PayByPhone External Notification Service (ENS) – API Integration Documentation Event Format Version 2

Document Revision 2.4

Change History

Date	Revision	Changed by	Change Log
2013-11-04	0.1	R. Sazonov	Initial Draft with Parking Session Created Event (Previously Parking Started Event).
2013-11-13	0.2	R. Sazonov	Adding Parking Session Extended Event.
2013-11-18	0.3	R. Sazonov	Changes to clarify the Parking Session Created Event.
2013-11-19	0.4	R. Sazonov	Added datatypes to the message fields.
2013-11-20	0.5	R. Sazonov	Changed Authorization header to be Basic instead of BASIC.
2013-11-21	0.6	R. Sazonov	Added additional http error response fields to deal with data processing.
2013-11-28	0.7	R. Sazonov	Adding heartbeat message.
2013-12-02	0.8	R. Sazonov	Added more detail around the rules of Retry of error responses. Made mention that that receiving endpoint should be idempotent and able to receive the same message multiple times.
2013-12-03	0.8.1	R. Sazonov	Fixed which error codes we will block on. Default behaviour when receiving an unknown HTTP status code is now blocking retry.
2013-12-06	0.8.2	R. Sazonov	Modified so we will now retry indefinitely instead of stopping after 24 hours.
2014-02-19	0.8.3	R. Sazonov	Allow any arbitrary port as long as it is SSL.
2014-07-21	0.9	R. Sazonov	Adding Parking Session Stopped Event.
2015-08-18	0.9.1	T. Ratch	Adding Parking Quote Accepted Event.
2015-12-16	1.0	T. Ratch	Removing heartbeat message.
2016-02-22	1.1	T. Ratch	Removing parking Quote Accepted.
2016-10-20	2.0	T. Ratch	Update events to version 2 to add Payment Events and add to Extension events.
2016-11-08	2.1	T. Ratch	Updated to show Payment Events as Optional.
2016-12-12	2.2	T. Ratch	Legal Notice Added.
2016-12-19	2.3	J. Stuart	Add 400 BadRequest behaviour. Add IP Ranges section. Update Version Overview section. Update Message Format section. Add Idempotency section to stress the need for an Idempotent endpoint. Add Event ordering section.

2017-04-11	2.4	J. Gray	Update Payment Committed to contain “payment” information within “session” structure instead of the root. Align Payment Committed Vendor Id property name with that of Parking Session Created. Add Vendor information to Parking Session Extended and Parking Session Stopped.

Contents

PayByPhone External Notification Service API

Introduction and Summary

The PayByPhone External Notification Service allows partners to receive notifications based on events generated by PayByPhone's systems. The API documented below allow your server to receive a standard HTTP POST request from PayByPhone containing relevant information pertaining to that event. To receive push events from PayByPhone, you need to provide PayByPhone with a HTTPS endpoint that can accept POST requests.

IP Ranges

The endpoint will be required to allow connections from the following IP ranges.

- 64.69.91.224/28
- 66.199.184.96/28
- 216.23.154.16/28
- 184.70.135.232/29

Version Overview

ENS Event Format is controlled by version number. Please check the title page of this document to see what version of Event Format this document pertains to. More information is included in the Versioning section later in this document.

Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119.

HTTP Verbs

Verb	Description
GET	Used for retrieving resources.
POST	Used for creating resources.
PUT	Used for updating resources.
DELETE	Used for deleting/revoking resources.

Message Format

Once a Parking Session event that you are subscribed to is detected within a PayByPhone Application, ENS will push this event using a Synchronous HTTP POST request to your configured endpoint with the request body containing a JSON formatted message using the format below.

