Mobile Payment Interface SDK2.0

Standard Version

Service Name: Alipay

Version No.: 1.2

Table of Contents

1 File Description

1.1 Function Description

Alipay Mobile Payment SDK2.0 Standard Version is mainly used for provding convenient, safe and reliable payment service to third-party application. This document mainly describes the application mode of SDK payment interface available for the developers of merchants.

1.2 Target Reader

This file is geared to the developers and administrators with certain capacity to explore Android/iOS client and knowledge of Android/iOS client.

1.3 Business Terms

Table 1-1 Business Terms

Term	Interpretation
Request	A process of transmitting data required in the form of character string by Android/iOS client to receipient party.
Notification	Asynchronous notification from server. Alipay server takes the initiative to notify merchant's website and feeds back the processing result to merchant's website after the data received is processed by Alipay.
Return	Alipay returns the processing result data in the form of character string to Android/iOS client directly.

2 Function Demo
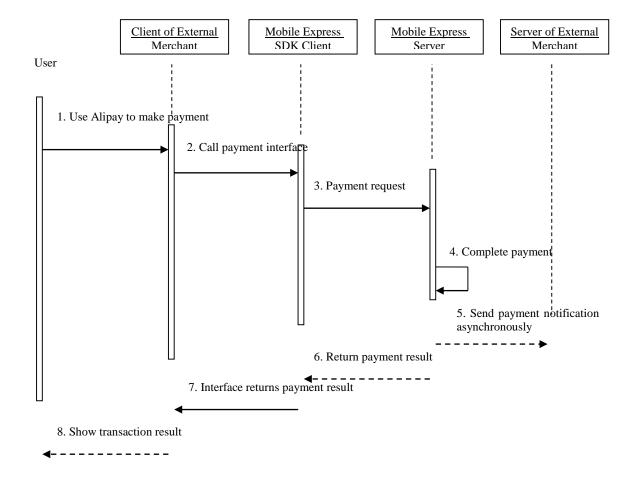
Figure 2-1 Flow Chart of Mobile Express Payment

Process Instruction: (take Android platform as an example):

(1) **Step 2 Call payment interface:** this information is the payment object "PayTask" provided by SDK decribed in this interface, Alipay checkout counter will be aroused by transmitting the order information of merchant to pay; for the format of order, please refer to "5 Request Parameter Description".

(2) **Step 3:** mobile express SDK will send payment request according to the parameter provided by the merchant's APP.

(3) **Step 5 Send payment notification asynchronously**: mobile express server sends asynchronous notification to the merchant's server, please refer to "7 Description of Asynchronous Notification Parameter from Server".

(4) **Step 7 Interface returns payment result:** merchant's application client acquires payment result through the Handler object of Acitity of payment called at that time and its callback function, please refer to "6 Synchronous Notification Parameter Description".

3 Data Interation
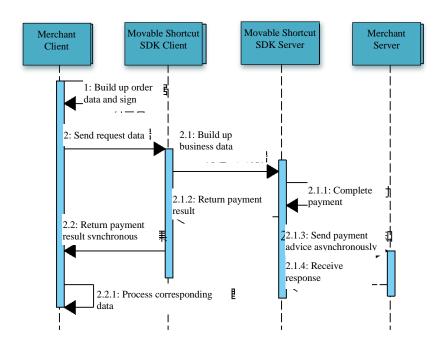
Figure 3-1 Interactive Pattern between Merchant's Client and Alipay Mobile Payment SDK

(1)   Build up order data and sign

Merchant's client generates signature result and data set to be transmitted to Alipay mobile payment SDK through relevant application according to the interface rules provide by Alipay mobile payment SDK.

(2)   Send request data

Transmit the data set built-up to Alipay mobile payment SDK.

(3)   Process request data by Alipay mobile payment SDK

Alipay mobile payment SDK transmits the request data to Alipay server after packing up the same according to business rules; server will conduct a series of verification, such as safety verification, after which the server will process the data request sent in this time.

(4)   Result data returned for process

For the transaction processed completely, Alipay will feed back the data to merchant's App and merchant's server respectively in two different ways.

- For Android/iOS client, SDK client will feed back the processed data result to Merchant's client directly;

- Alipay server takes the initiative to send notification, and calls the page path set by merchant at request (parameter is notify_url; if merchant fails to set the page path, this operation can not be executed.).

