



**SPARROW**

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## **Merchant Public Services**

Split Funding API

**Version** 3.4.0 (Build 8062)

**Released** February 2017

## Revision History

Date	Revision	Comments	Author
2016-07-01	1.0	Initial document	Pavel Stefanov
2016-12-28	1.1	Scheduler parameter is added	Pavel Stefanov
2017-01-19	1.2	Streamline Authentication is added	Sergey Belov
2017-03-01	1.3	Review document	Ilya Tretyakov



## Overview

The Sparrow Gateway provides a set of services which can be used for integrating the gateway with merchant's IT systems. Merchant Public API provides the following RESTfull services:

- **Account** service – it is auxiliary service to obtain the authentication token required for invoking other Merchant Public API services
- **Transaction** service - this service allows querying transactions processed by the merchant in the Sparrow Gateway
- **Terminal** service – this service provides control functions over transaction processing
- **Split Funding** service – this service provides control functions over split funding groups

This document provides architectural overview of Merchant Public API and describes the services included into this API.

## Architectural Overview

Merchant Public API consists of a number of *Actions* which are logically grouped into services. This section describes the structure of HTTP requests which are used for invoking *Actions*.

The legend:

- `<TERM>` indicates a parameter that will be described below of the snippet
- `[any-text]` indicates an optional part that can be not provided in requests for some *Actions* (see the specification of the particular *Action*)

### Action Route

A route to an *Action* is a URL-based path that uniquely identifies the *Action* for invocation and invocation parameters:

```
<URL>/api/public/merchant/<SERVICE>/<ACTION> [ /<PATH-PARAMETERS> ] [ ?<QUERY-PARAMETERS> ]
```

Term	Description
<code>&lt;URL&gt;</code>	The address of the Sparrow Gateway server where the service is hosted.  Merchants have to use the following URL for the production (life) integrations:  <a href="https://secure.sparrowone.com">https://secure.sparrowone.com</a>
<code>&lt;SERVICE&gt;</code>	The name of the service where the <i>Action</i> is located. Examples: <b>account</b> , <b>transactions</b> , <b>terminal</b> . See documentation of services below in this document.
<code>&lt;ACTION&gt;</code>	The name of the <i>Action</i> . See documentation of services below in this document.  Note: normally the name of the action must be always presented in <i>Action Route</i> . However, the service can have a default Action. In this case, this action is invoked without the name in the <i>Action Route</i> . Example: <b>authenticate</b> action in the <b>account</b> service.

<b>&lt;PATH-PARAMETERS&gt;</b>	Path parameters are used to clarify an entity for which the action has to be invoked
<b>&lt;QUERY-PARAMETERS&gt;</b>	Additional parameters provided in the form of HTTP query string

## Action Request

An *Action* can be invoked by a HTTP request:

```

<HTTP-VERB> <ACTION-ROUTE> HTTP/1.1
Content-Type: <REQUEST-CONTENT-TYPE>
Accept: <RESPONSE-CONTENT-TYPE>
Authorization: <REQUEST-AUTH-PARAMS>[other HTTP headers]

<REQUEST-DATA>
    
```

