



Pyxpro Online Payment Integration Guide (AliPay)

1 Introduction

1.1 Audience

The readers of this document would be technical engineers who will conduct integration work with Pyxpro payment platform, as well as people who want to learn the business scenarios of Pyxpro online payment services.

1.2 Change History

Date	Version	Comments
2020-02-10	1.0	First edition

2 Message Structure

2.1 Message Sample

All the messages communicated with Pyxpro must be sent over HTTPS with POST command and payload of the message is encoded by xml format. Message signature is required to secure the message transmission.

**See example in below:****Request Message**

```
<xml>
<service>pay.alipay.native.intl</service>
<charset>UTF-8</charset>
<version>2.0</version>
<sign_type>MD5</sign_type>
<mch_id>157590000059</mch_id>
<out_trade_no>Q3NL0000442503084402</out_trade_no>
<device_info>SN12345678</device_info>
<body><![CDATA[iPhone]]></body>
<total_fee>10</total_fee>
<mch_create_ip><![CDATA[103.218.216.123]]></mch_create_ip>
<notify_url><![CDATA[http://www.baidu.com]]></notify_url>
<time_start>20180526202310</time_start>
<time_expire>20180527202310</time_expire>
<op_user_id>10001</op_user_id>
<product_id>123456789</product_id>
<nonce_str>ibuaiVcKdpRxxkhJA</nonce_str>
<sign>2444D06685977A585F4C98D7C796BD92</sign>
</xml>
```

Response Message, 'status' field indicates the result.

0 - success

others - failure

Both 'status' and 'result_code' are 0 if success

```
<xml>
<status>0</status>
```



```
<appid>wx2006c4c3da91e7b1</appid>
<charset>UTF-8</charset>
<code_img_url>https://pay.wepayez.com/pay/qrcode?uuid=alipay%3A%2F%2Fwxpa
y%2Fbizpayurl%3Fpr%3DUWAhBq5</code_img_url>
  <code_url>alipay://wxpay/bizpayurl?pr=UWAhBq5</code_url>
  <device_info>SN12345678</device_info>
  <mch_id>157590000059</mch_id>
  <nonce_str>ibuaiVcKdpRxkhJA</nonce_str>
  <result_code>0</result_code>
  <sign>93AFEEB54BCF4825547761CCB6CBF241</sign>
  <sign_type>MD5</sign_type>

  <uuid>0d0ef3f2d344e2cc2fbd679ed3aa19e71</uuid>
  <version>2.0</version>
</xml>
```

Common error case 1:**Communication error, find details in 'message' field**

```
<xml>
  <version>2.0</version>
  <charset>UTF-8</charset>
  <status>400</status>
  <message>Signature error</message>
</xml>
```

Common error case 2:**Business processing error, find details in 'err_code_des' field**

```
<xml>
  <status>0</status>
```



```
<message><![CDATA[OK]]></message>
<appid><![CDATA[wx2421b1c4370ec43b]]></appid>
<mch_id><![CDATA[10000100]]></mch_id>
<device_info><![CDATA[1000]]></device_info>
<nonce_str><![CDATA[sthBJ9QyUG6vkrjJ]]></nonce_str>
<sign><![CDATA[6277A96D7875D4FF23AA7B6A4C3046AB]]></sign>
<result_code>1</result_code>
<err_code><![CDATA[AUTHCODE_EXPIRE]]></err_code>

<err_code_des><![CDATA[QR code is expired, fresh QR Code]]></err_code_des>

</xml>
```

2.2 Test Information

Test server URL:

<https://pay.wepayez.com/pay/gateway>

Test merchant account:

124580000005

Signature key:

01bf86746b7a8258a174c728c17d3de5

3 Payment Interface Description

3.1 Online payment

3.1.1 Scenario

Step 1: Merchant system generates collecting QR code through Pyxpro payment platform and displays on screen, see figure 1:



Figure 1

Step 2: Consumers scan QR code by AliPay APP and review the payment order and continue to pay on mobile, see figure 2



Figure 2

Step 3: Consumers confirm payment by PIN (see figure 3) and receive payment notification on AliPay, see figure 4 in below:



