![paybyphone logo]

PayByPhone Enforcement API - Version 2

Document Revision 1.1

Change History

Date	Revision	Changed by	Change Log
2017-04-04	1.0	Matt Olson	Initial public document
2017-07-11	1.1 **PREVIEW**	Matt Olson	Added amount field to parking entitlement - up to date with /byVendorLocation endpoint

Contents

PayByPhone Enforcement API V.2

Introduction

This document is a draft specification of the Enforcement API v2.

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.

API Overview

General notes

The Enforcement API follows a RESTful API design, in which information is made available via queryable resources. It adheres to the following general behaviour:

JSON format

Response payloads are returned in the JavaScript Object Notation (JSON)[1] format;

- For the most compact output, attributes containing null values will be omitted entirely from the response.

UTF-8 encoding

Requests to the API, and response provided by the API MUST use **UTF-8** text encoding.

Date formatting

Accepts and returns DateTimes in the *RFC 3339* [2] format.

- In this format, Dates and Times MUST either use UTC or specify the time zone offset in relation to UTC. E.g., for UTC:

"2013-06-24T14:33:05Z"

For UTC+9:

"2013-12-01T09:00:00+09:00"

- All DateTimes returned by the API will be expressed in UTC. It is the responsibility of the calling application to convert any retrieved DateTimes into the user's local timezone.

Latitude and Longitude

Latitude and longitude MUST be provided in accordance with the WGS 84 datum[3]. This is the reference coordinate system used our geo-location systems. Use of another coordinate system will lead to inaccurate results.

Latitude and longitude MUST be provided in signed degrees format[4]:

- Latitude values MUST be between -90 to 90 (inclusive, -90 = south pole, 90 = north pole)
- Longitude values MUST be between -180 to 180 (inclusive, negative = west, positive = east)
- The '+' sign MUST be omitted on positive coordinates
- MAY have up to 8 decimal places, though not all decimal places will be used in calculations

HTTPS + TLS only

Currently, only secure HTTP connections are allowed. Communicating over HTTPS preserves user privacy by protecting information between the user and the Enforcement API as it travels across the public Internet.

The Enforcement API MUST be accessed through a secured transport connection. I.e., HTTPS secured using TLS. Note that due to security concerns, using the older Secure Sockets Layer (SSL) to secure the transport is not supported.

Endpoints

The Enforcement v2 API is available at the following URLs:

- Primary endpoint: https://api.paybyphone.com/enforcement/v2/

Additional endpoints may be provided for specific clients.

New integrations should use the primary endpoint.

Authentication and Authorisation

The Enforcement API supports the following methods for authenticating:

User Authentication

Basic Authentication is supported for authentication - Username and Password credentials submitted by the client via the Authorization HTTP header. Where Basic Authentication is used, the credentials MUST be included in every request to the API.

Client Certificate Authentication

Client certificate based authentication is also supported. The public client certificate must be provided to PayByPhone beforehand. Note that when client certificate authentication is used, a username/password MUST not be provided. Further details are available on request.

Authorisation

Users will be authorised to only view enforcement data for associated vendors. Any attempt to access data for a different vendor will result in a 403 (Forbidden) error.

API Resources

GET parking/byPlate

Given a full plate number and coordinates of patroller position, returns information about the vehicle's current parking, the vehicle's eligibilities, and the geographical area in which the patroller is located.

Parameters

vendorId	number	REQUIRED	- Unique identifier for the vendor whose entitlements are being queried - Assigned by PayByPhone - MUST match the Id of a Vendor which exists in the PayByPhone system - MUST match the Id of a Vendor which the user has authorisation to view
patrollerId	string	OPTIONAL	- A unique identifier which identifies the patroller using the calling application - Assigned/managed by the enforcement provider. - If the enforcement provider makes a distinction between the ID of the user and the ID of the device, ID of the user SHOULD be used. - Although optional, providing the patrollerId is RECOMMENDED for allowing more accurate data. - It is the responsibility of the enforcement provider to provide the correct patrollerIds. The API will not perform any verification on provided patrollerIds.
plate	string	REQUIRED	- A full plate number to compare against parking entitlement vehicle plates - MUST contain at least two characters - Has no maximum length - MUST only contain alphanumeric characters (0 - 9, a - z, A - Z), spaces (' ') and hyphens ('-') - A parking entitlement is returned only if the entitlement's vehicle plate equals this plate parameter - The equality comparison is case-insensitive, and ignores spaces and hyphens

