Catapult Connect API

USAGE GUIDE

v1.0

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About Catapult Connect

Catapult Connect exists to bring a brand-new level of accessibility to your athlete performance data. Connect is a secure, cloud-hosted Application Programming Interface (API) for querying metrics captured via wearable devices and analysed in OpenField software. Only data synced to OpenField Cloud is accessible through Connect.

Features

Connect is designed to expose all of the information you're used to seeing in OpenField Cloud, and contains endpoints for

- **Athletes**
  Lists athletes and associated information recorded in your OpenField account
- **Activities**
  Lists activities and associated information recorded in your OpenField account
- **Parameters**
  List the parameters for which measures are captured within OpenField, including Player Load, heart rate, banded velocity and acceleration metrics, amongst many others
- **Statistics**
  Lists recorded metrics for a set of specified parameters and according to supplied filters

Technical Documentation

Connect is a REST API that returns JSON for all requests.

The Base URL for Connect differs according to the region your OpenField account has been created in:

- **Asia-Pacific**
  OpenField URL: https://openfield.catapultsports.com
  Connect Base URL: https://connect-au.catapultsports.com/api/v4
- **North America**
  OpenField URL: https://us.catapultsports.com/
  Connect Base URL: https://connect-us.catapultsports.com/api/v4
- **Europe, the Middle East and Africa, Latin America**
  OpenField URL: https://eu.catapultsports.com/
  Connect Base URL: https://connect-eu.catapultsports.com/api/v4

In the examples below, replace `BASE_URL` with the correct Base URL for your OpenField region.

AUTHENTICATION

Access to Connect is controlled by oAuth2 authentication and requires a valid Client ID and Secret (supplied by OpenField Support) in addition to active OpenField credentials.

In the examples below, replace `CLIENT_ID` and `CLIENT_SECRET` with the token provided to you, and `USERNAME` and `PASSWORD` with your OpenField credentials.

Requesting an access token

When no token is present, send a GET request to `/oauth/token`. The following must be provided:

- Client ID/Client Secret, provided in the query string in the request
- Using basic authentication, the username and password associated with this account

Example Request:

```
curl -u "USERNAME:PASSWORD"
https://BASE_URL/oauth/token\?client_id\=CLIENT_ID\&client_secret\=CLIEN
T_SECRET
```

Example Response:

```
{"access_token":"IbtBBvCu30xixwBxF5zpyL4wfrPuCm3jGCJToI95","token_type":
"Bearer","expires":1411352773,"expires_in":3600,"refresh_token":"Ef3yALA
EvmZhFIL8MuniOyBDDyCX72mmSHQd7lS7"}
```

Error Response (username/password incorrect):

```
401: Unauthorized
```

Error Response (any missing parameters):

```
401: Unauthorized
```

The `access_token` in the response should be used to make API subsequent Connect requests, and should replace `ACCESS_TOKEN` in the examples below.

Refreshing an access token

Access tokens will by default expire after one hour (3600 seconds), after which all requests will result in an error response of type 410: Gone. Once expired, the `refresh_token` returned from the original authentication request can be used to obtain a new access token without having to fully re-authenticate.

Example Request:

```
curl https://BASE_URL/oauth/refresh?client_id\=CLIENT_ID\&client_secret\
=CLIENT_SECRET\&refresh_token\=REFRESH_TOKEN
```

Example Response:

```
{"access_token":"4d4DrMnI8b0RXmVFYo8cxDxO4Jq434HGrOPUGBMZ","token_type":
"Bearer","expires":1411353506,"expires_in":3600}
```

Error Response (invalid refresh token):

```
401: Unauthorized
```

This request returns a new access token to use in future API requests.

Making data requests

All endpoints require the token to be provided in the request header. The `access_token` from the above endpoints should be used to request data by adding an 'Authorization' header with the value `Bearer ACCESS_TOKEN`.

Example:

```
curl: --header "Authorization: Bearer
4d4DrMnI8b0RXmVFYo8cxDxO4Jq434HGrOPUGBMZ"
```

ATHLETES

A list of athletes/players for the account can be retrieved by accessing the /athletes endpoint.

