.read()
                image_base64= base64.b64encode(image_data).decode("utf-8")
            payload = {}
            payload['image'] = image_base64
            if options:
                payload.update(options)
            response = requests.post(url, json=payload, headers=headers)
            if 401 == response.status_code and ("Token expired" in response.text):
                #token expired,refresh token
                self.refresh_token()
                return self.request_ocr_service_base64(uri, filepath, options)
            elif 403 == response.status_code and ("The authentication token is abnormal." in response.text):
                # token expired,refresh token
                self.refresh_token()
                return self.request_ocr_service_base64(uri, filepath, options)
            return response
        except Exception as e:
            print(e)
            return None
    return None
```

### 4.3 How Do I Obtain the Base64 Code for an Image?

The input image parameter of OCR is a Base64 code of the image. This section describes how to use the Google Chrome browser to obtain the Base64 code of an image.

1. Open the Google Chrome browser and drag an image file to the browser. The image is displayed on the browser.
2. Press **F12**, click **Sources**, and select the image file from the navigation tree on the left. The Base64 code of the image is displayed on the right, as shown in red frame 3 in the following figure.
3. Double-click the Base64 code of the image, press **Ctrl+A** to select all text of the code, and press **Ctrl+C** to copy it. Do not copy the code by right-clicking it, or some text may be missing.

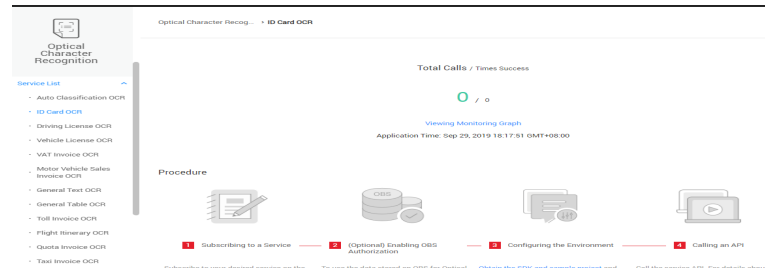
Figure 4-1 Base64-encoded image



## 4.4 How Do I Check the Number of OCR Calls?

Log in to the [OCR console](#). See [Figure 4-2](#).

**Figure 4-2** Console page of ID Card OCR



## 4.5 Can OCR Recognize Text in Video Streams in Real Time?

OCR is mainly used for image processing. It can identify video streams by extracting frame images, or extract text information from videos by using [VCR](#).

## 4.6 How Is the Concurrency Capability of OCR?

For details about the concurrency capability of OCR, [contact us](#).

## 4.7 How Do I Use OCR APIs?

You can send a request based on constructed request messages using any of the following three methods:

- cURL  
cURL is a command-line tool used to perform URL operations and transfer files. It serves as the HTTP client that can send HTTP requests to the HTTP server and receive response messages. cURL is suitable for use in API tuning scenarios.
- Code  
You can call APIs through code to assemble, send, and process request messages.
- REST client  
Both Mozilla Firefox and Google Chrome provide a graphical browser plug-in, that is, REST client, to send and process requests.

## 4.8 How Do I Set the Right Confidence Threshold to Ensure the Recognition Accuracy?

The confidence score is calculated based on algorithms and is not directly correlated to the accuracy of the corresponding field. There may be cases where

the confidence score is high but the recognition results are still inaccurate, or the confidence score could be low but the recognition results are correct.

Confidence and accuracy are different. You can set a confidence threshold based on service requirements and then select the fields whose confidence score is lower than the threshold, and manually confirm those fields. The confidence threshold is user-defined based on service requirements.

## 4.9 How Many Times Is the ID Card OCR API Called to Recognize the Front and Back Sides of an ID Card?

To recognize the front and back sizes of an ID card, you need to call the ID Card OCR API twice. For details, see [ID Card OCR](#).

## 4.10 Can the Region Where OCR Is Called Be Different from the Region Where OBS Resources Are Located?

OBS must be deployed in the same region where OCR is called.

OBS resources for which public read authorization is enabled are accessible through the Internet and can be called across regions, which is convenient. However, OCR involves sensitive information and personal private data, so OCR and OBS must be deployed in the same region.

## 4.11 Can the Input Data of OCR Be Stored Locally?

When using OCR, you can store the input data locally or in an OBS bucket.

The difference is that if the network is unstable, the network transmission latency is longer when OCR reads local image files than when OCR reads images files stored in the OBS bucket located in the same region as the OCR.

