Lipisha Instant Payment Notification

A Synchronous 3-Way Handshake IPN Callback Protocol for Lipisha API Version 1.0

Authors
Lipisha Consortium Limited

Document Revision History

Date	Change	Revision	Author
09 Sep, 2012	Original draft. Please review and update.	1.0.0	Musyimi M.
08 Feb, 2013	Revised.	1.0.1	Musyimi M.
11 Feb, 2013	Revised.	1.0.2	Kasomo M.
19 Feb, 2013	Updated 3-Way Handshake	1.0.3	Kasomo M.
21 Feb, 2013	Revised.	1.0.3	Musyimi M.
1 Mar, 2013	Contribution of python example scripts from Caine Wanjau, a Takamoto integration specialist. Thanks!	1.0.4	Wanjau C. (Contributor)
1 Mar, 2013	Reviewed and updated corresponding references and errata.	1.0.4	Kasomo M.
1 Mar, 2013	Reviewed.	1.0.4	Musyimi M.

Table of Contents

Table of Figures

Overview

The Lipisha Instant Payment Notification (IPN) Callback is designed to help developers integrate third-party applications with the Lipisha Payment Platform (Lipisha).

This guide provides the technical specifications for integrating and configuring your application to notify you of payments received on Lipisha using HTTP POST and JSON.

Use the Lipisha IPN to get real-time or near real-time notification of mobile money transactions from various mobile money providers including Safaricom's Mpesa, Airtel Money, Orange Money and YuCash.

The Lipisha IPN implements a synchronous 3 Way handshake protocol to ensure accuracy and reliability.

This specification document describes the Lipisha 3 Way handshake IPN Callback Protocol.

1. Registering an IPN Callback URL

1.1 What is an IPN Callback URL?

The easiest way to receive a payment notification is registering a callback page that we can call whenever we get a payment on our account.

A callback page is a page on your server that we send payment notifications to and that you use to process the payment notifications that you have received in real-time.

1.2 How to setup your API credentials and callback

You can register a callback page in the ***Manage Settings*** under the ***Manage API*** section of your Lipisha account.

