Zendrive Documentation

Release 0.0.21

Zendrive

Apr 24, 2017

Contents

1 Analytics API Documentation 1

CHAPTER 1

Analytics API Documentation

Introduction

The Zendrive Driver Analytics API provides driver analytics metrics at various aggregation levels via URI paths. To use this API, your application should make a HTTPS request and parse the response. The response format is JSON. Use standard HTTP GET methods to retrieve driver analytics. We support cross-origin resource sharing to allow you to interact securely with our API from a client-side web application. **Remember that you should never expose your secret API key in any public website's client-side code**. JSON will be returned in all responses from the API, including errors.

Since the API is based on open standards, you can use any web development language to access the API.

Authentication

You authenticate to the Zendrive API endpoint by providing your application key in the request parameters. The application key must be specified as the apikey query parameter. It is a required parameter in every API request. *Sign Up<http://zendrive.com>* to get your API key. Your API key carries many privileges, so keep it secret and secure!

All API requests must be made over HTTPS. Calls made over plain HTTP will fail.

API Host and Versioning

All API requests must be sent to `https://api.zendrive.com`. All API requests must contain the appropriate version in the path. Current API version is **v2**.

Errors

Zendrive API uses conventional HTTP response codes to indicate success or failure of an API request. Response codes in the 2xx range indicate success, codes in the 4xx range indicate an error that resulted from the provided information (e.g. a required parameter was missing etc.) and codes in the 5xx range indicate an error with Zendrive's servers. The error response JSON may have following attributes.

error	A human readable message giving more details about the error.

List Endpoints

Several Zendrive API end points return a list of resources like drivers or trips. Such lists of resources can be large depending on your fleet size (number of drivers or number of trips) and time window of the query. The API provides some common parameters to process responses from these List endpoints. All of them are optional.

Pagination

The list API methods share a common structure for pagination. Zendrive uses cursor-based pagination, using the parameters `offset` and `limit`.

Query Parameter	Default	Description
offset	0	A cursor for use in pagination. `offset` is the index of object that defines your place in the list. For instance, if you make a list request and receive first 20 objects, your subsequent call should include `offset=20` in order to fetch the next page of the result list. The list API responses also contain `next_offset` parameter which can be used to fetch next page. When there are no more elements left in the list `next_offset` is missing from the response.
limit	10	A limit on the number of objects to be returned. Limit can range between 1 and 50.

Sorting

The list API methods also allow sorting the list by different numerical attributes in both ascending and descending order. This can be done by the `order_by` and `order_type` query parameters.

Query Parameter	Default	Description
order_by	none	Specifies the numerical attribute by which to sort the list of resources in the response. This is supported for the various zendrive score types in the **score** section of the response (e.g: **zendrive_score**) and numerical attributes in the **info** section of the response. (e.g: **distance_km**). By default, lists in responses are unsorted.
order_type	asc	Specifies the sort order. **asc** for sorting in ascending order. **desc** for sorting in descending order.

Date Range

All endpoints allow lookup of data in a specific date range. The date range can be specified using the `start_date` and `end_date` query parameters. Specifying a date range is optional. If a date range is not specified. API endpoints return data for the last one week.

Query Parameter	Description
start_date	Lookup data from active drivers between start_date and end_date [both inclusive]. Date format is YYYY-MM-DD
end_date	Lookup data from active drivers between start_date and end_date [both inclusive]. Date format is YYYY-MM-DD

Zendrive Scores

The safety and efficiency of your fleet drivers can make or break your bottom line. Zendrive SDK was built to give fleet managers insight into the quality and safety of their drivers based on detailed driving behavior. By accessing phone sensors and combining that data with context about the drive time and place, Zendrive can identify both safe and risky driving - allowing fleet managers to take action before poor driving becomes a liability. The main areas of interest are cautiousness, control and focus. Zendrive mobile SDK automatically detects the start and end of driving (called trips) and collects sensor data (GPS / accelerometer / gyroscope etc) throughout the trip. Zendrive employs state of the art data analysis and machine learning algorithms to compute various driver behavior scores. The scores are expressed as a number between 0 to 100 or -1 if they are not yet available. High values correspond to better driving practices.