Term	Description
<b>&lt;HTTP-VERB&gt;</b>	<p>HTTP verb for invoking the service <i>Action</i>. Possible values are:</p> <ul style="list-style-type: none"> <li>▪ GET</li> <li>▪ POST</li> <li>▪ PUT</li> <li>▪ DELETE</li> </ul> <p>It is not mandatory for <i>Actions</i> to support all 4 verbs (but at least one verb must be supported). The verb can be interrupted as a sub-action supported by the <i>Action</i>. See the service documentation to select the proper verb for the <i>Action</i>.</p>
<b>&lt;ACTION-ROUTE&gt;</b>	An URL-based path that uniquely identifies the <i>Action</i> for invocation and invocation parameters. See the section above for details.
<b>&lt;REQUEST-CONTENT-TYPE&gt;</b>	<p>The content type of the <b>&lt;REQUEST-DATA&gt;</b>. Possible values are:</p> <ul style="list-style-type: none"> <li>▪ <i>application/xml</i></li> <li>▪ <i>application/json</i></li> </ul> <p>See <i>JSON Objects</i> and <i>XML Objects</i> sections below for object format details.</p>
<b>&lt;RESPONSE-CONTENT-TYPE&gt;</b>	<p>The expected content type for the response. Possible values are:</p> <ul style="list-style-type: none"> <li>▪ <i>application/xml</i></li> <li>▪ <i>application/json</i></li> </ul> <p>If <i>Accept</i> HTTP header is not provided in the request, then the response will be returned in JSON format.</p> <p>See <i>JSON Objects</i> and <i>XML Objects</i> sections below for object format details.</p>
<b>&lt;REQUEST-AUTH-PARAMS&gt;</b>	The authorization parameters. See <i>Authentication</i> section.
<b>&lt;REQUEST-DATA&gt;</b>	<p>Request data object formatted according <b>&lt;REQUEST-CONTENT-TYPE&gt;</b>. Names of request parameters are case-sensitive.</p> <p>See the <i>Action</i> documentation for parameters supported by the <i>Action</i> in <b>&lt;REQUEST-DATA&gt;</b>.</p>

## Action Response

Here is a format of *Action* responses:

```
HTTP/1.1 <HTTP-CODE> <HTTP-CODE-DESCRIPTION>
Content-Type: <RESPONSE-CONTENT-TYPE>
WWW-Authenticate: <RESPONSE-AUTH-TOKEN>
[other HTTP headers]

<RESPONSE-DATA>
```

Term	Description
<HTTP-CODE>	<p>A standard HTTP response code. Here are codes (with HTTP descriptions) commonly used in Merchant Public API:</p> <ul style="list-style-type: none"> <li>▪ 200 OK The action was executed successfully</li> <li>▪ 403 Forbidden The current user is not allowed to execute this <i>Action</i></li> <li>▪ 404 Not Found The Action was requested for the entity that is not found on the system</li> <li>▪ 400 Bad Request The Action was executed with an error. More information about the error is returned in &lt;RESPONSE-DATA&gt;.</li> <li>▪ 500 Internal Server Error It is unwanted, but possible response that indicates about internal (unexpected) error during processing the <i>Action</i>.</li> </ul> <p>Particular <i>Actions</i> may support other HTTP response codes, see the <i>Action</i> documentation for details.</p>
<HTTP-CODE-DESCRIPTION>	A general message that clarifies the <HTTP-CODE>. See above for examples.
<RESPONSE-CONTENT-TYPE>	<p>The content type of &lt;RESPONSE-DATA&gt;. Possible values are:</p> <ul style="list-style-type: none"> <li>▪ <i>application/xml</i> (see <i>XML Objects</i> section for details)</li> <li>▪ <i>application/json</i> (see <i>JSON Objects</i> section for details)</li> </ul> <p>See <i>JSON Objects</i> and <i>XML Objects</i> sections below for object format details.</p>
<RESPONSE-AUTH-TOKEN>	The authentication token. The response contains WWW-Authenticate HTTP header only when the request contains valid authentication parameters: credentials or API Key. See <i>Authentication</i> section.
<RESPONSE-DATA>	<p>Response parameters formatted according &lt;REQUEST-CONTENT-TYPE&gt;.</p> <p>Names of response parameters are case-sensitive.</p> <p>See the <i>Action</i> documentation for parameters supported by the <i>Action</i> in &lt;REQUEST-DATA&gt;.</p>

## JSON Objects

Action requests and responses can be formatted as JSON objects:

```
{
  "Username": "JoeDoe",
  "Password": "pwd"
}
```

See *Action* documentation for supported request/response parameters.

## XML Objects

Action requests and responses can be formatted as XML objects:

```
<LoginResponse>
  <AuthToken>TIUPQV+R1R5RGORA4IZVUIXIYEP+OFNB</AuthToken>
</LoginResponse>
```

See *Action* documentation for supported request/response parameters.

The name of the root element is composed as shown below:

- The root element for *Action* requests is named **<ActionName>Request** (e.g. LoginRequest)
- The root element for *Action* responses is named **<ActionName>Response** (e.g. LoginResponse)

where **<ActionName>** is the name of the current *Action*, the first letter is the upper case, others – in the low case.

