

Alipay General Payments API Specification

In 2004, Alibaba Corporation established its subsidiary-Alipay.com.

Alipay is committed to providing payment services with “simple, secure and speedy” solutions to Chinese e-business.

Confidential

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1.Introduction

1.1. Overview

The Alipay General Payments API Specification is a set of interfaces between the Client-side System and the Alipay Payments platform, including the Alipay General Interaction Interface, Payments Interface, Refundment File Uploading Interface, Reconciliation file download interface, Settlement File Downloading Interface and the Single Transaction Query Interface.

The specification also sets the unified standard for modes of interactions, data exchange and security between the Client-side System and the Alipay Payments System. General business support for payments and workflow process is also described in this documentation.

Intended Audience : Merchant Developers

1.2. Glossary

Term	Description
Oversea Acquiring Buyer	An Alipay authenticated user who has a valid email account and the ability to create a transaction.
Oversea Merchant Partner	A business entity that cooperates with Alipay on overseas acquiring business.
Oversea Partner System	The website operated by the overseas merchant partner, on which the transactions are made with foreign currency instead of CNY (Chinese Yuan).
Settlement File	When the income from the Partner system reaches a prescribed quota, the bank representing Alipay will liquidify the fund to the overseas partner. The

	<p>partner downloads the settlement file in order to verify the balance from the previous settlement cycle.</p> <p>The file is a .TXT file without headings. Each line is a strictly ordered settlement data separated by the delimiter " " .</p>
Reconciliation File	<p>The oversea partner needs to check the transaction details made with Alipay, including settlement and refundament statements. This can be done by downloading the reconciliation file.</p> <p>The file is a .TXT file without headings. Each line is a strictly ordered statement data separated by the delimiter " " .</p>
Refundament File	<p>When the oversea partner system initiates a refund request, the Alipay system is authorized to return an unliquidated fund from the partner system to the acquiring buyer.</p> <p>The file can be in .TXT or .XLS format without headings. Each line is a strictly ordered refundament data, separated by the delimiter " " in case of .TXT format.</p>

2. Interaction Modes

Alipay system will interact with partner system in following two modes: request/response mode and active notifying mode.

The former is often used in constructing requests, invoking Alipay service or transfer user from a page on partner website to another page on Alipay, so they may perform actions like making a payment.

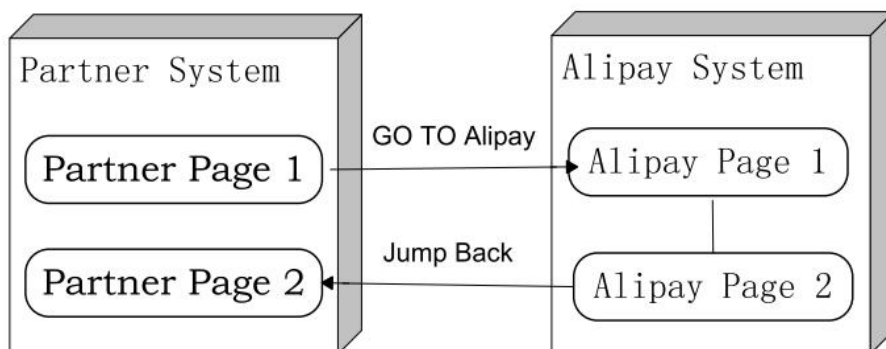
The latter one is often used when Alipay sends notification, update partner systems about changes made in their accounts; usually it occurs when a transaction is complete.

2.1. The Request/Respond Mode

The request/respond is the most frequently used interaction mode. Under the mode, the Oversea Merchant Partner System (partner system) sends request data to the Alipay Oversea Acquiring System (Alipay system), and synchronously wait for the response from the Alipay system after the request has been processed.

The request/respond mode can be further classified into two types: system invocation and page re-directed. The system invocation type only needs to invoke the relevant API to perform the business operation, the page re-directed type on the other hand needs the operation to be done on the Alipay system's web page.

If the acquiring buyer completes the operation after being transferred to the Alipay' s webpage, the Alipay system will return the results to the partner system' s website; the user will continue the buying process on the partner' s site. The parameter return_url (the next-step page url on the partner' s website) for the must be specified



Alipay page response parameter list:

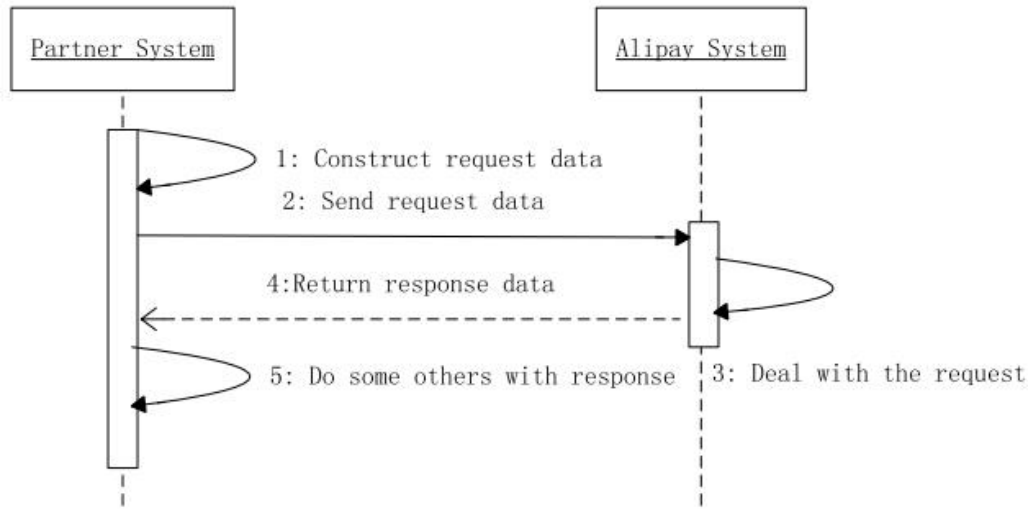
Name	Parameter	type	description
Partner transaction ID	out_trade_no	String(64)	A numbered transaction ID (Unique inside the partner system)
Status	trade_status	String(32)	One of following two value: TRADE_FINISHED
Transaction ID	trade_no	String(28)	The transaction ID on the Alipay system
Currency	currency	String(10)	Abbreviated currency name
Amount	total_fee	Number(8,2)	Range: 0.01 ~ 1000000.00

Response sample:

http://www.returnurl.com/front?currency=HKD&total_fee=0.10&out_trade_no=40

28608899131221&trade_no=2014061800001000100000574688&trade_status=TRADE_FINISHED

2.1.1. Process workflow

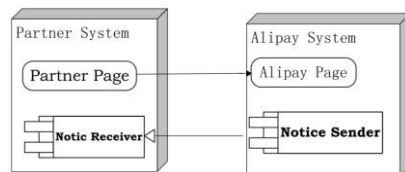


The gateway URL :