graceMinutes	number	OPTIONAL	• The number of minutes for which the API should continue to return a parking entitlement or eligibility after it has expired. • If omitted, a default value of 0 will be used • If provided, MUST be a non-negative value. I.e., graceMinutes ≥ 0 • A parking entitlement or eligibility will only be included in results if startDateTime ≤ asAtDateTime < (endDateTime + graceMinutes)
asAtDateTime	datetime	OPTIONAL	• Optionally provides an 'as at' date and time to query for valid parking entitlements. • If omitted, the current API system date and time will be used. • If provided, MUST be in the RFC 3339 format for combined Date and Time. *Note*: the 'T' character which separates the Date and Time parts MUST be provided.
maxSize	number	OPTIONAL	• Limits the number of parking entitlements returned in the response. If omitted, all results will be returned (up to a system-imposed maximum limit). • If provided, MUST be a non-negative value. I.e., maxSize ≥ 0.
coordinates	string	OPTIONAL	• Latitude and longitude of the patrolling device. • A comma-separated pair of values in the format *latitude*,*longitude*. E.g. 48.8478318,2.2427717 • If provided, then MUST conform to the signed degrees format (Refer above to *Latitude and Longitude* in the *API Overview).* • If not provided, geo-location will not be performed. • Although optional, users SHOULD pass through coordinates if GPS is available. The client SHOULD only omit coordinates if the device's current position cannot be determined.

accuracy	number	OPTIONAL	• The accuracy of the provided coordinates, in metres. Accuracy is defined by the radius of a circle around the *latitude*,*longitude* point. The patrolling device may be actually located anywhere within this circle.
			• When determining the patroller's current zone and sector, the API will take this accuracy value into consideration.
			   o If the accuracy number is large (meaning lower accuracy), the circle around the (latitude, longitude) point will be larger, and might overlap multiple sectors or zones.
			   o When this occurs, the API will return all overlapped zones/sectors as possible patroller positions.
			   o MUST be a non-negative value. I.e., accuracy ≥ 0.
			   o If coordinates are provided but accuracy is not provided, a default accuracy value of 0 metres will be used.
			   o If coordinates are not provided, then this value is ignored.

Response

The response is a hierarchical JSON document. The top level of the document will contain the following fields:

Errors	array of Error objects	A collection of any errors which have occurred while processing this request. See the "Error Handling" section below for details. If no errors have occurred, an empty collection is returned.
patrollerPosition	PatrollerPosition object	Current geolocated position of the patrolling device. Includes zone and sector information. If the coordinates parameter is omitted from the request parameters, a patrollerPosition with empty zones and sectors collections will be returned.
parkingEntitlements	array of ParkingEntitlement objects	Collection of parking entitlements (short-term or permit parking sessions) matching the query parameters (vendorId, plate, graceMinutes, asAtDateTime). All matching entitlements are returned regardless of their location within the city. Entitlements are sorted by plate; entitlements for the same plate are returned in unspecified order. If there are no matching entitlements, an empty collection is returned.

Eligibilities	array of Eligibility objects	Collection of eligibilities matching the query parameters. All matching eligibilities are returned regardless of the zones and/or sectors within the city to which the eligibility applies. Eligibilities are returned in the sort order used by the P&E API. As-of Jan. 2017, the P&E API sorts eligibilities by last name, first name, phone number, and start date. If there are no matching eligibilities, an empty collection is returned.

Response: PatrollerPosition

The patrollerPosition object has the following fields:

zones	array of strings	Collection of zones in which the patrolling device is located. Normally one zone will be returned. Multiple zones will be returned if the accuracy circle around the (latitude, longitude) point overlaps multiple zones. Zones are the primary subdivision of a city in which parking is enforced.
sectors	array of strings	Collection of sectors in which the patrolling device is located. Normally one sector will be returned. Multiple sectors will be returned if the accuracy circle around the (latitude, longitude) point overlaps multiple sectors. Sectors are the secondary subdivision of a city in which parking is enforced. Note that a sector may overlap multiple zones