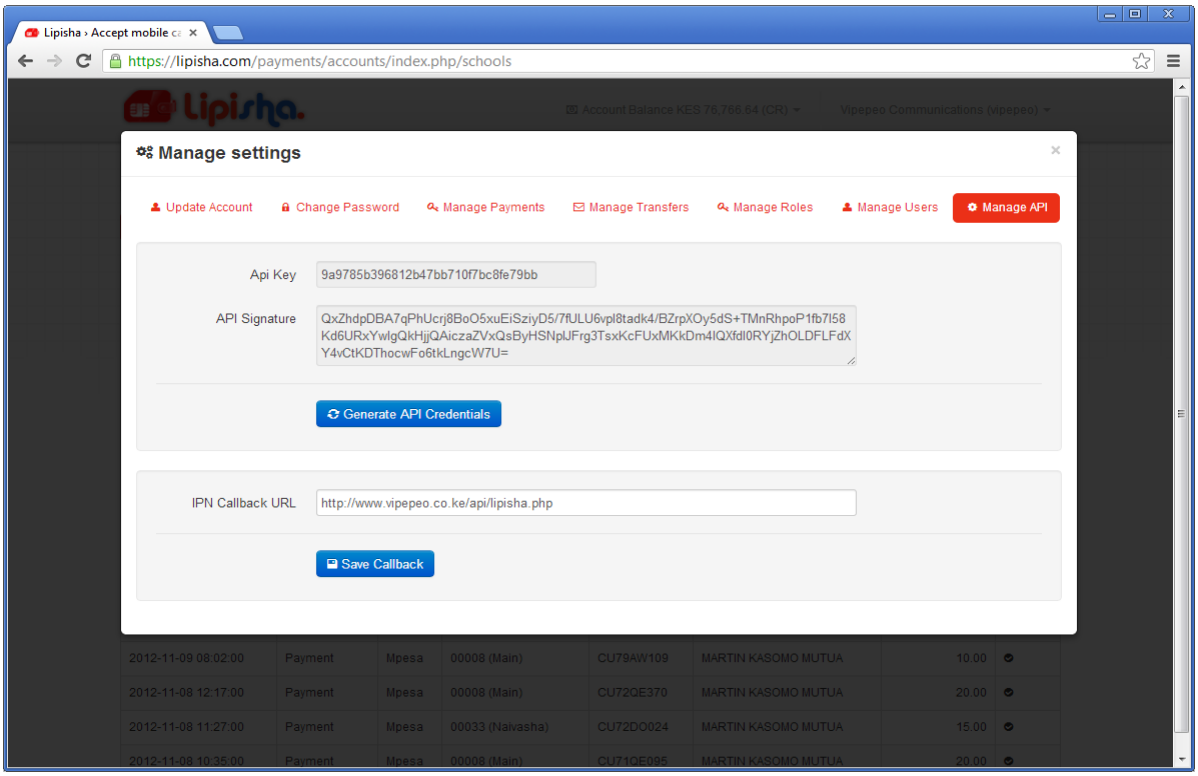

Figure 1: Shows the API credentials under Manage API in Lipisha Settings

1. Login to your Lipisha Account
2. Click on your account name at the top right corner of the screen to display menu
3. Click on ***Manage Settings***
4. On the screen that appears, click ***Generate API Credentials*** to generate API credentials if you don't already have them
5. Enter your callback page on the ***IPN Callback URL*** textbox
6. Finally click ***Save Callback*** to save the callback url page
7. That's it! Your API credentials and Callback URL are now ready!

2. The 3-Way Handshake IPN Callback Protocol

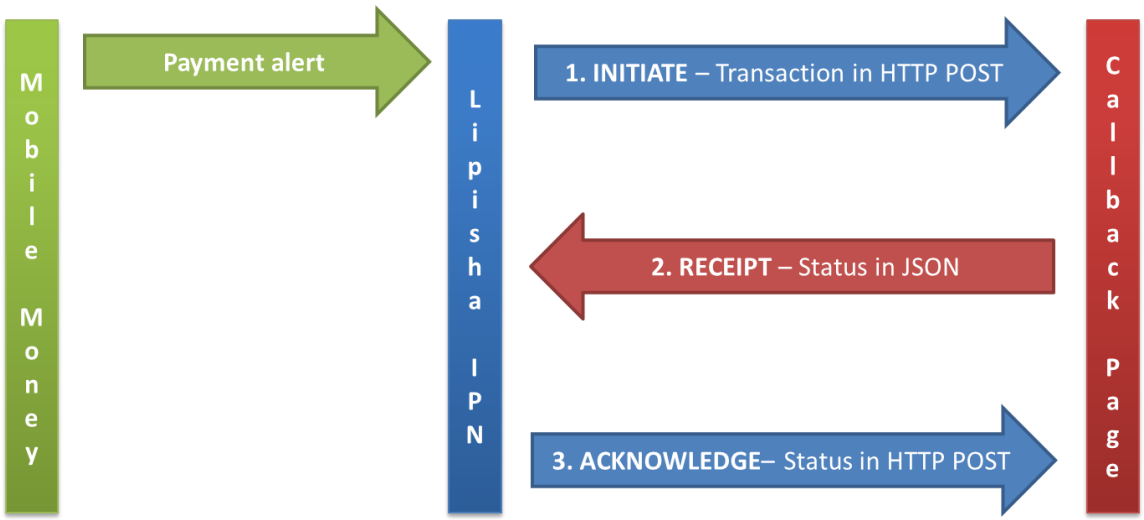

Figure 2: Shows the Lipisha 3-way Handshake IPN callback protocol

2.1 How does the 3-Way handshake protocol work?

1. Once you register your callback page, any payments that we receive belonging to you will trigger an instant payment notification that sends the transaction data to your callback page using a HTTP POST ***Initiate*** status.
2. Your callback page is expected to then respond with a JSON ***Receipt*** status.
3. On receiving your JSON receipt, a HTTP POST ***Acknowledge*** status will be sent back in the same session to complete the 3-way handshake.

2.2 Step 1 – Initiate

On receiving a payment, our IPN server will first send an ***Initiate*** status via HTTP POST to your callback page.

The HTTP POST ***Initiate*** status will contain the following parameters.