<https://mapi.alipay.com/gateway.do>

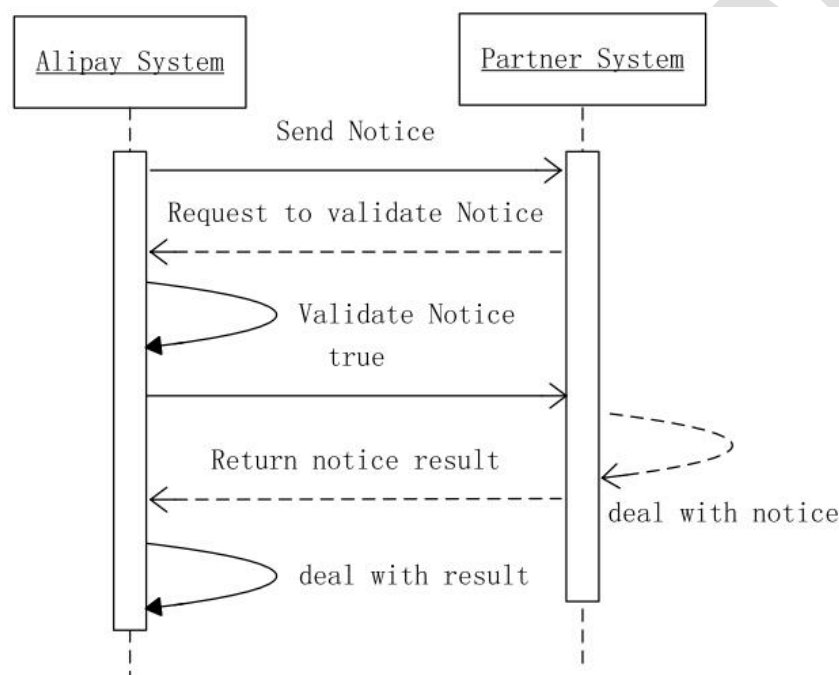
2.2. Active Notifying Interaction Mode

In the case acquiring buyers are sent to the Alipay' s website from the partner' s site. After completing the transaction, those buyers will be sent back to the partner' s site. Also, the Alipay system will actively notify the partner' s site on the buyer-related events.



As the session requires the result to be sent asynchronously, the notify_url has to be specified. For example, a transaction has been created by the partner system, when the transaction status (see: Transaction Status List) changes, the Alipay system sends the updated status and related information on the transaction to the partner system according to the notify URL.

2.2.1. Process workflow



1. The Alipay system sends notification to the partner system, i.e. the URL for partner system to receive future notifications (the notify_url parameter)
2. The partner system receives the notification, sends back an authentication request with parameter notify_id (the notify id will expire in 1 minute) to the Alipay system.
3. The Alipay system verifies the authentication, if genuine returns true, otherwise false.
4. Upon Alipay' s confirmation, the partner system processes the request, and

sends the result back to the Alipay' s system. The enumeration of the results can be found on the Appendix: Notification result list.

5. The Alipay system reads the notification result from the partner system, and processes it.

Notice:

- *The Alipay system delivers the data via HTTP/HTTPS POST method. The notify URL for the partner system can be configured statically in the API protocol, or it can be specified during each session dynamically via the notify_url parameter, e.g. if the notify_url is provided in the transaction creation request, all the future notification on this transaction will be sent through the specified notify_url from Alipay system to the partner system.*
- *If the Alipay system fails to deliver the notification data, or the merchandise system fail to respond, the billing system will actively retry according to a prescribed schedule to maximize the delivery success rate, however it is not guaranteed all the active notification will be eventually delivered.*
- *Due to this active notification mechanism, same notification can be sent multiple times to the partner system. Further, some ordered event active notification can be received asynchronizely with different order. Therefore the partner system must be able to ignore repeated notification and re-order the notifications. It is recommended by Alipay that upon receiving a notification, verification with relevant local data should be performed to determine if the notification has been already processed. The partner system is also expected to actively verify the correctness of notification order before processing the request, by data lock or time stamping to manage the concurrency.*

Alipay' s Notification Parameters:

Name	Parameter	类型	说明	可空
Protocol Parameters				

Notification type	notify_type	String	Notification type, value : trade_status_sync.	N
Notification ID	notify_id	String(34)	The ID for a particular notification. It can be used by the partner system to verify the notification	N
Notification time	notify_time	Timestamp	Time (Alipay' s time zone) : YYYY-MM-DD hh:mm:ss	N
Signature	sign	String	See: Signature mechanism	N
Encode Charset	_input_charset	String	The charset on partner website like utf-8、gbk、gb2312 etc.	N
Signature Type	sign_type	String	See: Signature type	N
Business Parameters				
Partner transaction ID	out_trade_no	String(64)	A numbered transaction ID (Unique inside the partner system)	N
Status	trade_status	String(32)	One of following two value: TRADE_FINISHED TRADE_CLOSED	N
Transaction ID	trade_no	String(28)	The transaction ID on the Alipay system	N
Currency	currency	String(10)	Abbreviated currency name	N
Amount	total_fee	Number(8,2)	Range: 0.01 ~ 1000000.00	N

Response sample

```

http://www.notifyurl.com/backend?notify\_id=13f1e773aeb299e26eb5d02bbb71219d50&notify\_type=trade\_status\_sync&sign=275a3wdfu8s9qghg3k4gfihxza0e9j09&trade\_no=2014061800001000100000574688&total\_fee=0.10&out\_trade\_no=4028608899131221&currency=HKD&notify\_time=2013-09-0210:41:43&trade\_status=TRADE\_FINISHED&sign\_type=MD5

```

2.2.2. Notification Verification

It is necessary for the partner system to verify the integrity and correctness of Alipay' s notification. In the interest of system' s healthiness, it is strongly recommended that the partner system apply such verification mechanism.

In order to guarantee the interface will be used legally, the partner system can only verify the notifications within the last 1 minute (this configuration is subject to change, and such change will not be notified).

The parameters :

Name	Parameter	Type	Description	Optional
Service Name	service	String	notify_verify.	N
The partner system	partner	String(16)	The ID of the partner on the Alipay system.	N
Notify ID	notify_id	String(34)	The ID of Alipay system' s notification.	N

HTTPS-based notification verification interface:

The program sends a HTTPS request according to the specification, and receives the response once the request has been completed. The possible outcome of the response is enumerated in the Output Result List. In order to use this interface, the HTTPS protocol must be supported by the website, otherwise HTTP-based notification verification interface should be used.

Gateway URL :

<https://mapi.alipay.com/gateway.do>

An example of notification verification request:

https://mapi.alipay.com/gateway.do?service=notify_verify&partner=1234567890¬ify_id=abcdefghijklmnopqrst

response once the request has been completed. The possible outcome of the

HTTP-based notification verification interface:

The program sends a HTTP request according to the specification, and receives the response is enumerated in the Output Result List.

Gateway URL :

http://notify.alipay.com/trade/notify_query.do

An example of notification verification request:

https://mapi.alipay.com/trade/notify_query.do?partner=1234567890¬ify_id=abcdefghijklmnopqrst

Notification verification output result list :

Output result	Description
invalid	The input parameter is invalid.
true	Authentication passed.
false	Authentication failed.

