

Optical Character Recognition

User Guide

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1 Experience and Trial of OCR Function

Optical Character Recognition (OCR) detects and extracts text from images and converts it into an editable format. OCR provides service capabilities through APIs, and you need to process recognition results through programming.

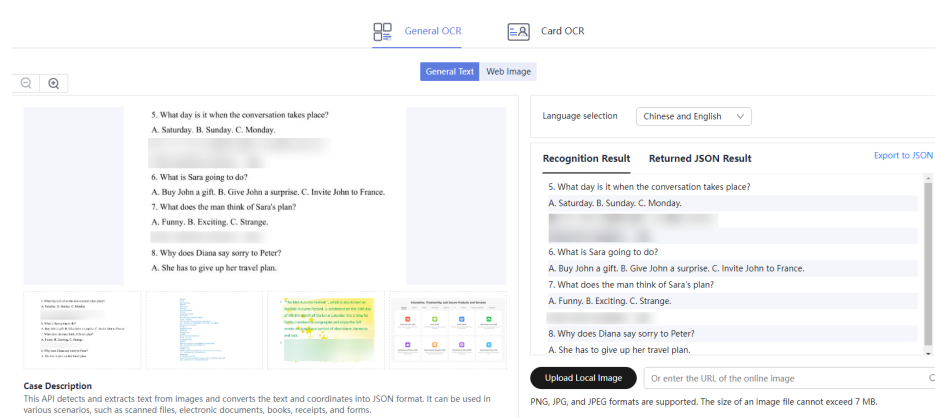
Before subscribing to OCR, experience the service function in the [OCR Experience Center](#). This method does not require programming, just upload the image on the web page to experience the recognition effect.

After subscribing to OCR, you will be billed based on the number of successful API calls made by default. For how to use APIs, refer to [How to Use OCR](#).

NOTE

Before using the OCR Experience Center, sign up for a HUAWEI ID, enable Huawei Cloud services, and complete real-name authentication.

Figure 1-1 OCR experience center

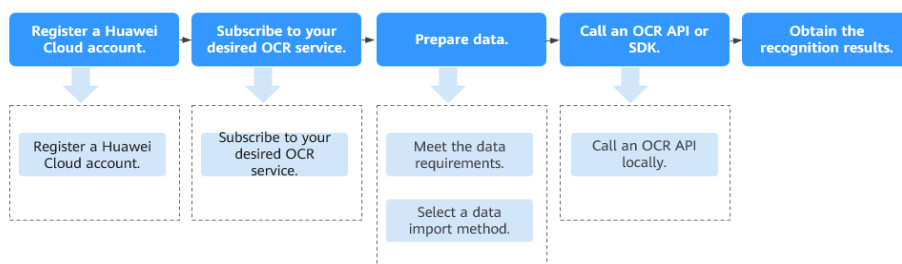


2 How to Use OCR

Optical Character Recognition (OCR) identifies and extracts text from images and converts the text into an editable JSON format. OCR provides this text recognition through open APIs.

Process of using OCR

Figure 2-1 Process of using OCR



Prerequisites

You must have programming capabilities and be familiar with Java, Python, iOS, Android, and Node.js.

You need to call APIs to use OCR and transmit the results to the service system, or to convert the results from JSON to TXT or Excel form.

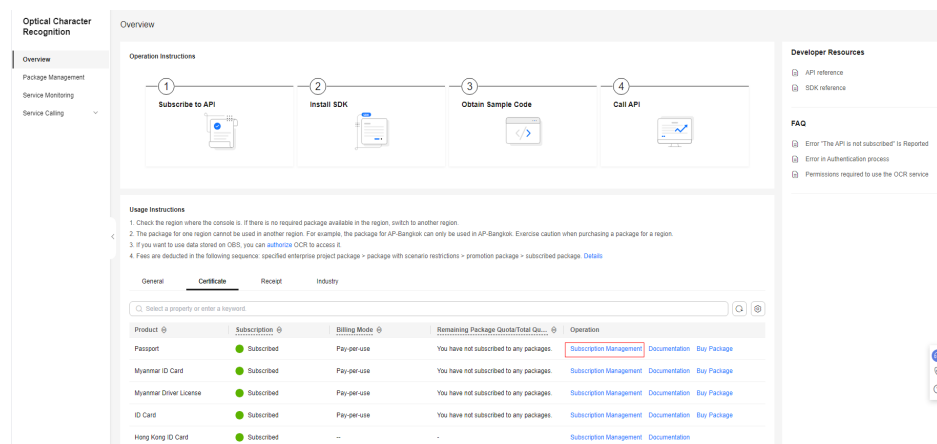
3 Subscribing to an OCR Service

You can use either of the following ways to subscribe to an OCR service:

Pay-per-Use Billing

1. Go to the [OCR](#) homepage and click **Try Now** to go to the OCR console.
2. On the **Overview** page, select your desired OCR service to subscribe to it. The pay-per-use billing is used by default.

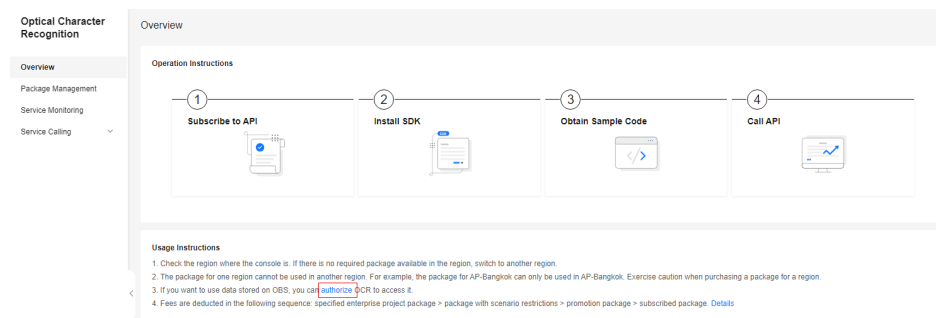
Figure 3-1 Subscribing to a service



If the service is subscribed to successfully, **Subscribed** is displayed in the **Subscription** column.

3. If you want to call data in OBS, authorize OCR to access OBS on the **Overview** page.

Figure 3-2 Authorizing OCR to access OBS



NOTE

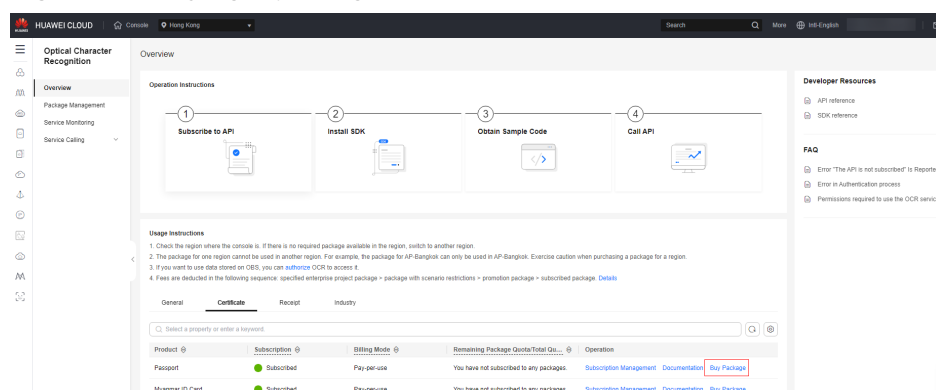
- If you no longer need to use an OCR service, you can unsubscribe it from the OCR console. After you subscribe to an OCR service, you will be billed for the service on a pay-per-use basis by default. You are billed only when your API is called successfully (status code 2xx is returned). For details about the pricing, see [Pricing Details](#).
- If you have not subscribed to an OCR service yet, an error message with error code "ModelArts.4204" will be displayed when you call the OCR API.

After the service is subscribed to, you can use the service as needed by referring to [Data Requirements](#) and [Calling APIs or SDKs](#).

Buying a Package

1. Go to the [OCR](#) homepage and click **Try Now** to go to the OCR console.
2. On the **Overview** page, select your desired service and click **Buy Package** in the **Operation** column. In this case, the package billing mode is used. After your package quota is used up, the billing mode automatically changes to pay-per-use.

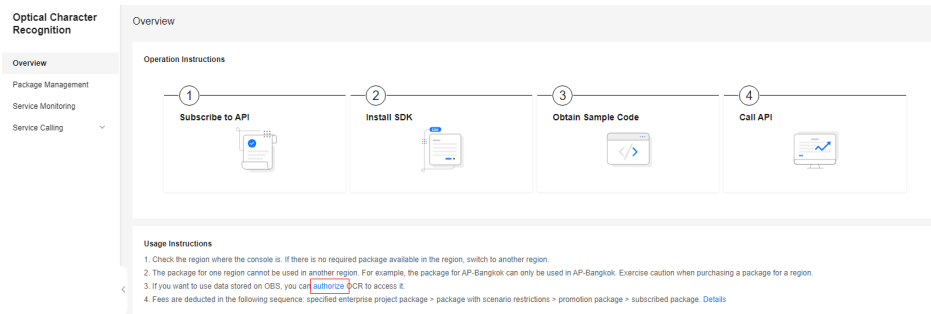
Figure 3-3 Buying a package



If the service is subscribed to successfully, **Subscribed** is displayed in the **Subscription** column.