Example Call

GET	https://api.paybyphone.com/enforcement/v2/parking/byPlate/?vendorId=5181&plate=AB123CD&graceMinutes=10&coordinates=48.861315,2.336760&accuracy=5.1&patrollerId=TEST&maxSize=10&asAtDateTime=2016-12-23T12:34:56-00:00

```
{
  "errors": [],
  "patrollerPosition": {
    "zones": [
      "75101"
    ],
    "sectors": [
      "1E"
    ]
  },
  "parkingEntitlements": [
    {
      "plate": "AB123CD",
      "zone": "75001",
      "locationNumber": "100075301",
      "startDateTime": "2016-12-23T12:28:36+00:00",
      "endDateTime": "2016-12-23T12:39:00+00:00",
      "eligibilityTypeApplied": "PRO",
      "isActive": true,
      "eligibilityStatus": "eligible",
      "vendorLocationId": "100075301",
      "vehicleType": "Car"",
      "amounts": [
        {
          "value": 500,
          "currency": "CAD",
          "type": "ParkingCostTotalIncludingTax"
        }
      ]
    },
    {
      "plate": "AB123CD",
      "zone": "75001",
      "locationNumber": "100075301",
      "startDateTime": "2016-12-23T12:18:35+00:00",
      "endDateTime": "2016-12-23T12:29:00+00:00",
      "eligibilityTypeApplied": "PRO",
      "isActive": false,
      "eligibilityStatus": "eligible",
      "vendorLocationId": "100075301",
      "vehicleType": "Car"",
      "amounts": [
        {
          "value": 500,
          "currency": "CAD",
          "type": "ParkingCostTotalIncludingTax"
        }
      ]
```

```
      }
   ],
   "eligibilities": [
     {
       "plate": "AB123CD",
       "sectors": [],
       "startDateTime": "2014-03-14T00:00:00+00:00",
       "endDateTime": "2019-03-14T00:00:00+00:00",
       "eligibilityType": "PRO"
     }
   ]
}
```

GET parking/byLocation

Given a vendor ID and location number, returns information about the vehicles currently entitled to park there.

This resource is under active development, and more information will be available as it progresses.

Parameters

vendorId	number	REQUIRED	- Unique identifier for the vendor whose entitlements are being queried - Assigned by PayByPhone - MUST match the Id of a Vendor which exists in the PayByPhone system - MUST match the Id of a Vendor which the user has authorisation to view
location	number	REQUIRED	- A unique identifier which identifies the location being queried - Assigned/managed by PayByPhone
graceMinutes	number	OPTIONAL	- The number of minutes for which the API should continue to return a parking entitlement or eligibility after it has expired. - If omitted, a default value of 0 will be used - If provided, MUST be a non-negative value. I.e., graceMinutes ≥ 0 - A parking entitlement or eligibility will only be included in results if startDateTime ≤ asAtDateTime < (endDateTime + graceMinutes)
asAtDateTime	datetime	OPTIONAL	- Optionally provides an 'as at' date and time to query for valid parking entitlements. - If omitted, the current API system date and time will be used. - If provided, MUST be in the RFC 3339 format for combined Date and Time. *Note*: the 'T' character which separates the Date and Time parts MUST be provided.
maxSize	number	OPTIONAL	- Limits the number of parking entitlements returned in the response. If omitted, all results will be returned (up to a system-imposed maximum limit). - If provided, MUST be a non-negative value. I.e., maxSize ≥ 0.

| patrollerId | string | OPTIONAL | A unique identifier which identifies the patroller using the calling application Assigned/managed by the enforcement provider. If the enforcement provider makes a distinction between the ID of the user and the ID of the device, ID of the user SHOULD be used. Although optional, providing the patrollerId is RECOMMENDED for allowing more accurate data. It is the responsibility of the enforcement provider to provide the correct patrollerIds. The API will not perform any verification on provided patrollerIds. |

Response

The response is a hierarchical JSON document. The top level of the document will contain the following fields:

platesResponse	array of PlatesResponse objects	Collection of Vehicle plates per location and their respective parking entitlements (short-term or permit parking sessions) and eligibilities matching the query parameters (vendorId, location), sorted by license plate. If there are no matching locationSessions, an empty collection is returned.
errors	array of Error objects	A collection of any errors which have occurred while processing this request. See the "Error Handling" section below for details. If no errors have occurred, an empty collection is returned.

Response: PlatesResponse

Each object in the platesResponse collection has the following fields:

plateValue	string	The full plate number of the matching vehicle.
parkingEntitlements	array of ParkingEntitlement objects	Collection of parking entitlements (short-term or permit parking sessions) matching the vehicle plate. All matching entitlements are returned based on their location and the existing vehicle plate in the response. Entitlements are returned in no particular order. If there are no matching entitlements, an empty collection is returned.
Eligibilities	array of Eligibility objects	Collection of eligibilities matching the vehicle plate in the response. Eligibilities are returned in no particular order.