Figure 3

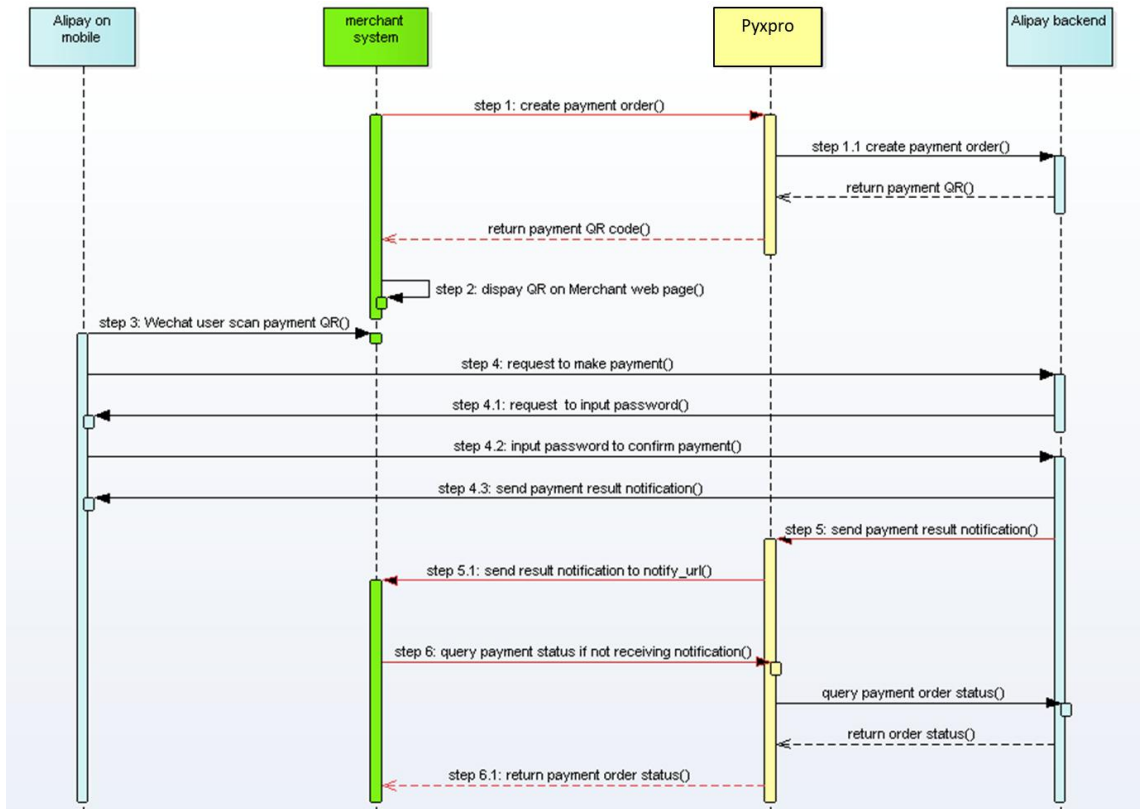


Figure 4



Step 4: Merchant system receives payment result after payment is completed and delivering goods/service.

3.1.2 System interaction flow



Red lines in above diagram are interaction message flows between Merchant System and Pyxpro platform:

Step 1: Merchant system invoke Pyxpro to create a payment order which will be encode as QR code

Step 5: Pyxpro sends payment result to merchant system by 'notify_url' after AliPay user scans QR code and completes payment.

Step 6: Merchant system should query the order status if payment notification from Pyxpro is lost.



3.1.3 Create Payment Order Interface

Parameter	Is Mandatory	Data Type	Description
service	Y	String(32)	Service type: pay.alipay.native.intl
version	N	String(8)	Interface version, default is 2.0
charset	N	String(8)	Message encoding charset, fixed value: UTF-8
sign_type	N	String(8)	Signature algorithm fixed value: MD5
mch_id	Y	String(32)	Unique merchant id allocated by Pyxpro
out_trade_no	Y	String(32)	Unique payment order id generated by merchant system. Maximum is 32 characters, only alphabet, digit and underscore and mixture.
device_info	N	String(32)	Terminal number
body	Y	String(12)	Product/service
attach	N	String(127)	Extension message for merchant system
total_fee	Y	Int	Value of payment amount Value unit is 1% of the currency. For example, If payment amount is HKD 10.00, the value of total_fee should be 1000
mch_create_ip	Y	String(16)	IP address of the merchant system (client)
notify_url	Y	String(255)	Callback url provided by merchant system to receive asynchronous notification of payment result from Pyxpro platform. Less than 255 characters , URL format as http://wap.tenpay.com/tenpay.asp ,can be accessed from public network