Score Name	Description
Cautious Score	The Cautious score reflects the driver's tendency to follow the rules of the road. This includes adherence to speed limits and the tendency to avoid creating dangerous or hazardous situations for other drivers. Drivers who score poorly on Cautious are more likely to be booked for moving violations.
Control Score	The Control Score measures the driver's tendency to accelerate or brake beyond normal rates. The acceptable limits for high acceleration and severe brake are 8 mph/sec. A driver frequently pushing those limits is more likely to lose control of his vehicle.
Focused Score	The Focused Score captures the driver's attention level. This score measures phone use while driving or while engaging is other risky driving behavior. Distracted drivers are more prone to create hazardous or unsafe situations on the road while driving.
Zendrive Score	Each driver receives a Zendrive Score. This is a combination of the other scores - Cautious, Control, and Focus scores. The index reflects the driver's accident risk. High scores in these three indicate safer drivers. Low scores reflect hazardous or risky driving patterns. Preventive or corrective actions should be prescribed in extreme cases.

Note: Since the score calculation requires high fidelity data, scores for a trip are only computed when the trips are logged by the SDK in analytics mode. This is specified as ZendriveOperationModeDriverAnalytics mode in iOS. In the android SDK, all trips are recorded in analytics mode with high fidelity data.

API Endpoints

List Driver Groups in a Fleet

```
curl https://api.zendrive.com/v2/groups?apikey={ZENDRIVE_ANALYTICS_API_KEY}
```

Note: This call takes no query parameters other than `apikey`.

Response field	Description
group_ids	A collection of all group ids that belong to the fleet. A group id is specified in Zendrive SDK initialization to tag a driver as part of a group.

Sample Response

```
{
    "group_ids" : [
        "san francisco",
        "new york",
        "chigaco"
    ]
}
```

List Drivers in a Fleet

Lookup active drivers in the given date range. An active driver is one who has at least one recorded trip in the given date range. This endpoint also allows look up of specific drivers using the ids parameter.

```
curl https://api.zendrive.com/v2/drivers?apikey={ZENDRIVE_ANALYTICS_API_KEY}
```

Note: All query parameters except `apikey` are optional.

Request Parameter	Description
start_date	Lookup active drivers in this date range. See *Date Range* for description
end_date	Lookup active drivers in this date range. See *Date Range* for description
fields	Comma separated list of fields to lookup. If nothing is specified, all data is returned. • info : Returns information about driver [Total kilometers driven,Drive time etc] • score: Returns driving behavior scores [cautious, focused, control etc]
limit	See *Pagination* section for description.
offset	See *Pagination* section for description.
ids	Comma separated list of driver ids for which data should be returned. Even if these drivers are not active between start_date and end_date the response will contain info and score sections for these drivers.
group_id	If specified the list of drivers returned will be restricted to drivers that belong to the specified group. If a list of driver ids is explicitly given as query parameter then group_id parameter has no impact on result set.
order_by	Sort list by score_type or info fields. See *Sorting* section for details.
order_type	Sort order. See *Sorting* section for details.

Response field	Description
start_date	Start date of the request.
end_date	End date of the request.
next_offset	This is the value that should be passed in offset parameter to get the next page of response. If not present in response, it implies that this is the last page.
drivers	Array of drivers.
drivers[i].driver_id	Id of the driver. This is the ID specified when initializing the Zendrive SDK in the mobile application.
drivers[i].info	Various metrics of the driver.
drivers[i].info.num_trips	Number of trips.
drivers[i].info.distance_km	Distance travelled in kilometers.
drivers[i].info.drive_time_hours	Total drive time of the driver across all trips in HH:MM format.
drivers[i].info.driver_first_date	The first date time we saw data from this driver.
drivers[i].info.attributes	Additional attributes of the driver if it was provided during setup of the Zendrive SDK. The attributes are returned here as a json string. This is **NA** if no attributed were provided.
drivers[i].rank	The rank of the driver within the fleet or group (if group_id was specified) based on the driver's Zendrive score.
drivers[i].score	A collection of various scores for the driver during the interval specified. Note that each score here is an average of daily scores for the driver over the given interval.
drivers[i].score.cautious_score	The cautious score of this driver at the end of the given date range.
drivers[i].score.control_score	The control Score of this driver at the end of the given date range.
drivers[i].score.focused_score	The focused Score of this driver at the end of the given date range.
drivers[i].score.zendrive_score	Zendrive score of this driver at the end of the given date range.
drivers[i].recommendation	A human friendly textual recommendation for the driver to improve his/her Zendrive score.