3.Interfaces

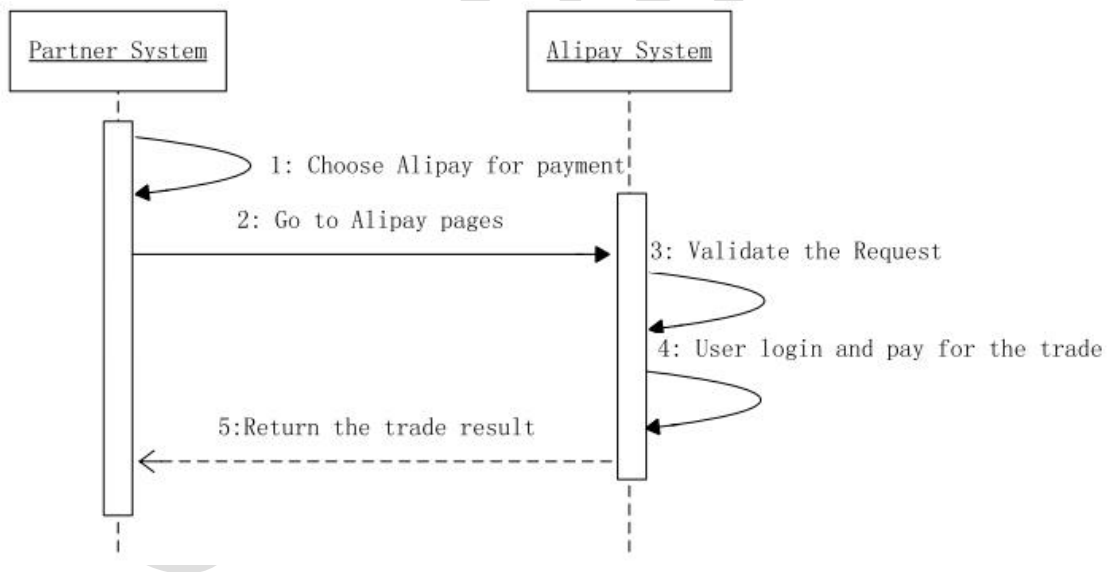
3.1. The payment interface

3.1.1. Business function

Once the acquiring buyer has bided on a goods with foreign currency, and proceeds to the Alipay system for payment, the partner system invokes the Alipay oversea acquiring interface, and transfer to the Alipay's cashier page. The Alipay system will automatically display the price in RMB to the buyer.

3.1.2. Interaction Mode

Request/Respond mode, Page re-directed type.



3.1.3. Request Parameters

Name	Parameter	Type	Description	Optional
Protocol Parameters				
Service Name	service	String	service=create_forex_trade in order to redirect to a mobile friendly page, please use service=create_forex_trade_wap	N
Partner	partner	String(16)	The ID of the partner on the Alipay system.	N
Notification URL	notify_url	URL(200)	The URL for receiving notifications after the payment process.	N
Return URL	return_url	URL(200)	After the payment transaction is done, the result is returned via the URL (only suitable for interfaces with directly returned results).	Y
_input_charset	Encode Charset	String	The charset on partner website like utf-8、gbk、gb2312 etc.	N
Signature	sign	String	See: Signature mechanism	N
Type of signature	sign_type	String	See: Signature type	N

Business Parameters				
Goods name	subject	String(256)	The name of the goods. Cannot contain special symbols	N
Goods description	body	String(400)	A detailed description of the goods. Cannot contain special symbols	Y
Outside trade ID	out_trade_no	String(64)	A numbered transaction ID (Unique inside the partner system)	N
Currency	currency	String(10)	The settlement currency merchant named in contract. Refer to abbreviation of currencies	N
Payment sum	total_fee	Number(8,2)	A floating number ranging 0.01 ~ 1000000.00 If use the rmb_fee, don't use the total_fee	N
Rmb sum	rmb_fee	Number	0.01 ~ 1000000.00 Use this parameter to replace total_fee if partner wish to price their product in RMB. If use the total_fee, don't use the rmb_fee.	Y
Order create time	order_gmt_create	Date	YYYY-MM-DD HH:MM:SS please use China local time in order to sync with Alipay	Y

			sustem , this parameter can only be used with order_valid_time together in order to control the valid time from redirect to login	
Order valid time	order_valid_time	String(5)	Maximum is 21600 , unit is second , this parameter can only be used with order_gmt_create together in order to control the valid time from redirect to login	Y
Transaction cancel timing	timeout_rule	String(10)	Options: 5m 10m 15m 30m 1h 2h 3h 5h 10h 12h. default is 12h. this parameter control the valid time from login to completion	Y
Authorization Token	auth_token	String(40)	The secure token from accessing express login API Mandatory for express login	Y
Supplier	supplier	String(16)	seller name shown in the cashier	Y
Sell ID	seller_id	String(64)	For PSG only The unique ID for PSG to identify a sub-merchant.	Normal Merchant : Y FOR PSG:N
Sell Name	seller_name	String(128)	For PSG only The name of sub-merchant who initiate the request.	Normal Merchant : Y

				FOR PSG:N
Sell Industry	seller_indus try	String(128)	For PSG only The industry type of sub-merchant who initiate the request.	Normal Mechant : Y FOR PSG:N

Attention1 : In the case a merchant wish to price their products in RMB, the merchant shall not change the value of the currency parameter, instead he shall just replace the total_fee with rmb_fee, and then his trade will appears in RMB in front of user.

Attention2 : The request parameters can only be accepted by the Alipay system if they are signed according to the signature mechanism specified in this document. The parameter "timeout_rule", the default value is 12h. If you want to use this parameter to change timing, you need to contact Alipay technical. Otherwise you will have an error.

A full payment request example:

https://mapi.alipay.com/gateway.do?total_fee=13¤cy=USD¬ify_url=http%3A%2F%2Fwww.tabao.com&service=create_forex_trade&agent=2088002007018916&partner=2088002007018916&out_trade_no=16177126201&subject=42560013718&return_url=http%3A%2F%2Fwww.tabao.com&body=71819701647&sign=UzZ7bRelBtSVB63jsfI9vbu3d21442SJV88po0XvIptqWGM4rxP5EQ%3D%3D&sign_type=DSA

3.1.4. Error list

Error Code	Description
ILLEGAL_SIGN	Illegal signature
ILLEGAL_ARGUMENT	Illegal parameters
HASH_NO_PRIVILEGE	No sufficient rights to complete the query
ILLEGAL_SERVICE	Service Parameter is incorrect

ILLEGAL_PARTNER	Incorrect Partner ID
ILLEGAL_SIGN_TYPE	sign_type parameter is incorrect
FOREX_MERCHANT_NOT_SUPPORT_THIS_CURRENCY	Cannot support this kind of currency
ILLEGAL_SECURITY_PROFILE	Cannot support this kind of encryption
REPEAT_OUT_TRADE_NO	out_trade_no parameter is repeated
ILLEGAL_CURRENCY	Currency parameter is incorrect
ILLEGAL_PARTNER_EXTERFACE	Service is not activated for this account
SYSTEM_EXCEPTION	Contact Alipay technical support for help
ILLEGAL_TIMEOUT_RULE	Timeout_rule parameter is incorrect

3.2. Refundament file uploading interface

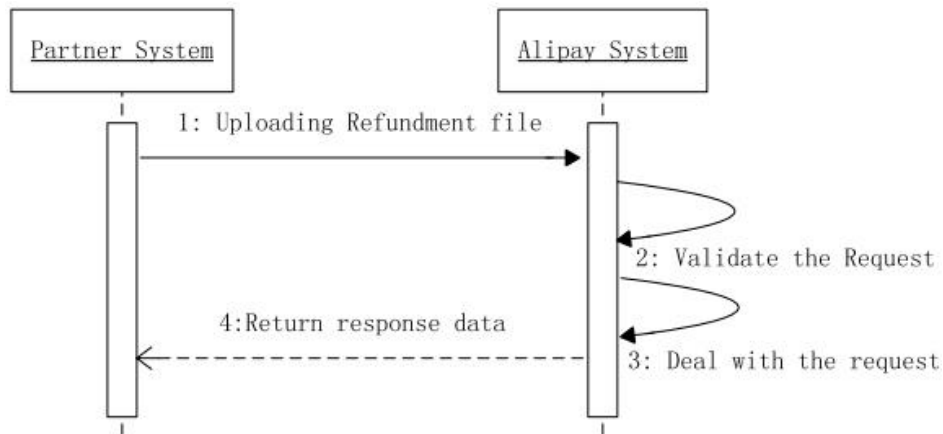
3.2.1. Business function

A refundament is a process during which the oversea merchant partner, represented by Alipay, returns a certain amount of fund to the buyer. The refundament action is requested by the partner, which authorizes the Alipay to return the unliquidated fund to the acquiring buyer.

