FOURKITES API OVERVIEW

API Credentials

Every FourKites Customer is assigned a unique set of API credentials, comprising of an API Client ID and Secret. Varying levels of security and authentication types are shown below.

Authentication

FourKites supports the following authentication methods for callbacks:

- No Authentication
- HTTP Basic Authentication (username and password)
- Bearer Token Authentication (persistent token specific to FourKites)
- Session-Based Bearer Token Authentication (session-specific token specific to FourKites)
- Nonce-Based Authentication (using SHA1, SHA256, SHA384, SHA512, SHA224, or MD5 encryption)

Creating Loads

A TMS partner/Customer should call FourKites Create Load API when the carrier has confirmed that they have accepted the load (i.e. upon tender acceptance). At a minimum, the following fields are required to create a load in FourKites:

- loadNumber
- carrier
- stops – list of pickup and delivery stops with stop type, stop reference id, complete address, and appointment time (note: appointment time is optional but strongly preferred to identify load statuses)

FourKites returns a load ID on successful creation of the load, which should be persisted by the partner for making subsequent requests for updating or viewing the load data. To allow phased roll out for customers, the partner should build in the ability to turn on integration by carrier (so the create load calls are only made for carriers for whom the customer has enabled FourKites integration).

CREATE Resource URL

POST https://tracking-api-staging.fourkites.com/api/v1/tracking

CREATE Request Parameters

See attached Excel document for defiintions

Rate Limit: 1 request per second

Sample Load CREATE Call (with fields for minimum Load creation)

Note: optional fields have values preceded with "//"

```
{
    {
    "load": {
        "loadNumber": "30017076-ABCD4034947",
        "carrier": "TEST",
        "tags": [
            "//Tags-are-searchable-and-free-form",
            "//Add-as-many-as-you-like"
        ],
        "stops": [
            {
                "stopType": "portOfLoading",
                "stopReferenceId": "104173",
                "externalAddressId": "CAVAN",
                "name": "//WESTRAN PORTSIDE TERMINAL LTD",
                "addressLine1": "//16060 PORTSIDE RD",
                "city": "//RICHMOND",
                "state": "//BC",
                "country": "//CA",
                "postalCode": "//V6W 1M1",
                "earliestAppointmentTime": "2018-05-07T12:00:00",
                "latestAppointmentTime": "2018-05-07T12:00:00",
                "timezoneOffset": "-25200",
                "latitude": "//49.1667",
                "longitude": "//-123.1333"
            },
            {
```

```json
            "stopType": "portOfDischarge",
            "stopReferenceId": "106820",
            "externalAddressId": "JPCHB",
            "name": "//TERMINAL 123",
            "addressLine1": "//123 PORTSIDE RD",
            "city": "//CHIBA",
            "state": "//BC",
            "country": "//JPN",
            "postalCode": "//V6W 1M1",
            "earliestAppointmentTime": "2018-05-06T12:01:00",
            "latestAppointmentTime": "2018-05-06T12:01:00",
            "timezoneOffset": "32400"
            "latitude": "//0.0",
            "longitude": "//0.0",
            "customer": {
                "id": "//01011",
                "poNumbers": [
                    "//15620-01-50"
                ]
            },
            "pallets": [{
                "billOfLading": "//41640103",
                "parts": [{
                    "weight": "//24311.0 KG"
                    }]
            },
                    }
        ]
    },
    "containerInfo": {
        "containerNumber": "ABCD4034947",
        "equipmentType": "40HC"
    },
    "trackingInfo": {
        "vesselName": "BARDU",
        "imo": "9504592",
        "mmsi": "//538005316",
    }
}
}
```

Updating Loads

FourKites allows for existing loads to be updated as changes occur within a Client's system. For example, if the carrier, stops, appointment times, etc. are altered, this should trigger an UPDATE call, and FourKites will update the existing record with the relative information.

UPDATE Resource URL

PATCH https://tracking-api-staging.fourkites.com/api/v1/tracking/:trackingId

Query Parameters

Attribute Name	Description
trackingId	Placeholder for FourKites internal tracking/load ID.
simpleUpdate	Indicates whether the load object in request payload is the complete snapshot of the load to be updated. Default to false. E.g: To update a load with FourKites Load ID 12345, resource URI would be `PATCH https://tracking-api-staging.fourkites.com/api/v1/tracking/12345?simpleUpdate=true`

UPDATE Request Parameters

Below is a table of commonly used request parameters. A comprehensive list can be shared upon request and includes other consumable parameters, including SKU details and truck requirements for routing (i.e. hazmat, weight, size, etc.), among others.