(5)   Process the returned result data acquired

Merchant may process the result data according to their own business logic (such as order update, recharge to member ID automatically)after receiving the same returned by Alipay from client snychronous notification receiving module or server asynchronous notification receiving module. Synchronous notification result shall be only for result exihibition, the data to be input in database shall be subject to asynchronous notification.

4 Mode of Interface Calling

4.1 iOS

4.1.1 Interface Description

SDK interface on iOS platform is as follows:

Table 4-1 iOS SDK Interface Table

Interface Name	Interface Description
AlipaySDK	Provide payment function.

Alipay interface is mainly used for providing order payment function to merchant.

The modes provided by this interface are as follows:

Table 4-2 Alipay Interface Mode Table

Mode Name	Mode Description
+(Alipay *)defaultService;	Obtain service examples.
-(BOOL)hasAuthorized;	Check if there is local authenticated account.
- (void)payOrder:(NSString *)orderStr fromScheme:(NSString *)schemeStr callback:(PaymentCallbackBlock)callbackBlock;	Pay and return result through callback.

Table 4-3 Pay Mode Description Table

Mode Prototype	- (void)payOrder:(NSString *)orderStr fromScheme:(NSString *)schemeStr callback:(PaymentCallbackBlock)callbackBlock;
Mode Function	Provide express order payment function to merchant.
Parameter	**NSString* scheme** URL protocol registered by merchant's application, which is used for calling back merchant's application after payment. **PaymentCallbackBlock callbackBlock** Callback function, login exemption upon return, payment result of express payment SDK. Please refer to "6 Synchronous Notification Parameter Description" for relevant results. **NSString* info** Mainly contains order information of merchant, the form is key="value", link with others by &. Examples of payment parameter are as follows: partner="2088101568358171"&seller_id="xxx@alipay.com"&out_trade_no="0819145412-6177"&subject="test"&body="test test "&total_fee="0.01"&notify_url="http://notify.msp.hk/notify.htm"&service="mobile.securitypay.pay"&payment_type="1"&_input_charset="utf-8"&it_b_pay="30m"&show_url="m.alipay.com"&sign="IBBK%2F0w5LOajrMrji7DUgEqNjIhQbidR13GovA5r3TgIbNqv231yC1NksLdw%2Ba3JnfHXoXuet6XNNHtn7VE%2BeCoRO1O%2BR1KugLrQEZMtG5jmJIe2pbjm%2F3kb%2FuGkpG%2BwYQYI51%2BhA3YBbvZHVQBYveBqK%2Bh8mUyb7GM1HxWs9k4%3D"&sign_type="RSA" Please refer to "5 Request Parameter Description" for the implications of all fields.

4.1.2 Callback Interface

Upon completion of payment process, payment result will be returned synchronously through **callbackBlock.**

Returned result shall be judged synthetically by **resultStatus** and the value of **result** fields, by which the payment result can be determined. If the verifications on **resultStatus=9000** and **success="true"** as well as **sign="xxx"** are approved, we can

know the payment succeeds, otherwise, the payment shall be deemed to fail. For the occasion with lower security level, the payment result can be judged only from **resultStatus** and **success="true"**. The following is an information example of successful order payment:

resultStatus={9000};memo={};result={partner="2088101568358171"&seller_id="xxx@alipay.com"&out_trade_no="0819145412-6177"&subject="test"&body="test   test
"&total_fee="0.01"&notify_url="http://notify.msp.hk/notify.htm"&service="mobile.securitypay.pay"&payment_type="1"&_input_charset="utf-8"&it_b_pay="30m"&show_url="m.alipay.com"&success="true"&sign_type="RSA"&sign="hkFZr+zE9499nuqDNLZEF7W75RFFPsly876QuRSeN8WMaUgcdR00IKy5ZyBJ4eldhoJ/2zghqrD4E2G2mNjs3aE+HCLiBXrPDNdLKCZgSOIqmv46TfPTEqopYfhs+o5fZzXxt34fwdrzN4mX6S13cr3UwmEV4L3Ffir/02RBVtU="}

4.2 Android

Express payment SDK interface on Android platform is as follows:

Table 4-4 Android SDK Interface Table

Interface Name	Interface Description
PayTask	SDK provides object interfaces of payment and query.

