Table of Content

1. Introduction

This document is the official reference for Optimo Route Application Programming Interface (API).

1.1. HTTP based API

Methods to retrieve data from the API require a GET request. Methods that submit, change, or destroy data require a POST. API Methods that require a particular HTTP method will return an error if you do not make your request with the correct one.

1.2. The format used for structured data exchange is JSON

The API supports the JSON (JavaScript Object Notation) format. Details on how JSON works can be found here: http://json.org/ and here: http://en.wikipedia.org/wiki/JSON Libraries to convert to and from the JSON format are readily available for popular and less popular programming languages.

1.3. SSL is required

SSL (https) is required to avoid passing both the authentication key and potentially confidential data in clear text over the web

1.4. Limited number of concurrent requests

Number of concurrent web service API requests for one account or from one IP is limited to 5.

1.5. General error codes

The following error codes are applicable for all API operations:

- AUTH_KEY_MISSING – authentication key is missing
- AUTH_KEY_UNKNOWN – wrong authentication key
- MALFORMED_REQUEST – something is wrong with the input
- ERR_MISSING_MAND_FIELD – one of the mandatory fields is missing
- ERR_INVALID_PARAM_FORMAT – one of the specified fields is not in a valid format
- ERR_TO_MANY_CONNECTIONS – too many concurrent requests
- ERR_INTERNAL – internal server error

Methods also have specific error codes that are described in the *Return values* section of each method.

2. Authentication

When using Optimo Route web service API authentication key parameter is required in addition to the standard parameters.

You can generate your client ID in the **Administration**-> **Settings**-> **WS API** section of Optimo Route application. Your authentication key is passed as the value of the *key* parameter.

3. REST API

3.1. Create Order

Description

Creates order in the system.

URL: https://api.optimoroute.com/v1/create_order

HTTP Method: POST

Input format

*Note: Properties marked with * are mandatory.*

Property	Type	Default value	Description
operation*	string enum	CREATE	• **CREATE** – creates order in the system. • **CREATE_IF_FEASIBLE** - system first tries to plan the order to make sure it is feasible. If order can be fulfilled it is inserted to the database. **NOTE**: CREATE_IF_FEASIBLE operation is experimental and might not be included in future API releases. The operation blocks other create operations and planning operations initiated through the Optimo Route GUI.
orderNo	string		User specified order identifier. It is displayed in the application and can be used for deleting orders via web service API.
acceptDuplicateOrderNo	boolean	False	If set to *True* the system will accept orders with *orderNo* that already exists in the system.
type*	string enum	D	Delivery (D), Pickup (P) or Task (T). Set it to **D** for all orders as currently only delivery is supported.
date*	date (string)		Date of Delivery. YYYY-mm-dd format, for example *2013-12-20*.
location*	location object		Delivery/Service location.
duration*	integer	5	Time at the location required to unload the good or perform a task (in minutes).
twFrom	time (string)		Earliest time allowed to begin the service (if the drivers arrives too early, he will be forced to wait). 24-hour (military) clock format, for example *10:00* Valid values are from *00:00* to *23:59.*
twTo	time (string)		Latest time to end the service. 24-hour (military) clock format, for example *12:00* Valid values are from *00:00* to *23:59.*

assignedTo	string		Serial number of the Driver that this Order must be forcefully assigned to. Setting this field forces this Order to be served by the set Driver.
load1	integer	0	Load requirements of the order, i.e. how many load units (Number of boxes, Kilos, Pounds, Liters etc) should be delivered. Meaning of the column depends on the configuration of load/capacity constraints that are used.
load2	integer	0	Load requirements of the order, i.e. how many load units (Number of boxes, Kilos, Pounds, Liters etc) should be delivered. Meaning of the column depends on the configuration of load/capacity constraints that are used.
load3	integer	0	Load requirements of the order, i.e. how many load units (Number of boxes, Kilos, Pounds, Liters etc) should be delivered. Meaning of the column depends on the configuration of load/capacity constraints that are used.
load4	integer	0	Load requirements of the order, i.e. how many load units (Number of boxes, Kilos, Pounds, Liters etc) should be delivered. Meaning of the column depends on the configuration of load/capacity constraints that are used.
load5	integer	0	Load requirements of the order, i.e. how many load units (Number of boxes, Kilos, Pounds, Liters etc) should be delivered. Meaning of the column depends on the configuration of load/capacity constraints that are used.
vehicleFeatures	list of strings		Vehicle features used to differentiate some Vehicles from the others. Required vehicle features are defined as a list of vehicle feature codes.
skills	list of strings		Driver skills used to differentiate some Drivers from the others. Required skills are defined as a list of skill codes.
notes	string		Optional note that will show in the driver's instructions. Notes do not affect the optimization process. Free form.