Sample Response


```
{
    "end_date": "2014-11-23",
    "start_date": "2014-11-17"
    "drivers": [
        {
            "info": {
                "num_trips": 15,
                "drive_time_hours": "03:35",
                "distance_km": "167.0",
                "driver_start_date": "2014-10-01",
                "attributes": "NA"
            },
            "driver_id": "10101672903689391",
            "rank": "6/8",
            "score": {
                "zendrive_score": 48,
                "control_score": 78,
                "cautious_score": 68,
                "focused_score": 73
            },
            "recommendation": "Phone use is distracting your performance."
        },
        {
            "info": {
                "num_trips": 8,
                "drive_time_hours": "00:42",
                "distance_km": "20.0",
                "driver_start_date": "2014-10-31",
                "attributes": "NA"
            },
            "driver_id": "1023232",
            "rank": "3/8",
            "score": {
                "zendrive_score": 60,
                "control_score": 86,
                "cautious_score": 77,
                "focused_score": 80
            },
            "recommendation": "Keep your hands off the phone while driving and avoid␣
↪over-speeding."
        },
    ],
}
```


Fleet Scores

```
curl https://api.zendrive.com/v2/score?apikey={ZENDRIVE_ANALYTICS_API_KEY}
```

Note: All query parameters except `apikey` are optional.

Request Parameter	Description
start_date	Lookup fleet score in this date range. See *Date Range* for description
end_date	Lookup fleet score in this date range. See *Date Range* for description
fields	Comma separated list of fields to lookup. If nothing is specified, info and score are returned. • info : Returns information about the fleet [Total kilometers driven, Drive time etc]. • score: Returns driving behavior scores [cautious, focused, control etc] averaged over all trips. • score_statistics: Returns daily driving behavior scores [cautious, focused, control etc] along with distributions over hour of day, week and driver. • daily_scores: Returns scores [cautious, focused, control etc] for all the days in the given date range
group_id	The fleet score is computed based on data from the specified group_id within the fleet.

Response field	Description
start_date	Start date of the request.
end_date	End date of the request.
info.distance_km	Total distance in km logged by all drivers in the fleet or group.
info.drive_time_hours	Total drive time over all drivers in fleet or group represented in HH:MM format.
info.drivers	Number of drivers in fleet or group active during the given date range.
info.last_trip_date	Date since the last recorded trip.
score.focused_score	Average Focused score across all drivers in the fleet in the given date range.
score.control_score	Average Control score across all drivers in the fleet in the given date range.
score.cautious_score	Average Cautious score across all drivers in the fleet in the given date range.
score.zendrive_score	Average Zendrive score across all drivers in the fleet in the given date range.
daily_scores[i]	Scores for each day in the date range requested.
daily_scores[i].date	Date for which scores are provided in this tuple. Date format is YYYY-MM-DD.
daily_scores[i].focused_score	Average Focused score across all drivers in the fleet on this particular date.
daily_scores[i].control_score	Average Control score across all drivers in the fleet on this particular date.
daily_scores[i].cautious_score	Average Cautious score across all drivers in the fleet on this particular date.
daily_scores[i].zendrive_score	Average Zendrive score across all drivers in the fleet on this particular date.
score_statistics.distributions.day_of_week	The distribution of a score type grouped by each day of the week of the trips in a fleet in the given date range. This is available for each score type. Each distribution is a dictionary where the key represents the day of the week (Sunday(0) to Saturday(6)).
score_statistics.distributions.hour_of_day	The distribution of a score type grouped by each hour of day of trips in a fleet in the given date range. This is available for each score type. Each distribution is a dictionary where the key represents the hour of the day from 0 to 23.
score_statistics.distributions.driver	The relative frequency distribution of a score over all active drivers in the fleet or group in the date range specified. This is available for each score type. Each distribution is an array of 100 values representing the relative frequency for scores from 1 to 100.