PayTask object is mainly used for providing order payment function to merchant, querying whether there is authenticated Alipay account on this device terminal, and acquiring current SDK verision number.

The modes provided by this interface are as follows:

Table 4-5 payTask.pay Description Table

Mode Prototype	PayTask payTask = new PayTask(activity); payTask.pay(orderInfo);
Mode Function	Provide order payment function to merchant
Mode Parameter	Instantiated PayTask, a living example for transmitting parameter activity. String orderInfo Mainly contains order information of merchant, the form is key="value",linked with others by &. Examples of payment parameter are as follows: partner="2088101568358171"&seller_id="xxx@alipay.com"&out_trade_no="0819145412-6177"&subject="test"&body="test test "&total_fee="0.01"&notify_url="http://notify.msp.hk/notify.htm"&service="mobile.securitypay.pay"&payment_type="1"&_input_charset="utf-8"&it_b_pay="30m"&show_url="m.alipay.com"&sign="lBBK%2F0w5LOajrMrji7DUgEqNjlhQbidR13GovA5r3TgIbNqv231yC1NksLdw%2Ba3JnfHXoXuet6XNNHtn7VE%2BeCoRO1O%2BR1KugLrQEZMtG5jmJIe2pbjm%2F3kb%2FuGkpG%2BwYQYI51%2BhA3YBbvZHVQBYveBqK%2Bh8mUyb7GM1HxWs9k4%3D"&sign_type="RSA" Please refer to "5 Request Parameter Description" for the implications of all fields.
Return Value	Result of callback by this mode. In general, the format of character string is as follows: resultStatus={9000};memo={};result={partner="2088101568358171"&seller_id="xxx@alipay.com"&out_trade_no="0819145412-6177"&subject="test"&body="test test "&total_fee="0.01"&notify_url="http://notify.msp.hk/notify.htm"&service="mobile.securitypay.pay"&payment_type="1"&_input_charset="utf-8"&it_b_pay="30m"&show_url="m.alipay.com"&success="true"&sign_type="RSA"&sign="hkFZr+zE9499nuqDNLZEF7W75RFFPsly876QuRSeN8WMaUgcdR00IKy5ZyBJ4eldhoJ/2zghqrD4E2G2mNjs3aE+HCLiBXrPDNdLKCZgSOIqmv46TfPTEqopYfhs+o5fZzXxt34fwdrzN4mX6S13cr3UwmEV4L3Ffir/02RBVtU="} Please refer to "6 Synchronous Notification Parameter Description" for the implications of all fields.

Table 4-6 payTask.checkAccountIfExist Description Table

Mode Prototype	PayTask payTask = new PayTask(activity); payTask.checkAccountIfExist ();
Mode Function	Query whether there is authenticated Alipay account on this terminal.
Mode Parameter	Instantiated PayTask, a living example for transmitting parameter activity.
Return Value	Boolean type value

⚠ Attention:

payTask.checkAccountIfExist mode is not required to be called prior to payment

interface PayTask pay mode, merchant shall use so according to its own need.

Table 4-7 payTask.getVersion Description Table

Mode Prototype	PayTask payTask = new PayTask(activity); payTask.getVersion();
Mode Function	Acquire current SDK version number.
Mode Parameter	Instantiated PayTask, a living example for transmitting parameter activity.
Return Value	String type value, such as "2.0.0".

5 Request Parameter Description

5.1 Implication

Request parameter is the request data provided to Alipay by merchant in conducting data interaction with Alipay so that further process can be conducted by Alipay based on these data.

5.2 List

Table 5-1 Request Parameter Description

Parameter	Parameter Name	Type (Byte Length)	Parameter Description	Nullable Y for Yes N for No	Example
Basic Parameter					
service	Interface name	String	Interface name. Fixed value.	N	mobile.securitypay.pay
partner	Merchant ID	String(16)	Unique Alipay user number corresponding to authorized Alipay account number. Be composed of 16 numbers beginning with 2088.	N	2088101568358171
_input_charset	Parameter encoding character set	String	Encoding format used in merchant's website; fixed format is utf-8.	N	utf-8
sign_type	Signature type	String	Signature type, only support RSA currently.	N	RSA