When the partner initiates a refund process, the refundament file is required to be uploaded to the Alipay system using the refundament file uploading interface. Currently only .TXT and .XLS formats which strictly follow the data requirement are supported. If the file is in .XLS format, all the cells in the sheet are of text type, except the "refund sum" cell being numeric type. There are no headings in the file, each line represents a refundament. The data is arranged according to their order, and each field is separated by the delimiter "|" .

3.2.2. Interaction Mode

Request/Respond Interaction, system invocation



3.2.3. Request Parameters

Name	Parameter	type	Description	Optional
Protocol parameters				
Service name	service	String	service=forex_refund_file	N
Partner	partner	String(16)	The ID of the partner on the Alipay system.	N
Signature	sign	String	See: Signature mechanism	N
Signature type	sign_type	String	See: Signature Type MD5 is used for refundment.	N

Attention : The request parameters can only be accepted by the Alipay system if they are signed according to the signature mechanism specified in this document.

The refundment file is attached as a part of the HTML form. The input name for the uploading file is "refund_file" , and does not need to be digitally signed, e.g

```

<input type="hidden" name="partner" value="2088002007018916" >
<input type="hidden" name="service" value="forex_refund_file" >
<input type="file" name="refund_file" >

```

3.2.4. File Format

Order	Field name	Type	Description
-------	------------	------	-------------

1.	Partner ID	String(16)	The ID of the partner on the Alipay system.
2.	New Partner transaction ID	String(32)	A unique identification for the refund transaction
3.	Old Partner transaction ID	String(32)	The ID for the original transaction.
4.	Currency	String(10)	See Appendix 1
5.	Refund sum	Number(8,2)	
6.	Refund Transaction time	String(14)	YYYYMMDDHHMMSS
7.	Reason for refundment	String(255)	

An example of the refundment file:

```
2088002007018916|23342347424|23342347875|USD|112.11|20080907193421|reason
```

3.2.5. Error Code List

Error Code	Description
Merchant ID incorrect	Partner ID is not consistent with the partner ID in the uploading file
Refundment valid date exceed	Exceed refundable period
File format incorrect	Incorrect file format
File content repeated	Repeated file content
Data records limit of 1000	Exceed 1000 entries of the file content
Data format incorrect	Incorrect data format
Connected exception, please try later	Network exception
Over amount of the original trade error	Refund amount exceed the original amount
The system can't find the file	System cannot find the uploading file
Illegal argument	Incorrect parameter
File name repeated	Repeated file name
System exception	System exception

File name is null	File name is null
Different currency	Currency not consistent
File is null	Null content of the uploading file
Request repeated	Repeated refund request
The original trade order does not exist	The original trade order does not exist
Refundment Valid Date Exceed	Exceed refundable period

3.3. Reconciliation file downloading interface

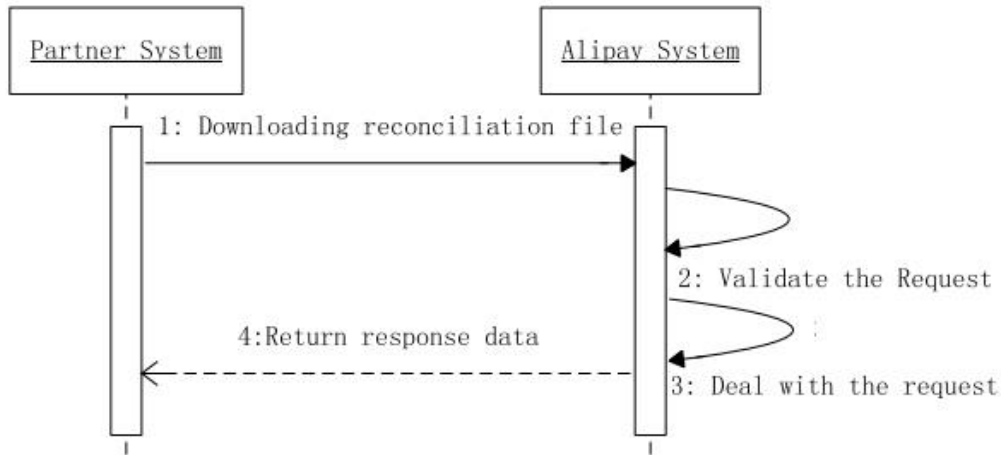
3.3.1. Business function

After certain period of time, the oversea merchant partner needs to verify the past transaction details in order to make sure the correctness and integrity of transaction records. This can be performed by using the reconciliation file downloading interface. The starting and end dates should be provided within a 10-day interval. Same-day transaction details cannot be accessed by this interface.

Currently the interface only supports .TXT file to be downloaded. The file contains no headings for data fields. Each data field is separated by "|", following the order given in the specification (see below).

3.3.2. Interaction Mode

Request/Respond Interaction, system invocation.



3.3.3. Request Parameters

Name	Parameter	Type	Description	Optional
Protocol parameters				
Service name	service	String	service=forex_compare_file	N
Partner	partner	String(16)	The ID of the partner on the Alipay system.	N
Signature	sign	String	See: Signature mechanism	N
Signature type	sign_type	String	See: Signature type	N
Business parameters				
Start date	start_date	String	The start date of the reconciliation period, formatted as YYYYMMDD	N
End date	end_date	String	The end date of the reconciliation period, formatted as YYYYMMDD	N

Attention : The request parameters can only be accepted by the Alipay system if they are signed according to the signature mechanism specified in this document.

3.3.4. Downloaded file format

Order	Field	Type	Description
1.	Partner transaction ID	String(32)	A numbered transaction ID (Unique inside the partner system)
2.	Amount	Number(8,2)	The amount of fund in foreign currency.
3.	Currency	String(10)	Abbreviated currency names.
4.	Payment Time	String(14)	YYYYMMDDHHMMSS Empty if the status being "failed" or "waiting" .
5.	Settlement Time	String(14)	YYYYMMDDHHMMSS Empty if unliquidated
6.	Transaction type	String(1)	Normal transaction : P Refundament transaction : R
7.	Service charge	Number(8,2)	The amount of service charge.
8.	Status	String(1)	Normal transaction: P : Payment made L: Liquidated Refundament transaction : F: failed L:Liquidated
9.	Remark	String(50)	An optional field. If the transaction is refundament, the refund request time should be added into the remark field in YYYYMMDDHHMMSS format.