Sample Response


```
{
    "info": {
        "drive_time_hours": "100:45",
        "drivers": 12,
        "distance_km": "1694.1"
    },
    "score": {
        "zendrive_score": 75,
        "cautious_score": 71,
        "control_score": 77,
        "focused_score": 80
    },
    "score_statistics": {
        "distributions": {
            "driver_score_distribution": {
                "zendrive_score": [0.0, 0.13, 0.0, ......... ],
                ...
            },
            "day_of_week_distribution": { ... },
            "hour_of_day_distribution": { ... }
        }
    },
    "daily_scores": [
        {
            "zendrive_score": 50,
            "date": "2014-11-01",
            "control_score": 78,
            "cautious_score": 71,
            "focused_score": 81
        },
        {
            "zendrive_score": 39,
            "date": "2014-11-02",
            "control_score": 91,
            "cautious_score": 52,
            "focused_score": 59
        },
        { ... }
    ],
    "start_date": "2014-11-01",
    "end_date": "2014-11-07"
}
```


Global Score Distribution

```
curl https://api.zendrive.com/v2/global_score?apikey={ZENDRIVE_ANALYTICS_API_KEY}
```

Note: This request takes no parameters.

Response field	Description
distribution	The relative frequency distribution of a score over the global population. This is available for each score type. Each distribution is an array of 100 values representing the relative frequency of scores from 1 to 100.

Sample Response

```
{
    "score": {
        "distributions": {
            "zendrive_score": [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, ......... ],
            "control_score": [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, ......],
            "cautious_score": [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, ......]
            "focused_score": [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, ......],
        }
    }
}
```

Driver Scores

```
curl https://api.zendrive.com/v2/driver/{driver_id}/score?apikey={ZENDRIVE_ANALYTICS_
↪API_KEY}&fields=info,score,score_statistics
```

Note: All query parameters except `apikey` are optional.

Request Parameter	Description
start_date	Lookup driver score in this date range. See *Date Range* for description
end_date	Lookup driver score in this date range. See *Date Range* for description
fields	Comma separated list of fields to lookup. If nothing is specified, info and score are returned. • info : Returns information about driver [Total kilometers driven, Drive time etc] • score: Returns latest driving behavior scores [cautious, focused, control etc] • score_statistics: Returns daily driving behavior scores [cautious, focused, control etc] along with hourly and weekly distributions