Attribute Name	Description	Required or Optional
trackingId	ID returned by FourKites upon on creating the load	Required
carrier	Identifier for the carrier (i.e. SCAC) if a change occurs (i.e. retendered load)	Optional

Attribute Name	Description	Required or Optional
referenceNumbers	List of additional reference numbers associated with the load	Optional
stops	Stop additions or changes to existing stops. (Note: child "stop" body described in Load CREATE and includes stopType, name, addressLine1, city, state, postalCode, country, etc.)	Optional
stop.appointmentTime	Stop's appointment time at the stop in stop's local timezone. Example: 2015-10-01T10:00:00 (ISO 8601). (Note: time windows available)	Optional
stop.sequence	Changes to the planned stop sequence	Optional
stop.destroy	Remove a stop altogether	Optional

Sample UPDATE Calls

PATCH https://tracking-api-staging.fourkites.com/api/v1/tracking/12345

1. Appointment time update

```
{
    "load": {
        "stops": [{
            "stopReferenceId": "1",
            "appointmentTime": "2016-01-10T10:00:00"
        }]
    }
}
```

2. Carrier change (i.e. retendered load)

```
{
    "load": {
        "carrier": "SCAC"
    }
}
```

Deleting Loads

If a load is canceled or withdrawn in the partner's system, FourKites needs to be intimated to delete the load and not track it anymore. To delete a load in FourKites, the partner needs to call Delete / Cancel Load(s) API with the list of tracking IDs (returned when a load was created) to be deleted. Delete requests may not always be fulfilled. If FourKites has already started tracking load, the load may not be deleted and the customer needs to reach out to FourKites support to delete the load.

DELETE Request URL

PATCH https://tracking-api-staging.fourkites.com/api/v1/tracking/delete_loads

DELETE Request Parameters

Name	Description
trackingIds	List of unique identifiers (returned when submitting the load) for the tracking records to be deleted.

Sample Delete Call (for multiple Loads)

```
{
    "trackingIds": [
      1234,
      1235,
      1236
    ]
}
```

Note: This API accepts up to 100 loads in a single request, and it is recommended to batch multiple loads in a single request.

API Response Format & Error Codes

When an API call is made, FourKites returns a response, including the following:

1. Valid request (successful load creation)

```
{

    "statusCode": 200,

    "message": "Load created successfully",

    "loadId": 1000

}
```

2. Invalid request

```
{

    "statusCode": 400,

    "errors": [

        "array of",

        "error messages"

    ]

}
```

3. Missing or invalid authentication

```
{

    "statusCode": 403,

    "message": "Invalid Session, please login"

}
```

4. Unauthorized user resource request

```
{

    "statusCode": 401,

    "message": "User not authorized for this resource"

}
```

When utilizing Callback URLs for ingesting data captured by FourKites (described in later section), error handling will be defined on the client side.

Receiving Tracking Updates from FourKites

Partners can register a callback URL to which FourKites can post updates for the loads submitted by them. This URL should be unique per customer (including the query parameters). Once the load is created and tracking information is assigned, the partner need not call FourKites at all and FourKites will call the callback URL associated with the customer account and send the updates back as they become available.

Callback URL Overview

Customers can register a callback URL to which FourKites will send notifications (via HTTP POST method) related to the loads they have created for tracking. Your company must be the creator of the load to receive updates via callback URL. The notifications are POSTed in JSON format. FourKites will set the following headers in every request:

- Content-Type: application/JSON

- Accept: application/JSON

The following are a sample of typical notifications that are POSTed to the callback URL:

1. Stop ETA Update
2. New Location Update
3. Stop Arrival
4. Stop Departure
5. Load Create Notification
6. Load Delete Confirmation
7. New Tracking Update
8. Stop File Upload
9. Tracking Information Assignment
10. Tracking Now
11. Ready To Track
12. Stop Geofence Update
13. New LTL/Parcel Update

The most common callbacks mentioned above are the Stop ETA Update, New Location Update, and Stop Arrival or Departures, as described below.

1. Stop ETA Update

When ETA for a stop changes by more than a specified amount of time (say 30 minutes), the following notification will be POSTed to the callback URL.

```
{
    "MessageType": "STOP_ETA_UPDATED",
    "FourKitesLoadId": 1234,
    "LoadNumber": "BOL12345",
    "ProNumber": "PRO123",
    "Shipper": "test-shipper",
    "Tags": ["tag1", "tag2"],
    "ReferenceNumbers": ["ref1", "ref2"],
    "StopReferenceId": "1",
    "StopName": "ABC Stop",
    "StopType": "delivery",
    "Timestamp": "2015-10-01T16:00:00-05:00",
    "Timezone": "America/New_York",
    "TimezoneShortName": "EST",
    "TimezoneOffset" : -1800
}
```