An example of reconciliation file :

```
23342347424|112.11|USD|20070616090001||P|2.24|P|Unliquidated
23342343423|102.32|USD|20070615090001|2007622090001|P|2.04|L|Liqu
idated
```

3.3.5. Error Code List

Error Code	Description
Over limit balance amount record	Exceed the maximum entries : 100000
System exception	System exception

Merchant ID incorrect	Incorrect partner ID
Finish date not ahead of today	Finish date not ahead of today
No balance amount data in the period	Do not have any trade during the period
Over 10 days to date period	Over 10 days to date period
Finish date ahead of begin date	Finish date ahead of begin date
Illegal date period	Null in date field
Date format incorrect YYYYMMDD	Incorrect format of the date ,YYYYMMDD
Internet connected exception ,please try later	Network exception

3.4. Single refund interface

3.4.1. Business function

The refund file upload interface is batch refund function interface. This single refund interface support refund once a time.

3.4.2. Request Parameters

Name	Parameter	Type	Description	Optional
Protocol Parameters				
Service Name	service	String	service=forex_refund	N
Partner	partner	String(16)	The ID of the partner on the Alipay system.	N
Input_charset	_input_charset	String	Default is GBK Or utf_8	Y
Signature	sign	String	See: Signature mechanism	N

Type of signature	sign_type	String	See: Signature type	N
Business Parameters				
Refund no	out_return_no	String(64)	The new ID which created for refund.	N
Old Partner transaction ID	out_trade_no	String(64)	The ID for the original transaction.	N
Refund sum	return_amount	Number(15)		N
Currency	currency	String(10)	Refer to abbreviation of currencies	
Refund Transaction time	gmt_return	String(14)	YYYYMMDDHHMMSS Beijing Time	N
Reason for refundament	reason	String(100)		N
Refund RMB amount	return_rmb_amount	Number(15)	This parameter related the RMB price function in the payment interface	Y

3.4.1. Response output

Normal response

```
<?xml version="1.0" encoding="UTF-8" ?>
<alipay>
<is_success>T</is_success>
</alipay>
```

Error response:

```
<?xml version="1.0" encoding="UTF-8" ?>
<alipay>
<is_success>F</is_success>
<error>REPEATED_REFUNDMENT_REQUEST</error>
</alipay>
```

Request Example:

```
https://mapi.alipay.com/gateway.do?reason=refund+test&return_amount=0.1&sign_type=MD5&gmt_return=20130812094000&out_trade_no=iamdjc456&currency=HKD&sign=8e
```

9004797d3c7112b907bd184d775662&_input_charset=UTF-8&out_return_no=test005&service=forex_refund&partner=2088701998606387

3.4.2. Error list:

Returned result	Description (无需翻译)
PURCHASE_TRADE_ NOT_EXIST	购汇交易不存在
REFUNDMENT_VALI D_DATE_EXCEED	退款有效期超过退款周期
SYSTEM_EXCEPTIO N	系统异常
ILLEGAL_ARGUMEN T	参数不正确
REPEATED_REFUND MENT_REQUEST	退款申请重复发起
RETURN_AMOUNT_ EXCEED	退款金额超限
CURRENCY_NOT_S AME	币种不一致（与创建交易时的币种不一致）

3.5. Refund cancellation interface

3.5.1. Business function

If merchant refund a transaction, and the refund is in “wait” status, can cancel this refund by this refund cancellation interface.

3.5.2. Request parameter

Name	Parameter	Type	Description	Optional
Protocol parameters				

Service name	service	String	service= forex_cancel_refund	N
Partner	partner	String(16)	The ID of the partner on the Alipay system	N
Charset	_input_charset	String	GBK,utf-8	N
Signature	sign	String	See: Signature mechanism	N
Type of signature	sign_type	String	See: Signature type	N
Business parameter				
Refund ID	out_return_no	String(64)	A unique identification for the refund transaction	N
Old Partner transaction ID	out_trade_no	String(64)	The ID for the original transaction.	N
Refund sum	return_amount	Number(8,2)		N
Currency	currency	String(10)	See Appendix 1	
Reason of Cancellation	memo	String(80)		Y

Example:

```
https://mapi.alipay.com/gateway.do?service=forex_cancel_refund&partner=2088002464631181&_input_charset=utf-8&sign_type=DSA&sign=_p_w_l_h_j0b_gd_aejia7n_ko4_m%252Fu_w_jd3_nx_s_k_mxus9_hoxg_y_r_lunli_pmma29_t_q%3D%3D&out_return_no=205485121225&out_trade_no=205485121223&return_amount=2.15&currency=USD&memo=%E5%B7%B2%E7%BA%BF%E4%B8%8B%E9%80%80%E6%AC%BE%E7%BB%99%E4%B9%B0%E5%AE%B6%EF%BC%8C%E6%89%80%E4%BB%A5%E6%92%A4%E9%94%80%E9%80%80%E6%AC%BE%E7%94%B3%E8%AF
```

%B7%E3%80%82

3.5.3. Error Code List

Error Code	Description
SYSTEM_EXCEPTION	Alipay system error
REFUND_RECORD_NOT_EXIST	Do not have this refund record
ILLEGAL_ARGUMENT	Incorrect parameter
NOT_ALLOW_CANCEL_REFUND	Refund not allowed to cancel

3.5.4. Response parameter

Name	Parameter	Type	Description	Optional
protocol parameter				
is_success	is_success	String	T/F	N

Example:

```
<?xml version="1.0" encoding="utf-8"?>
<alipay>
  <is_success>T</is_success>
</alipay>
```

Error code

Returned result	Description (无需翻译)
SYSTEM_EXCEPTION	Alipay system error
REFUND_RECORD_NOT_EXIST	Original refund request not exists
ILLEGAL_ARGUMENT	Incorrect request parameters
NOT_ALLOW_CANCEL_REFUND	Cancel refund request denied

3.6. Settlement file downloading interface

3.6.1. Business function

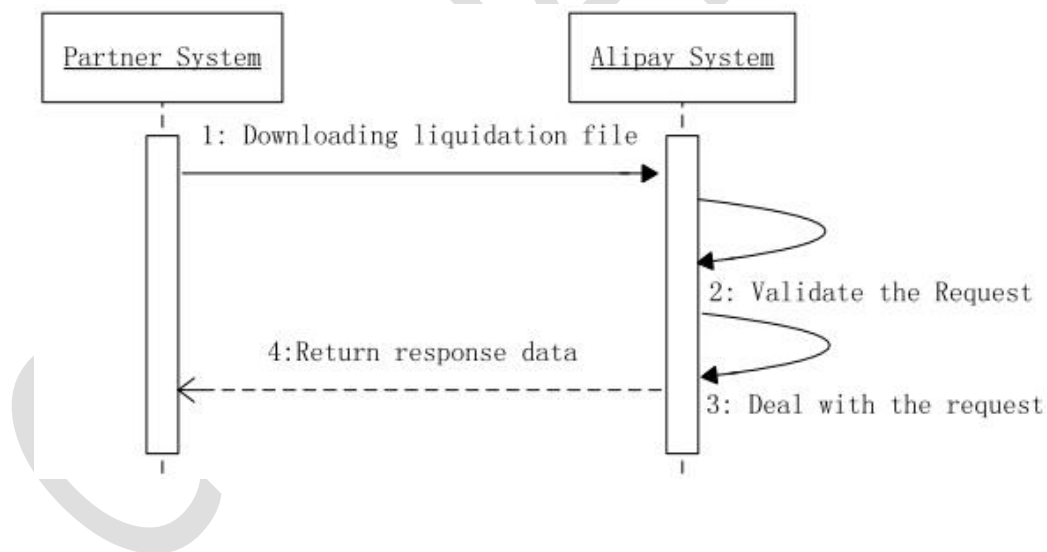
The oversea merchant partner needs to verify the past settlement details in order to

make sure the correctness and integrity of data records from the previous settlement cycle. This can be performed by using the settlement file downloading interface. The starting and end dates should be provided within a 10-day interval. Same-day transaction details cannot be accessed by this interface.