Common HTTP Request Header

Parameters	
id	Unique identifier of the workflow
Http Method	POST <your end point> HTTP/1.1
Host	<your host>
Accept	application/json
Date	Represents the date and time at which the message was sent from PayByPhone's server. The field value is an HTTP-date in RFC 1123 date format in GMT.
Authorization	Push secret, this secret is provided so that you can verify the authenticity of pushes received. This will be generated by PayByPhone and distributed to you. We will use HTTP Basic Auth with a Base64 encoded push secret representing the username without a password.
Accept-Language	en-US,en;q=0.5
Accept-Encoding	gzip, deflate
Content-Length	<length of message>
Content-Type	<based on the message being sent> in UTF-8 format
Connection	keep-alive
Pragma	no-cache

Sample

```
POST /events/receive HTTP/1.1
Host: https://example.com
Accept: application/json
Date: Fri, 31 Dec 2013 23:59:59 GMT
Authorization: Basic YWJjZGZzZGZzZGZkc2Y6DQo=
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Content-Length: 100
```

```
Content-Type:
application/ven.paybyphone.parkingsessioncreated+json.v2;charset=utf-8
Connection: keep-alive
Pragma: no-cache
Cache-Control: no-cache
```

Idempotency

It is possible for ENS to send an event to an endpoint more than once. This is because of ENS's retry mechanism and often occur because of an error response (see table below) from or timeout to an endpoint. The endpoint need to be idempotent and resilient to receiving the same message more than once.

Event ordering

ENS makes a best effort to deliver events in chronological order but there is no guarantee in which order events will be delivered. It is important for the endpoint to not rely on the order of events.

In the rare case that events are delivered out of order the endpoint should handle it correctly. An example of this would be if a Parking Sessions Extended event is delivered before a Parking Session Created event.

Event Types

Parking Session Events

The External Notification Service can push to your application every time one of the following events occur within the PayByPhone system.

Other events will be implemented in the future.

Event Name	Description
Parking Session Created	A valid parking session has been created for a location at a specific time. In the majority of cases the session begins immediately, but in some cases it can be either in the past or the future depending on the start time
Parking Session Extended	An existing parking session is being extended. This event will occur when the extension is confirmed, not at the extension start time.
Parking Session Stopped	An existing parking session has been stopped. This event will occur when the stop is confirmed, not at the new expiry time of the parking session (which may be later).

Parking Session Created

(*) Indicates optional value - value can be empty.

Parameters					
id	string	a unique id for this message			
version	string	a field indicating the version of this message			
correlationId	string	a unique identifier used to link events related together. For example, a Parking Extended event would have the same correlationid as the original Parking Session Created event.			
workflowId	string	a unique identifier used to link the parking events that generated the payment. For example, A Payment Committed event can be related to a Parking Extended Event.			
createdAt	dateTime	the date and time the event was generated in UTC ISO8601 date / time format			
event	string	the event this message represents			
<randomfield>	string	a randomly generated field which should be ignored. See the versioning section for details.			
session	object	**location**	**object**		
			id	string	the unique PayByBPhone id for the location the user is parking
			vendorLocationId(*)	string	the identifier for the location as set for by the Vendor.
			stall(*)	string	the Stall the user is parking at

		vehicle(*)	object		
			plate(*)	string	the plate assigned to this vehicle
			type(*)	string	the type of vehicle parking possible values are "Car" "Motorcycle" "Electric Motorcycle" "Heavy Goods Vehicle"
			state(*)	string	the state abbreviation of the vehicle plate
			country(*)	string	the ISO-3166 country code of the vehicle
		vendor	object		
			id	string	the id of the vendor
		duration	object		
			startTime	dateTime	the requested start time of the parking session in UTC ISO8601 Date / Time format. Please note this can be in the past or in the future.
			endTime	dateTime	the requested end time of the parking session in UTC ISO8601 Date / Time format

Content-Type: application/ven.paybyphone.parkingsessioncreated+json.v2;


```
{
	"id": "4e6fe1404b90c00032eeac34",
	"version": "2",
	"correlationId": "2b4c1f2b901d7c435a22badd",
	"workflowId": "2f4c3bf2b901d7c435a22bfff",
	"createdAt": "2013-09-21T07:31:00Z",
	"event": "parkingSessionCreated",
	"abc-213-dummy": "ignore",
	"session": {
		"location": {
			"id": "1234",
			"vendorLocationId": "5678",
			"stall" : "13"
		},
		"vehicle": {
			"plate": "ABC1234",
			"type": "Car" ,
			"country": "CA",
			"state": "BC"
		},
		"vendor": {
			"id": "123"
		},
		"duration": {
			"startTime" : "2013-09-21T07:30:00Z",
			"endTime": "2013-09-21T09:00:00Z"
		}
	}
}
```

Parking Session Extended

(*) Indicates optional value - value can be empty.