## Authentication

Only authenticated users are allowed to invoke service *Actions*. Merchant Public API supports two action invocation workflows which differ in a way how authentication information is obtained and specified in API calls: explicit authentication and streamline authentication.

### Streamline Authentication

Streamline authentication is a preferable way to work with Merchant Public API: authentication information is specified with the every API call in HTTP headers as Authorization parameter (see **Action Request** section above). The following forms are supported for this parameter:

- **Authorization: credentials=<credentials-string>**  
where <credentials-string> is <username>:<password> encoded by BASE64

This form is used for the first API call if the user-based authentication scheme is used. Please note, the username cannot contain the ":" symbol, otherwise the expression cannot be parsed correctly (the gateway's policy does not allow using ":" in user names as well).

- **Authorization: apikey=<api-string>**  
This form is used for the first API call if the API-based authentication scheme is used.
- **Authorization: token=<auth-token>**

**Authorization: <auth-token>**

These two forms are equal. They are recommended for using with second and forth API calls. <auth-token> is provided as WWW-Authenticate HTTP header in the response for the first API call: **WWW-Authenticate: <auth-token>** (see **Action Response** section above).

**Explicit Authentication**

Explicit authentication can be used if an integration does not have ability to specify/fetch HTTP header parameters. This workflow assumes that a special API call is made just to obtain an auth token.

- The app invoke **Authenticate** action (see **Account Service** section below). If the action is successful, then <auth-toke> is returned in the response.
- The app makes the first API call with providing **token=<auth-token>** in the request’s query string
- The second and forth API calls are performed in the same way: by providing **token=<auth-token>** in the request’s query string

**Account Service**

The **Account** service is auxiliary service that allows retrieving the authentication token required for invoking other *Actions*.

**Authenticate Action**

This action is used to obtain the authentication token for the specified user.

Name	Value
Service	Account
Action Name	(default)
Method	POST
Path Parameters	No
Query Parameters	No
Request	The following items must be provided in <b>&lt;REQUEST-DATA&gt;</b> : <ul style="list-style-type: none"> <li>▪ <b>Username</b></li> <li>▪ <b>Password</b></li> </ul>
Response	The action returns the following items in <b>&lt;RESPONSE-DATA&gt;</b> : <ul style="list-style-type: none"> <li>▪ <b>AuthToken</b> – an authentication token for subsequent service actions calls</li> </ul>

**Split Funding Service**

The **Split Funding** service provides a set of *Actions* over split funding groups.

**Get Split Funding Group Action**

This action is used to retrieve details about the split funding group.

Name	Value/Description
Service	Splitgroups
Action Name	(default)
Method	GET
Path Parameters	<p><b>/&lt;SplitFundingGroup-ID&gt;</b></p> <p><b>&lt; SplitFundingGroup-ID &gt;</b> - is the identifier of the split funding group which details are requested</p>
Query Parameters	<p>The following items can be provided in <b>&lt;QUERY-PARAMETERS&gt;</b>:</p> <ul style="list-style-type: none"> <li>▪ <b>token</b> – the authentication token (required for explicit authentication scheme)</li> </ul>
Request	No
Response	<p>The details of the requested split funding group (see below).</p> <p>For XML formatter – the root element of the response is <b>&lt;SplitFundingGroup&gt;</b>.</p>

The table below enumerates split funding group parameters which are returned by this action:

Name	Required	Data Type	Description
GroupId	Required	String	Split Funding Group ID
Description	Required	String	Split Funding Group description
SplitDelayDays	Optional	Int32	<b>Obsolete. Use Scheduler instead.</b> It is the legacy form to specify scheduling settings for the group. If it is provided – it has the same meaning as <i>Scheduler/Parameter</i> for <i>Type= DailyWithLag</i> .
Scheduler	Optional	Object	This element defines a schedule how/when Split Funding is run for the group.
Scheduler/Type	Required	String	<p><b>DailyWithLag</b> – Split Funding is run every day (once per day) for this group. However, only transactions which were settled <i>Parameter</i> days ago or early (with lag) are processed.</p> <p><b>Interval</b> – Split Funding is run in every <i>Parameter</i> days. All settled transactions are processed (no lag).</p> <p><b>Monthly</b> – Split Funding is run once per a month on the day specified in the <i>Parameter</i> (<i>1<sup>st</sup> day of month, 5<sup>th</sup> day of month, etc</i>). All settled transactions are processed (no lag).</p> <p><b>Amount</b> – Split Funding is run once the total amount of all pending transactions is equals or greater than <i>Parameter</i>. All settled transactions are processed (no lag).</p>