3. If you want to call data in OBS, authorize OCR to access OBS on the **Overview** page.

Figure 3-4 Authorizing OCR to access OBS



NOTE

- After you purchase a package, an API call is counted only when it is successfully called (status code 2xx is returned). For details about pricing, see [Pricing Details](#).
- If you have not subscribed to an OCR service yet, an error message with error code "ModelArts.4204" will be displayed when you call the OCR API.

After the service is subscribed to, you can use the service as needed by referring to [Data Requirements](#) and [Calling APIs or SDKs](#).

4 Preparing Data

Data Requirements

Multiple factors such as technology and cost impose the following constraints on your use of OCR services.

Take Passport OCR API as an example. For details about constraints on calling other OCR APIs, see [Constraints](#).

- Passports issued by different countries can be recognized by detecting and extracting the machine-readable code at the bottom of the first page.
- Only images in PNG, JPG, JPEG, BMP, or TIFF format can be recognized.
- No side of the image can be smaller than 15 or larger than 4,096 pixels.
- The information page of the passport to be recognized must occupy more than 25% of the image. When scanning a passport, ensure that the entire page is displayed in the image.
- A passport can be rotated to any angle.
- The passport in the image can be moderately distorted, but the aspect ratio cannot be distorted by more than 10%.
- Illuminated or dark images can be recognized, but the accuracy may be compromised.

Data Import Methods

When OCR APIs or SDKs are used, data is imported in either of the following methods:

- image

Import the Base64 code of an image.

You can use an online transcoding tool or the **base64.b64encode** function in Python to obtain the Base64 code of an image.

- url

Import the URL of an image.

- Use an HTTP/HTTPS URL, for example, https://support.huaweicloud.com/intl/en-us/api-ocr/en-us_image_0000001425779334.png.

- Upload the image to Huawei Cloud OBS and use the URL provided by OBS. To use OBS data, authorize OCR to access OBS, including service authorization, temporary authorization, and anonymous public authorization. For details, see [Configuring the Access Permission of OBS](#).

5 Calling APIs or SDKs

5.1 Performing Online Debugging

[API Explorer](#), the online debugging tool provides API retrieval, debugging, and code example generation. Additionally, you can build, debug, and run code in CloudIDE.

This section uses Passport OCR as an example to walk you through how you can use API Explorer to debug an API.

Prerequisites

- You have registered a Huawei ID, enabled Huawei Cloud services, and completed real-name authentication. Your account cannot be in arrears, frozen, or deregistered.
- You have subscribed to General Text OCR by referring to [Subscribing to an OCR Service](#).

Procedure

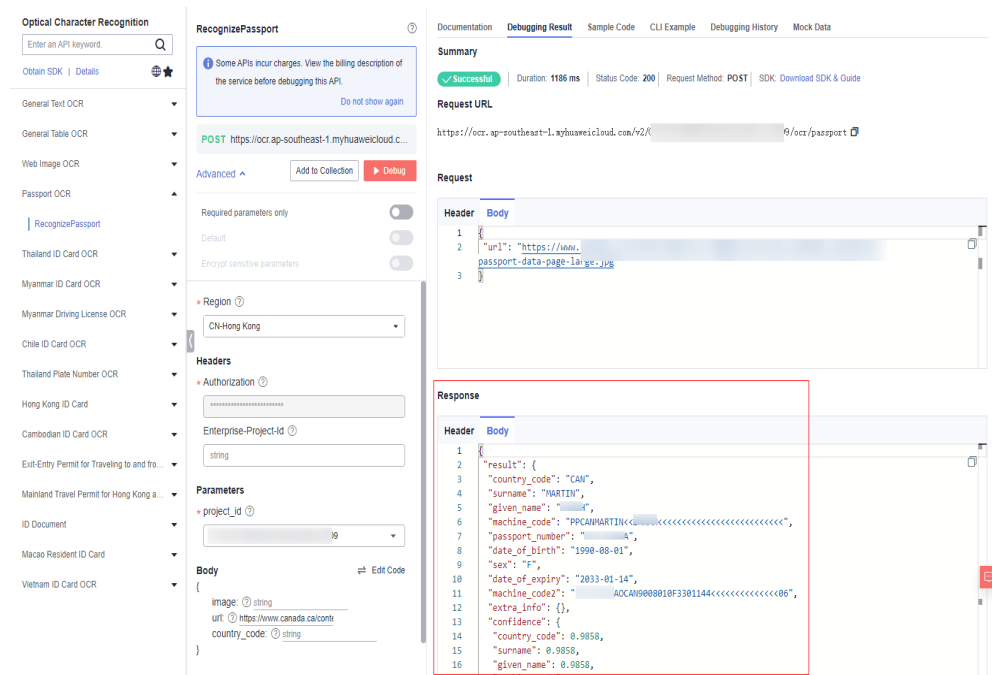
1. Log in to [API Explorer](#).
After the login, the **X-Auth-Token** and **project_id** parameters are automatically set.
2. Enter the data of the image to be detected.
The input data can be an image or a URL.

image:

url:

3. Click **Debug** to obtain the recognition results.

Figure 5-1 Recognition results



5.2 Calling an OCR API Locally

Use Passport OCR as an example to describe how you can use the OCR Python SDK.

To use the OCR Python SDK, perform the following steps:

Prerequisites

- You have registered a Huawei ID and enabled Huawei Cloud services. Your account cannot be in arrears, frozen, or deregistered.
- You have subscribed to Passport OCR by referring to [Subscribing to an OCR Service](#).

Procedure

- Download and install the OCR Python SDK.

The following uses PyCharm as an example to describe how to install the SDK.

Create a project in PyCharm and click **Terminal** in the lower left corner. Run the following commands to install the SDK (the SDK supports Python 3 or later):

```

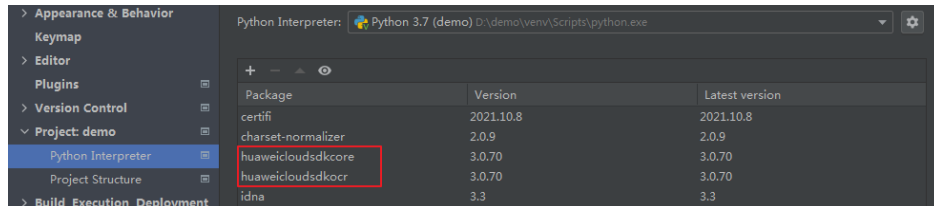
# Install the huaweicloudsdkcore package.
pip install huaweicloudsdkcore
# Install the huaweicloudsdkocr package.
pip install huaweicloudsdkocr

```

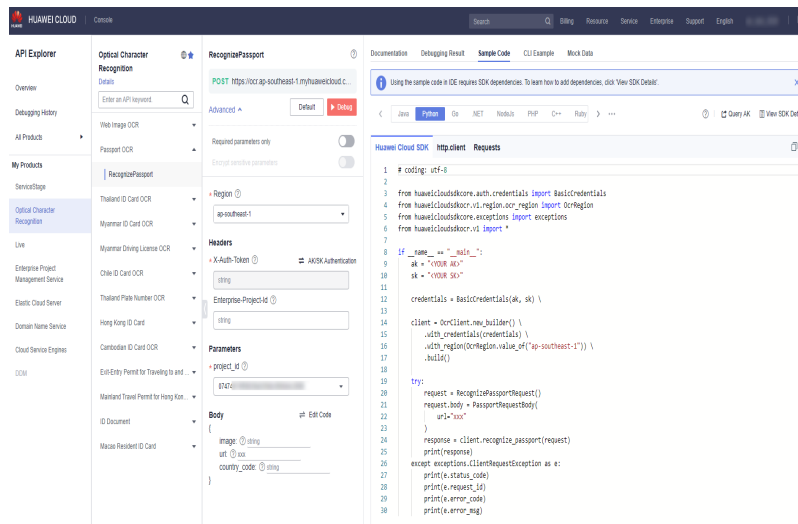
```

Terminal: Local x + v
PS D:\demo> pip install huaweicloudsdkcore
Collecting huaweicloudsdkcore
  Downloading huaweicloudsdkcore-3.0.70-py2.py3-none-any.whl (42 kB)
    |#####| 42 KB 123 kB/s
Collecting six>=1.16.0
  Downloading six-1.16.0-py2.py3-none-any.whl (11 kB)
    
```

2. Check whether the SDK has been installed properly.
Choose **File > Settings > Project > Python Interpreter** in PyCharm and check whether the SDK has been installed properly.



3. Obtain the SDK sample code of Passport OCR.
 - a. Log in to the [API Explorer](#) and click **Python** on the **Sample Code** tab page.
 - b. Configure request body parameters. Set **image** or **url** as input data.