Parameters		
id	string	a unique id for this message
version	string	a field indicating the version of this message
correlationId	string	a unique identifier used to link events related together. For example, a Parking Extended event would have the same correlationid as the original Parking Session Created event.
workflowId	string	a unique identifier used to link the parking events that generated the payment. For example, A Payment Committed event can be related to a Parking Extended Event.
createdAt	dateTime	the date and time the event was generated in UTC ISO8601 date / time format
event	string	the event this message represents
<randomfield>	string	we will generate a randomly named field which should be ignored.
session	object	**location** — **object**: **id** (string) — the unique PayByPhone id for the location the user is parking; **vendorLocationId**(*) (string) — the identifier for the location as set for by the Vendor.; **stall**(*) (string) — the Stall the user is parking at
		vehicle(*) — object: **plate**(*) (string) — the plate assigned to this vehicle; **type**(*) (string) — the type of vehicle parking possible values are "Car", "Motorcycle", "Electric Motorcycle", "Heavy Goods Vehicle"; **state**(*) (string) — the state abbreviation of the vehicle plate; **country**(*) (string) — the ISO-3166 country code of the vehicle
		duration — object: **startTime** (dateTime) — the requested start time of the parking session extension in UTC ISO8601 Date / Time format. This is equal to the end time of the previous session that is being extended.

			endTime	dateTime	the requested end time of the parking session extension in UTC ISO8601 Date / Time format.
		vendor	object		
			id	string	the id of the vendor

Content-Type: application/ven.paybyphone.parkingsessionextended+json.v2;

```
{
	"id": "4e6fe1404b90c00032eeff00",
	"version": "2",
	"correlationId": "2b4c1f2b901d7c435a22badd",
	"workflowId": "2f4c3bf2b901d7c435a22bfff",
	"createdAt": "2013-09-21T07:31:00Z",
	"event": "parkingSessionExtended",
	"233-dummy-zZzy1": "ignore",
	"session": {
		"location": {
			"id": "1234",
			"vendorLocationId": "5678",
			"stall": "13"
		},
		"vehicle": {
			"plate": "ABC1234",
			"type": "Car",
			"country": "CA",
			"state": "BC"
		},
		"duration": {
			"startTime": "2013-09-21T09:00:00Z",
			"endTime": "2013-09-21T09:30:00Z"
		},
		"vendor": {
			"id": "123"
		}
	}
}
```

Parking Session Stopped

(*) Indicates optional value - value can be empty.

<table>
<tr><th colspan="4">Parameters</th></tr>
<tr><td>id</td><td>string</td><td colspan="2">a unique id for this message</td></tr>
<tr><td>version</td><td>string</td><td colspan="2">a field indicating the version of this message</td></tr>
<tr><td>correlationId</td><td>string</td><td colspan="2">a unique identifier used to link events related together. For example, a Parking Session Stopped event would have the same correlationid as the original Parking Session Created event.</td></tr>
<tr><td>workflowId</td><td>string</td><td colspan="2">a unique identifier used to link the parking events that generated the payment. For example, A Payment Committed event can be related to a Parking Extended Event.</td></tr>
<tr><td>createdAt</td><td>dateTime</td><td colspan="2">the date and time the event was generated in UTC ISO8601 date / time format</td></tr>
<tr><td>event</td><td>string</td><td colspan="2">the event this message represents</td></tr>
<tr><td><randomfield></td><td>string</td><td colspan="2">we will generate a randomly named field which should be ignored.</td></tr>
<tr><td rowspan="2">session</td><td rowspan="2">object</td><td>duration</td><td>object<table><tr><td>endTime</td><td>dateTime</td><td>the updated time the parking session will expire, in UTC ISO8601 Date / Time format (note: due to various factors, the time that the user stopped the parking session may not be the same as the updated parking session expiry time)</td></tr></table></td></tr>
<tr><td>vendor</td><td>object<table><tr><td>id</td><td>string</td><td>the id of the vendor</td></tr></table></td></tr>
</table>