Example request:

```
curl https://BASE_URL/athletes --header "Authorization: Bearer
ACCESS_TOKEN"
```

Example response:


```
[
  {
    "id": "fff0377a-5b53-4fe8-8bc0-098cc3a0949e",
    "first_name": "Scott",
    "last_name": "Higginbotham",
    "jersey": "R8",
    "nickname": "",
    "height": 0,
    "weight": 0,
    "date_of_birth": "0",
    "velocity_max": "10",
    "acceleration_max": "10",
    "heart_rate_max": "220",
    "player_load_max": "10",
    "max_player_load_per_minute": 12,
    "tag_list": [
      "Wide Receiver",
      "Rehab"
    ],
    "tags": [
      {
        "id": "9b8baf9f-e4d4-41ce-93a7-635f130bfeb4",
        "tag_type_id": "c7ff448a-6d16-4e27-9bce-a686cd908e82",
        "tag_type_name": "Position",
        "tag_name": "Wing"
      }, {
        "id": "0a3f1746-b64c-435b-a3d0-573f96e14879",
        "tag_type_id": "d6c99680-0570-4435-8984-a4895b0c1a1c",
        "tag_type_name": "Training Group",
        "tag_name": "Rehab"
      }
    ]
    },
  ...
]
```

The athlete `id` property listed in the example response can be used to filter requests for data relating to a particular athlete.

ACTIVITIES

A list of activities can be retrieved from the /activities endpoint.

Example request:

```
curl https://BASE_URL/activities --header "Authorization: Bearer
ACCESS_TOKEN"
```

Example response:


```
[
  {
    "id": "803ac529-700c-4735-8e34-1ecf36ca8145",
    "name": "SOO3 QLD v NSW",
    "start_time": "1499854408",
    "end_time": "1499860657",
    "venue": {
      "name": "Suncorp",
      "width": 68,
      "length": 117,
      "rotation": 1,
      "lat": "-37.830258052762",
      "lng": "144.95438003888"
    },
    "periods": [
      {
        "id": "6122d61b-88cb-4729-9eb3-3b07fd2d98bd",
        "name": "1",
        "start_time": 1499854408.73,
        "end_time": 1499857004.39
      },
      {
        "id": "f98fd5a6-cb8b-4803-beb3-2d93c0fb1543",
        "name": "2",
        "start_time": 1499858086.21,
        "end_time": 1499860657.34
      }
    ]
    "tag_list": [
      "State of Origin 2018",
      "Win"
    ],
    "tags": [
      {
        "id": "9b8baf9f-e4d4-41ce-93a7-635f130bfeb4",
        "tag_type_id": "c7ff448a-6d16-4e27-9bce-a686cd908e82",
        "tag_type_name": "Activity",
        "tag_name": "State of Origin 2018"
      }, {
        "id": "0a3f1746-b64c-435b-a3d0-573f96e14879",
        "tag_type_id": "d6c99680-0570-4435-8984-a4895b0c1a1c",
```

```
          "tag_type_name": "Activity",
          "tag_name": "Win"
        }
      ]
    },
    ..
]
```

The activity `id` property listed in the example response can be used to filter requests for data relating to a particular activity.

The period `id` property for each element in the array of returned periods can be used to filter requests for data relating to a particular period.

PARAMETERS

The /parameters endpoint provides a list of parameters (sports metrics) captured within OpenField, including Player Load, heart rate, banded velocity and acceleration metrics, amongst many others.

Example request:

```
curl https://BASE_URL/parameters --header "Authorization: Bearer
ACCESS_TOKEN"
```

Example response:

```
[
  {
    "id": "00025054-617c-45f1-ae03-a768ebfcd893",
    "parameter_type_id": "417654ed-209f-4c6f-a028-62c10f873d18",
    "name": "IMA Accel Medium",
    "original_name": "IMA Accel Medium",
    "slug": "ima_band2_accel_count",
    "calculation": ""
  },
  {
    "id": "003eb200-194c-4bce-8573-756f8df67adc",
    "parameter_type_id": "65344b9a-8526-11e2-97f1-53b3868817d9",
    "name": "Velocity Band 2 Average Effort Count",
    "original_name": "Velocity Band 2 Average Effort Count",
    "slug": "velocity_band2_average_effort_count",
    "calculation": "",
    },
    ...
  {
    "id": "0232570c-949d-4bf8-9719-9a29ee8761d3",
    "parameter_type_id": "65344b9a-8526-11e2-97f1-53b3868817d9",
    "name": "Velocity Band 1 Duration %",
    "original_name": "Velocity Band 1 Duration %",
    "slug": "velocity_band1_duration_percentage",
    "calculation": ""
```

```
    }
]
```