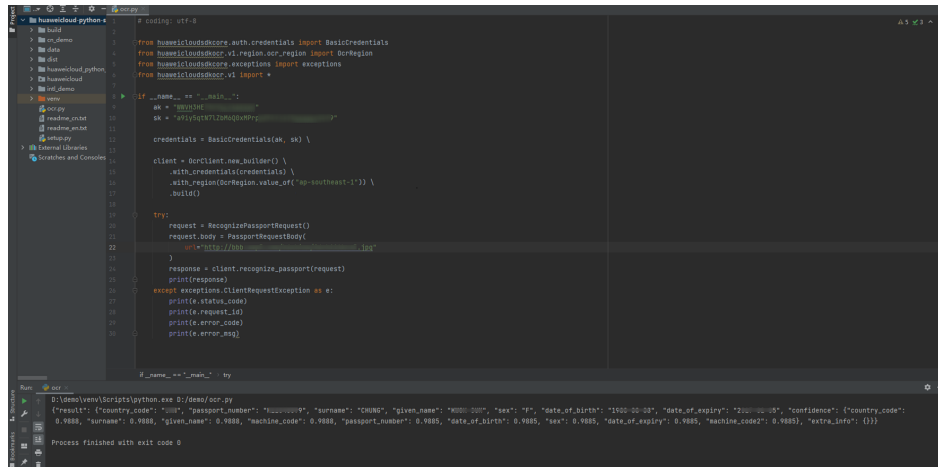


- c. Copy the sample code to PyCharm.
4. Obtain the AK and SK and replace **<YOUR AK>** and **<YOUR SK>** in the sample code with the AK and SK, respectively.

Log in to the [Access Keys](#) page and create an access key or use an existing access key. The AK and SK are contained in the **credentials.csv** file.

A	B	C	D	E
User Name	Access Key	Secret Access Key		
testuser	LSKM	rIZaQ		
	AK	SK		

5. Run the sample code to obtain recognition results.



```
1 from huaweicloudsdkcore.auth.credentials import BasicCredentials
2
3 from huaweicloudsdkocr.v1.region_ocr_region import OcrRegion
4 from huaweicloudsdkcore.exceptions import exceptions
5 from huaweicloudsdkocr.v1 import *
6
7 if __name__ == '__main__':
8     ak = "AKIAI44QH8DHBEXAMPLE"
9     sk = "sk-1234567890ABCDEFghijklmnopqrstuvwxyz0123456789"
10
11     credentials = BasicCredentials(ak, sk) \
12
13     client = sdkClient_new_builder() \
14         .with_credentials(credentials) \
15         .with_region(ocrRegion_value_of("cn-southwest-1")) \
16         .build()
17
18     try:
19         request = RecognizePassportRequest()
20         request_body = PassportRequestBody()
21         request_body.set_image_path("https://obn.oss-cn-hangzhou.aliyuncs.com/obn-1234567890.jpg")
22
23         response = client.recognize_passport(request)
24         print(response)
25     except exceptions.ClientRequestException as e:
26         print(e.status_code)
27         print(e.request_id)
28         print(e.error_code)
29         print(e.error_msg)
30
31 # __name__ == '__main__': try
```

```
0:\demo\venv\Scripts\python.exe 0:\demo\ocr.py
{"result": {"country_code": "CN", "passport_number": "122000019", "surname": "CHUNG", "given_name": "M0001 0001", "sex": "F", "date_of_birth": "1990-08-08", "date_of_expiry": "2020-08-08", "confidence": {"country_code": 0.9888, "surname": 0.9888, "given_name": 0.9888, "machine_code": 0.9888, "passport_number": 0.9885, "date_of_birth": 0.9885, "sex": 0.9885, "date_of_expiry": 0.9885, "machine_code": 0.9885}, "extra_info": {}}}
```

Process finished with exit code 0

6 Obtaining Recognition Results

6.1 Interpreting Recognition Results

Use the Web Image OCR API as an example to walk you through how to interpret the recognition results in JSON format returned by the API. For details, see "Response Parameters" in [Optical Character Recognition API Reference](#).

The following figure is used as an example to describe the mapping between the image content and the fields returned by the API.

Figure 6-1 Web image



After the Web Image OCR API is called successfully, the **result** field is displayed in returned JSON result. This field contains information such as the number of text blocks, text block sequence, text content, location, and confidence.

- The **result** field is returned only after the API is successfully called.
- **words_block_count**: Number of text blocks. In this example, two text blocks are extracted, indicating two lines of text in the image.
- **words_block_list**: List of text blocks arranged from top to bottom according to the position of text in the image from top to bottom and from left to right.
- **words**: Recognized text content; **confidence**: confidence of the field.
- **location**: Location of a text block in the image coordinate system. The vertex of the upper left corner of the first text block is [184,606].

- **extracted_data**: Width and height in the image. This field is returned only when the **extract_type** input parameter is set.

```
{
  "result": {
    "words_block_list": [
      {
        "words": "School",
        "confidence": 0.891,
        "location": [
          [
            184,
            606
          ],
          [
            461,
            608
          ],
          [
            461,
            684
          ],
          [
            184,
            682
          ]
        ]
      },
      {
        "words": "Children going to or from school",
        "confidence": 0.9115,
        "location": [
          [
            85,
            779
          ],
          [
            554,
            778
          ],
          [
            554,
            820
          ],
          [
            85,
            821
          ]
        ]
      }
    ],
    "words_block_count": 2,
    "extracted_data": {}
  }
}
```

6.2 Post-Processing the Recognition Results

Extracting Specific Fields and Importing Them to an Excel File

In this example, the API of ID Card OCR is called, the required fields are extracted from the obtained JSON results, and the fields are filled in an Excel file.

- Prerequisites
 - You have subscribed to Passport OCR by referring to [Subscribing to an OCR Service](#).

- You have installed the OCR Python SDK by referring to [Calling an OCR API Locally](#) and have installed dependency packages by running the `pip install xlswriter` command.
- You have obtained the AK and SK by accessing the [Access Keys](#) page. On this page, you can create an access key or use an existing one. The AK and SK are contained in the `credentials.csv` file.

A	B	C	D	E
User Name	Access Key	Secret	Access Key	
testuser	LSKM	CrIZaQ		
	AK	SK		

- **Sample code**

```
# -*- coding: utf-8 -*-
import base64
import xlswriter

from huaweicloudsdkcore.auth.credentials import BasicCredentials
from huaweicloudsdkocr.v1.region.ocr_region import OcrRegion
from huaweicloudsdkcore.exceptions import exceptions
from huaweicloudsdkocr.v1 import *
from huaweicloudsdkcore.http.http_config import HttpConfig

def recognize_id_card_request():
    try:
        request = RecognizeIdCardRequest()
        request.body = IdCardRequestBody(
            image=image_base64
        )
        response = client.recognize_id_card(request)
        return response
    except exceptions.ClientRequestException as e:
        print(e.status_code)
        print(e.request_id)
        print(e.error_code)
        print(e.error_msg)

def get_credential():
    return BasicCredentials(ak, sk)

def get_client():
    config = HttpConfig.get_default_config()
    config.ignore_ssl_verification = True
    return OcrClient.new_builder(OcrClient) \
        .with_credentials(credentials) \
        .with_region(OcrRegion.CN_NORTH_4) \
        .with_http_config(config) \
        .build()

def image_to_base64(imagepath):
    """
    Convert a local image into Base64 code.
    """
    with open(imagepath, "rb") as bin_data:
        image_data = bin_data.read()
        base64_data = base64.b64encode(image_data).decode("utf-8")
    return base64_data

def response_to_excel(save_file, data):
    """
    :param save_file: File name
    :param data: result data
    """
```

```

"""

# Process the result data returned after the API is called.
keys_list = list(data["result"].keys())
values_list = list(data["result"].values())

options = {'in_memory': True}
with xlsxwriter.Workbook(save_file, options) as workbook:
    worksheet = workbook.add_worksheet()
    worksheet.set_column('A1:A20', 23)
    worksheet.set_column('B1:B20', 100)
    worksheet.write_column('A1', keys_list)
    worksheet.write_column('B1', values_list)
workbook.close()

if __name__ == '__main__':
    # Enter the AK and SK.
    ak = "Enter the AK."
    sk = "Enter the SK."

    # Init Auth Info
    credentials = get_credential()

    # Create OcrClient
    client = get_client()

    image_base64 = image_to_base64(r"Image path, for example, D:\local\test.png")

    # request id card service
    response = recognize_id_card_request().to_dict()

    # Store the data in the Excel file.
    response_to_excel(r"Excel file path, for example, D:\local\test.xlsx", response)

```

Extracting Text from a PDF File

In this example, a PDF file is converted into images and the Web Image OCR API is called to obtain the recognition result.

- Prerequisites
 - You have subscribed to Passport OCR by referring to [Subscribing to an OCR Service](#).
 - You have installed the OCR Python SDK by referring to [Calling an OCR API Locally](#) and have installed dependency packages by running the `pip install fitz` and `pip install PyMuPDF==1.18.0` commands.
 - You have obtained the AK and SK by accessing the [Access Keys](#) page. On this page, you can create an access key or use an existing one. The AK and SK are contained in the `credentials.csv` file.