GET	https://api.paybyphone.com/enforcement/v2/parking/byLocation?vendorId=5181&location=100075301&graceMinutes=10&asAtDateTime=2016-12-23T12:34:56-00:00&maxSize=2&patrollerId=TEST

```json
{
  "platesResponse": [
    {
      "plateValue": "AB123CD",
      "parkingEntitlements": [
        {
          "plate": "AB123CD",
          "zone": "75001",
          "location": "100075301",
          "startDateTime": "2016-12-23T12:18:35+00:00",
          "endDateTime": "2016-12-23T12:29:00+00:00",
          "eligibilityTypeApplied": "PRO",
          "isActive": false,
          "eligibilityStatus": "unknown",
          "vendorLocationId": "100075301"",
          "amounts": [
            {
              "value": 500,
              "currency": "CAD",
              "type": "ParkingCostTotalIncludingTax"
            }
          ]
        }
      ],
      "eligibilities": [
        {
          "plate": "AB123CD",
          "sectors": [],
          "startDateTime": "2014-03-14T00:00:00+00:00",
          "endDateTime": "2019-03-14T00:00:00+00:00",
          "eligibilityType": "PRO"
        }
      ]
    },
    {
      "plateValue": "AB345CD",
      "parkingEntitlements": [
        {
          "plate": "AB345CD",
          "zone": "75001",
          "location": "100075301",
          "startDateTime": "2016-12-23T12:18:44+00:00",
```

```
            "endDateTime": "2016-12-23T12:29:00+00:00",
            "eligibilityTypeApplied": "PRO",
            "isActive": false,
            "eligibilityStatus": "unknown",
            "vendorLocationId": "100075301"",
            "amounts": [
              {
                "value": 500,
                "currency": "CAD",
                "type": "ParkingCostTotalIncludingTax"
              }
            ]
          }
        ],
        "eligibilities": [
          {
            "plate": "AB345CD",
            "sectors": [],
            "startDateTime": "2014-03-14T00:00:00+00:00",
            "endDateTime": "2019-03-14T00:00:00+00:00",
            "eligibilityType": "PRO"
          }
        ]
      }
    ],
  "errors": []
}
```

GET parking/byVendorLocation

Given a vendor ID and vendor location ID (aka vendor lot ID), returns information about the vehicles currently entitled to park there.

Parameters

vendorId	number	REQUIRED	Unique identifier for the vendor whose entitlements are being queried Assigned by PayByPhone MUST match the Id of a Vendor which exists in the PayByPhone system MUST match the Id of a Vendor which the user has authorisation to view
vendorLocationId	string	REQUIRED	A unique identifier which identifies the vendor location being queried Assigned/managed by PayByPhone

graceMinutes	number	OPTIONAL	The number of minutes for which the API should continue to return a parking entitlement or eligibility after it has expired. If omitted, a default value of 0 will be used. If provided, MUST be a non-negative value. I.e., graceMinutes ≥ 0 A parking entitlement or eligibility will only be included in results if startDateTime $\leq$ asAtDateTime < (endDateTime + graceMinutes)
asAtDateTime	datetime	OPTIONAL	Optionally provides an 'as at' date and time to query for valid parking entitlements. If omitted, the current API system date and time will be used. If provided, MUST be in the RFC 3339 format for combined Date and Time. *Note*: the 'T' character which separates the Date and Time parts MUST be provided.
maxSize	number	OPTIONAL	Limits the number of parking entitlements returned in the response. If omitted, all results will be returned (up to a system-imposed maximum limit). If provided, MUST be a non-negative value. I.e., maxSize ≥ 0.
patrollerId	string	OPTIONAL	A unique identifier which identifies the patroller using the calling application. Assigned/managed by the enforcement provider. If the enforcement provider makes a distinction between the ID of the user and the ID of the device, ID of the user SHOULD be used. Although optional, providing the patrollerId is RECOMMENDED for allowing more accurate data. It is the responsibility of the enforcement provider to provide the correct patrollerIds. The API will not perform any verification on provided patrollerIds.

Response

The response is a hierarchical JSON document. The top level of the document will contain the following fields:

platesResponse	array of PlatesResponse objects	Collection of Vehicle plates per location and their respective parking entitlements (short-term or permit parking sessions) and eligibilities matching the query parameters (vendorId, vendor location), sorted by license plate.
		If there are no matching locationSessions, an empty collection is returned.

| errors | array of Error objects | A collection of any errors which have occurred while processing this request. See the "Error Handling" section below for details. |
| | | If no errors have occurred, an empty collection is returned. |

Response: PlatesResponse

Each object in the platesResponse collection has the following fields:

plateValue	string	The full plate number of the matching vehicle.
parkingEntitlements	array of ParkingEntitlement objects	Collection of parking entitlements (short-term or permit parking sessions) matching the vehicle plate.
		All matching entitlements are returned based on their vendor location and the existing vehicle plate in the response.
		Entitlements are returned in no particular order.
		If there are no matching entitlements, an empty collection is returned.
eligibilities	array of Eligibility objects	Collection of eligibilities matching the vehicle plate in the response.
		Eligibilities are returned in no particular order.