Response field	Description
start_date	Starting date for driver score returned in response. Same as request parameter if specified, else the start date considered by the API by default.
end_date	End date for driver score returned in response. Same as request parameter if specified, else the start date considered by the API by default.
info.distance_km	Total distance in km logged by the driver during the specified date range.
info.num_trips	Total number of trips logged by the driver during the specified date range.
info.driver_start_date	The date at which data was first logged by this driver.
info.attributes	Additional attributes of the driver if it was provided during setup of the Zendrive SDK. The attributes are provided as a json string. This is **NA** if no attributed were provided.
info.drive_time_hours	Total drive time of the driver during the specified date range represented in HH:MM format.
info.highway_ratio	Indicates the fraction of trips recorded on highways (value lies within 0 & 1)
info.night_driving_fraction	Indicates the fraction of night (12:00 AM to 4:00 AM local time) driving (value lies within 0 & 1)
info.device_info	Devices theat the driver has used (model name and version number)
score.focused_score	Focused score of the driver at the end of the given date range.
score.control_score	Control score of the driver at the end of the given date range.
score.cautious_score	Cautious score of the driver at the end of the given data range.
score.zendrive_score	Zendrive score of the driver at the end of the given data range.
score_statistics.focused_score	Focused score of the driver at the end of the given data range coupled with a difference from the same score at the start of the date range.
score_statistics.control_score	Control score of the driver at the end of the data range coupled with a difference from the same score at the start of the date range.
score_statistics.cautious_score	Cautious score of the driver at the end of the given data range coupled with a difference from the same score at the start of the date range.
score_statistics.zendrive_score	Zendrive score of the driver at the end of the given data range coupled with a difference from the same score at the start of the date range.
score_statistics.distributions.hour_of_day	The distribution of a score type grouped by each hour of the day of each trip in the given date range. This is available for each score type. Each distribution is a dictionary where the key represents the hour of the day from 0 to 23.
score.distributions.day_of_week	The distribution of a score type grouped by each day of the week of each trip in the given date range. This is available for each score type. Each distribution is a dictionary where the key represents the day of the week (Sunday(0) to Saturday(6)).
daily_scores	Daily scores for the driver. This score is based on trips logged by the driver on each day in the given date range.This is returned as a list with an element for each day where trips were logged by the driver in the given date range. All score types are computed.

Sample Response

```
{
    "info": {
        "drive_time_hours": "23:48",
        "num_trips": 10,
        "distance_km": "54.8",
        "driver_start_date": "2014-10-01",
        "attributes": {
          "LastName": "Hopkins",
          "FirstName": "Anthony",
          "Phone": "555-555-5555"
        },
```

```
        "highway_ratio": 0.0203,
        "night_driving_fraction": 0.01874794090402367,
        "device_info": [{missing_data: [], model: "samsung-SM-G935F", version: "23"}]
    },
    "score": {
        "zendrive_score": 57,
        "control_score": 88,
        "cautious_score": 70,
        "focused_score": 80
    },
    "score_statistics"": {
        "zendrive_score": {
            "score": 57,
            "delta": 0
        },
        "control_score": {
            "score": 88,
            "delta": 0
        },
        "distributions": {
            "hour_of_day_distribution": {
                "zendrive_score": { ... },
                "control_score": { ... },
                "cautious_score": { ... },
                "focused_score": { ... }
            },
            "day_of_week_distribution": { ... }
        },
        "cautious_score": {
            "score": 70,
            "delta": 0
        },
        "focused_score": {
            "score": 80,
            "delta": 0
        }
    },
    "daily_scores": [
        {
            "zendrive_score": 57,
            "date": "2014-11-04",
            "control_score": 88,
            "cautious_score": 70,
            "focused_score": 80
        },
        { ... }
    ],
    "start_date": "2014-11-01",
    "end_date": "2014-11-07"
}
```

List Driver Sessions

```
curl https://api.zendrive.com/v2/driver/{driver_id}/sessions?apikey={ZENDRIVE_
↪ANALYTICS_API_KEY}
```

Note: All query parameters except `apikey` are optional.

Request Parameter	Description
start_date	Lookup driver sessions in this date range. See *Date Range* for description.
end_date	Lookup driver sessions in this date range. See *Date Range* for description.
limit	See *Pagination* section for description.
offset	See *Pagination* section for description.

Response Field	Description
start_date	Start date of the request.
end_date	End date of the request.
sessions	List of session ids.
sessions[i].session_id	The session id provided by the application in the Zendrive SDK.

Sample Response

```
{
    "next_offset": 10,
    "start_date": "2014-11-16",
    "end_date": "2014-11-22",
    "sessions": [
        {
            "session_id": "542ebb4ee98f7c2438f6c140bb"
        },
        {
            "session_id": "542ebb4ee98f7c2438f6c140bb"
        },
        { ... }
    ]
}
```

List Driver Trips

```
curl https://api.zendrive.com/v2/driver/{driver_id}/trips?apikey={ZENDRIVE_ANALYTICS_
↪API_KEY}
```

Note: All query parameters except `apikey` are optional.