A	B	C	D	E
User Name	Access Key	Secret	Access Key	
testuser	LSKM	CrIZaQ		
	AK	SK		

- Sample code


```

# -*- coding: utf-8 -*-
import os
import base64
import fitz
import io
from PIL import Image
from glob import glob

```

```
from huaweicloudsdkcore.auth.credentials import BasicCredentials
from huaweicloudsdkocr.v1.region.ocr_region import OcrRegion
from huaweicloudsdkcore.exceptions import exceptions
from huaweicloudsdkocr.v1 import *
from huaweicloudsdkcore.http.http_config import HttpConfig

class CovertPdfToJpg:
    def __init__(self, file_path, save_root):
        self.file_path = file_path
        self.save_root = save_root

    @staticmethod
    def open_pdf(file):
        return fitz.open(file)

    @staticmethod
    def get_trans(doc, page, min_side=0, max_side=0, rotate=0.0):
        """ Create a scale object. """
        region = doc[page].rect
        scale = 1
        if max_side > min_side > 0:
            scale = min_side / min(region.width, region.height)
            if max(region.width, region.height) * scale > max_side:
                scale = max_side / max(region.width, region.height)
        trans = fitz.Matrix(scale, scale).preRotate(rotate)
        return trans

    def page2pix(self, doc, page, trans):
        """ Parse the current page as image data based on given parameters. """
        return doc[page].getPixmap(matrix=trans, alpha=False)

    def pdf_to_jpg(self, width=1024, height=1400):
        """ Convert PDF images to JPG images. """
        doc = self.open_pdf(self.file_path)
        save_dir = os.path.join(self.save_root)
        if not os.path.exists(save_dir):
            os.makedirs(save_dir)
        print("document", len(doc), doc.pageCount)
        for i in range(len(doc)):
            trans = self.get_trans(doc, i, width, height, rotate=0)
            try:
                pdf = self.page2pix(doc, i, trans)
            except:
                continue
            image = pdf.getPNGData()
            image = Image.open(io.BytesIO(image))
            print(os.path.join(
                save_dir, os.path.basename(self.file_path).replace('.pdf', '') + '_' + str(i + 1) + '.jpg'))
            image.save(
                os.path.join(save_dir, os.path.basename(self.file_path).replace('.pdf', '') + '_' + str(i + 1) +
                '.jpg'))
        return

    def recognize_general_text_request():
        try:
            request = RecognizeGeneralTextRequest()
            request.body = GeneralTextRequestBody(
                image=image_base64
            )
            response = client.recognize_general_text(request)
            print(response)
        except exceptions.ClientRequestException as e:
            print(e.status_code)
            print(e.request_id)
            print(e.error_code)
            print(e.error_msg)
```

```
def get_credential():
    return BasicCredentials(ak, sk)

def get_client():
    config = HttpConfig.get_default_config()
    config.ignore_ssl_verification = True
    return OcrClient.new_builder(OcrClient) \
        .with_credentials(credentials) \
        .with_region(OcrRegion.CN_NORTH_4) \
        .with_http_config(config) \
        .build()

def url_to_base64(imagepath):
    with open(imagepath, "rb") as bin_data:
        image_data = bin_data.read()
    base64_data = base64.b64encode(image_data).decode("utf-8")
    return base64_data

if __name__ == '__main__':
    # Enter the AK and SK.
    ak = "Enter the AK."
    sk = "Enter the SK."

    # Init Auth Info
    credentials = get_credential()

    # Create OcrClient
    client = get_client()

    df_path = r"Local PDF file path, for example, D:\local\test.pdf"
    save_path = r"Path of the converted image, for example, D:\local"

    covert_pdf_to_jpg = CovertPdfToJpg(df_path, save_path)
    covert_pdf_to_jpg.pdf_to_jpg()

    jpgs = glob(os.path.join(save_path, "*.jpg"))
    for jpg in jpgs:
        image_base64 = url_to_base64(jpg)
        recognize_general_text_request()
```

 **NOTE**

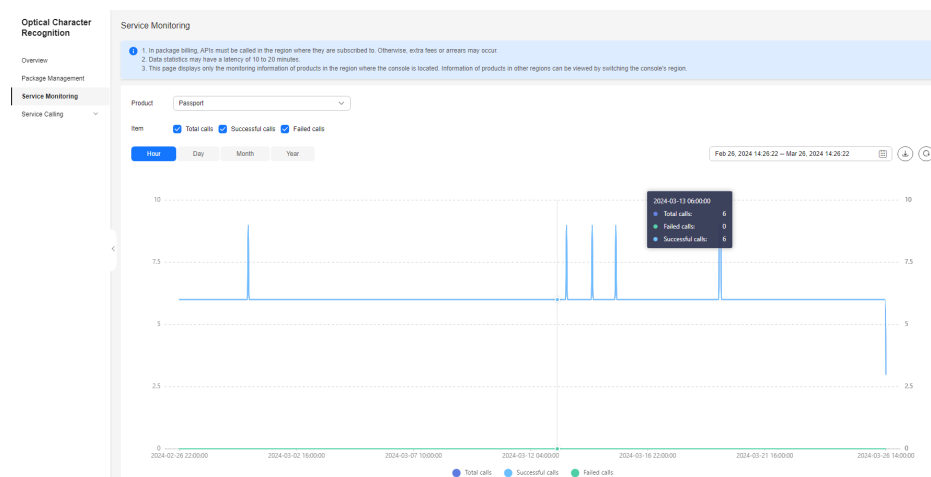
If the error message "AttributeError: 'Document' object has no attribute 'pageCount'" is displayed, uninstall the **PyMuPDF** dependency package and install version 1.18.0 instead.

7 Collecting API Usage Statistics

Log in to the OCR console and choose Service Monitoring. On the displayed **Service Monitoring** page, view the total number of API calls, number of successful API calls, and number of failed API calls.

If you have purchased a package, you can view the package and its usage details on the **Package Management** page. For details about package deduction rules, see "Billing" in *Optical Character Recognition Service Overview*.

Figure 7-1 Service Monitoring page



8 Unsubscribing from an OCR Service

If an OCR service is no longer needed, you can unsubscribe from it by logging in to the OCR [console](#).

You can also subscribe to or unsubscribe from an OCR service for the IAM users under your account.

Figure 8-1 Unsubscribing from an OCR service

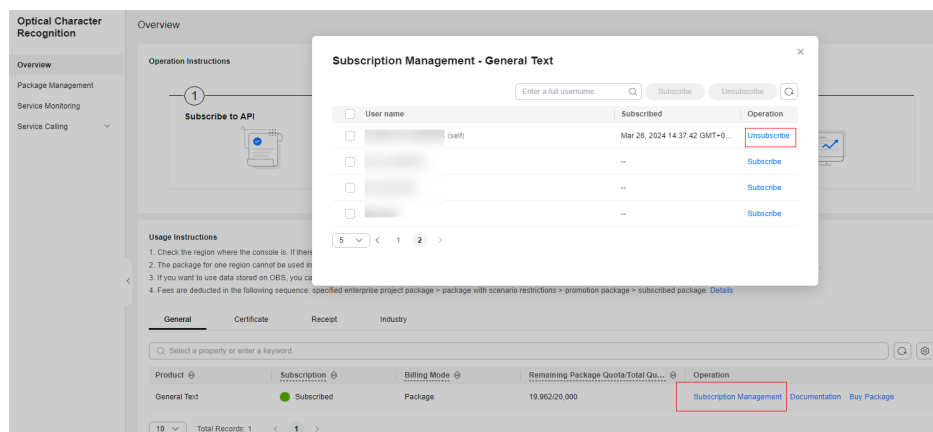
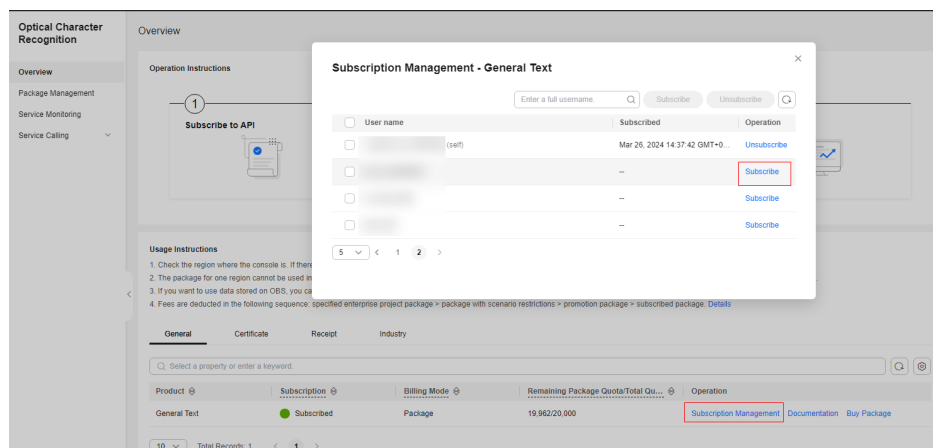


Figure 8-2 Subscribing to or unsubscribing from an OCR service for the IAM users under your account



9 Monitoring

9.1 OCR Monitoring Metrics

Function

This section describes metrics reported by OCR to Cloud Eye, as well as their namespaces, list, and dimensions. You can use the management console or [APIs](#) provided by Cloud Eye to query the metric information and alarms generated for OCR.