Parameter	Parameter Name	Type (Byte Length)	Parameter Description	Nullable Y for Yes N for No	Example
sign	Signature	String	Please refer to "9 Signature Mechanism".	N	lBBK%2F0w5LOajrMrji7DUgEqNjIhQbidR13GovA5r3TgIbNqv231yC1NksLdw%2Ba3JnfHXoXuet6XNNHtn7VE%2BeCoRO1O%2BR1KugLrQEZMtG5jmJIe2pbjm%2F3kb%2FuGkpG%2BwYQYI51%2BhA3YBbvZHVQBYveBqK%2Bh8mUyb7GM1HxWs9k4%3D
notify_url	Page path of asynchronous notification from sever	String(200)	Alipay server takes the initiative to notify the page http path designated by merchant's website.	N	http://notify.msp.hk/notify.htm
app_id	Client ID	String	Identify client.	N	external
appenv	Client source	String	Identify client source. Parameter value is agreed as follows: appenv="system=client platform name ^version=business system version", for example: appenv="system=iphone^version=3.0.1.2" appenv="system=ipad^version=4.0.1.1"	N	appenv="system=android^version=3.0.1.2"
Business Parameter					

Parameter	Parameter Name	Type (Byte Length)	Parameter Description	Nullable Y for Yes N for No	Example
out_trade_no	Unique order ID in merchant's website	String(64)	Unique order ID in merchant's website of Alipay	N	0819145412-6177
subject	Product name	String(256)	Product title/transaction tile/order title/order keywords, etc. The length of this parameter is up to 128 Chinese characters.	N	Test
payment_type	Payment type	String(4)	Payment type. The default value is 1 (purchase of goods)	N	1
seller_id	Seller ID	String(16)	Seller ID (in the format of email or mobile phone) or the corresponding unique user ID (16 numbers beginning with 2088)	N	xxx@alipay.com
total_fee	Total fee	Number	A floating number ranging 0.01～1000000.00, specify the foreign price of the items If use the total_fee, don't use the rmb_fee	N	0.01
rmb_fee	Rmb fee（RMB pricing）	Number	A floating number ranging 0.01～1000000.00, specify the RMB price of the items If use the rmb_fee, don't use the total_fee	Y	100.25

Parameter	Parameter Name	Type (Byte Length)	Parameter Description	Nullable Y for Yes N for No	Example
body	Product details	String(1000)	Specific description of the transaction. In case of a variety of goods, please accumulate the character strings descrbing the goods, and transmit the same to body.	N	testtest
currency	Currency	String(10)	Please refer to the abbreviation set out in Currency List.	N	USD
forex_biz	Forex_biz	String(10)	"FP" is the only value	N	FP
it_b_pay	Overtime of non-payment transaction	String	Set the overtime of non-payment transaction, the transaction will be closed automatically once the time is up. Range of values: 1m～15d, or absolute time (for example: 2014-06-13 16:00:00) m-minute, h-hour, d-day, 1c-current day (Whenever the transaction is created, it will be closed at 0:00). Demical point of the numerical value of this parameter is rejected, for example, 1.5h can be converted into 90m. To realize this function, Alipay is needed to be advised to set close time.	Y	30m

Paramete r	Parameter Name	Type (Byte Length)	Parameter Description	Nullable Y for Yes N for No	Example
paymet hod	Pay by bank cards	String	Can work with checkAccountIfExist function form PayTask to check if Alipay authorized account existed on this device, if return false, can use this to trigger bank cards payment page. Fixed value.	Y	expressGateway
extern_t oken	Authoriz ation token	String(3 2)	Token (including account information) returned by open platform (authorization token, a right for merchant to access to some services of Alipay within specified period).	Y	1b258b84ed2faf3e88b4 d979ed9fd4db

📖   Illusration:

Part of parameter type is String, range of length is not specified, which means the

system will not check out the length of this parameter.

5.3 Example

```
https://www.notifyurl.com/web/alipaydatafeed.do?notify_id=4c14ed0a8147c82f795a70dc5906c

0a63z&notify_type=trade_status_sync&sign=saxishyye6u1k2makagevu3t80fo9x0h&trade_no=

2014121091227635&total_fee=31.00&out_trade_no=5012338025&currency=USD&notify_time
```

=2014-12-10 17:47:16&trade_status=TRADE_FINISHED&sign_type=MD5

6 Description of Synchronous Notification Parameters

6.1 Implication

Alipay will notify merchant of the result data it processed directly after it completes the processing of request data of merchant. These result data are synchronous notification parameters.