Example Call

G ET	https://api.paybyphone.com/enforcement/v2/parking/byvendorlocation?vendorId=5181&vendorLocationId=1202&graceMinutes=10&asAtDateTime=2016-12-23T12:34:56-00:00&maxSize=2&patrollerId=TEST

```
{
   "platesResponse": [
     {
       "plateValue": "AB123CD",
       "parkingEntitlments": [
         {
           "plate": "AB123CD",
           "zone": "75001",
           "location": "100075301",
           "startDateTime": "2016-12-23T12:18:35+00:00",
           "endDateTime": "2016-12-23T12:29:00+00:00",
           "eligibilityTypeApplied": "PRO",
           "isActive": false,
           "eligibilityStatus": "unknown",
           "vendorLocationId": "100075301",

           "amounts": [
             {
               "value": 500,
               "currency": "CAD",
               "type": "ParkingCostTotalIncludingTax"
             }
```

```
        ]
      }
    ],
    "eligibilities": [
      {
        "plate": "AB123CD",
        "sectors": [],
        "startDateTime": "2014-03-14T00:00:00+00:00",
        "endDateTime": "2019-03-14T00:00:00+00:00",
        "eligibilityType": "PRO"
      }
    ]
  },
  {
    "plateValue": "AB345CD",
    "parkingEntitlements": [
      {
        "plate": "AB345CD",
        "zone": "75001",
        "location": "100075301",
        "startDateTime": "2016-12-23T12:18:44+00:00",
        "endDateTime": "2016-12-23T12:29:00+00:00",
        "eligibilityTypeApplied": "PRO",
        "isActive": false,
        "eligibilityStatus": "unknown",
        "vendorLocationId": "100075301",

        "amounts": [

          {

            "value": 500,

            "currency": "CAD",

            "type": "ParkingCostTotalIncludingTax"

          }

        ]
      }
    ],
    "eligibilities": [
      {
        "plate": "AB345CD",
        "sectors": [],
        "startDateTime": "2014-03-14T00:00:00+00:00",
        "endDateTime": "2019-03-14T00:00:00+00:00",
        "eligibilityType": "PRO"
      }
    ]
  }
  ],
  "errors": []
}
```

GET parking/byLocationAndPlate

Given a vendor ID, location number, and plate number returns information about the vehicles currently entitled to park there.

This resource is under active development, and more information will be available as it progresses.

Parameters

vendorId	number	REQUIRED	- Unique identifier for the vendor whose entitlements are being queried - Assigned by PayByPhone - MUST match the Id of a Vendor which exists in the PayByPhone system - MUST match the Id of a Vendor which the user has authorisation to view
location	number	REQUIRED	- A unique identifier which identifies the location being queried - Assigned/managed by PayByPhone
plate	string	REQUIRED	- A full plate number to compare against parking entitlement vehicle plates - MUST contain at least two characters - Has no maximum length - MUST only contain alphanumeric characters (0 - 9, a - z, A - Z), spaces (' ') and hyphens ('-') - A parking entitlement is returned only if the entitlement's vehicle plate equals this plate parameter - The equality comparison is case-insensitive, and ignores spaces and hyphens
graceMinutes	number	OPTIONAL	- The number of minutes for which the API should continue to return a parking entitlement or eligibility after it has expired. - If omitted, a default value of 0 will be used - If provided, MUST be a non-negative value. I.e., graceMinutes ≥ 0 - A parking entitlement or eligibility will only be included in results if startDateTime ≤ asAtDateTime < (endDateTime + graceMinutes)
asAtDateTime	datetime	OPTIONAL	- Optionally provides an 'as at' date and time to query for valid parking entitlements. - If omitted, the current API system date and time will be used. - If provided, MUST be in the RFC 3339 format for combined Date and Time. *Note*: the 'T' character which separates the Date and Time parts MUST be provided.
maxSize	number	OPTIONAL	- Limits the number of parking entitlements returned in the response. If omitted, all results will be returned (up to a system-imposed maximum limit). - If provided, MUST be a non-negative value. I.e., maxSize ≥ 0.

patrollerId	string	OPTIONAL	- A unique identifier which identifies the patroller using the calling application - Assigned/managed by the enforcement provider. - If the enforcement provider makes a distinction between the ID of the user and the ID of the device, ID of the user SHOULD be used. - Although optional, providing the patrollerId is RECOMMENDED for allowing more accurate data. - It is the responsibility of the enforcement provider to provide the correct patrollerIds. The API will not perform any verification on provided patrollerIds.