Request Parameter	Description
start_date	Lookup trips from a driver in this date range. See *Date Range* for description.
end_date	Lookup trips from a driver in this date range. See *Date Range* for description.
fields	Comma separated list of fields to lookup. If nothing is specified, all data is returned. `info` : Returns information about driver [Total kilometers driven, Drive time etc]. `score`: Returns driving behavior scores [cautious, focused, control etc]
session_ids	A comma separated list of session ids to filter trips by. Only trips tagged by the given session ids are returned. Sessions are specified in the Zendrive SDK. The mobile application can provide session ids to the SDK to tag trips with.
tracking_ids	A comma separated list of tracking ids to filter trips by. Only trips tagged by the given tracking ids are returned. Tracking ids are specified by the mobile application when recording a trip in manual mode.
limit	See *Pagination* section for description.
offset	See *Pagination* section for description.
order_by	Sort list by score_type or info fields. See *Sorting* section for details.
order_type	Sort order. See *Sorting* section for details.

Response Field	Description
start_date	Start date of the request.
end_date	End date of the request.
trips	List of trips from the driver in the given date range.
trips[i].trip_id	Unique Id of the trip assigned by Zendrive.
trips[i].info.distance_km	Length of the trip in km.
trips[i].info.drive_time_hours	Total duration of the trip in HH:MM format.
trips[i].info.start_time	Start time of trip in ISO format.
trips[i].info.end_time	End time of trip in ISO format.
trips[i].info.tracking_id	Tracking id of the trip if specified in the Zendrive SDK. This is available only for trips recorded in manual mode of the SDK.
trips[i].info.session_id	Id of the session this trip belongs to. This is available if the session was live in the Zendrive SDK when the trip was recorded.
trips[i].score.control_score	Control score of the trip.
trips[i].score.cautious_score	Cautious score of the trip.
trips[i].score.focused_score	Focused score of the trip.
trips[i].score.zendrive_score	Zendrive score of the trip.

Sample Response


```
{
    "trips": [
        {
            "info": {
                "start_time": "2014-11-17 07:36:44-05:00",
                "session_id": "542ebb4ee98f7c2438f6c140",
                "distance_km": "13.7",
                "end_time": "2014-11-17 07:55:24-05:00",
                "tracking_id": "545e88bdfd3115a27ff5ebb1",
                "drive_time_hours": "00:18"
            },
            "score": {
                "zendrive_score": 74,
                "control_score": 97,
                "cautious_score": 76,
                "focused_score": 87
```

```
            },
            "trip_id": 1416227804134
        }
    ]
    "end_date": "2014-11-22",
    "start_date": "2014-11-16"
}
```

Trip Scores

```
curl https://api.zendrive.com/v2/driver/{driver_id}/trip/{trip_id}?apikey={ZENDRIVE_
↪ANALYTICS_API_KEY}
```

Note: All query parameters except `apikey` are optional.

Request Parameter	Description
fields	Comma separated list of fields to lookup. If nothing is specified, this defaults to "info,score". • info : Returns recorded information about the trip [Total kilometers driven, Drive time etc]. • simple_path: Returns a coarse GPS trail of the trip. Useful for visualization of the trip path. • score: Returns driving behavior scores about the trip [control, focused etc]. • speed_profile: Returns the speed profile of the trip as a tuple (Driver's speed in MPH, Timestamp in ms, Speed limit on the road segment). • events: Returns events detected by Zendrive during the trip. Events like OverSpeeding, PhoneUse, AggressiveAcceleration, HardBrake and Collision are returned.