6.2 List

Table 6-1 Description of Synchronous Notification Parameters

Parameter	Parameter Name	Type (Range of Length)	Parameter Description	Nullable Y for Yes N for No	Example
resultStatus	Status code	String	Status value returned from this operation, identifying the result of this call, please refer to "11.2 Client Error Code".	N	9000

Parameter	Parameter Name	Type (Range of Length)	Parameter Description	Nullable Y for Yes N for No	Example
result	Result data returned from this operation	String	Result data returned from this operation. Thereinto: The part before &success="true"&sign_type="RSA"&sign="xxx" is the original data of merchant. success is used for identifying the result of this payment. sign="xxx" is the signature of Alipay for the result of this payment, merchant may authenticate this signature by using the public key provided by Alipay at execution of contract.	N	partner="2088101568358171"&seller_id="xxx@alipay.com"&out_trade_no="0819145412-6177"&subject="test"&body="testtest"&total_fee="0.01"&notify_url="http://notify.msp.hk/notify.htm"&service="mobile.securitypay.pay"&payment_type="1"&_input_charset="utf-8"&it_b_pay="30m"&show_url="m.alipay.com"&success="true"&sign_type="RSA"&sign="hkFZr+zE9499nuqDNLZEF7W75RFFPsly876QuRSeN8WMaUgcdR00IKy5ZyBJ4eldhoJ/2zghqrD4E2G2mNjs3aE+HCLiBXrPDNdLKCZgSOIqmv46TfPTEqopYfhs+o5fZzXxt34fwdrzN4mX6S13cr3UwmEV4L3Ffir/02RBVtU="
memo	Prompt message	String	Parameter reserved, in general, there is no content.	Y	

6.3 Example

resultStatus={9000};memo={};result={partner="2088101568358171"&seller_id="xxx@alipay.com"&out_trade_no="0819145412-6177"&subject="test"&body="testtest"&total_fee="0.01"&notify_url="http://notify.msp.hk/notify.htm"&s

ervice="mobile.securitypay.pay"&payment_type="1"&_input_charset="utf-
8"&it_b_pay="30m"&show_url="m.alipay.com"&success="true"&sign_type="RSA"&sign="hkFZr+zE9
499nuqDNLZEF7W75RFFPsly876QuRSeN8WMaUgcdR00IKy5ZyBJ4eIdhoJ/2zghqrD4E2G2mNjs3
aE+HCLiBXrPDNdLKCZgSOIqmv46TfPTEqopYfhs+o5fZzXxt34fwdrzN4mX6S13cr3UwmEV4L3Ffir/
02RBVtU="}

6.4 Acquisition of Synchronous Notification Parameters

6.4.1 iOS

Please refer to "4.1.2 Callback Interface".

6.4.2 Android

Instantiate PayTask object in new thread, call pay mode, and notify main thread to acquire payment result through Handler object. Please refer to the project realization of alipay_sdk_demo.

7 Description of Asynchronous Notification Parameters from Server

7.1 Implication

Alipay will notify merchant's website of the result data it processed directly through initiative notification from server after it completes the processing of request data of merchant. These result data are asynchronous notification parameters from server.

7.2 List

Table 7-1 Payment Asynchronous Notification Parameters Specification

Name	Parameter	Type	Description
Notify type	notify_type	String	Unique value: forex_trade_status_sync.
Notify authentication ID	notify_id	String(34)	Unqiue ID used for authenticating notify
Notify time	notify_time	Timestamp	System notify time (Beijing time): YYYY-MM-DD hh:mm:ss
Signature	sign	String	Please refer to signature algorithm
Encoding Charset	_input_charset	String	Encoding path for partner page: uft-8 GBK , gb2312
Signature type	sign_type	String	MD5
Business Parameters			
Partner order ID	out_trade_no	String(64)	Unique oder ID in partner system
Transaction status	trade_status	String(32)	There are two status as follows: TRADE_FINISHED TRADE_CLOSED
Alipay transaction number	trade_no	String(16)	Unique oder ID in Alipay system
Currency	currency	String(10)	Please refer to enumeration value of currency as set out in Appendix
Amount	total_fee	Number(8,2)	Range: 0.01 ~ 1000000.00

7.3 Condition for Triggering Notification

Table 7-2 Condition for Triggering Notification

Name of Condition	Description of Condition	Default Value of Condition
TRADE_FINISHED	Transaction succeeds	True (trigger notification)
TRADE_SUCCESS	Payment succeeds	True (trigger notification)
WAIT_BUYER_PAY	Transaction is created	False (not trigger notification)
TRADE_CLOSED	Transaction is closed	False (not trigger notification)

 Illusration:

true (trigger notification) / false (not trigger notification) value shall be consistant

with the sign-up configuration.