Response

The response is a hierarchical JSON document. The top level of the document will contain the following fields:

Errors	Array of Error objects	A collection of any errors which have occurred while processing this request. See the "Error Handling" section below for details. If no errors have occurred, an empty collection is returned.
PatrollerPosition	PatrollerPosition object	Current geolocated position of the patrolling device. Includes zone and sector information. If the coordinates parameter is omitted from the request parameters, a patrollerPosition with empty zones and sectors collections will be returned. **(Currently not implemented)**
Eligibilities	Array of Eligibility objects	Collection of eligibilities matching the query parameters. All matching eligibilities are returned regardless of the zones and/or sectors within the city to which the eligibility applies. Eligibilities are returned in the sort order used by the P&E API. As-of Jan. 2017, the P&E API sorts eligibilities by last name, first name, phone number, and start date. If there are no matching eligibilities, an empty collection is returned.

		Collection of parking entitlements (short-term or permit parking sessions) matching the query parameters (vendorId, plate, graceMinutes, asAtDateTime).
ParkingEntitlements	Array of ParkingEntitlement objects	All matching entitlements are returned regardless of their location within the city.
		Entitlements are sorted by plate; entitlements for the same plate are returned in unspecified order.
		If there are no matching entitlements, an empty collection is returned.

Response: PlatesResponse

Each object in the platesResponse collection has the following fields:

GET	https://api.paybyphone.com/enforcement/v2/parking/bylocationandplate?vendorId=5181&location=100075301&plate=acb123&graceMinutes=10&asAtDateTime=2016-12-23T12:34:56-00:00&maxSize=2&patrollerId=TEST

Example Call

```
{
  "errors": [],
  "parkingEntitlements": [
    {
      "plate": "AB123CD",
      "zone": "75001",
      "locationNumber": "100075301",
      "startDateTime": "2016-12-23T12:28:36+00:00",
      "endDateTime": "2016-12-23T12:39:00+00:00",
      "eligibilityTypeApplied": "PRO",
      "isActive": true,
      "eligibilityStatus": "eligible",
      "vendorLocationId": "100075301",
      "vehicleType": "Car",
      "amounts": [
        {
          "value": 500,
          "currency": "CAD",
          "type": "ParkingCostTotalIncludingTax"
        }
      ]
    },
    {
      "plate": "AB123CD",
      "zone": "75001",
      "locationNumber": "100075301",
      "startDateTime": "2016-12-23T12:18:35+00:00",
      "endDateTime": "2016-12-23T12:29:00+00:00",
      "eligibilityTypeApplied": "PRO",
      "isActive": false,
      "eligibilityStatus": "eligible",
      "vendorLocationId": "100075301",
      "vehicleType": "Car"",
      "amounts": [
        {
          "value": 500,
          "currency": "CAD",
          "type": "ParkingCostTotalIncludingTax"
        }
      ]

    }
  ],
  "eligibilities": [
    {
      "plate": "AB123CD",
      "sectors": [],
      "startDateTime": "2014-03-14T00:00:00+00:00",
```

```
        "endDateTime": "2019-03-14T00:00:00+00:00",
        "eligibilityType": "PRO"
      }
    ]
}
```

GET /health

Returns a document describing the general health of the Enforcement API and its dependencies.

Common Data Types

ParkingEntitlement

Each ParkingEntitlement has the following fields:

plate	string	The full plate number of the matching vehicle.
zone	string	The zone in which the parking entitlement is locate. ***Note**: This field will be omitted if the system cannot determine the Zone at the time of Parking*
sector	string	The sector in which the parking entitlement is located. ***Note**: This field will be omitted if the system cannot determine the Sector at the time of Parking*.
locationNumber	string	The PayByPhone location number for the parking entitlement.
startDateTime	datetime	The UTC date and time at which the parking entitlement begins
endDateTime	datetime	The UTC date and time at which the parking entitlement ends
eligibilityTypeApplied	string	Eligibility type that was used to calculate the cost for this parking entitlement. This field is omitted if no eligibility type was used, as in the case of visitor parking.
isActive	boolean	Describes whether the parking entitlement is active, as of the time of the patroller query. Will be true when the entitlement is active, and false when the entitlement has expired, but falls within the specified graceMinutes.