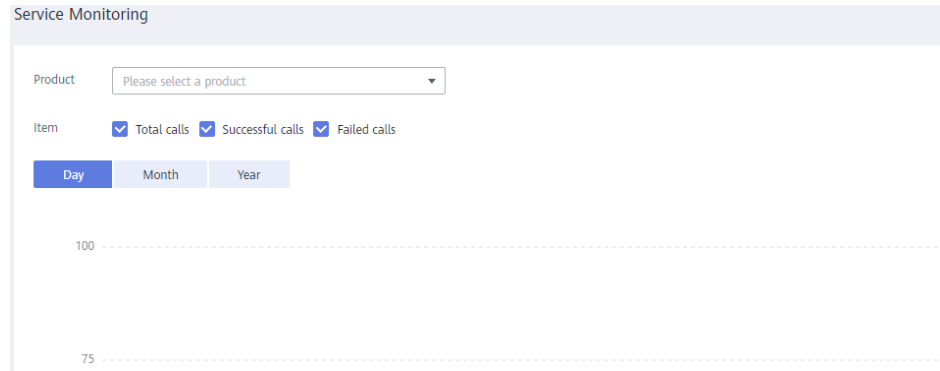
## 4.12 Can APIs Be Called Across Regions?

No.

- The networks that ECSs, RDS instances, and OBS buckets in different regions are deployed on are not connected.
- ECSs in different regions also cannot be bound to the same load balancer.

## 4.13 How Do I View the API Usage?

1. Log in to the OCR management console.
2. In the navigation pane on the left, choose **Service Monitoring**, and view the API usage.



## 4.14 Why Is the Actual Number of API Calls Inconsistent with the Record Displayed on the Management Console?

The OCR console only records the number of successful API calls. The number of failed API calls is not recorded.

To view the number of failed calls, perform the following operations:

1. Log in to the management console.
2. On the **Console** page, choose **Optical Character Recognition**. The **Optical Character Recognition** management console is displayed.
3. Click the target service, for example, **Auto Classification OCR**. Click **View Monitoring Graph** to go to the Cloud Eye console and view detailed service usage such as the number of successful or failed API calls.

## 4.15 Does OCR Support Batch Processing?

Currently, you can only use an OCR API call to recognize one image at a time. For batch processing, you would need to do some additional coding that enabled an OCR API to be called repeatedly.

# 5 Error Code

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## 5.1 How Do I Resolve the Issue of "The account is locked."?

If your HUAWEI CLOUD account is locked, log in to the account again after 15 minutes. If you need to change your account password, see [Resetting Passwords](#).

### Resetting Passwords

- If you remember your password:
  - If your HUAWEI CLOUD account has not been upgraded to a HUAWEI ID and you remember the password, you can change the password on the **Basic Information** page of My Account.
  - If your HUAWEI CLOUD account has been upgraded to a HUAWEI ID and you remember the password, you can change the password on the HUAWEI ID website. To do this, go to the **Basic Information** page of My Account, and click **Manage** next to **HUAWEI ID Information**. You are automatically redirected to the HUAWEI ID website. Choose **Account & security**, and reset the password in the **Security center** area.
  - If you are an IAM user and remember the password, hover the cursor over the username in the upper right corner of the console and choose **Security Settings**. Then change the password on the **Basic Information** tab page.
- If you have forgotten your password:
  - Reset the password by following the instructions in [What Can I Do If My Password Is Forgotten?](#)
  - If you are an IAM user who is not bound with any email address or mobile number, contact the administrator to [reset your password](#).

## 5.2 Why Do I Fail to Call an OCR API?

### Fault Locating

1. Locate the fault according to the returned result or error code.
2. Check whether the API has been subscribed to.
3. Check whether the AK and SK have been successfully obtained.
4. Check whether the token has been correctly entered or expired.
5. Check whether the API has been correctly invoked.

If you cannot determine the cause and rectify the fault, [contact us](#).

## 5.3 Why Is an Error Message with Error Code "APIG.0301" Displayed When an API Is Called?

There are two possibilities to check:

1. The message is "Incorrect IAM authentication information: decrypt token fail" and the error code is "APIG.0301", the token fails to decrypt.

Check if:

The token has expired.

The method and request body for obtaining the token are correct and whether the token is correct and complete.

The environment for obtaining the token is consistent with the environment for calling the token.

The account is in arrears or frozen.

2. The message is "Incorrect IAM authentication information: verify aksk signature fail" and the error code is "APIG.0301", the AK/SK-based authentication fails.

Check if:

The AK/SK pair is correct. For example, check if the SK corresponding to the AK is incorrect or if there is an extra space in the AK/SK pair.

There are frequent AK/SK-based authentication errors. If an AK/SK pair fails to be authenticated more than five times in a row, the AK/SK pair is locked for 5 minutes. If this happens, all AK/SK-based authentication requests will be rejected until the 5 minutes is up. After the 5 minutes is up, the AK/SK pair is unlocked and re-authenticated.

The account is in arrears or frozen.