Scheduler/Parameter	Required	Int32 Money	The type and meaning of this value depends on <i>Scheduler/Type</i> (see above for details). The following data type is expected: <ul style="list-style-type: none"> <li>▪ Int32 for <b>DailyWithLag</b></li> <li>▪ Int32 for <b>Interval</b></li> <li>▪ Int32 for <b>Monthly</b></li> <li>▪ Money for <b>Amount</b></li> </ul>
Scheduler/IsSendingUpcomingIncome	Optional	Boolean	Indicator whether the upcoming income notification will be sent
Scheduler/DaysBeforeUpcomingIncome	Optional	Int32	Number of days before split operation to send upcoming income notification
<b>Holdback</b>	Optional	Object	This element contains holdback details
Holdback/Description	Optional	String	Holdback description
Holdback/ValueType	Required	String	Payout type (FixedAmount/Percentage)
Holdback/Value	Required	Money	Payout value
<b>SplitPayouts</b>	Required	Array	This element contains the array of payout items
SplitPayouts/Payout/PaymentTypeToken	Required	String	Payment Type Token
SplitPayouts/Payout/TransactionKey	Required	String	Merchant Transaction Key
SplitPayouts/Payout/SourceAmountType	Required	String	Source Amount type(Total/Shared)
SplitPayouts/Payout/Description	Optional	String	Payout description
SplitPayouts/Payout/ValueType	Required	String	Payout type (FixedAmount/Percentage)
SplitPayouts/Payout/Value	Required	Money	Payout value
SplitPayouts/Payout/AllowSingleBatch	Required	Boolean	Indicator whether the payout item can joins with other payout
SplitPayouts/Payout/CustomerName	Optional	String	Customer name
SplitPayouts/Payout/CompanyName	Optional	String	Company name

### Create Split Funding Group Action

This action is used to create a split funding group.

Name	Value/Description
<b>Service</b>	Splitgroups
<b>Action Name</b>	(default)
<b>Method</b>	POST
<b>Path Parameters</b>	No
<b>Query Parameters</b>	The following items can be provided in <b>&lt;QUERY-PARAMETERS&gt;</b> : <ul style="list-style-type: none"> <li>▪ <b>token</b> – the authentication token (required for explicit authentication scheme)</li> </ul>
<b>Request</b>	The details of new split funding group (see below).  For XML formatter – the root element of the request is <b>&lt;SplitFundingGroup&gt;</b> .
<b>Response</b>	The action returns the following items in <b>&lt;RESPONSE-DATA&gt;</b> : <ul style="list-style-type: none"> <li>• If the Action is successful, that returned <b>Success</b> object.</li> <li>• If the Action is failed, that returned <b>Error</b> object.</li> </ul>

	The details these object see below.
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The table below enumerates group parameters which are passed to Request:

Name	Required	Data Type	Description
GroupId	Required	String	Split Funding Group ID
Description	Required	String	Split Funding Group description
SplitDelayDays	Optional	Int32	<b>Obsolete. Use Scheduler instead.</b> It is the legacy form to specify scheduling settings for the group. If it is provided – it has the same meaning as <i>Scheduler/Parameter</i> for <i>Type=DailyWithLag</i> .
<b>Scheduler</b>	Optional	Object	This element defines a schedule how/when Split Funding is run for the group.
Scheduler/Type	Required	String	<b>DailyWithLag</b> – Split Funding is run every day (once per day) for this group. However, only transactions which were settled <i>Parameter</i> days ago or early (with lag) are processed.  <b>Interval</b> – Split Funding is run in every <i>Parameter</i> days. All settled transactions are processed (no lag).  <b>Monthly</b> – Split Funding is run once per a month on the day specified in the <i>Parameter</i> ( <i>1<sup>st</sup> day of month, 5<sup>th</sup> day of month, etc</i> ). All settled transactions are processed (no lag).  <b>Amount</b> – Split Funding is run once the total amount of all pending transactions is equals or greater than <i>Parameter</i> . All settled transactions are processed (no lag).
Scheduler/Parameter	Required	String	The type and meaning of this value depends on <i>Scheduler/Type</i> (see above for details). The following data type is expected: <ul style="list-style-type: none"> <li>▪ Int32 for <b>DailyWithLag</b></li> <li>▪ Int32 for <b>Interval</b></li> <li>▪ Int32 for <b>Monthly</b></li> <li>▪ Money for <b>Amount</b></li> </ul>
Scheduler/IsSendingUpcomingIncome	Optional	Boolean	Indicator whether the upcoming income notification will be sent
Scheduler/DaysBeforeUpcomingIncome	Optional	Int32	Number of days before split operation to send upcoming income notification

<b>Holdback</b>	Optional	Object	This element contains holdback details
Holdback/Description	Optional	String	Holdback description
Holdback/ValueType	Required	String	Payout type (FixedAmount/Percentage)
Holdback/Value	Required	Money	Payout value
<b>SplitPayouts</b>	Required	Array	This element contains the array of payout items
SplitPayouts/Payout/PaymentTypeToken	Required	String	Payment Type Token
SplitPayouts/Payout/TransactionKey	Required	String	Merchant Transaction Key
SplitPayouts/Payout/SourceAmountType	Required	String	Source Amount type(Total/Shared)
SplitPayouts/Payout/Description	Optional	String	Payout description
SplitPayouts/Payout/ValueType	Required	String	Payout type (FixedAmount/Percentage)
SplitPayouts/Payout/Value	Required	Money	Payout value
SplitPayouts/Payout/AllowSingleBatch	Required	Boolean	Indicator whether the payout item can joins with other payout

### **Edit Split Funding Group Action**

This action is used to edit an existing split funding group.

<b>Name</b>	<b>Value/Description</b>
<b>Service</b>	Splitgroups
<b>Action Name</b>	(default)
<b>Method</b>	PUT
<b>Path Parameters</b>	<p><b>/&lt;SplitFundingGroup-ID&gt;</b></p> <p><b>&lt; SplitFundingGroup-ID &gt;</b> - is the identifier of the split funding group which details are requested</p>
<b>Query Parameters</b>	<p>The following items can be provided in <b>&lt;QUERY-PARAMETERS&gt;</b>:</p> <ul style="list-style-type: none"> <li>▪ <b>token</b> – the authentication token (required for explicit authentication scheme)</li> </ul>
<b>Request</b>	<p>The new details of the split funding group (see below).</p> <p>For XML formatter – the root element of the request is <b>&lt;SplitFundingGroup&gt;</b>.</p>
<b>Response</b>	<p>The action returns the following items in <b>&lt;RESPONSE-DATA&gt;</b>:</p> <ul style="list-style-type: none"> <li>• If the Action is successful, that returned <b>Success</b> object.</li> <li>• If the Action is failed, that returned <b>Error</b> object.</li> </ul> <p>The details these object see below.</p>

The table below enumerates group parameters which are passed to Request:

<b>Name</b>	<b>Required</b>	<b>Data Type</b>	<b>Description</b>
GroupID	Required	String	Split Funding Group ID
Description	Required	String	Split Funding Group description
SplitDelayDays	Optional	Int32	<b>Obsolete. Use Scheduler instead.</b> It is the legacy form to specify scheduling settings for the group. If it is provided – it has the same meaning as