Currently the interface only supports .TXT file to be downloaded. The file contains no headings for data fields. Each data field is separated by "|", following the order given in the specification (see below).

3.6.2. Interaction Mode

Request/Respond Interaction, system invocation.



3.6.3. Request Parameters

Name	Parameter	Type	Description	Optional
Protocol Parameters				
Service Name	Service	String	service=forex_liquidation_file	N
Partner	partner	String(16)	The ID of the partner on the Alipay system.	N
Signature	sign	String	See: Signature mechanism	N
Signature type	sign_type	String	See: Signature type	N
Business Parameters				
Start date	start_date	String	The start date of the settlement period, formatted as YYYYMMDD	N
End date	end_date	String	The end date of the settlement period, formatted as YYYYMMDD	N

Attention : The request parameters can only be accepted by the Alipay system if they are signed according to the signature mechanism specified in this document.

3.6.4. File Format

Order	Field	Type	Description
1	Partner transaction ID	String(32)	A numbered transaction ID (Unique inside the partner system)
2	Amount	Number(8,2)	The amount of fund in foreign currency.
3	Currency	String(10)	Abbreviated currency names.
4	Payment Time	String(14)	YYYYMMDDHHMMSS Empty if the status being "failed" or "waiting" .

5	Settlement Time	String(14)	YYYYMMDDHHMMSS Empty if unliquidated
6	Transaction type	String(1)	Normal transaction : P Refundament transaction : R
7	Service charge	Number(8,2)	The amount of service charge.
8	Status	String(1)	L : liquidated
9	Remark	String(50)	An optional field. If the transaction is refundament, the refund request time should be added into the remark field in YYYYMMDDHHMMSS format.

An example of settlement file content:

```
23342343423|102.32|USD|20070615090001|2007622090001|P|2.04|L|Liquidated
```

3.6.5. Error Code List

Error Code	Description
Over limit balance amount record	Exceed the maximum entries : 100000
System exception	System exception
Merchant ID incorrect	Incorrect partner ID
Finish date not ahead of today	Finish date not ahead of today
No balance amount data in the period	Do not have any trade during the period
Over 10 days to date period	Over 10 days to date period
Finish date ahead of begin date	Finish date ahead of begin date
Illegal date period	Null in date field
Date format incorrect YYYYMMDD	Incorrect format of the date ,YYYYMMDD
Internet connected exception ,please try later	Network exception

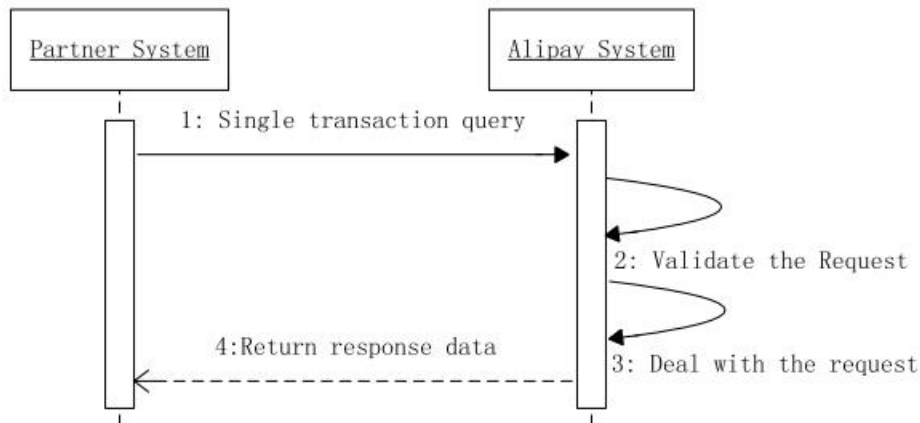
3.7. Single Transaction Query Interface

3.7.1. Business Function

If the partner wants to obtain information on a particular transaction, the Alipay Single Transaction Query Interface can be used. Upon request, the interface returns the transaction's ID, outside ID, goods name, transaction status and if the transaction has been successful.

3.7.2. Interaction Mode

Request/Respond Interaction, system invocation.



3.7.3. Request Parameters

Name	Parameter	Type	Description	Optional
Protocol Parameters				
Service Name	Service	String	service=single_trade_query	N
Partner	partner	String(16)	The ID of the partner on the Alipay system.	N
Signature	sign	String	See: Signature mechanism	N
Signature	sign_type	String	See: Signature type	N

Type				
Parameter encoding charset	_input_charset	Default: GBK	The charset used in encoding traffic data between the partner system and the Alipay system. The partner system can specify the desired charset and encodes the data accordingly, while the Alipay system will follow the charset setting accordingly in the response.	N
Business Parameters				
Outside trade ID	out_trade_no	String(64)	A numbered transaction ID (Unique inside the partner system)	N

Attention : The request parameters can only be accepted by the Alipay system if they are signed according to the signature mechanism specified in this document.

3.7.4. Response Parameters

Name	Parameter	Type	Description	Optional
Protocol Parameters				
Is successful	is_success	String	T/F	N
Business Parameters				
Alipay transaction ID	trade_no	String(16)	The ID of the transaction inside the Alipay' s system	N
Partner transaction ID	out_trade_no	String(64)	The ID of the transaction inside the partner' s system	N
Goods name	subject	String(256)		N
Status	trade_status	String	See: Transaction Status List	N

A normal response in XML:

```

<?xml version="1.0" encoding="gb2312"?>
<alipay>
  <is_success>T</is_success>
  <!--The request parameters-->
  <request>
    <param name=""></param>
    <param name=""></param>
  </request>
  <!--The reponse -->
  <response>
    <trade>
      <trade_no></trade_no>
      <out_trade_no></out_trade_no>
      <subject></subject>
      <trade_status></trade_status>
    </trade>
  </response>
</alipay>
  
```

An error response in XML:

```

<?xml version="1.0" encoding="gb2312"?>
<alipay>
  <is_success>F</is_success>
  <error>error_code</error>
</alipay>
  
```

Error Code	Description
ILLEGAL_SIGN	Illegal signature
ILLEGAL_ARGUMENT	Illegal parameters
HASH_NO_PRIVILEGE	No sufficient rights to complete the query
ILLEGAL_SERVICE	Service Parameter is incorrect
ILLEGAL_PARTNER	Incorrect Partner ID
ILLEGAL_SIGN_TYPE	Signature is of wrong type.
ILLEGAL_CHARSET	Illegal charset

3.8. Exchange rate file downloading interface

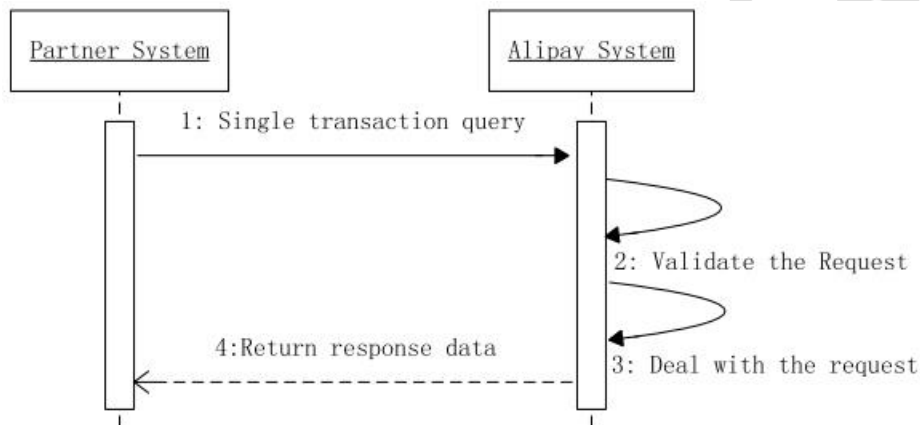
3.8.1. Business function

Some merchants want to get the exchange rate from Alipay, and this interface can meet this requirement.