Namespace

SYS.OCR

Monitoring Metrics

Table 9-1 OCR metrics

Metric ID	Metric	Description	Value Range	Monitored Object	Monitoring Period (Raw Data)
successful_call_times_of_service	Successful Calls	Times that a service is successfully called. Unit: Times/min	≥ 0 times/min	API	1 minute
failed_call_times_of_service	Failed Calls	Times that a service fails to be called. Unit: Times/min	≥ 0 times/min	API	1 minute

Dimensions

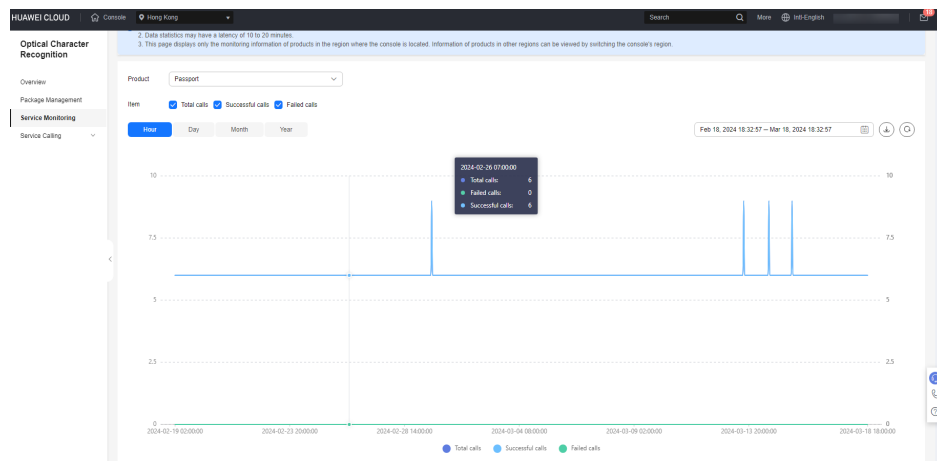
Key	Value
call_of_interface	API

9.2 Viewing Metrics

To view metrics, perform the following operations:

1. [Log in to the management console.](#)
2. In the navigation pane on the left, choose **Service Monitoring**.

Figure 9-1 Service Monitoring page



10 Auditing

10.1 Key Operations Recorded by CTS

Scenarios

With Cloud Trace Service (CTS), you can record operations associated with OCR for future query, audit, and backtracking.

Prerequisites

You have enabled CTS.

Key Operations Recorded by CTS

Table 10-1 OCR operation recorded by CTS

Operation	Resource Type	Event Name
Subscribing to your desired service	ai_service	subscribeAISubService

10.2 Viewing Tracing Logs

Scenarios

After you subscribe to CTS, CTS starts recording operations on cloud servers. You can view operation records in the last seven days on the CTS management console.

This section describes how to view operation records of the last 7 days on the CTS management console.

Procedure

1. Log in to the [CTS console](#).
2. On the **Cloud Trace Service** page that is displayed, choose **Trace List** from the navigation pane.
3. Set the filter criteria to query traces. The following four filter criteria are available:
 - **Trace Source, Resource Type, and Search By**
Select your desired criteria from the three drop-down lists one by one. When you select **Trace name** for **Search By**, select a trace name. When you select **Resource ID** for **Search By**, enter a resource ID. When you select **Resource name** for **Search By**, select or enter a resource name.
 - **Operator**: Select a specific operator (a user other than the tenant).
 - **Trace Status**: Select **All trace statuses, Normal, Warning, or Incident**.
 - **Time Range**: You can view traces generated during any time range of the last seven days.
4. Expand your desired trace to view its details.

Figure 10-1 Expanding a trace for details

Trace Name	Trace Source	Resource Type	Resource Name	Resource ID	Operator	Trace Status	Operation Time
	ModelArts	ai_service				normal	Mar 26, 2024
	IAM	user		4	Obd...	normal	Mar 26, 2024

5. Locate your desired trace and click **View Trace** in the **Operation** column.

11 Permission Management

11.1 Permissions Management

If you need to assign different permissions to employees in your enterprise to access your OCR resources, IAM is a good choice for fine-grained permissions management. IAM provides identity authentication, permissions management, and access control, helping you secure access to your Huawei Cloud resources.

If your Huawei Cloud account does not require individual IAM users for permissions management, skip this section.

With IAM, you can use your Huawei Cloud account to create IAM users, and grant permissions to the users to control their access to specific resources. For example, some software developers in your enterprise need to use OCR but should not be allowed to delete other OCR resources or perform any other high-risk operations. In this scenario, you can create IAM users for the software developers and grant them only the permissions required for using OCR resources.

IAM is free of charge. You pay only for the resources you use. For more information about IAM, see [IAM Service Overview](#).

OCR Permissions

By default, new IAM users do not have permissions assigned. You need to add a user to one or more groups, and attach permissions policies or roles to these groups. Users inherit permissions from the groups to which they are added and can perform specified operations on cloud services based on the permissions.

OCR is a project-level service deployed and accessed in specific physical regions. To assign OCR permissions to a user group, specify the scope as region-specific projects and select projects such as **ap-southeast-1** for the permissions to take effect. If **All projects** is selected, the permissions will take effect for the user group in all region-specific projects. When accessing OCR, the users need to switch to a region where they have been authorized to use this service.

[Table 11-1](#) lists all the system roles supported by OCR.

Table 11-1 OCR system policies

Policy	Description	Type	Dependency
OCR FullAccess	All permissions	System policy	None
OCR ReadOnlyAccess	Read-only access	System policy	None

Table 11-2 lists the common operations supported by each system policy.

Table 11-2 Common operations supported by each system policy

Action	Description	OCR FullAccess	OCR ReadOnlyAccess
ocr:passport:subscribe	Subscribes to Passport OCR.	√	×
ocr:passport:unsubscribe	Unsubscribes from Passport OCR.	√	×
ocr:passport:getSubscribeUserList	Queries the list of users who have subscribed to Passport OCR.	√	√
ocr:passport:subscribeAllUsers	Subscribes to Passport OCR for other sub-users.	√	×
ocr:passport:unsubscribeAllUsers	Unsubscribes from Passport OCR for other sub-users.	√	×
ocr:webImage:subscribe	Subscribes to Web Image OCR.	√	×
ocr:webImage:unsubscribe	Unsubscribes from Web Image OCR.	√	×
ocr:webImage:getSubscribeUserList	Queries the list of users who have subscribed to Web Image OCR.	√	√
ocr:webImage:subscribeAllUsers	Subscribes to Web Image OCR for other sub-users.	√	×
ocr:webImage:unsubscribeAllUsers	Unsubscribes from Web Image OCR for other sub-users.	√	×
ocr:myanmarIdCard:subscribe	Subscribes to Myanmar ID Card OCR.	√	×

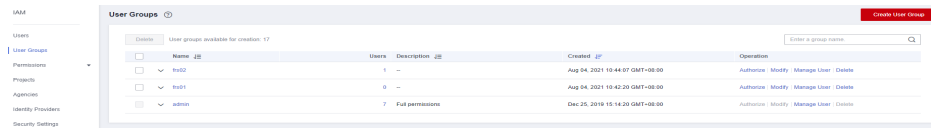
Action	Description	OCR FullAccess	OCR ReadOnlyAccess
ocr:myanmarIdCard:unsubscribe	Unsubscribes from Myanmar ID Card OCR.	√	×
ocr:myanmarIdCard:getSubscribeUserList	Queries the list of users who have subscribed to Myanmar ID Card OCR.	√	√
ocr:myanmarIdCard:subscribeAllUsers	Subscribes to Myanmar ID Card OCR for other sub-users.	√	×
ocr:myanmarIdCard:unsubscribeAllUsers	Unsubscribes from Myanmar ID Card OCR for other sub-users.	√	×
ocr:myanmarDriverLicense:subscribe	Subscribes to Myanmar Driving License OCR.	√	×
ocr:myanmarDriverLicense:unsubscribe	Unsubscribes from Myanmar Driving License OCR.	√	×
ocr:myanmarDriverLicense:getSubscribeUserList	Queries the list of users who have subscribed to Myanmar Driving License OCR.	√	√
ocr:myanmarDriverLicense:subscribeAllUsers	Subscribes to Myanmar Driving License OCR for other sub-users.	√	×
ocr:myanmarDriverLicense:unsubscribeAllUsers	Unsubscribes from Myanmar Driving License OCR for other sub-users.	√	×
ocr:thailandLicensePlate:subscribe	Subscribes to Thailand Plate Number OCR.	√	×
ocr:thailandLicensePlate:unsubscribe	Unsubscribes from Thailand Plate Number OCR.	√	×
ocr:thailandLicensePlate:getSubscribeUserList	Queries the list of users who have subscribed to Thailand Plate Number OCR.	√	√
ocr:thailandLicensePlate:subscribeAllUsers	Subscribes to Thailand Plate Number OCR for other sub-users.	√	×