eligibilityStatus	string	Describes whether the parker for this parking entitlement is eligible for the eligibilityTypeApplied. Note that when graceMinutes is supplied, then eligibilities which have expired, but fall within the specified graceMinutes will also be considered when determining eligibilityStatus. • *eligible* : Either eligibility is not required for this location, or that the parker is determined to be eligible to park in this location for the eligibilityTypeApplied. • *ineligible* : Eligibility for this location is required, but no matching eligibility could be found; • *unknown* : Eligibility status cannot be determined. Either no geo-location coordinates were provided in the query, or a partial failure has occurred (see the "Error Handling" section below).
vendorLocationId	string	The Vendor location number associated to the vendor
Stall	string	The stall number used for parking
vendorStall	string	The vendor specific stall number used for parking **Note**: *This field will be omitted if the vendor does not have an alternate stall numbering system*
vehicleState	string	The state or province in which the vehicle's licence plate was registered. If the user has not provided this information, vehicleState will be an empty string.
vehicleType	string	The type of vehicle, as specified in the member's profile. Omitted if the type of vehicle is not known. Possible values: • Car • Motorcycle • Electric Vehicle • Heavy Goods Vehicle

		The components for which the parker was charged. Each element is an object as follows:
amounts	array	<table><tr><td>**value**</td><td>integer</td><td>The value of the amount expressed in the smallest currency unit (e.g. cents). For a value of $3.50, this property will be 350.</td></tr><tr><td>**currency**</td><td>string</td><td>The 3-character ISO-4217 currency code</td></tr><tr><td>**type**</td><td>string</td><td>The type of the component. Possible values are: - ParkingCostTotalIncludingTax - ParkingCostTotal - ParkingSegmentTotalIncludingTax - FeesIncludingTax - Fees</td></tr></table>

Determining Eligibility Status

A parking entitlement is determined to be eligible if the vehicle parked has one or more eligibilities where ALL of the following is true:

1. They all have an eligibilityType which matches the eligibilityTypeApplied of the parking entitlement;
2. They cover the entire duration of the parking entitlement, so that at no time during parking is the entitlement not covered under an eligibility;
3. They all contain at least one of the patroller's geo-located sectors within their list of eligible sectors. If no geo-location information was provided in the query, then eligibility cannot be determined and the status will be *unknown.*

Additionally, a parking entitlement will be by default *eligible* if the location being parked in does not require any eligibility.

Eligibility

Each Eligibility has the following fields:

plate	string	The full plate number of the eligible vehicle.
sectors	array of strings	The sectors in which the eligibility authorizes the purchase of parking. If the eligibility authorizes the purchase of parking in all sectors for the vendor, an empty array of sectors will be returned. (If there is no eligibility for any sector, the eligibility object will not be returned at all.)
startDateTime	datetime	The UTC date and time at which the eligibility begins
endDateTime	datetime	The UTC date and time at which the eligibility ends
eligibilityType	string	The type of eligibility granted to this vehicle

Eligibility types are vendor-specific, defined as part of the vendor setup process. Each vendor has its own list of eligibility types. Further details are available on request.

Error Handling

Errors which occur within the Enforcement API can be categorised into two types:

- *Fatal* errors, which indicate that the API was unable to process the request, preventing it from returning any enforcement related information. The response will only include information on the error which occurred.
- *Partial* errors, which indicate a *partially successful* request, in which the API was only able to obtain part of the information request. The response will include the incomplete information the API was able to retrieve, along with the errors which occurred.

When either of these types of errors occur, the response from the Enforcement API will contain one or more errors to describe why the request was unsuccessful (or only partially successful). Each of these errors contains an error code and message to describe the nature of the error that occurred:

Response: Errors

errorCode	String	A short identifier to indicate the type of error which occurred.
message	String	A description of the particular error which occurred. • The message is provided for informational purposes only and SHOULD NOT be used directly for any error handling. Either the HTTP status code or the errorCode should be used instead.

HTTP Status Codes

Fatal errors will return an appropriate HTTP status code when this type of error is encountered (typically 400 or 500-level to indicate the nature of the problem). A successful or partially successful request will always return a 200 (OK) status code.

Error Type	HTTP Status	Meaning
Fatal	4xx or 5xx	The API was unable to process the request and hence unable to return any information. A list of the known HTTP status codes used for fatal errors is outlined further below.
Partial	200	The API was able to return information. A fatal error has not occurred. A partial error may still have occurred; please check the errors collection in the response.