Content-Type: application/ven.paybyphone.parkingsessionstopped+json.v2;

```
{
      "id": "4e6fe1404b90c00032eeff00",
      "version": "2",
      "correlationId": "2b4c1f2b901d7c435a22badd",
      "workflowId": "2f4c3bf2b901d7c435a22bfff",
      "createdAt": "2013-09-21T07:31:00Z",
      "event": "parkingSessionStopped",
      "654-dummy-aZaA1": "ignore",
      "session": {
            "duration": {
                  "endTime" : "2013-09-21T09:15:00Z",
            },
            "vendor": {
                  "id": "123"
```

```
                    }
            }
}
```

Payment Events

The External Notification Service can push to your application every time one of the following events occurs within the PayByPhone Systems. Payment events are not included in the standard ENS configuration and need to be explicitly requested for the integration.

Other events will be implemented in the future.

Event Name	Description
Parking Payment Committed	A payment captured for a parking session and the funds secured.

Payment Committed

(*) Indicates optional value - value can be empty.

<table>
<tr><th colspan="4">Parameters</th></tr>
<tr><td>id</td><td>String</td><td colspan="2">a unique id for this message</td></tr>
<tr><td>version</td><td>string</td><td colspan="2">a field indicating the version of this message</td></tr>
<tr><td>correlationId</td><td>string</td><td colspan="2">a unique identifier used to link related events together. For example, a Parking Extended event would have the same correlationid as the original Parking Session Created event.</td></tr>
<tr><td>workflowId</td><td>string</td><td colspan="2">a unique identifier used to link the parking events that generated the payment. For example, A Payment Committed event can be related to a Parking Extended Event.</td></tr>
<tr><td>createdAt</td><td>dateTime</td><td colspan="2">the date and time the event was generated in UTC ISO8601 date / time format</td></tr>
<tr><td>event</td><td>string</td><td colspan="2">the event this message represents</td></tr>
<tr><td><randomfield></td><td>string</td><td colspan="2">we will generate a randomly named field which should be ignored.</td></tr>
<tr><td rowspan="4">payment</td><td rowspan="4">object</td><td>transactionId</td><td>String</td><td>A unique identifier for the payment transaction</td></tr>
<tr><td>amount</td><td>Decimal</td><td>The total amount of the payment.</td></tr>
<tr><td>paymentMethodType</td><td>String</td><td>The payment method type for the payment. For example: Visa</td></tr>
<tr><td>paymentMethodSubType</td><td>String</td><td>The payment method sub type for the payment. For example: Apple Pay</td></tr>
<tr><td rowspan="4">session</td><td rowspan="4">object</td><td rowspan="4">payment</td><td colspan="3">object</td></tr>
<tr><td>transactionId</td><td>String</td><td>A unique identifier for the payment transaction</td></tr>
<tr><td>account</td><td>String</td><td>A unique identifier for the payment account.</td></tr>
<tr><td>amount</td><td>Decimal</td><td>The total amount of the payment.</td></tr>
</table>

			paymentMethodType	String	The payment method type for the payment. For example: Visa
			paymentMethodSubType	String	The payment method sub type for the payment. For example: Apple Pay
		vendor	object **id** string the id of the vendor		