			<i>Scheduler/Parameter</i> for <i>Type=DailyWithLag</i> .
<b>Scheduler</b>	Optional	Object	This element defines a schedule how/when Split Funding is run for the group.
Scheduler/Type	Required	String	<p><b>DailyWithLag</b> – Split Funding is run every day (once per day) for this group. However, only transactions which were settled <i>Parameter</i> days ago or early (with lag) are processed.</p> <p><b>Interval</b> – Split Funding is run in every <i>Parameter</i> days. All settled transactions are processed (no lag).</p> <p><b>Monthly</b> – Split Funding is run once per a month on the day specified in the <i>Parameter</i> (<i>1<sup>st</sup> day of month, 5<sup>th</sup> day of month, etc</i>). All settled transactions are processed (no lag).</p> <p><b>Amount</b> – Split Funding is run once the total amount of all pending transactions is equals or greater than <i>Parameter</i>. All settled transactions are processed (no lag).</p>
Scheduler/Parameter	Required	String	<p>The type and meaning of this value depends on <i>Scheduler/Type</i> (see above for details).</p> <p>The following data type is expected:</p> <ul style="list-style-type: none"> <li>▪ Int32 for <b>DailyWithLag</b></li> <li>▪ Int32 for <b>Interval</b></li> <li>▪ Int32 for <b>Monthly</b></li> <li>▪ Money for <b>Amount</b></li> </ul>
Scheduler/IsSendingUpcomingIncome	Optional	Boolean	Indicator whether the upcoming income notification will be sent
Scheduler/DaysBeforeUpcomingIncome	Optional	Int32	Number of days before split operation to send upcoming income notification
<b>Holdback</b>	Optional	Object	This element contains holdback details
Holdback/Description	Optional	String	Holdback description
Holdback/ValueType	Required	String	Payout type (FixedAmount/Percentage)
Holdback/Value	Required	Money	Payout value
<b>SplitPayouts</b>	Required	Array	This element contains the array of payout items
SplitPayouts/Payout/PaymentTypeToken	Required	String	Payment Type Token
SplitPayouts/Payout/TransactionKey	Required	String	Merchant Transaction Key
SplitPayouts/Payout/SourceAmountType	Required	String	Source Amount type(Total/Shared)
SplitPayouts/Payout/Description	Optional	String	Payout description
SplitPayouts/Payout/ValueType	Required	String	Payout type (FixedAmount/Percentage)

SplitPayouts/Payout/Value	Required	Money	Payout value
SplitPayouts/Payout/AllowSingleBatch	Required	Boolean	Indicator whether the payout item can joins with other payout

### **Delete Split Funding Group Action**

This action is used to delete the split funding group.

Name	Value/Description
<b>Service</b>	Splitgroups
<b>Action Name</b>	(default)
<b>Method</b>	DELETE
<b>Path Parameters</b>	<p><b>&lt;/SplitFundingGroup-ID&gt;</b></p> <p><b>&lt; SplitFundingGroup-ID &gt;</b> - is the identifier of the split funding group which details are requested</p>
<b>Query Parameters</b>	<p>The following items can be provided in <b>&lt;QUERY-PARAMETERS&gt;</b>:</p> <ul style="list-style-type: none"> <li>▪ <b>token</b> – the authentication token (required for explicit authentication scheme)</li> </ul>
<b>Request</b>	No
<b>Response</b>	<p>The action returns the following items in <b>&lt;RESPONSE-DATA&gt;</b>:</p> <ul style="list-style-type: none"> <li>• If the Action is successful, that returned <b>Success</b> object.</li> <li>• If the Action is failed, that returned <b>Error</b> object.</li> </ul> <p>The details these object see below.</p>

### **Success Response**

The table below enumerates Success object parameters which are returned by actions:

Name	Data Type	Description
Message	String	Message

### **Error Response**

The table below enumerates Error object parameters which are returned by actions:

Name	Data Type	Description
ErrorCode	Int32	Error code(details see below)
Message	String	Message

Error cods:

Name	Code	Description
InvalidData	1	Invalid data
IdAlreadyExists	2	Split Funding Group with this ID already exists
RelatedTransactions	4	There are some pending transactions or some transactions with error status for this Split Funding Group
TotalPercentSumExceeds100	7	Total percentage sum exceeds 100 percent
SharedPercentSumExceeds100	8	Shared percentage sum exceeds 100 percent

PayoutsPercentSumExceeds100	10	Total and Shared sum exceeds 100 percent.
HoldbackAndPayoutsPercentSumExceed100	11	Holdback percentage and payouts sum exceeds 100 percent.
NotFound	404	Some entity not found
InternalError	500	Internal error