7.4 Acquisition of Asynchronous Notification Parameter from Server

(1) Make sure that there is no character on the page of asynchronous notification

from server (notify_url), such as spacing, HTML label, abnormal prompt

message came with and from development system and so on;

(2) As Alipay sends notification information by means of POST, the mode of

acquiring parameter from this page, such as

request.Form("out_trade_no"), $_POST['out_trade_no'];

(3) This mode can be enabled only if Alipay takes the initiative to initiate notification;

(4) The interaction between servers is invisible; it is unlike synchrounous advice for page redirect, which can be shown on the pages.

(5) "success" (excluding quotation mark) must be printed out upon fully execution of the program. If the character fed back by merchant is not success, Alipay server will resend notification constantly till 24 hours and 22 minutes have passed.

In general, 8 notifications will be completed within 25 hours (the interval frequency for notification usually is 2m, 10m, 10m, 1h, 2h, 6h, 15h);

(6) This page can not conduct page reindrect upon fully execution of the application, otherwise, success character will not be received by Alipay, and Alipay server will judge this page program to be abnormal, and resend the processing result notice;

(7) cookies, session will become invalid on this page, that is to say these data can not be obtained;

(8) The debugging and operation of this mode shall be made on server, that is to say the same can be accessed to on internet;

(9)   The role of this mode is to avoid the loss of order, that is to say if synchronous

advice for page indirect does not process the order update, this mode will

process the order update;

(10) Asynchronous notification parameter from server (notify_id) will become

invalid after merchant receives asynchronous notification from server and

prints success out. That is to say, asynchronous notification parameter from

server (notify_id) will remain unchanged when Alipay sends the same

asynchronous notification (including Alipay resends notice several times as

merchant fails to print success out).

7.5 Example

http://notify.java.jpxx.org/index.jsp?discount=0.00&payment_type=1&subject=test&trade_no=201308
2244524842&buyer_email=dlwdgl@gmail.com&gmt_create=2013-08-22
14:45:23&notify_type=trade_status_sync&quantity=1&out_trade_no=082215222612710&seller_id=20
88501624816263&notify_time=2013-08-22
14:45:24&body=testtest&trade_status=TRADE_SUCCESS&is_total_fee_adjust=N&total_fee=1.00&g
mt_payment=2013-08-22
14:45:24&seller_email=xxx@alipay.com&price=1.00&buyer_id=2088602315385429&notify_id=64ce1
b6ab92d00ede0ee56ade98fdf2f4c&use_coupon=N&sign_type=RSA&sign=1glihU9DPWee+UJ82u3+
mw3Bdnr9u01at0M/xJnPsGuHh+JA5bk3zbWaoWhU6GmLab3dIM4JNdktTcEUI9/FBGhgfLO39BKX/
eBCFQ3bXAmIZn4l26fiwoO613BptT44GTEtnPiQ6+tnLsGlVSrFZaLB9FVhrGfipH2SWJcnwYs=

8 Matters Needing Attention for Merchant's Buiness Process

Alipay will return data result to merchant after it completes the processing. Merchant must do the right processing according to the different types of notification given by Alipay, and filter out the duplicated data. Among Alipay notifications, only when transaction status notification is TRADE_SUCCESS or TRADE_FINISHED, Alipay will confirm the success of payment by the buyers. If merchant needs to verify the return data, it must be done by the signature verification code on the server side. If merchant can't process the notification in the right way, there will potential risks, merchant shall bear all losses arising there at its own expense.

⚠ Attention:

- TRADE_SUCCESS notification will be triggerred when signed product supports refund function and buyer's payment is successful.

- TRADE_FINISHED notification will be triggerred when signed product doesn't support refund function and buyer's payment is successful; or signed product supports refund function and transaction is successful and passed the refundable period.