POST Parameter	Description	Example
api_key	This should match the api key that you have generated for your Lipisha account	3aa67677e8bf1d4c8fe886a38c03a860
api_signature	This should match the api signature that you have generated for your Lipisha account	SYetmwsNnb5bwaZRyeQIIpVEhf9sqWOWwffHxVO57ROhu4kof4tKhZNNkCoEx5x6btHAymQqlm53r0B0O0QhV9vV5KJvNrO1DpX95oS8h8nAdF60d7wR8pS89hknG0qs98HkT2q+IexaDJXpSKyVI6YQuuu0TCZ3RaYLbLkw+MI=

api_version	Version of the API in use	1.0.0
api_type	The type of handshake	Initiate
transaction_date	Date when transaction was made	2013-02-02 12:30:45
transaction_amount	The amount of the transaction	5200.00
transaction_type	The type of transaction e.g. Payment, Settlement	Payment
transaction_method	What method was used to make the payment e.g. Mpesa or Airtel Money	Mpesa
transaction_reference	The unique identifier for the transaction e.g. Mpesa Payment Code	CU79AW109
transaction_name	The name of the person who made the payment	JOHN ONYANGO KAMAU
transaction_mobile	The mobile number of the person who made the payment	254722002222
transaction_paybill	The receiving paybill business number used	961700
transaction_account	The unique account number the payment was paid to	000075

Script Examples

Python (Django/Pylons)

The script below shows an example of a Django/Pylons script that would run at the callback location and process these requests.

```
# example showing output of HTTP POST Initiate parameters

if request.POST[“api_type”] == “Initiate”:
    print request.POST[“api_key”]
    print request.POST[“api_signature”]
    print request.POST[“api_version”]
    print request.POST[“api_type”]
    print request.POST[“transaction_date”]
    print request.POST[“transaction_amount”]
    print request.POST[“transaction_type”]
    print request.POST[“transaction_method”]
    print request.POST[“transaction_reference”]
    print request.POST[“transaction_name”]
    print request.POST[“transaction_mobile”]
    print request.POST[“transaction_paybill”]
    print request.POST[“transaction_account”]
```

PHP

The script below shows an example of a PHP script that would run at the callback location and process these requests.

```
// example showing output of HTTP POST Initiate parameters
```

```
if($_POST[“api_type”] == “Initiate”)
{
  echo $_POST[“api_key”];
  echo $_POST[“api_signature”];
  echo $_POST[“api_type”];
  echo $_POST[“api_version”];
  echo $_POST[“transaction_date”];
  echo $_POST[“transaction_amount”];
  echo $_POST[“transaction_type”];
  echo $_POST[“transaction_method”];
  echo $_POST[“transaction_reference”];
  echo $_POST[“transaction_name”];
  echo $_POST[“transaction_mobile”];
  echo $_POST[“transaction_paybill”];
  echo $_POST[“transaction_account”];
}
```

2.3 Step 2 - Receipt

On receiving the HTTP POST ***Initiate*** status, your IPN callback page should respond with a ***Receipt*** status in JSON format.

The JSON ***Receipt*** status from your server must contain the following parameters.

JSON Parameter	Description	Example
api_key	This should match the api key that you have generated for your Lipisha account	3aa67677e8bf1d4c8fe886a38c03a860
api_signature	This should match the api signature that you have generated for your Lipisha account	SYetmwsNnb5bwaZRyeQIIpVEhf9sqWOWwffHxVO57ROhu4kof4tKhZNNkCoEx5x6btHAymQqlm53r0B0O0QhV9vV5KJvNrO1DpX95oS8h8nAdF60d7wR8pS89hknG0qs98HkT2q+IexaDJXpSKyVI6YQuuu0TCZ3RaYLbLkw+MI=
api_version	Version of the API in use	1.0.0
api_type	The type of handshake	Receipt
transaction_reference	The unique identifier for the transaction sent during the IPN callback e.g. Mpesa Payment Code	CU79AW109
transaction_status_code	The status code of the response e.g 001 for success and 002 for failure	001
transaction_status	Corresponding type of status	Success
transaction_status_description	Description or message of your status	Transaction received successfully.

If this response is not receipted then the transaction will be flagged as incomplete and will be queued for retrying every five minutes thereafter until the correctly formatted receipt is returned.

Possible Status Responses

You are allowed to respond with the following status information.

Transaction Status Code	Transaction Status	Transaction Status Description
001	Success	Transaction received successfully.
002	Fail	Error on initiate. Or your own custom message.

Script Examples

Quick Note

For proper processing of your JSON response, please ensure that all your JSON strings or array elements are wrapped in double quotes and NOT single quotes.