Fatal Errors

Fatal errors indicate that the Enforcement API was unable to process the request.

The following are a set of known fatal level errors and the HTTP status codes they will respond with. Note that the errorCode within the response will match the HTTP status code.

Status	Text	Meaning
400	Bad Request	Incorrect information received in request or incorrect request format
401	Unauthorized	Missing or incorrect username/password credentials
403	Forbidden	Attempt to access data for a vendor to which the current user is not authorized
404	Not Found	The URL requested is invalid or the resource requested does not exist
500	Internal Server Error	Something is wrong, please contact PayByPhone so this issue can be investigated.

Note that the availability of parking entitlement information is regarded as critical for the Enforcement API. If parking entitlement information cannot be retrieved for a request, then it is treated as a fatal error.

Example

```
{
  "errors": [
    { "errorCode": "500", "message": "Unable to retrieve Parking session information" }
  ]
}
```

Partial Errors

Partial errors indicate that only part of a request was unable to be processed.

The Geo-Enforcement API makes use of three types of information:

- Parking Entitlements;
- Eligibilities;
- Patroller Position.

Under normal operation, all three types of information are available and are returned.

Failure to obtain parking entitlements is considered fatal, and an HTTP status of 500 (Internal Server Error) will be returned.

However, the ability to obtain either eligibilities or patroller position is treated as non-critical, and so these scenarios are treated as partial errors.

When a partial error occurs, the API will still return an HTTP status code of 200 (OK).

The following are the known list of partial errors which can occur in the Enforcement APi:

errorCode	message	Meaning

1001	Unable to retrieve Eligibility information	Indicates that the eligibilities for the requested plate could not be retrieved.
		
		Parking entitlements and patroller position (if available) will still be returned.
		
		Due to the unavailability of eligibility information, all returned parking entitlements with an eligibility type applied will have an eligibility status of unknown.
		
		Example:
		
		``
		{
		  "errors": [
		    { "errorCode": "1001", "message": "Unable to retrieve Eligibility information" }
		  ],
		  "patrollerPosition": {
		    "zones": ["75101"],
		    "sectors": ["1E"]
		  },
		  "parkingEntitlements":
		  [
		    {
		      "plate": "23XYZ43",
		      "zone": "75004",
		      "locationNumber": "75004",
		      "startDateTime": "2014-10-07T17:42:27Z",
		      "endDateTime": "2014-10-10T17:42:27Z",
		      "eligibilityTypeApplied": "RES",
		      "isActive": false,
		      "eligibilityStatus": "unknown"
		    }
		  ]
		}
		``

1002	Unable to retrieve Patroller Position information	Indicates that zone and sector information for the requested coordinates could not be retrieved.
		
		Parking entitlements and eligibilities (if available) will still be returned.
		
		Due to the unavailability of positional information, all returned parking entitlements with an eligibility type applied will have an eligibility status of unknown.
		
		<pre>{
		  "errors": [
		    { "errorCode": "1002", "message": "Unable to retrieve Patroller Position information" }
		  ],
		  "parkingEntitlements": [
		    {
		      "plate": "23XYZ43",
		      "zone": "75004",
		      "locationNumber": "75004",
		      "startDateTime": "2014-10-07T17:42:27Z",
		      "endDateTime": "2014-10-10T17:42:27Z",
		      "eligibilityTypeApplied": "RES",
		      "isActive": true,
		      "eligibilityStatus": "unknown"
		    }
		  ],
		  "eligibilities": [
		    {
		      "plate": "23XYZ43",
		      "sectors": ["4D","4E","5A","5B"],
		      "startDateTime": "2014-09-25T10:33:27Z",
		      "endDateTime": "2015-09-25T10:33:27Z"
		      "eligibilityType": "RES"
		    }
		  ]
		}</pre>

Multiple Partial Errors

It is possible for a single request to the Enforcement API to encounter more than one non-critical problem. For example, a failure to retrieve both eligibilities and patroller position will return an error for both of these issues:

```
{
  "errors": [
    { "errorCode": "1001", "message": "Unable to retrieve Eligibility information" },
    { "errorCode": "1002", "message": "Unable to retrieve Patroller Position information" }
  ],
{
  "parkingEntitlements": [
    {
      "plate": "23XYZ43",
      "zone": "75004",
      "locationNumber": "75004",
      "startDateTime": "2014-10-07T17:42:27Z",
      "endDateTime": "2014-10-10T17:42:27Z",
      "eligibilityTypeApplied": "RES",
      "isActive": true,
      "eligibilityStatus": "unknown"
    }
  ]
}
```

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.