time_start	N	String(14)	Time to initial payment order, format: yyyyMMddHHmmss, e.g. 25 th Sept,2009, 9:10:10 value: 20091225091010 Time Zone: GMT+8 beijing
time_expire	N	String(14)	Expiry of payment order Same format as time_start
op_user_id	N	String(32)	Cashier id
goods_tag	N	String(32)	Promotion flag supported by AliPay
product_id	N	String(32)	Reserved
nonce_str	Y	String(32)	Random string less than 32 characters
limit_credit_pay	N	String(32)	If credit card is supported, 1 - not allowed, other - allowed
sign	Y	String(32)	Message signature with MD5

Response Message

Parameter	Is Manda tory	Data Type	Description
version	Y	String(8)	Default 2.0.
charset	Y	String(8)	Fixed :UTF-8
sign_type	N	String(8)	Fixed:MD5
status	Y	String(16)	0 - success other - failure this field indicates communication status of the request. Only 'result_code' 0 indicates request is successful.
message	N	String(128)	Error description of communication failure
Only return when 'status' is 0			



result_code	Y	String(16)	Request status 0 - success other - failure
mch_id	Y	String(32)	Unique merchant id allocated by Pyxpro
device_info	N	String(32)	Terminal number
nonce_str	Y	String(32)	Random string, less than 32 characters
err_code	N	String(32)	Error code
err_msg	N	String(128)	Error description
sign	Y	String(32)	Message signature
Only returns when both 'status' and 'result_code' are 0			
code_url	Y	String(64)	QR code in text format, merchant systems can encode the value to be QR code image
code_img_url	Y	String(256)	URL of QR code image

3.1.4 Asynchronous Notification

Introduction

Asynchronous notification will be sent to 'notify_url' which is past by merchant system in request message. Pyxpro will send payment result to this URL after consumers complete the payment on mobile. Merchant system should response plain text 'success' to Pyxpro platform in less than 5 seconds once receiving the notification. Otherwise Pyxpro regards the failure of this notification and retry to send the same message in the regular frequency (0/15/15/30/180/1800/1800/1800/1800/3600 unit: second) until receiving correct response.

Notes:

Merchant system should verify out_trade_no and total_fee to be same as request message before updating order status.

Notification message is sent by POST command to notify_url.

**Callback message**

Parameter	Is Mandatory	Data Type	Description
version	Y	String(8)	Fixed:2.0
charset	Y	String(8)	Fixed:UTF-8。
sign_type	N	String(8)	Fixed:MD5
status	Y	String(16)	0 - success other - failure
message	N	String(128)	Error message
Only return when 'status' is 0			
result_code	Y	String(16)	Payment request processing result 0 - success other - failure
mch_id	Y	String(32)	Unique merchant id allocated by Pyxpro
device_info	N	String(32)	Terminal Number
nonce_str	Y	String(32)	Random string less than 32 characters
err_code	N	String(32)	Error code
err_msg	N	String (128)	Error description
sign	Y	String(32)	Message signature in MD5
Only return when both 'status' and 'result_code' are 0			
openid	Y	String(128)	Unique id of AliPay user
trade_type	Y	String(32)	pay.alipay.native.intl
pay_result	Y	Int	0 - success Other - failure
pay_info	N	String(64)	Error message in failure case
transaction_id	Y	String(32)	Unique order id generated by Pyxpro



out_transaction_id	Y	String(32)	Unique order id generated by AliPay
out_trade_no	Y	String(32)	Unique order id generated by merchant system
total_fee	Y	Int	Amount of payment order
fee_type	Y	String(8)	Currency code of merchant collecting payment
attach	N	String(127)	Echo of the extension message added by merchant
bank_type	Y	String(16)	Bank name
time_end	Y	String(14)	Transaction completed time, format: yyyyMMddHHmmss, time zone: GMT+8 beijing.

Response to callback

Merchant should response plain text 'success' after receiving notification.

Return Parameter	Description
success	Not case sensitive Pyxpro will stop sending notification.
Fail or other string	Pyxpro will continue to re-send notification in the regular period.