Currently the interface only supports .txt file to be downloaded .The file contains no headings for data fields, and each data field is separated by “|”

3.8.2. Interaction Mode

Request/Respond interaction, system invocation.



3.8.3. Request parameters

Name	Parameter	Type	Description	Optional
Protocol Parameters				
Service Name	Service	String	service=forex_rate_file	N
Partner	partner	String(16)	The ID of the partner on the Alipay system.	N
Signature	sign	String	See: Signature mechanism	N
Signature Type	sign_type	String	See: Signature type	N

3.8.4. File Format

Order	Field	Type	Description
-------	-------	------	-------------

1	Date	String(8)	Rate releasing date:YYYYMMDD
2	Time	String(6)	Rate releasing time:HHMMSS
3	Currency	String(3)	Abbreviated currency names.
4	Rate	String(10)	

Example: 20130418|101311|USD|6.235788

3.8.5. Error list:

Returned result	Description (无需翻译)
System exception	Alipay system error
Merchant ID incorrect	Invalid value of the partner parameter
File empty	Null content of the file

4. Signature Algorithms

4.1. Generate Pre-sign string

4.1.1. Parameters to sign

In the list of request parameters, all of them need to be signed except sign、sign_type . (in some case even sign_type also need to be signed)

In the list of response parameters, all of them need to be signed except sign、sign_type.

4.1.2. Generate Pre-sign string

For following data set:

```
string[] parameters={
    "service=create_forex_trade",
    "partner=2088101568338364",
    "_input_charset=gbk",
    "return_url= http://www.test.com/alipay/return_url.asp",
    "out_trade_no=6741334835157966",
    "currency=USD",
    "subject=a book ",
    "body=nice book",
    "total_fee=100"
};
```

Rearrange parameters in the data set alphabetically

And connect rearranged parameters with &:

```
_input_charset=gbk&out_trade_no=6741334835157966&partner=2088101568338364&payment_type=1&return_url=http://www.test.com/alipay/return_url.asp&currency=USD&service=create_forex_trade&subject=a book&body=nice book&total_fee=100
```

This is the pre-sign string



Notice:

Notice:

- Parameters without a value, can be excluded from sign;
- Charset in sign must be consistent with the charset used previously
- If `_input_charset` is passed, it also shall be signed.
- According to HTTP protocol, special character like `&`, `@` needs to do URL encoding, therefore the request receiver can get correct value. In this situation, pre-sign string shall be the original value instead of encoded one. For example: calling a particular API need to sign the parameter email, the pre-sign string shall be `email=test@msn.com`, rather than `email=test%40msn.com`.

4.2. Signature generation

4.2.1. MD5 signature

Private Key is necessary for MD5 signature. The MD5 private key is the 32-byte string which is composed of English letters and numbers. Partner can log on the Merchant Service Center (<https://b.alipay.com>) to install the digital certificate and click "Trade Security Code" ("交易安全校验码") in the menu of "Technical Service" ("技术服务") to check the private key.

- Sign for request

After the partner receives the pre-sign string during requesting, the private key should be appended to the pre-sign string to generate the new string. Then this new string would be calculated with the MD5 signature algorithm by the MD5 signature function. Thus, the result 32-byte string is the signature result string. (the value is given to parameter "sign")

- Signature Verification for response

After receiving the pre-sign string during responding from Alipay system, the next step is the same as the procedure of Sign for request. When the 32-byte signature result string is generated, it should be verified whether the value is equal to the value of the parameter "sign". If equal, the verification would be passed.

4.2.2. DSA RSA signature

Both private key and public key are necessary for DSA or RSA signature. Both private key and public key are generated with OPENSSL by partner. Partner and Alipay need to exchange their own public key. Therefore, partner uses Alipay public key and partner private key.

- Sign for request

After the partner receives the pre-sign string during requesting, the partner private key and the pre-sign string are used in the RSA or DSA signature algorithm by the RSA or DSA signature function to get the result string. (the value is given to parameter "sign")

- Signature Verification for response

After receiving the pre-sign string during responding from Alipay system, the Alipay public key, the pre-sign string and the parameter "sign" are used in the RSA or DSA signature asymmetric algorithm by the RSA or DSA signature function to accomplish the signature verification.

5. How to verify Alipay Response

Purpose

Validate a notification is from Alipay Server, ensure the authenticity of the response data.

Mechanism

Acquire the parameter notify ID (notify_id), assemble it into a URL according to Alipay requirement, e.g.:

https://mapi.alipay.com/gateway.do?service=notify_verify&partner=2088002396712354¬ify_id=RqPnCoPT3K9%252Fvwbh3I%252BFioE227%252BPfNMI8jwyZqMIiXQWxhOCmQ5MQO%252FWd93rvCB%252BaiGg

Through this request URL, partner can acquire result data from Alipay server with the method of programming to simulate the http request interacting with Alipay server.

If returned information is true, verification success, otherwise fail.

6.Acquiring Use Case

6.1. Scenario

An oversea buyer Nana owns an account on Alipay, and just found a right product on Partner' s website that she would like to purchase. However when she proceeds to check-out, she found herself unable to make the payment in foreign currency. Therefore she decides to use Alipay to complete the transaction.

After Nana chose Alipay to make the payment, the Partner system invokes the Alipay system' s payment interface (See: Payment Interface). Nana is then redirected to the Alipay' s website where she provides her account name and password. If there is sufficient credit on her Alipay account, the payment can be made successfully; otherwise, she will be prompted to use other Alipay products to top-up her account first.

After the payment is made, the Alipay system will send notifications to the Partner system. Once the partner system is notified (See: Alipay notification parameters), an authentication request will be sent to the Alipay system to verify the notification (See: Notification Verification). Once the Alipay system has confirmed the notification was genuine, the partner system will act accordingly, e.g. start goods delivery to Nana, and return the transaction results to the Alipay system.

The partner system can also query about the transaction made by Nana using the

Partner transaction ID (out_trade_no) to check if Nana has successfully made the payment (See: Single Transaction Query Interface). If the payment has been made, the goods will be delivered to Nana.

Nana just received the package that she has been long waiting for, but she was disappointed to find out it was not the right brand she ordered. After negotiation, the partner has agreed to refund her on this transaction. The partner system will invoke the refundment file uploading file interface to complete the refundment action (See: Refundment file uploading interface).