Location object can be defined with the following fields:

Property	Type	Default value	Description
address	string		Full address including country, for example *393 Hanover St, Boston, MA 02113, US*
acceptMultipleResults	boolean	False	Used only if a new location is created by geocoding the *address* field. If set to *False*, geocoded addresses where several results matching address have been found will not be accepted and an error will be raised.
acceptPartialMatch	boolean	False	Used only if a new location is created by geocoding the *address* field. If set to *False*, geocoded addresses that were only a partial match (lower geocoding confidence) will not be accepted and an error will be raised.
locationNo	string		Unique identifier for a location.
locationName	string		Location name.
latitude	decimal		Location GPS latitude.
longitude	decimal		Location GPS longitude.

Location is defined by one of the following:

- **locationNo** (**address, latitude + longitude** and **locationName** should **NOT** be specified, otherwise the system will try to geocode the location or create one with defined GPS location)– location number of a location already existing in the system. Existing location is used.
- **latitude + longitude + locationName** (with optional **address** and **locationNo**) – location is defined by GPS latitude and longitude.
  Location name will be set to the value of *locationName* field.
  Location address will be set to *address* if *address* is set, otherwise it will be left blank.
  Location number will be set to *locationNo* if *locationNo* is set, otherwise it will be left blank.
- **address** (with optional **locationName** and **locationNo**) - location address will be geocoded based on the supplied *address*.
  Location name will be set to *locationName* field if *locationName* is supplied, otherwise it will be set to the value of *address* field.
  Location number will be set to *locationNo* if *locationNo* is set, otherwise it will be left blank.

Request example

curl –d "@reqbody.json" https://api.optimoroute.com/v1/create_order?key=AUTH_KEY

(where reqbody.json is a local file containing the json data to be posted. See the request body example here below)

Request body example:

```
{
  "operation": "CREATE",
  "orderNo": "ORD001",
  "type": "D",
  "date": "2014-10-14",
  "location": {
    "address": "393 Hanover St, Boston, MA 02113, USA",
    "locationNo": "LOC001",
    "locationName": "Green Cross Pharmacy North End",
    "acceptPartialMatch": true
  },
  "duration": 20,
  "twFrom": "10:00",
  "twTo": "10:59",
  "load1": 10,
  "load2": 25,
  "vehicleFeatures": ["FR"],
  "skills": ["SK001", "SK002"],
  "notes": "Deliver at back door"
}
```

Return values

Property	Type	Default value	Description
success*	boolean		True if order was saved, false if there was an error.
code	string		Error or warning code (not set if operation was successful).
message	string		Error or warning description (not set if operation was successful).
geocodingResults	list		List of geocoding results if location is created from the supplied address. Each geocoding result is defined as: [geocodedAddress*, latitude*, longitude*, partialMatchFlag]

Error and warning codes

- ERR_ORD_EXISTS - an order with the specified *orderNo* already exists in the system (checked only if *orderNo* field is set)
- ERR_DRV_NOT_EXISTS – driver with serial number set in *assignedTo* does not exist
- ERR_DRV_MULTIPLE – multiple drivers with serial number set in *assignedTo* exist
- ERR_LOC_NOT_VALID – specified location is not valid
- ERR_LOC_GEOCODING – specified address could not be geocoded
- ERR_LOC_GEOCODING_MULTIPLE – multiple results have been found during geocoding

- ERR_LOC_GEOCODING_PARTIAL – geocoder did not return an exact match for the original request
- ERR_LOC_NON_EXISTING_LOC – the location specified by *locationNo* does not exist
- ERR_LOC_MULTIPLE_LOC – multiple locations with specified *locationNo* have been found
- ERR_VF_NOT_EXISTS – vehicle feature does not exist (for one of the codes specified in *vehicleFeatures* field)
- ERR_VF_MULTIPLE – multiple vehicle features exist (for one of the codes specified in *vehicleFeatures* field)
- ERR_SK_NOT_EXISTS – vehicle skill not exist (for one of the codes specified in *skills* field)
- ERR_SK_MULTIPLE – multiple skills exist (for one of the codes specified in *skills* field)
- ERR_TIMEOUT - only applicable if CREATE_IF_FEASIBLE operation is set – this error is raised if the operation timed out while waiting for another optimization to finish or optimization lasted too long.
- ERR_NOT_FEASIBLE – only applicable if CREATE_IF_FEASIBLE operation is set – this error is raised if it is not possible to fulfill the order (taking in consideration all the existing orders and constraints)
- WAR_LOC_GEOCODING_MULTIPLE – multiple results have been found during geocoding (but the order was created because *acceptMultipleResults* was set to True)
- WAR_LOC_GEOCODING_PARTIAL – geocoder did not return an exact match for the original request (but the order was created because *acceptPartialMatch* was set to True)

3.2. Delete Order

Description

Removes the order from the system.