Action	Description	OCR FullAccess	OCR ReadOnlyAccess
ocr:thailandLicense-Plate:unsubscribeAllUsers	Unsubscribes from Thailand Plate Number OCR for other sub-users.	√	×
ocr:thailandIdCard:subscribe	Subscribes to Thailand ID Card OCR.	√	×
ocr:thailandIdCard:unsubscribe	Unsubscribes from Thailand ID Card OCR.	√	×
ocr:thailandIdCard:getSubscribeUserList	Queries the list of users who have subscribed to Thailand ID Card OCR.	√	√
ocr:thailandIdCard:subscribeAllUsers	Subscribes to Thailand ID Card OCR for other sub-users.	√	×
ocr:thailandIdCard:unsubscribeAllUsers	Unsubscribes from Thailand ID Card OCR for other sub-users.	√	×
ocr:cambodianIdcard:subscribe	Subscribes to Cambodian ID Card OCR.	√	×
ocr:cambodianIdcard:unsubscribe	Unsubscribes from Cambodian ID Card OCR.	√	×
ocr:cambodianIdcard:getSubscribeUserList	Queries the list of users who have subscribed to Cambodian ID Card OCR.	√	√
ocr:cambodianIdcard:subscribeAllUsers	Subscribes to Cambodian ID Card OCR for other sub-users.	√	×
ocr:cambodianIdcard:unsubscribeAllUsers	Unsubscribes from Cambodian ID Card OCR for other sub-users.	√	×

11.2 Creating a User Group and an IAM User

Creating a User Group

1. Log in to the [IAM console](#) using a master account.
2. On the IAM console, choose **User Groups** from the navigation pane, and click **Create User Group** in the upper right corner.



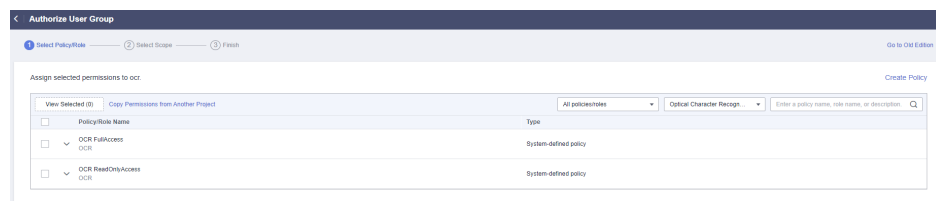
3. In the displayed page, enter a user group name.
4. Return to the user group list and click **Authorize** in the **Operation** column.
5. Select policies or roles and click **OK**.



6. Select the service to which the permission applies. Select **Optical Character Recognition (OCR)** and assign required permissions to the user group.

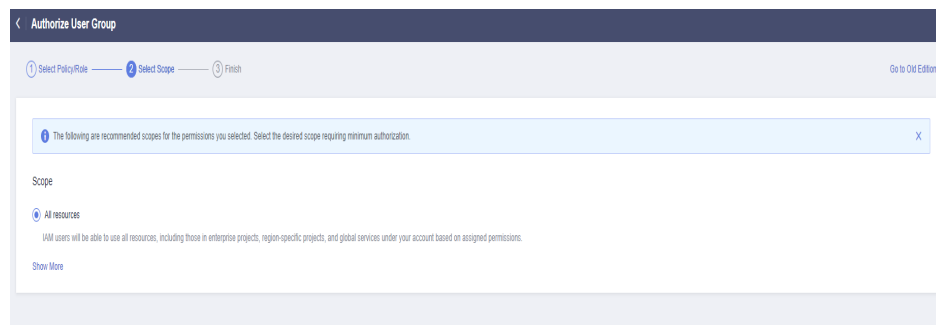
OCR FullAccess: all permissions, which enables IAM users to subscribe to, unsubscribe from, and use OCR services.

OCR ReadOnlyAccess: the read-only access permission, which enables IAM users to only use but not subscribe to or unsubscribe from OCR services. The master account is required to subscribe to or unsubscribe from OCR services.



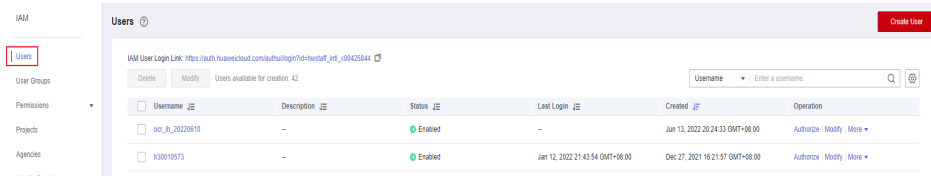
7. Click **Next** and set the minimum authorization scope for the user group. Click **OK**.

- **All resources:** The minimum authorization scope is not set. After authorization, users can use all resources in the account based on their permissions.
- **Region-specific projects:** After authorization, users can use resources in the selected region projects based on their permissions.
- IAM users can use the resources in the enterprise projects you select, as specified by the permissions. This option is available only when the enterprise project function has been enabled.

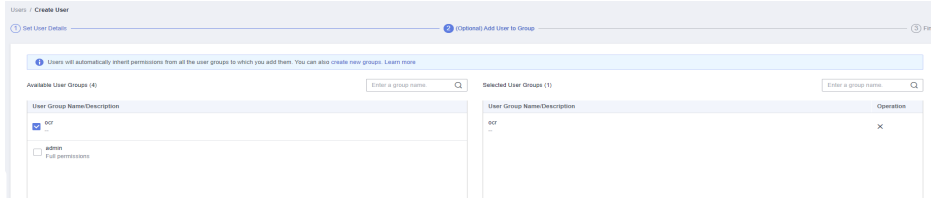


Create an IAM user and add it to a user group.

1. Create a user on the IAM console. Click **+ Create User** in the upper right corner and configure basic user information.



2. Click **Next** to add the user to the user group.

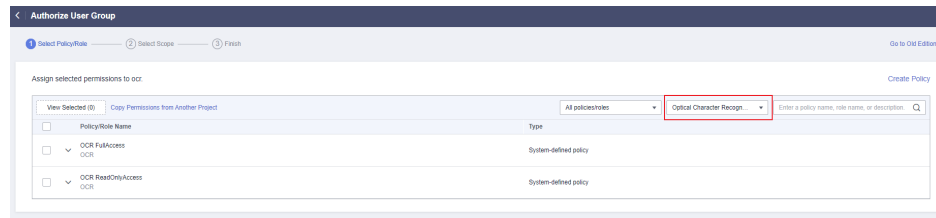


3. Click **Create**.

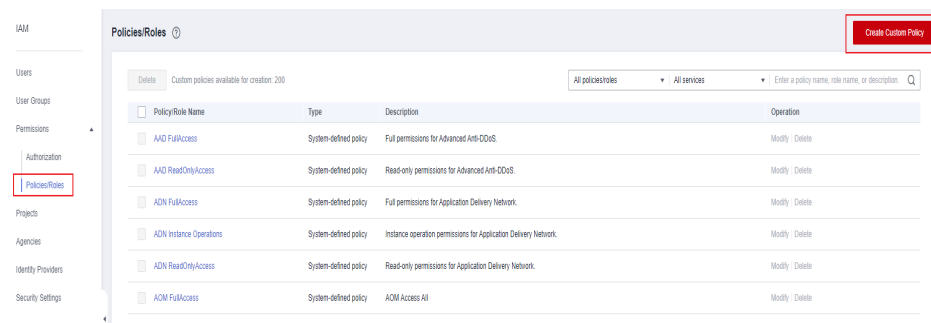
11.3 Assigning Permissions to IAM Users

Subscribing to an OCR Service as an IAM User

1. Log in to the IAM console using a master account.
2. Choose **User Groups** in the left navigation pane. In the user group list, locate the user group to which sub-users belong, and click **Authorize** in the **Operation** column.
3. Select policies or roles and click **OK**. For details about all OCR system permissions, see [Permissions Management](#).



If the existing policies or roles do not meet service requirements, customize policies by referring to [OCR Custom Policies](#).