3.1.5 Query Payment Order

Introduction

Merchant system can query order details by out_trade_no or Pyxpro transaction id.

Request message is sent over HTTPS POST command.

Request Message

Parameter	Is Mandatory	Data Type	Description
service	Y	String(32)	Service Type unified.trade.query
version	N	String(8)	Fixed: 2.0
charset	N	String(8)	Fixed:UTF-8



sign_type	N	String(8)	Fixed: MD5
mch_id	Y	String(32)	Unique merchant id allocated by Pyxpro
out_trade_no	N	String(32)	Unique order id generated by merchant system
transaction_id	N	String(32)	Unique order id generated by Pyxpro. Either 'out_trade_no' or 'transaction_id' should be filled
nonce_str	Y	String(32)	Random string, less than 32 characters
sign	Y	String(32)	Message Signature in MD5

Response Message

Parameter	Is Mandatory	Data Type	Description
version	Y	String(8)	Interface version Fixed:2.0.
charset	Y	String(8)	Fixed:UTF-8.
sign_type	N	String(8)	Fixed:MD5
status	Y	String(16)	Request message communication status. 0 - success other - failure
message	N	String(128)	Error message
Only return when 'status' is 0			
result_code	Y	String(16)	Request message processing status 0 - success other - failure
mch_id	Y	String(32)	Unique merchant id allocated by Pyxpro
device_info	N	String(32)	Terminal Number
nonce_str	Y	String(32)	Random string, less than 32 characters



err_code	N	String(32)	Error code
err_msg	N	String (128)	Error description
sign	Y	String(32)	Message signature in MD5
Only return when both 'status' and 'result_code' are 0			
trade_state	Y	String(32)	Payment order status: SUCCESS - success REFUND - payment is refunded NOTPAY - order is created but not paid CLOSED - payment order is closed REVERSE - payment order is reversed REVOK - payment order is cancelled
Only return when 'trade_state' is SUCCESS			
trade_type	Y	String(32)	pay.alipya.native.intl
transaction_id	Y	String(32)	Unique payment order id generated by Pyxpro
out_transaction_id	Y	String(32)	Unique transaction id generated by AliPay
out_trade_no	Y	String(32)	Unique payment order id generated by merchant system, only including alphabet, digit, underscore and mixture
total_fee	Y	Int	Total value of the payment Unit is 1% of the currency For example in HKD: 1000 indicates HKD 10.0,
coupon_fee	N	Int	Coupon amount Coupon amount <= total_fee Cash paid = total_fee - coupon amount
fee_type	Y	String(8)	Merchant payment collecting currency. Currency code compliant with ISO 4217 standard
attach	N	String(127)	Echo data from request message filled by merchant system
bank_type	N	String(16)	Bank name
bank_billno	N	String(32)	bank bill number if available
time_end	Y	String(14)	Completed time of payment transaction Format: yyyyMMddHHmmss, Time Zone: GMT+8 beijing



3.1.6 Close Order

Introduction

Merchant system can close the unpaid order to prevent double pay.

Notes:

Payment order can only be closed at least 5 minutes after it is created.

Request Message

Parameter	Is Mandatory	Data Type	Description
service	Y	String(32)	Service Name: unified.trade.close
version	N	String(8)	Fixed: 2.0
charset	N	String(8)	Fixed: UTF-8
sign_type	N	String(8)	Fixed: MD5
mch_id	Y	String(32)	Unique merchant id allocated by Pyxpro
out_trade_no	Y	String(32)	Unique payment order id generated by merchant system
nonce_str	Y	String(32)	Random string, less than 32 characters
sign	Y	String(32)	Message signature in MD5

Response Message

Parameter	Is Mandatory	Data Type	Description
version	Y	String(8)	Fixed: 2.0
charset	Y	String(8)	Fixed: UTF-8
sign_type	Y	String(8)	Fixed: MD5
status	Y	String(16)	Message communication status: 0 - success other - failure



message	N	String(128)	Error message
Only return when 'status' is 0			
result_code	Y	String(16)	Request processing status: 0 - success, payment order in closed status cannot be paid anymore. Other - failure, close payment order failed, you need try again
mch_id	Y	String(32)	Unique merchant id allocated by Pyxpro
nonce_str	Y	String(32)	Random string, less than 32 characters
err_code	N	String(32)	Error code
err_msg	N	String (128)	Error description
sign	Y	String(32)	Message signature in MD5

3.1.7 Refund

Introduction

Consumers may request to refund transactions if he/she does not satisfy goods and service merchants provide. And funds paid will be returned to the consumers' Alipay/Wechat pay wallet or bankcard linked to the wallets if merchants refund the original transactions.