## 5.4 Why Is an Error Message with Error Code "ModelArts.4603" or "ModelArts.4704" Displayed When an API Is Called?

There are two possibilities to check:

1. The message "Obtaining the file from the URL failed." and error code "ModelArts.4603" are displayed, and the image data fails to be obtained from the URL.  
Check if:  
The URL supports the HTTP/HTTPS request protocol. The format should be **http/https url**.  
The server for storing images is stable and reliable, the network connection is normal, and if the server is accessible to the Internet.  
The content type of the image to be downloaded complies with the **content-type** format in the HTTP or HTTPS header, for example, **image/gif**, **image/jpeg**, **image/png**, or **image/tiff** (Suggestion: Use the URL of OBS).
2. The message "Obtaining the file from the OBS failed." and error code "ModelArts.4704" are displayed, and the image data fails to be obtained from OBS.  
Check if:  
The OBS path for storing images exists and is accessible. If the path exists, ensure that the OBS bucket for storing images is a public bucket.  
Do not use an OBS path across regions.  
OBS and the region where the service to be called is deployed are not in the same region. If they are in different regions, download the image to a local host and then call the service using the image method.

## 5.5 Why Is an Error Message with Error Code "APIG.0201" Displayed When an API Is Called?

If error message "Backend timeout." and error code "APIG.0201" are displayed when an API is called, the request times out.

To rectify the fault, use a tool, such as Postman, to call the service and check whether the call is successful. If the call is successful, the service API is normal. Perform the following steps to proceed:

1. Check whether the original API call requests are excessively frequent.  
If they are, use the retry mechanism to rectify the fault by checking the return value in the code and retrying the requests after a short period of time (for example, 2 to 5 seconds). Alternatively, check whether the results of the previous request were returned at the backend. If they were, send the next request. This helps prevent excessively frequent requests.
2. Check whether the image is too large or the network delay is too long.  
If the image is too large, compress the image, but make sure the image definition is preserved. If there is too much network delay, you can increase the network transmission speed.

If you cannot rectify the fault, [contact us](#).

## 5.6 Why Is an Error Message with Error Code "ModelArts.4204" Displayed When an API Is Called?

If error message "Request api error! Have not subscribed this api" and error code "ModelArts.4204" are displayed when an API is called, the service you attempt to call is not enabled. In this case, enable the service by referring to [Applying for a Service](#).

If the service has been enabled, check whether the region (or account) where the service is enabled is the same as the region (or account) where the service is called. If they are the same, check whether the URL of the API is spelled correctly.

## 5.7 Why Is an Error Message with Error Code "APIG.0308" Displayed When an API Is Called?

If error message "The throttling threshold has been reached: policy user over ratelimit,limit:XX,time:1 minute" and error code "APIG.0308" are displayed when an API is called, the maximum number of concurrent API calls specific to the service, for example, *XX* calls per minute, has been reached.

Rectify the fault using either of the following methods:

1. Use the retry mechanism to rectify the fault by checking the return value in the code and retrying the requests after a short period of time (for example, 2 to 5 seconds).
2. Alternatively, check whether the results of the previous request were returned at the backend. If they were, send the next request. This helps prevent excessively frequent requests.

If you need higher concurrency, [contact us](#).

## 5.8 Why Is an Error Message with Error Code "APIG.0307" Displayed When an API Is Called?

If the error message "The token must be updated." and error code "APIG.0307" are displayed when an API is called, the token has expired and needs to be updated.

Do the following to rectify the fault:

- The validity period of a token is 24 hours. Obtain the token again to call the API.
- Check whether the endpoint in the API URL is correct. For details about endpoints, see [Endpoints](#). Services deployed in different regions cannot be called across regions. If APIs in different regions are called, the token is invalid and error code APIG.0307 is displayed.

## 5.9 Why Is an Image Quality Error Displayed When I Call an API?

### Symptom

When I call an OCR API, one of the following image quality errors is reported.

- Error code AIS.0102: The image format is not supported.
- Error code AIS.0103: The image size does not meet the requirements.
- Error code AIS.0104: The image is not supported or is of poor quality.

### Solution

- Check whether the image format and pixel meet the requirements by referring to [Constraints](#).
- Check whether the Base64 code for the image is complete.
- Check the image quality. Specifically, check whether the text in the image is clear and visible to naked eyes.
- Check whether the API function matches the input image.

## 5.10 Why Does the Token Fail to Be Obtained When Postman Is Used to Call an ORC API?

Check the following items:

- Check whether the service region in the URI is correct.
- Check whether the service region in the body and the corresponding key value are correct.

# 6 Data Security

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## 6.1 Will User Data Be Saved When OCR Is Used?