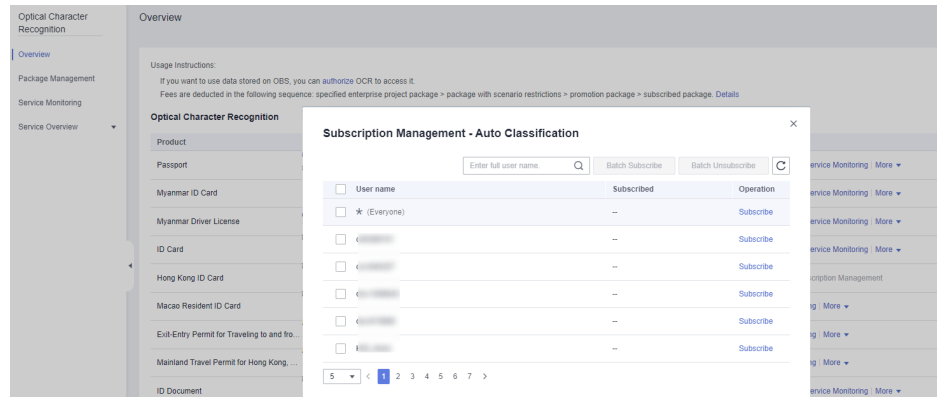
4. After an IAM user is granted with required permissions, you can log in to the OCR console as the IAM user and subscribe to OCR services as needed.

Subscribing to an OCR Service for IAM Users Using an Account

1. Log in to the OCR console using a master account.

2. Locate the OCR service that the IAM users under your account need and click **Subscription Management** to subscribe to the service for an IAM user or all IAM users.

Figure 11-1 Subscribing to OCR services for an IAM user using a master account



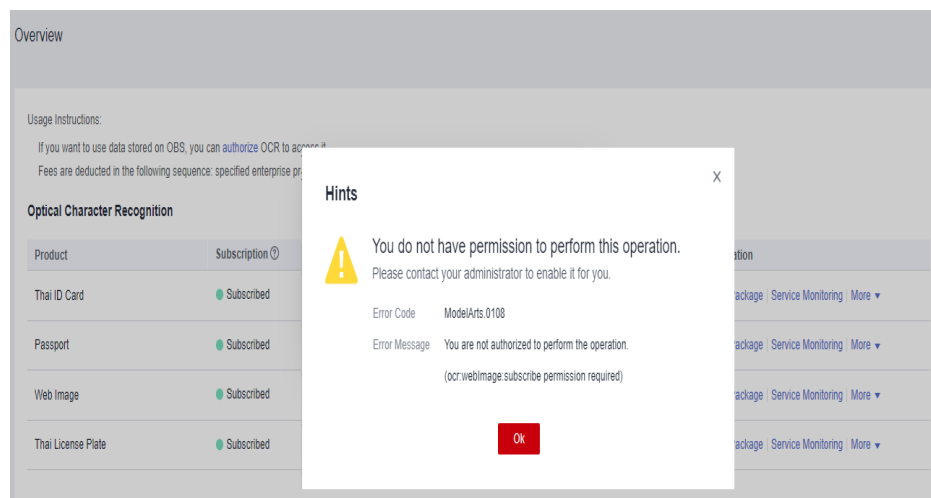
NOTE

After an OCR service is subscribed to for the *(Everyone) special user, other IAM sub-users can use the service. After an OCR service is subscribed to for an IAM user, the region where the service called must be the region where the service is subscribed to.

IAM User Does Not Have a Specific Permission

If a created IAM user does not have a specific permission, an error message is displayed when you subscribe to an OCR service as the user. For example, in the following figure, the error message "ocr:webImage:subscribe permission required" is displayed, indicating that the Web Image OCR subscription permission is required.

Figure 11-2 Web Image OCR subscription permission needs to be assigned to an IAM user



If such an error is reported, the IAM user can contact the master account to subscribe to the corresponding OCR service. Alternatively, the master account can customize OCR policies to help IAM users subscribe to the service.

11.4 Logging In as an IAM User and Verifying Permissions

Log in to the console using the IAM user you created and verify the permissions.

- Assume that an IAM user has only the **OCR ReadOnlyAccess** permission, that is, the read-only access permission. The IAM user can only use but cannot subscribe to or unsubscribe from OCR services. The master account is required to subscribe to or unsubscribe from OCR services.

Go to the OCR console and click **Subscribe**. If the service fails to be subscribed to and a message is displayed indicating that you do not have sufficient permissions to perform the operation, the **OCR ReadOnlyAccess** permission has taken effect.

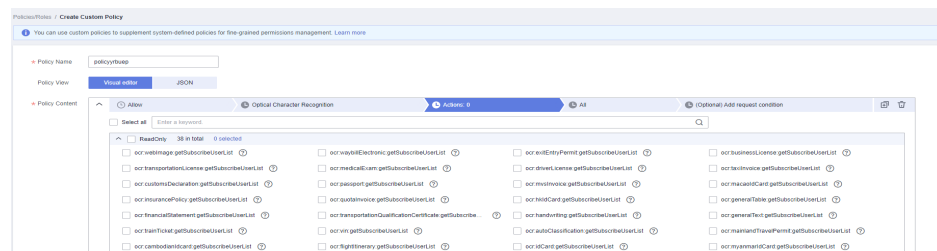
- IAM users with the **OCR FullAccess** permission can subscribe to or unsubscribe from OCR services on the OCR console, regardless of whether they have the **OCR ReadOnlyAccess** permission.

11.5 OCR Custom Policies

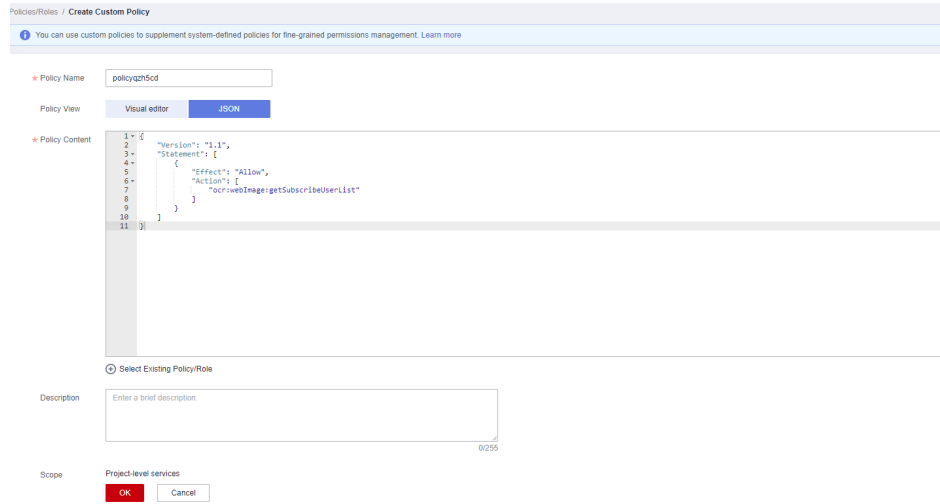
Custom policies can be created to supplement the system-defined policies of OCR. For details about the actions supported by custom policies, see [Permissions Management](#).

You can create custom policies in either of the following ways:

- Visual editor:** Select cloud services, actions, resources, and request conditions. This does not require knowledge of policy syntax.



- JSON:** Edit JSON policies from scratch or based on an existing policy.



For details, see [Creating a Custom Policy](#).

12 Enterprise Project Management

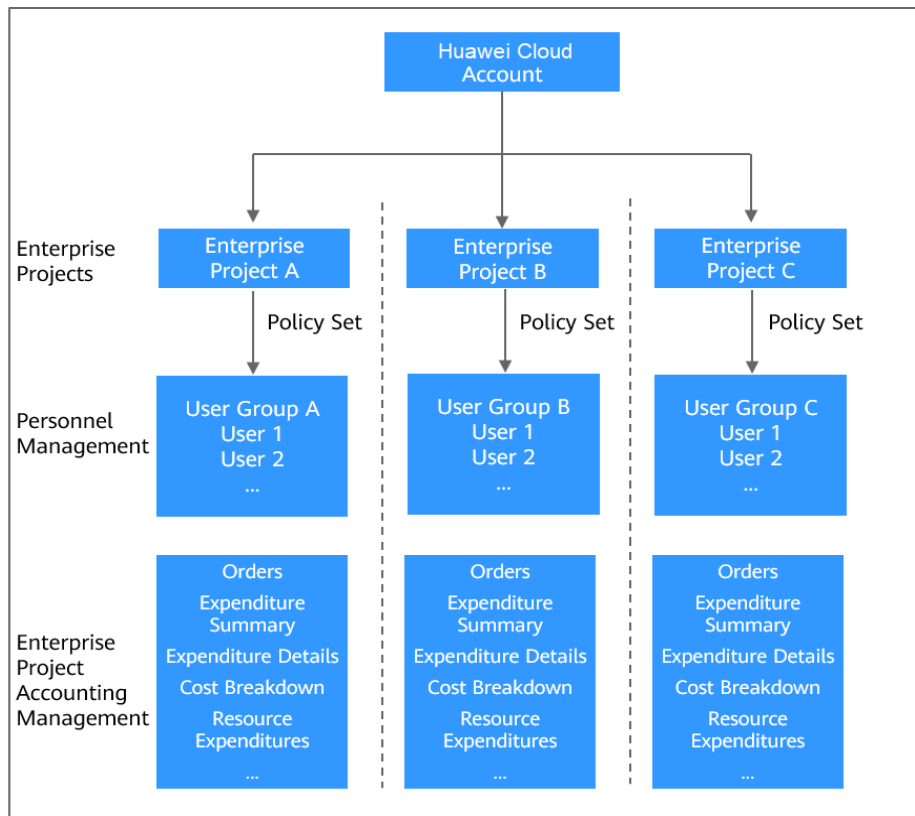
12.1 Application Scenario

OCR uses Enterprise Project Management Service (EPS) to split fees for resources used by different user groups and users. An enterprise can plan different enterprise projects based on the organizational structure and set user groups and users with different permissions for each enterprise project. Multiple enterprise projects are independent of each other, and resources are settled separately.