Response Field	Description
info.distance_km	Distance in km of the trip.
info.drive_time_hours	Total duration of the trip represented in HH:MM format.
info.start_time	Start time of trip in ISO format.
info.end_time	End time of trip in ISO format
info.session_id	Session id attached the trip if specified in the Zendrive SDK when the trip was recorded.
simple_path	An array of latitude, longitude, timestamp tuples representing a simplified path of the trip. The timestamp is in ISO format.
score.control_score	Control score of the trip.
score.cautious_score	Cautious score of the trip.
score.focus_score	Focus score of the trip.
score.zendrive_score	Zendrive score of the trip.
speed_profile	An array of tuples containing Driver's speed in MPH, timestamp (Unix timestamp since epoch in milliseconds) and Speed limit on the road segment. The array is in timestamp ascending order.
events	An array containing a list of driving events that happened during the trip. The events are low level details that are reflected in scores.
events[i].latitude_start	Latitude of location where the event started.
events[i].longitude_start	Longitude of location where the event started.
events[i].latitude_end	Latitude of location where the event ended.
events[i].longitude_end	Longitude of location where the event ended.
events[i].start_time	Timestamp of when the event started in ISO format.
events[i].end_time	Timestamp of when the event ended in ISO format.
events[i].event_type	Type of driving event. The possible types are **OverSpeeding, PhoneUse, AggressiveAcceleration, HardBrake and Collision**.
events[i].confidence	Confidence level for a Collision event. The possible types are **HIGH and LOW**.

Sample Response


```
{
   "info":{
      "trip_max_speed":"NA",
      "distance_km":"2.4",
      "end_time":"2015-03-02T13:47:47-05:00",
      "tracking_id":"NA",
      "drive_time_hours":"00:08",
      "start_time":"2015-03-02T13:39:44-05:00",
      "session_id":"NA",
      "trip_type":"drive"
   },
   "score":{
      "zendrive_score":37,
      "control_score":22,
      "cautious_score":61,
      "focused_score":28
   },
   "trip_id":"1425321584126",
   "events":[
      {
         "latitude_end":39.1737515526,
         "latitude_start":39.1746982093,
         "longitude_end":-86.5102897492,
         "event_type":"PhoneUse",
         "start_time":"2015-03-02T13:39:44-05:00",
```

```
            "longitude_start":-86.5093636444,
            "end_time":"2015-03-02T13:39:51-05:00"
        },
        {
            "latitude_end":39.1752463302,
            "latitude_start":39.1752463302,
            "longitude_end":-86.5269198749,
            "event_type":"HardBrake",
            "start_time":"2015-03-02T13:45:54-05:00",
            "longitude_start":-86.5269198749,
            "end_time":"2015-03-02T13:45:54-05:00"
        },
        {
            "latitude_end":39.1759635662,
            "latitude_start":39.1759686268,
            "longitude_end":-86.5309157845,
            "event_type":"Collision",
            "start_time":"2015-03-02T13:46:22-05:00",
            "longitude_start":-86.5300238164,
            "end_time":"2015-03-02T13:46:30-05:00",
            "confidence":"HIGH"
        }
    ],
    "speed_profile":[
        [
            7.202946800000001,
            1425321588071,
            "NA"
        ],
        [
            5.72656416306,
            1425321589070,
            "NA"
        ]
    ],
    "simple_path":[
        {
            "latitude":39.1746982093,
            "timestamp":"2015-03-02T13:39:44-05:00",
            "longitude":-86.5093636444,
            "time_millis":1425321584470
        },
        {
            "latitude":39.1739835218,
            "timestamp":"2015-03-02T13:39:48-05:00",
            "longitude":-86.5100537986,
            "time_millis":1425321588071
        }
    ]
}
```


Delete Trip

This API endpoint should be used if you want to ignore an existing trip and all its data from future API responses and driver score computations. Once deleted a trip has no impact on the driver's scores any more and hence deletion will lead to change in driver scores.

Note that a trip MUST already exist in Zendrive system for it to be successfully deleted (if a trip and its data is not yet uploaded to server it cannot be deleted). This API endpoint typically should be called after existence of trip is verified by a GET call or after a Webhook callback has been invoked.

```
curl -X DELETE https://api.zendrive.com/v2/driver/{driver_id}/trip/{trip_id}?apikey=
↪{ZENDRIVE_ANALYTICS_API_KEY}
```

Note: `apikey` is the only query parameter.