With trustworthiness as the core quality concept, OCR provides you with leading-edge, future-ready, and trustworthy cloud services by meeting the requirements on security, compliance, privacy, resilience, and transparency. For details about statements, see [Privacy Statement](#) and [Site Terms](#). To obtain trusted resources, see [white papers](#). For details about OCR statements, see *Service Statement*.

# 7 Regions and AZs

## 7.1 What Are Regions and AZs?

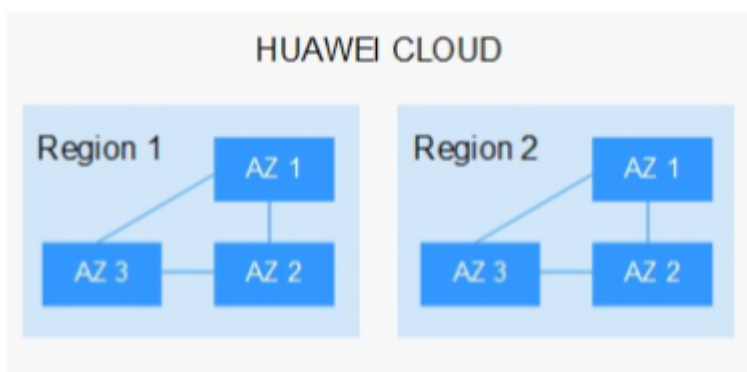
### Concept

A region and availability zone (AZ) identify the location of a data center. You can create resources in a specific region and AZ.

- Regions are divided based on geographical location and network latency. Public services, such as Elastic Cloud Server (ECS), Elastic Volume Service (EVS), Object Storage Service (OBS), Virtual Private Cloud (VPC), Elastic IP (EIP), and Image Management Service (IMS), are shared within the same region. Regions are classified as universal regions and dedicated regions. A universal region provides universal cloud services for common tenants. A dedicated region provides specific services for specific tenants.
- An AZ contains one or more physical data centers. Each AZ has independent cooling, fire extinguishing, moisture-proof, and electricity facilities. Within an AZ, compute, network, storage, and other resources are logically divided into multiple clusters. AZs within a region are interconnected using high-speed optical fibers to allow you to build cross-AZ high-availability systems.

**Figure 7-1** shows the relationship between regions and AZs.

**Figure 7-1** Regions and AZs



HUAWEI CLOUD provides services in many regions around the world. You can select a region and AZ as needed.

## How to Select a Region?

When selecting a region, consider the following factors:

- Location  
You are advised to select a region close to you or your target users. This reduces the network latency and improves the access speed. However, Chinese mainland regions provide basically the same infrastructure, BGP network quality, as well as operations and configurations on resources. Therefore, if you or your target users are in the Chinese mainland, you do not need to consider the network latency differences when selecting a region.  
The countries and regions outside the Chinese mainland, such as Bangkok and Hong Kong, provide services for users outside the Chinese mainland. If you or your target users are in the Chinese mainland, these regions are not recommended due to high access latency.
  - If you or your target users are in Asia Pacific excepting the Chinese mainland, select the **CN-Hong Kong**, **AP-Bangkok**, or **AP-Singapore** region.
  - If you or your target users are in Africa, select the **AF-Johannesburg** region.
  - If you or your target users are in Europe, select the **EU-Paris** region.
- Relationship between cloud services  
When using multiple cloud services, pay attention to the following restrictions:
  - ECSs, RDS instances, and OBS buckets in different regions cannot communicate with each other through an internal network.
  - ECSs in different regions cannot be bound to the same load balancer.
- Resource price  
Resource prices may vary in different regions. For details, see [Product Pricing Details](#).

## How to Select an AZ?

When determining whether to deploy resources in the same AZ, consider your application's requirements on disaster recovery (DR) and network latency.

- For high DR capability, deploy resources in different AZs in the same region.
- For low network latency, deploy resources in the same AZ.

## Regions and Endpoints

Before using an API to call resources, specify its region and endpoint. For more details, see [Regions and Endpoints](#).

## 7.2 How Do I Select a Region for an OCR Package?

Resource packages in different regions are isolated. Select a region according to your business requirements. For details about the regions where services are deployed, see [Endpoints](#).

Determine the service region before purchasing a service package.

# 8 Permissions

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## 8.1 What Permissions Do I Need to Use OCR?

- After subscribing to the OCR service on the management console, you can directly use OCR without configuring additional permissions.
- If you want to use data stored on HUAWEI CLOUD OBS, you can authorize OCR to access your OBS on the OCR management console.
- OCR does not support the fine-grained permissions management that IAM provides.

## 8.2 How Do I Create an IAM Account Using a Master Account

OCR does not support the fine-grained permissions management that IAM provides. The IAM account has the same permissions as the master account.

You can use the user management function provided by IAM to create IAM accounts for employees or applications. This helps keep your account and password secure. For details, see [Creating an IAM User](#).