Every day, there are lots of such transactions like Nana's take place on Partner's site. The partner can check the past transaction information such as transaction/refundment records by downloading the reconciliation file (See: Reconciliation file downloading interface), by providing the start and the end date.

When the partner's balance reaches certain settlement quota, the Alipay will authorize the bank to liquidate the fund to the partner. When the partner wants to check the settlement records from the previous settlement cycle, the partner system can invoke the settlement file downloading interface by providing the start and the end date (See: Settlement file downloading interface).

An interaction example

Once the buyer chose Alipay to make the payment, the partner system invokes the Alipay's payment interface. According to the specification, a working example looks like the following:

```
<input type=text name='service' value='create_forex_trade'>
```

```
<input type=text name='partner' value='2088002007018916'>
<input type=text name='notify_url' value='http://www.tabao.com'>
<input type=text name='return_url' value='http://www.tabao.com'>
<input type=text name='subject' value='goods'>
<input type=text name='body' value='goods'>
<input type=text name='currency' value='USD'>
<input type=text name='total_fee' value='13'>
<input type=text name='out_trade_no' value='6445714259642100'>
```

Suppose MD5 signature is being used, with the secret key abc123, then the request parameter should include: sign_type=MD5.

Pre-process for Signing

According to the signature mechanism, the parameters are rearranged as follows:

```
body=goods
currency=USD
notify_url=http://www.tabao.com
out_trade_no=6445714259642100
partner=2088002007018916
return_url=http://www.tabao.com
service=create_forex_trade
subject=goods
total_fee=13
```

The parameters then concatenated together using "&" :

```
body=goods&currency=USD&notify_url=http://www.tabao.c
om&out_trade_no=6445714259642100&partner=208800200701
8916&return_url=http://www.tabao.com&service=create_f
orex_trade&subject=goods&total_fee=13
```

Signature Generation

We have specified the MD5 algorithm with secret key abc123 shall be used in generating the signature (parameter sign). The secret key will be appended along the parameters:

```
body=goods&currency=USD&notify_url=http://www.tabao.co
```

```
m&out_trade_no=6445714259642100&partner=2088002007018916&return_url=http://www.tabao.com&service=create_forex_trade&subject=goods&total_fee=13abc123
```

The MD5 (parameter sign_type) is applied to the parameters, and the result is put into the parameter sign as its value:

```
sign=4b04730e2e8a0a034fa66c509030f8af
```

Request Initiation

The partner system initiates a request to the Alipay system by sending data to the gateway URL according to the Request/Respond mode specified in the document.

```
https://mapi.alipay.com/gateway.do?body=goods&currency=USD&notify_url=http%3A%2F%2Fwww.tabao.com&out_trade_no=6445714259642100&partner=2088002007018916&return_url=http%3A%2F%2Fwww.tabao.com&service=create_forex_trade&sign=564f1b8a37cb8c7bcfabd25d44138076&sign_type=MD5&subject=goods&total_fee=13
```

Alipay' s response

After the Alipay system completed processing the request, the response will also have the sign and sign_type parameters. The partner system calculates the sign value according to the sign_type, and verifies the sign value that Alipay system returned. It should be noted that the partner system will need to decode the parameter values before checking the signature.

7. Appendix

7.1. Currency List

Abbreviation	Currency	Decimal
GBP	British Sterling	2
HKD	Hong Kong Dollar	2
USD	U.S. Dollar	2

CHF	Confederation Helvetica 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 Rouble	2
MOP	Macau Pataca	2

7.2. Notification Result List

Result	Description
Success	Delivery successful, notification terminates.
Fail	Delivery failed, retry.

7.3. Transaction Status List

Status	Description
WAIT_BUYER_PAY	The buyer is expected to make the payment
TRADE_FINISHED	The payment has been made, transaction closes.
TRADE_CLOSED	Transaction closed without payment.

7.4. Refundament file uploading response result list

Returned result	Description (无需翻译)
File name repeated	文件名重复
File content repeated	文件内容重复
File format incorrect	文件格式错误
File empty	文件内容为空

The system can't find the file	文件没找到
Data format incorrect	数据格式错误
Data records limit of 1000	文件数据条数超限
Request repeated	退款申请重复发起
Refund request repeated to one trade	一笔交易多次退款
Merchant ID empty	商户 ID 为空
Merchant ID incorrect	商户 ID 与退款文件的中的商户 ID 不一致
Upload successfully!	上传成功

7.5. Reconciliation file downloading response results

Returned result	Description (无需翻译)
Date format incorrect,YYYYMMDD	日期格式不正确, YYYYMMDD
Over 10 days to Date period	查询日期区间大于 10 天
Finish date ahead of begin date	查询 Start date 大于截至日期
Finish date not ahead of today	查询截至日期大于当天日期
Over limit Balance account record	记录条数超限
No balance account data in the period	此时间区间无对账结果

7.6. Settlement file downloading response results

Returned result	Description (无需翻译)
Date format incorrect,YYYYMMDD	日期格式不正确, YYYYMMDD
Over 10 days to Date period	查询日期区间大于 10 天
Finish date ahead of begin date	查询 Start date 大于截至日期
Finish date not ahead of today	查询截至日期大于当天日期
Over limit Balance account record	记录条数超限
No balance account data in the period	此时间区间无清算结果

7.7. Signature and Encryption Algorithms

7.7.1. MD5 Signature

As a simple hashing digest function, the MD5 was not originally designed to be a

signature generation algorithm; however, by appending the key (a common key known both to the sender and the receiver) into the data, the MD5 sum can be used as a form of digital signature.

For example, if the key is set to be :32#af*dsf , the partner system' s request should be formatted as:

```
email=test@msn.com&service=user_query32#af*dsf
```

However such scheme can only detect if the data has been modified or not. Due to the key is known to both sender and receiver; it cannot be used to authenticate the sender.

7.7.2. Bank list

Bank_Code	BANK_NAME
creditcard-ccb	China Construction Bank
creditcard-citic	China Citic Bank
creditcard-icbc	Industrial and Commercial Bank of China
creditcard-cmb	China Merchant Bank
creditcard-boc	Bank of China
creditcard-comm	Bank of Communications
creditcard-gdb	Guangdong Development Bank
creditcard-cib	Industrial Bank CO.LTD.
creditcard-ceb	China Everbright Bank
creditcard-spabank	Ping An Bank
creditcard-shbank	Bank of Shanghai
creditcard-spdb	Shanghai Pudong Development Bank
creditcard-abc	Agricultural Bank of China
debitcard-cmb-b2c	China Merchant Bank
debitcard-comm-b2c	Bank of Communications
debitcard-gdb-b2c	Guangdong Development Bank
debitcard-boc-b2c	Bank of China
debitcard-ceb-b2c	China Everbright Bank
debitcard-psbc-b2c	Postal Savings Bank of China
debitcard-spdb-b2c	Shanghai Pudong Development Bank
debitcard-sdb-b2c	Shenzhen Development Bank
debitcard-bjbank-b2c	Bank of Beijing
debitcard-wzcb-b2c	Bank of Wenzhou
debitcard-abc-b2c	Agricultural Bank of China
debitcard-ccb-mb2c	China Construction Bank
debitcard-icbc-b2c	Industrial and Commercial Bank of China
debitcard-cmbc-b2c	China Minsheng Banking CORP.LTD
debitcard-spabank-b2c	Ping An Bank