Key information shared includes:
- *FourKites Load ID – Unique identifier in FourKites*
- *Load Number – Unique identifier in the shipper system*
- *StopReference ID – Unique stop identifier, defined during load creation*
- *Stop Name – Stop name, provided during load creation*
- *Timestamp - Estimated Arrival Time for the stop in stop's local time (in ISO 8601 format with local time offset to UTC)*
- *Timezone - Local timezone of the stop for which Timestamp is specified.*

2. New Location Update

When a new location is available for a load, the following notification will be POSTed to the callback URL.

```json
{
    "MessageType": "LOCATION_UPDATE",
    "FourKitesLoadId": 1234,
    "LoadNumber": "BOL12345",
    "ProNumber": "PRO123",
    "Shipper": "test-shipper",
    "Tags": ["tag1", "tag2"],
    "ReferenceNumbers": ["Ref1", "Ref2"],
    "Location": "123 Address Street, New York, NY, USA",
    "City": "New York",
    "State": "NY",
    "Country": "USA",
    "Latitude": "40.7127",
    "Longitude": "-74.0059",
    "OdometerReading": 12345,
    "Timestamp": "2015-10-01T16:00:00-05:00"
    "Timezone": "America/New_York",
    "TimezoneShortName": "EST",
    "TimezoneOffset" : -1800
}
```

Key information shared includes:
- *FourKites Load ID – Unique identifier in FourKites*
- *Load Number – Unique identifier in the shipper system*
- *Location – Latest address of the location*
- *City, State, Country – City, State & Country of the latest location*
- *Latitude, Longitude – Latitude & Longitude of the latest location*
- *Timestamp – Timestamp associated with the location (in ISO 8601 format)*
- *Timezone - Local timezone of the location for which Timestamp is specified*

By default, FourKites sends location updates each time a location information is received. However, this can be configured. For example, if a customer wants to set the update frequency to 60, then they will receive a location update once every 60 minutes only. This will be the last received location of the vehicle at that point of time.

3. Stop Arrival or Departure

When the truck arrives or departs a stop, the following notification will be POSTed to the callback URL, with "MessageType" being "STOP_ARRIVAL" or "STOP_DEPARTURE""for each respective event.

```
{
    "MessageType": "STOP_ARRIVAL",
    "FourKitesLoadId": 1234,
    "LoadNumber": "BOL12345",
    "ProNumber": "PRO123",
    "Shipper": "test-shipper",
    "Tags": ["tag1", "tag2"],
    "ReferenceNumbers": ["ref1", "ref2"],
    "StopReferenceId": "1",
    "OdometerReading": 12345.6,
    "StopName": "ABC Stop",
    "StopType": "pickup",
    "Timestamp": "2015-10-01T16:00:00-05:00",
    "Timezone": "America/New_York",
    "TimezoneShortName": "EST",
    "TimezoneOffset" : -1800
}
```

Key information shared includes:
- *FourKites Load ID – Unique identifier in FourKites*
- *Load Number – Unique identifier in the shipper system*
- *Stop Name – Descriptive name for the stop*
- *Stop Type – Pickup or Delivery*
- *Timestamp – Timestamp associated with the location (in ISO 8601 format)*
- *Timezone - Local timezone of the location for which Timestamp is specified*

4. New LTL / Parcel Update

This update is sent when key tracking / status updates related to Parcel and LTL are made to the load, with "MessageType" being "PARCEL_UPDATE."

```
{
    "MessageType": "PARCEL_UPDATE",
    "FourKitesLoadId": 1234,
    "LoadNumber": "BOL12345",
    "ProNumber": "PRO123",
    "Shipper": "test-shipper",
    "Scac": "ABCD",
    "Tags": ["tag1", "tag2"],
    "ReferenceNumbers": ["ref1", "ref2"],
    "Status": "New Activity",
    "Message": "Load is at New York, NY",
    "StopName": "ABC Stop",
    "Timestamp": "2015-10-01T16:00:00-05:00",
    "StatusCode": "X6"
}
```

Key information shared includes:
- *FourKites Load ID – Unique identifier in FourKites*
- *Load Number – Unique identifier in the shipper system*
- *Stop Name – Descriptive name for the stop*
- *Stop Type – Pickup or Delivery*
- *Status – parcel/LTL status category, e.g. "In Transit", "Loaded on Truck," etc.*
- *Message – Indicates the tracking update details, e.g. "Out For Delivery Today: MAUMEE, OH" or "Arrival Scan: MAUMEE, OH"*
- *Status Code – EDI Code associated with the status update. Example X3 would be sent for the status ""Arrived At Terminal"*