STATISTICS

The /stats endpoint provides filtered and grouped performance metrics via a POST request, with data supplied as a JSON object. The request takes three types of input parameters:

- **Parameters**
  A list of one or more parameter (performance metrics) names from the list supplied through the /parameters endpoint (e.g. `average_player_load`)
- **Filters**
  A list of filters to narrow down the query. Where multiple filters are supplied, returned statistics will match ALL conditions. Each filter element must include a parameter name, a comparison type (i.e. one of `=`, `!=`, `>`, `<`, `<=`, `>=`) and an array of filter values, which is a list of ids for the particular type of filter.
- **Groupings**
  A discrete list of parameters to group the response by, one or more of:
    - activity
    - athlete_group
    - athlete
    - period
    - tag
    - position
    - team
    - date
    - day
    - week
    - month
    - year
    - swing (baseball only)
    - pitch (baseball only)
    - delivery (cricket only)

Statistics for a specific activity

To retrieve statistics for each athlete in a particular activity (using the `id` retrieved from the /activities endpoint):

Example request:

```
curl https://BASE_URL/stats -X POST --header "Authorization: Bearer
ACCESS_TOKEN" --data '{"filters": [{"name": "activity_id", "comparison":
"=", "values": ["803ac529-700c-4735-8e34-1ecf36ca8145"]}], "parameters":
["total_player_load", "total_duration"],"group_by": ["athlete"]}'
```

Example response:

```
[
  {
    "athlete_id": "884fed5b-432d-47d4-9f50-7cf7b4cbb5a3",
    "athlete_name": "Jarryd Hayne",
    "start_time": 1499854408.73,
    "end_time": 1499860657.34,
    "total_player_load": 704.58575,
    "average_player_load": 352.29288,
    "average_player_load_session": 704.58575,
    "date": "12/07/2017",
    "int_day_id": 1,
    "start_time_h": "20:13:28",
    "end_time_h": "21:57:37"
  },
  ...
]
```

Note: additional fields will be returned certain circumstances. Grouping by a parameter will result in the id and name to be returned for each value, i.e. `activity_id` and `activity_name` will be included in the response when grouped by `activity`.

Statistics per period for a specific activity

By comparison to the previous example, in this case a result is returned for each period in the selected activity. Properties `period_id` and `period_name` are now returned as a result of grouping by `period`.

Example request:

```
curl https://BASE_URL/stats -X POST --header "Authorization: Bearer
ACCESS_TOKEN" --data '{"filters": [{"name": "activity_id", "comparison":
"=", "values": ["803ac529-700c-4735-8e34-1ecf36ca8145"]}], "parameters":
["total_player_load", "average_player_load",
"average_player_load_session"],"group_by": ["period", "athlete"]}
```

Example response:

```
[
  {
    "athlete_id": "884fed5b-432d-47d4-9f50-7cf7b4cbb5a3",
    "athlete_name": "Jarryd Hayne",
    "period_id": "f98fd5a6-cb8b-4803-beb3-2d93c0fb1543",
    "period_name": 2,
    "start_time": 1499858086.21,
    "end_time": 1499860657.34,
```

```
    "total_player_load": 343.28204,
    "average_player_load": 343.28204,
    "average_player_load_session": 343.28204,
    "date": "12/07/2017",
    "periodname_id": 2,
    "periodname_name": 2,
    "int_day_id": 1,
    "start_time_h": "21:14:46",
    "end_time_h": "21:57:37"
  },
 ...
]
```


Usage Policy

Catapult expects all consumers of the Connect API to follow a set of fair-usage guidelines -- access may otherwise be revoked to ensure a good service for all.

Individual requests should not exceed a rate of more than one per 60s, and should be made synchronously, not asynchronously.