Transaction status will be updated in 1-2 minutes once the refund call is completed.

Notes:

1. Refund should be initiated before 90 days of the completed time of the original transaction.
2. Funds may not return back to consumers' wallets or the linked bank accounts immediately and time of delay depends on business process of each bank. Usually, 1-3 days delay after the refund call is completed.
3. Input parameter 'out_refund_no' generated by merchant system should be unique.

Retry with the same 'out_refund_no' for unsuccessful refunds calls.



Partial refund is allowed unless the total refund amount reaches the original transaction amount. And coupon cannot be refunded.

4. Most banks in China allow refund transactions, but few banks may not support. Merchants have to find other way to return money back to consumers.

Request Message

Parameter	Is Mandatory	Data Type	Description
service	Y	String(32)	Interface type: unified.trade.refund
version	N	String(8)	Default is 2.0
charset	N	String(8)	Fixed: UTF-8
sign_type	N	String(8)	Fixed:MD5
mch_id	Y	String(32)	Merchant ID allocated by Pyxpro platform
out_trade_no	Y	String(32)	Unique id of the original transaction generated by merchant system, less than 32 characters
transaction_id	N	String(32)	Unique transaction id generated by Pyxpro platform transaction_id has high priority if both 'out_trade_no' and 'transaction_id' are provided
out_refund_no	Y	String(32)	Unique id of the refund transaction generated by merchant system. One refund for multiple refund calls with the same 'out_refund_no'. Please retry with the same 'out_refund_no' for unsuccessful refund calls.



total_fee	Y	Int	Amount of the original order, unit is 1% of the currency, e.g. if collecting currency is EUR, 100 indicates 1EUR
refund_fee	Y	Int	Amount of the refund call, unit is 1% of the currency. Partial refund is supported, and the summary of the all refund transactions cannot exceed the original amount
op_user_id	Y	String(32)	Casher id
refund_channel	N	String(16)	ORIGINAL- refund to the same funds source of the original transaction Default value: ORIGINAL
nonce_str	Y	String(32)	Random string, less than 32 characters
sign	Y	String(32)	MD5 signature

Response Message, XML encoding

Parameter	Is Mandatory	Data Type	Description
version	Y	String(8)	Fixed: 2.0
charset	Y	String(8)	Fixed: UTF-8
sign_type	Y	String(8)	Fixed: MD5
status	Y	String(16)	Message communication status: 0 - success other - failure
message	N	String(128)	Error message, return when status is not 0
Only return when status is 0			
result_code	Y	String(16)	0 - success other - failure, please retry
mch_id	Y	String(32)	Merchant ID allocated by Pyxpro platform
device_info	N	String(32)	Device number
nonce_str	Y	String(32)	Random string, less than 32 characters



err_code	N	String(32)	Error code
err_msg	N	String (128)	Error description
sign	Y	String(32)	MD5 signature
Only return when both status and result_code is 0			
transaction_id	Y	String(32)	Order id generated by Pyxpro platform
out_trade_no	Y	String(32)	Unique order id of the original transaction generated by merchant system
out_refund_no	Y	String(32)	Unique refund transaction id generated by merchant system
refund_id	Y	String(32)	Refund transaction id generated by Pyxpro platform
refund_channel	Y	String(16)	Only support: ORIGINAL
refund_fee	Y	Int	Amount of this refund request, unit is 1% of the currency
coupon_refund_fee	N	Int	Amount of the coupon refunded, reserved.

3.1.8 Query Refund Order

Introduction

Merchant system can query refund order status after calling refund interface. The status of the refund transaction will delay several minutes and funds will return back in around 3 days.