- After transaction is successful, merchant (Advanced real-time to account or air ticket sells) can call batch refund interface, system will send out refund

notification to merchants, for details please refer to batch refund interface

documentation.

- When merchant uses refund function, system will send out notification which

    includes fields: refund_status and gmt_refund to merchant.

9 Signature Mechanism

9.1 Generate Character String to be Signed

9.1.1 Parameter requiring signature

- In request parameter list, with the exception of sign and sign_type, all other

    parameters used need to be signed.

- In synchronous notification parameter list, with the exception of sign and

    sign_type, all parameters returned by notification shall participate in signature

    authentication.

- In the list of asynchronous notification parameter from server, with the

    exception of sign and sign_type, all parameters returned by notification shall

    participate in signature authentication.

- utf-8 URLencode is needed for sign value.

9.1.2 Generate character string to be signed

1. Generation of character string to be signed at payment interface

For the following parameter array:

```
string[] parameters={
    "service=\"mobile.securitypay.pay\"",
    "partner=\"2088101568338364\"",
    "_input_charset=\"utf-8\"",
    "notify_url=\"http://notify.msp.hk/notify.htm\"",
    "out_trade_no=\"0819145412-6177\"",
    "subject=\"Diablo III: Book of Cain\"",
    "payment_type=\"1\"",
    "seller_id=\"alipay-test01@alipay.com\"",
    "total_fee=\"0.01\""
};
```

Combine all array values in the format of key= "value" and link them up by the

character "&", disorder is supported, for example:

```
service="mobile.securitypay.pay"&partner="2088101568338364"&_input_charset="utf-
8"&notify_url="http://notify.msp.hk/notify.htm"&out_trade_no="0819145412-
6177"&subject="test"&payment_type="1"&seller_id="xxx@alipay.com"&total_fee="0.01"
```

This character string is a character string to be signed.

2. Generation of character string to be signed for synchronous notification

For the contents of synchronous notification:

```
resultStatus={9000};memo={};result={partner="2088101568358171"&seller_id="xxx@alipay.com"&o
ut_trade_no="0819145412-
6177"&subject="test"&body="testtest"&total_fee="0.01"&notify_url="http://notify.msp.hk/notify.htm"&s
ervice="mobile.securitypay.pay"&payment_type="1"&_input_charset="utf-
8"&it_b_pay="30m"&show_url="m.alipay.com"&success="true"&sign_type="RSA"&sign="hkFZr+zE9
499nuqDNLZEF7W75RFFPsIy876QuRSeN8WMaUgcdR00lKy5ZyBJ4eldhoJ/2zghqrD4E2G2mNjs3
aE+HCLiBXrPDNdLKCZgSOIqmv46TfPTEqopYfhs+o5fZzXxt34fwdrzN4mX6S13cr3UwmEV4L3Ffir/
02RBVtU="}
```

Take out the part of result, get rid of sign and sign_type:

```
partner="2088101568358171"&seller_id="xxx@alipay.com"&out_trade_no="0819145412-
6177"&subject="test"&body="testtest"&total_fee="0.01"&notify_url="http://notify.msp.hk/notify.htm"&s
```

```
ervice="mobile.securitypay.pay"&payment_type="1"&_input_charset="utf-
8"&it_b_pay="30m"&show_url="m.alipay.com"&success="true"
```

The character string to be signed is generated.

3. Generation of character string to be signed for asynchronous notification

For the contents of asynchronous notification:

```
http://notify.java.jpxx.org/index.jsp?discount=0.00&payment_type=8&subject=test&trade_no=201308
2244524842&buyer_email=dlwdgl@gmail.com&gmt_create=2013-08-22
14:45:23&notify_type=trade_status_sync&quantity=1&out_trade_no=082215222612710&seller_id=20
88501624816263&notify_time=2013-08-22
14:45:24&body=testtest&trade_status=TRADE_SUCCESS&is_total_fee_adjust=N&total_fee=1.00&g
mt_payment=2013-08-22
14:45:24&seller_email=xxx@alipay.com&price=1.00&buyer_id=2088602315385429&notify_id=64ce1
b6ab92d00ede0ee56ade98fdf2f4c&use_coupon=N&sign_type=RSA&sign=1glihU9DPWee+UJ82u3+
mw3Bdnr9u01at0M/xJnPsGuHh+JA5bk3zbWaoWhU6GmLab3dIM4JNdktTcEUI9/FBGhgfLO39BKX/
eBCFQ3bXAmlZn4l26fiwoO613BptT44GTEtnPiQ6+tnLsGlVSrFZaLB9FVhrGfipH2SWJcnwYs=
```