Content-Type: application/ven.paybyphone.parkingpaymentcommitted+json.v2;


```
{
	"id": "2880d408-996e-0600-e5a0-005056ae1407",
	"version": "2",
	"correlationId": "b1aca39d-443c-433a-964a-2ddb43fdf440",
	"workflowId": "e886f171-2b71-42ce-9a08-c8b31ffbf3a9",
	"createdAt": "2017-04-10T08:44:07-07:00",
	"event": "paymentCommitted",
	"c362bfa1": "ignore",
	"session": {
		"payment": {
			"transactionId": "253752067",
			"account": "16615837",
			"amount": "1",
			"paymentMethodType": "VISA",
			"paymentMethodSubType": ""
		},
		"vendor": {
			"id": "1596"
		}
	}
}
```

Versioning

Versioning of the request from PayByPhone is handled by the custom `vnd.paybyphone` *content-type*. Should this contract change we will change the version that we send to you. If receiving new versions and in the event that you do not accept it, return the following status code.

406 Not acceptable	The resource identified by the request is only capable of generating response entities which have content characteristics not acceptable according to the accept headers sent in the request.

The version number is also provided as one of the fields in the message body

New Fields

PayByPhone may at some point add new fields to an existing contract without changing the version number which means you must include logic to ignore the fields that you are not interested in, essentially implementing a Tolerant Reader.

In order to ensure that the ignoring of unknown fields is adhered to, we will generate a single random field in every request body which should be ignored.

Responses

Success

To indicate success, you can return any of the following status codes:

Response Code	Description
200 Ok	Standard response for successful HTTP requests. In a POST request the response will contain an entity describing or containing the result of the action.
201 Created	The request has been fulfilled and resulted in a new resource being created.
202 Accepted	The request has been accepted for processing, but the processing has not been completed. The request might or might not eventually be acted upon, as it might be disallowed when processing actually takes place.
204 No Content	The server successfully processed the request, but is not returning any content.

Error

Returning one of the following error codes will determine whether ENS will retry the request.

- Requests that are marked as Will Retry Request ***no*** will be skipped and the error response logged for debugging purposes.
- Request that are marked as Will Retry Request ***yes*** will be blocked on that message and retried with an exponential back off up to 5 minutes, after which we will retry every 5 minutes until the issue is resolved.

To indicate that the request has been rejected due to the Push Secret not matching, you must return the following response.

Response Code	Description	Will Retry
400 Bad Request	The server cannot or will not process the request.	**Yes**
404 Not Found	The requested resource end point does not exist (and never has).	**Yes**
406 Not Acceptable	Return this if the content type in the header is not acceptable. This can occur when the version indicated in the content-type is not accepted.	**Yes**
410 Gone	Indicates that the resource requested is no longer available and will not be available again.	**Yes**
422 Unprocessable Entity	The request was well-formed but was unable to be followed due to errors in the data. Please be sure to include a detailed error description in the response body.	**No**
429 Too Many Requests	Too many requests have been sent in a given amount of time and you are unable to process the load.	**Yes**

If your service returns any of the following 5xx error codes, the PayByPhone Push API will block on that message and retry the request.

Response Code	Description	Will Retry Request
500 Internal Server Error	A generic error message, given when no more specific message is suitable	**Yes**
502 Bad Gateway	The server was acting as a gateway or proxy and received an invalid response from the upstream server.	**Yes**
503 Service Unavailable	The server is currently unavailable (because it is overloaded or down for maintenance).Generally, this is a temporary state. Sometimes, this can be permanent as well on test servers.	**Yes**
504 Gateway Timeout	The server was acting as a gateway or proxy and did not receive a timely response from the upstream server.	**Yes**
xxx Unknown Status Code	It is not recommended that you return a status code not listed in this document. However, in the event that an unknown status code is returned it will be treated as a failure which will result in a blocking retry.	**Yes**

Error Messages

For any of the error response codes where you can elaborate on the error condition, do so in the following format:Example Error Response Body - JSON errors array

```
{
      "errors": [{
            "code": "51",
            "message": "Unable to map the location provided for the given Parking Session"
      }]
}
```

Field Name	Field Description
code	Your internal error code for reference purposes
message	A detailed description of the error