URL: https://api.optimoroute.com/v1/delete_order

HTTP Method: POST

Input format

*Note: Properties marked with * are mandatory.*

Property	Type	Default value	Description
orderNo*	string		User specified identified of the order to be deleted.

Request example

curl –d "@reqbody.json" https://api.optimoroute.com/v1/delete_order?key=AUTH_KEY

(where reqbody.json is a local file containing the json data to be posted. See the request body example here below)

Request body example:

```
{
  "orderNo": "ORD001"
}
```

Return values

Property	Type	Default value	Description
success*	boolean		True if order was deleted, false if there was an error.
code	string		Error or warning code (not set if operation was successful).
message	string		Error or warning description (not set if operation was successful).

Error codes

- ERR_ORD_NOT_FOUND – order with the matching *orderNo* was not found
- ERR_MULTIPLE_ORD_FOUND – multiple orders with matching *orderNo* were found

3.3. Get Routes

Description

Gets Routes for a specific date.

URL: https://api.optimoroute.com/v1/get_routes

HTTP Method: GET

Input format

*Note: Properties marked with * are mandatory.*

Property	Type	Default value	Description
date*	date (string)		Queried date. YYYY-mm-dd format, for example *2013-12-20*.
driverSerial	string		Optional filter by Serial number of the Driver.
vehicleRegistration	string		Optional filter by Vehicle registration.

Request example

curl 'https://api.optimoroute.com/v1/get_routes?key=AUTH_KEY&date=2013-12-20'

Return values

Property	Type	Default value	Description
success*	boolean		True if query was successful, false if there was an error.
routes*	list of route objects	[]	List of routes matching the query.
code	string		Error or warning code (not set if operation was successful).
message	string		Error or warning description (not set if operation was successful).

Route object:

Property	Type	Default value	Description
driverSerial*	string		Serial number of the Driver.
driverName*	string		Name of the Driver.
vehicleRegistration*	string		Vehicle registration.
vehicleLabel*	string		Vehicle label.
duration*	integer		Route duration in minutes.
distance*	decimal		Route distance in kilometers.
load1*	integer	0	Route load #1.
load2*	integer	0	Route load #2.
load3*	integer	0	Route load #3.
load4*	integer	0	Route load #4.
load5*	integer	0	Route load #5.
stops*	list of stop objects	[]	Ordered list of stops/orders on the route.

Stop object:

Property	Type	Default value	Description
stopNumber*	integer		Stop number. Starting at 1.
orderNo*	string		Order number.
locationNo*	string		Location number.
locationName*	string		Location name.
address*	string		Location address.
latitude*	decimal		Location latitude.
longitude*	decimal		Location longitude.
scheduledAt*	time (string)		Scheduled time for beginning of the service 24-hour (military) clock format, for example *10:00* Valid values are from *00:00* to *23:59*.

Error codes

None.

3.4. Get Scheduling Information

Description

Get scheduling information for the specified Order.

URL: https://api.optimoroute.com/v1/get_scheduling_info

HTTP Method: GET

Input format

*Note: Properties marked with * are mandatory.*

Property	Type	Default value	Description
orderNo*	string		User specified identified of the order.

Request example

*curl 'https://api.optimoroute.com/v1/*get_scheduling_info*?key=AUTH_KEY&orderNo=ORD001'*

Return values

Property	Type	Default value	Description
success*	boolean		True if query was successful, false if there was an error.
orderScheduled	boolean		True if Order is scheduled, False otherwise.
scheduleInformation	schedule info object		Order scheduling information.
code	string		Error or warning code (not set if operation was successful).
message	string		Error or warning description (not set if operation was successful).

Order scheduling information object:

Property	Type	Default value	Description
driverSerial*	string		Serial number of the Driver.
driverName*	string		Name of the Driver.
vehicleRegistration*	string		Vehicle registration.
vehicleLabel*	string		Vehicle label.
stopNumber*	integer		Stop number on the route. Starting at 1.
scheduledAt*	time (string)		Scheduled time for beginning of the service 24-hour (military) clock format, for example *10:00* Valid values are from *00:00* to *23:59*.

Error codes

- ERR_ORD_NOT_FOUND – order with the matching *orderNo* was not found
- ERR_MULTIPLE_ORD_FOUND – multiple orders with matching *orderNo* were found