Request Message

Parameter	Is Mandatory	Date Type	Description
service	Y	String(32)	Inteface Type: unified.trade.refundquery
version	N	String(8)	Fixed: 2.0
charset	N	String(8)	Fixed: UTF-8
sign_type	N	String(8)	Fixed: MD5
mch_id	Y	String(32)	Merchant ID allocated by Pyxpro platform
out_refund_no	N	String(32)	Unique ID of the refund transaction generated by merchant system



refund_id	N	String(32)	Unique ID of the refund transaction generated by Pyxpro platform. Refund_id has high priority if out_refund no is provided either.
nonce_str	Y	String(32)	Random string, less than 32 characters
sign	Y	String(32)	MD5 signature

Response Message

Parameter	Is Mandatory	Data Type	Description
version	Y	String(8)	Interface version, fixed: 2.0.
charset	Y	String(8)	Fixed: UTF-8.
sign_type	N	String(8)	Fixed: MD5
status	Y	String(16)	Message communication status: 0 - success other - failure
message	N	String(128)	Error message
Only returns when status is 0			
result_code	Y	String(16)	0 - success other - failure
mch_id	Y	String(32)	Merchant ID allocated by Pyxpro Platform
device_info	N	String(32)	Device number
nonce_str	Y	String(32)	Random string , less than 32 characters
err_code	N	String(32)	Error code
err_msg	N	String (128)	Error message
sign	Y	String(32)	MD5 signature
Only return when status and result_code is 0			
transaction_id	Y	String(32)	Unique id of the original transaction generated by Pyxpro platform



out_trade_no	Y	String(32)	Unique id of the original transaction generated by merchant system
refund_count	Y	Int	Refund counts
out_refund_no_\$n	Y	String(32)	Unique id of the refund transaction generated by merchant system
refund_id_\$n	Y	String(32)	Unique id of the refund transaction generated by Pyxpro platform
refund_channel_\$n	Y	String(16)	Only support:ORIGINAL
refund_fee_\$n	Y	Int	Amount of this refund request, unit is 1% of the currency
coupon_refund_fee_\$n	N	Int	Reserved, refund amount of coupon
refund_time_\$n	N	String(14)	yyyyMMddHHmmss
refund_status_\$n	Y	String(16)	Refund transaction status: SUCCESS FAIL PROCESSING NOTSURE— unknown status, please retry CHANGE— consumer's bank rejected refund and funds remain in merchant account, should find other refund means

\$n index of the refund transaction number in case of multi-refund requests, value from 0 to (\$refund_count-1), e.g if refund_count has value:2, it means there are two partial refund transactions, 0 for 1st refund, "1" for 2nd refund

4 Signature Algorithm

Step 1:

place all data sent or received into dataset M, then sort all non-null parameters in ascending order according to their ASCII codes, then assembling in key-value pair format (i.e. key1=value1&key2=value2...) and set as stringA. Keep key and value in raw value without URL encoding.

Notes:

1. 'Sign' and null-value parameters should be excluded from signature string
2. Additional parameters may be introduced in later upgrading release, please consider this case in your design

For example:



```
stringA="
body=iPhone&charset=UTF-8&device_info=SN12345678&mch_create_ip=103.218.216.123&mch
_id=157590000059&nonce_str=ibuaiVcKdpRxxkhJA&notify_url=http://www.baidu.com&op_user
_id=10001&out_trade_no=Q3NL0000442503084402&product_id=123456789&service=pay.alipay.
native.intl&sign_type=MD5&time_expire=20180527202310&time_start=20180526202310&total
_fee=10&version=2.0 ";
```

Step 2:

Append "key=" + <merchant signature key> to stringA and then sign the new string in MD5 algorithm and convert the signed string in uppercase Hex format.

For example:

Merchant signature Key: c43a467098af250171cd787e56d03978,

stringB=stringA + "&key= c43a467098af250171cd787e56d03978", then you get:

```
"body=iPhone&charset=UTF-8&device_info=SN12345678&mch_create_ip=103.218.216.123&mc
h_id=157590000059&nonce_str=ibuaiVcKdpRxxkhJA&notify_url=http://www.baidu.com&op_user
_id=10001&out_trade_no=Q3NL0000442503084402&product_id=123456789&service=pay.alipa
y.native.intl&sign_type=MD5&time_expire=20180526212310&time_start=20180526202310&tot
al_fee=10&version=2.0&key=c43a467098af250171cd787e56d03978";
```

Sign in MD5:

```
Final Signature=MD5(stringSignTemp).toUpperCase()="2444D06685977A585F4C98D7C796BD92"
```