NOTE

- The enterprise project function can be enabled using enterprise accounts. Enterprise accounts must be authenticated by real enterprise names. For details, see [Enterprise Real-Name Authentication](#). If an enterprise account is registered as a Huawei Cloud partner, it cannot be used to access the **Enterprise Project Management** page.
- After the enterprise project function is enabled, when users in an enterprise project call OCR APIs, accounting statistics can be collected by enterprise project only after the **Enterprise-Project-Id** parameter (enterprise project ID) is specified in the request header. For details about how to transfer parameters, see *Optical Character Recognition API Reference*.
- This function is available only to APIs deployed in the **CN-Hong Kong**, **AP-Bangkok**, and **AP-Singapore** regions. For details about API deployment, see [Endpoints](#).

Figure 12-1 Enterprise project management



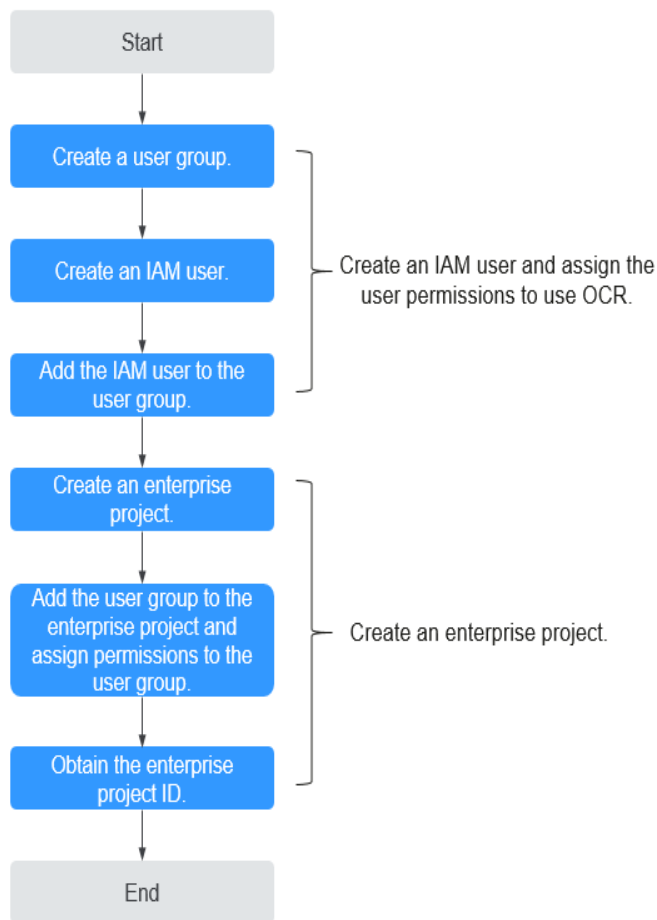
12.2 Creating an Enterprise Project

You can create enterprise projects only when you are an administrator or have been assigned the **EPS FullAccess** policy on IAM.

NOTE

The enterprise project function can be enabled using enterprise accounts. Enterprise accounts must be authenticated by real enterprise names. For details, see [Enterprise Real-Name Authentication](#). If an enterprise account is registered as a Huawei Cloud partner, it cannot be used to access the **Enterprise Project Management** page.

Figure 12-2 Procedure



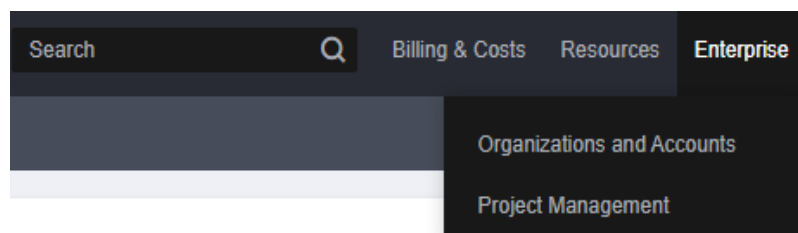
Creating an IAM User and Granting Permissions

For details about how to create an IAM user, see [Creating a User Group and an IAM User](#). For details about how to authorize an IAM user to use OCR, see [Assigning Permissions to IAM Users](#).

Creating an Enterprise Project

1. Log in to the [console](#) and choose **Enterprise > Project Management** in the upper right corner of the page.
If the screen resolution is low, choose **More > Enterprise > Project Management**.

Figure 12-3 Enterprise project menu entry



2. On the **Enterprise Project Management** page, click **Create Enterprise Project** in the upper right corner. Create an enterprise project as prompted.

Figure 12-4 Creating an enterprise project

Create Enterprise Project ×

* Project Type Commercial project Test project
Resources of commercial projects are deployed in the production environment and are rated based on commercial discounts offered for VIP customers.

* Name

Description
0/512

Associating an Enterprise Project with a User Group and Granting Permissions

1. On the **Enterprise Project Management** page, click the name of the desired enterprise project.

Figure 12-5 Selecting an enterprise project

Enterprise Management

Project Management

Application Management

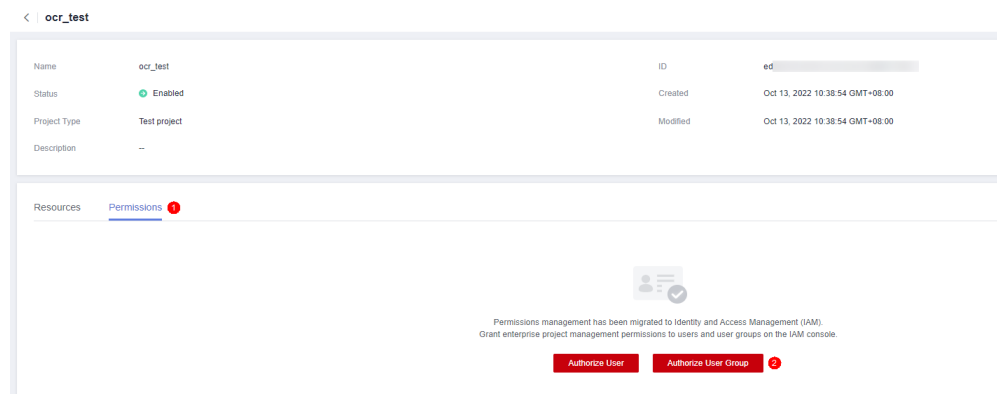
Enterprise Project Management ⓘ

Name	Project Type	Status ⓘ
default	Commercial project	Enabled
ocr_test	Test project	Enabled

2. On the enterprise project details page that is displayed, click the **Permissions** tab, and click **Authorize User Group**.

The **IAM User Groups** page is displayed. Select a user group and authorize the user group to manage the enterprise project.

Figure 12-6 Authorizing a user group



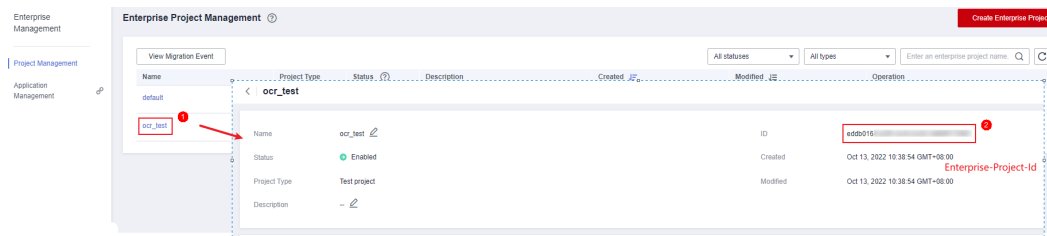
Obtaining an Enterprise Project ID

NOTE

After the enterprise project function is enabled, when users in an enterprise project call OCR APIs, accounting statistics can be collected by enterprise project only after the **Enterprise-Project-Id** parameter (enterprise project ID) is specified in the request header. For details about how to transfer parameters, see *Optical Character Recognition API Reference*.

Choose **Enterprise Project Management**, click the enterprise project name, and obtain the enterprise project ID on the enterprise project details page.

Figure 12-7 Obtaining an enterprise project ID



12.3 Enterprise Project Accounting Management

If you have enabled the enterprise project function, you can view the monthly expenditure summary, expenditure details, product expenditure trends, and expenditure distribution of each enterprise project.

Choose **Project Management** > **Enterprise Project Management**. On the page that is displayed, locate an enterprise project and click **View Expenditures** in the **Operation** column to view its expenditure information.