Response in case of Success

```
{
    "success": true
}
```

Sample Response in case of Failure

```
{
    "error": "trip_id 1426131047984 is not valid"
}
```

Webhook Notifications API

Zendrive provides the ability to specify a Webhook where you can receive notifications of interesting events and alerts from Zendrive. The Webhook URL can be specified under **Settings** in your account, after you login to Zendrive.

The Webhook URL provided must be a HTTPS URL as the notifications contain private information about your fleet. Notifications are sent as a POST request to the Webhook URL with a data block containing a json string. The json data contains the following fields.

Field	Description
version	Specifies the version of the notification API being sent. Currently, the value of this field is 1. As the notification API evolves, this field will be incremented.
type	The type of this notification as a string. Your application can use this to handle different types of notifications as needed. New notification types may be added incrementally in the API without a bump in the version.
...	Additional fields present are notification type specific. They are described along with the description of the different notification types.

Retries

Zendrive will retry notifications to the Webhook in case of all HTTP Errors, Connection Timeouts, SSL Errors, TooManyRedirectErrors. The interval between consecutive retrials increases from 2 min to 15 mins in an exponential fashion, gets capped at 15 mins, is expired after 1 day is elapsed since the first retry.

While it may happen rarely, it is possible that your Webhook receive duplicates of the same notification from Zendrive. Your Webhook handler should take care to handle this correctly as required.

Trip Scored Notification

This notification is sent by Zendrive when a trip uploaded by your application is completely uploaded and scored by the Zendrive backend. Your application can now query the Zendrive API for *Trip Scores* for this trip. The notification data block contains the following fields.

Request Parameter	Description
version	Currently, the value of this field is always 1.
type	type for this notification is **TRIP_SCORED**.
driver_id	Id of the driver whose trip was just scored.
trip_id	Id of the trip which was just scored.
data	A dictionary with the following details about the trip. This is available only to applications who are set up to receive trip details via webhook. Contact support@zendrive.com to set this up for your application. Else this field will be an empty dictionary {} • info : Recorded information about the trip [Total kilometers driven, Drive time etc]. • simple_path: A coarse GPS trail of the trip. Useful for visualization of the trip path. • score: Driving behavior scores about the trip [control, focused etc]. • speed_profile: The speed profile of the trip as a tuple (Driver's speed in MPH, Timestamp in ms, Speed limit on the road segment). • events: Events detected by Zendrive during the trip. Events like speeding, hard braking, phone use etc are returned.

Sample Response

```
 curl -X POST -H "Content-Type: application/json" -d
'{"version":1,"type":"TRIP_SCORED","driver_id":"10101672903689391","trip_id":␣
↪1416227804134,"data": {}}' https://webhook'

 curl -X POST -H "Content-Type: application/json" -d
'{"version":1,"type":"TRIP_SCORED","driver_id":"10101672903689391","trip_id":␣
↪1416227804134,"data": {"info": {"start_time": 1416227804134, "end_time":␣
↪1416227805000, "trip_type": "drive", "drive_time_hours": "01:02", "distance_km": 2.
↪1, "session_id": "701f6868e7e4", "tracking_id": "56250c0f1adf6054dab4f3ed"}, "score
↪": {"cautious_score": 88, "fuel_efficiency_score": -1, "control_score": 88,
↪"focused_score": 90, "zendrive_score": 89}, "events": [{"event_type": "HardBrake",
↪"start_time": 1416227804136, "end_time": 1416227804560, "latitude_start": 72.12345,
↪"longitude_start": 11:1234, "latitude_end": 72.12354, "longitude_end": 11.1235}],
↪"simple_path": [{"latitude": 72.12345, "longitude": 11.1234, 'time_millis':␣
↪1416227804134, "timestamp": "2016-01-26T14:59:43+05:30"}], "speed_profile": [[30.12,
↪ 1416227804134, 55]]}}' https://webhook
```