Get rid of sign and sign_type, sort other parameters in alphabetical order from a to

z, and link up all array values by the character of "&":

```
body=testtest
&buyer_email=dlwdgl@gmail.com&buyer_id=2088602315385429&discount=0.00&gmt_create=2013-
08-22 14:45:23&gmt_payment=2013-08-22 14:45:24&is_total_fee_adjust=N&notify_time=2013-08-22
14:45:24&notify_type=trade_status_sync&out_trade_no=082215222612710&payment_type=8&price
=1.00&quantity=1&seller_email=alipayrisk18@alipay.com&seller_id=2088501624816263&subjecttes
t&total_fee=1.00&trade_no=2013082244524842&trade_status=TRADE_SUCCESS&use_coupon=N
```

This character string is one to be signed.

⚠ Attention:

- The parameter without value needs not to be transmitted, nor to be included in the data to be signed;

- At signing, the character set designated at the time when the character turns into byte stream shall be consistent with _input_charset;

- If the parameter of _input_charset is transmitted, it shall also be included in the data to be signed.

9.2 RSA Signature

Private key and public key are needed for RSA signature. Both private key and public key are generated from OPENSSL by customer. Customer interchanges the public key generated with the Alipay public key configured by Alipay technical personnel. Therefore, customer shall use the private key of customer and the public key of Alipay at signing.

- **Signature at request**

Conduct signature algorithm by putting character string to be signed and private key of customer into RSA signature function upon obtaining character string to be signed at request, from which signature result character string can be generated.

- **Signature authentication upon notificationing return**

Conduct asymmetrical signature algorithm by putting character string to be signed, public key provided by Alipay and sign value in return parameter notified by Alipay into RSA signature function upon obtaining character string to be signed, from which we can judge whether the signature authentication is passed or not.

10 How to Verify Whether Requested by Alipay or not?

- **Purpose**

Verify whether this notification information is sent by Alipay server in order to check out the truth or falsehood of the data fed back.

- **Operating Principle**

Acquire notification verification ID (notify_id) as a piece of the data returned by Alipay, put them together into a request link according to the format required by Alipay, for example:

https://mapi.alipay.com/gateway.do?service=notify_verify&partner=20880023967 12354&notify_id=RqPnCoPT3K9%252Fvwbh3I%252BFioE227%252BPfNMl8jwy ZqMIiXQWxhOCmQ5MQO%252FWd93rvCB%252BaiGg

Access to this request link, simulate the interaction between http request and Alipay server by means of programming, acquire the result processed by Alipay server.

If the information acquired is ture, the verification succeeds; otherwise, the verification fails.

11 Appendix

11.1 Business Error Code

Table 11-1 Business Error Code

Error Code (error_code)	Implication
9000	Order payment succeeds
8000	Under processing
4000	Order payment fails

11.2 Client Error Code

Table 11-2 Client Error Code

Error Code (error_code)	Implication
9000	Order payment succeeds
8000	Under processing
4000	Order payment fails
6001	Cancel by user
6002	There is mistake in network connection

11.3 Transaction Status

Table 11-3 Transaction Status List

Enumeration Name	Enumeration Description
TRADE_CLOSED	● Transaction closed within specified period due to non-payment
TRADE_FINISHED	Transaction succeeds, operations can be done to this transaction, such as refund, etc.

11.4 Currency List

Currency Symbol	Currency Name	Number of Decimal Places Retained
GBP	British Sterling	2
HKD	Hong Kong Dollar	2
USD	U.S. Dollar	2
CHF	Swiss Franc	2
SGD	Singapore Dollar	2
SEK	Swedish Krona	2
DKK	Danish Krone	2
NOK	Norwegian Krone	2
JPY	Japanese Yen	0
CAD	Canada Dollar	2

AUD	Australian Dollar	2
EUR	Euro	2
NZD	New Zealand Dollar	2
RUB	Russian Ruble	2
MOP	Macao Pataca	2