JSON Output

```
{
“api_key”:”3aa67677e8bf1d4c8fe886a38c03a860”,
“api_signature”:”SYetmwsNnb5bwaZRyeQIIpVEhf9sqWOWwffHxVO57ROhu4kof4tKhZNNkCoEx5x6btHAymQqlm53r0B0O0QhV9v
V5KJvNrO1DpX95oS8h8nAdF60d7wR8pS89hknG0qs98HkT2q+IexaDJXpSKyVI6YQuuu0TCZ3RaYLbLkw+MI=“,
“api_version”:”1.0.0”,
“api_type”:”Receipt”,
“transaction_reference”:”CU79AW109”,
“transaction_status_code”:”001”,
“transaction_status”:”Success”,
“transaction_status_description”:”Transaction received successfully.”
}
```

Python (Django/Pylons)

```
# create json response and output (nothing else must be output before or after)
import simplejson as json

response = {}
response["api_key"] = "" + request.POST['api_key'] + ""
response["api_signature"] = "" + request.POST['api_signature'] + ""
response["api_version"] = "1.0.0"
response["api_type"] = "Receipt"
response["transaction_reference"] = "" + request.POST['transaction_reference'] + ""
response["transaction_status_code"] = "001"
response["transaction_status"] = "Success"
response["transaction_status_description"] = "Transaction received successfully."

json_response = json.dumps(response)
return HttpResponse(json_response, mimetype="application/json")
```

PHP

```php
// create json response and output (nothing else must be output before or after)
$response= array();
$response["api_key"] = $_POST["api_key"];
$response["api_signature"] = $_POST["api_signature"];
$response["api_version"] = $_POST["api_version"];
$response["api_type"] = "Receipt";
$response["transaction_reference"] = $_POST["transaction_reference"];
$response["transaction_status_code"] = "001";
$response["transaction_status"] = "Success";
$response["transaction_status_description"] = "Transaction received successfully.";
$json_response = json_encode($response);

header("Content-Type: application/json");
echo $json_response;
```

2.4 Step 3 - Acknowledge

On receiving your ***Receipt*** status, we will respond with an ***Acknowledge*** status via HTTP POST.

The HTTP POST ***Acknowledge*** status will contain the following parameters.

POST Parameter	Description	Example
api_key	This should match the api key that you have generated for your Lipisha account	3aa67677e8bf1d4c8fe886a38c03a860
api_signature	This should match the api signature that you have generated for your Lipisha account	SYetmwsNnb5bwaZRyeQIIpVEhf9sqWOWwffHxVO57ROhu4kof4tKhZNNkCoEx5x6btHAymQqlm53r0B0O0QhV9vV5KJvNrO1DpX95oS8h8nAdF60d7wR8pS89hknG0qs98HkT2q+IexaDJXpSKyVI6YQuuu0TCZ3RaYLbLkw+MI=
api_version	Version of the API in use	1.0.0
api_type	The type of handshake	Acknowledge
transaction_reference	The unique identifier for the transaction e.g. Mpesa Payment Code	CU79AW109
transaction_status_code	The status code of the response e.g 001 for success and any other for failure	001
transaction_status	Corresponding type of status	Success
transaction_status_description	Description or message of the status	Transaction successfully acknowledged.

Possible Status Responses

We will only respond with the following status information.

Transaction Status Code	Transaction Status	Transaction Status Description
001	Success	Transaction successfully acknowledged.
002	Fail	Transaction already acknowledged.
003	Fail	Invalid transaction receipted.
004	Fail	Error receipt returned.

Script Examples

Python (Django/Pylons)

The script below shows an example of a Django/Pylons script that would run at the callback location and process these requests.

```
# example showing output of HTTP POST Acknowledge parameters

if request.POST[“api_type”] == “Acknowledge”:
    print request.POST[“api_key”]
    print request.POST[“api_signature”]
    print request.POST[“api_version”]
    print request.POST[“api_type”]
    print request.POST[“transaction_reference”]
    print request.POST[“transaction_status_code”]
    print request.POST[“transaction_status”]
    print request.POST[“transaction_status_description”]
```

PHP

The script below shows an example of a PHP script that would run at the callback location and process these requests.

```
// example showing output of HTTP POST Acknowledge parameters

if($_POST[“api_type”]  == “Acknowledge”)
{
  echo $_POST[“api_key”];
  echo $_POST[“api_signature”];
  echo $_POST[“api_version”];
  echo $_POST[“api_type”];
  echo $_POST[“transaction_reference”];
  echo $_POST[“transaction_status_code”];
  echo $_POST[“transaction_status”];
  echo $_POST[“transaction_status_description”];
}
```