

crypto facilities

DIGITAL ASSETS UNLEASHED

Crypto Facilities V2 REST API

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Crypto Facilities Ltd
79 Maygrove Road
London NW6 2EG
United Kingdom

Registered Number: 9172128
Phone: +44 7413 0279 27
Email: contact@cryptofacilities.com
Web: <https://www.cryptofacilities.com>

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1 Introduction

Our REST API allows to securely access the functionalities of your Crypto Facilities account, for example to request current or historical price information, check your account balance and PnL, your margin parameters and estimated liquidation thresholds, place or cancel orders individually or in batch, see your open orders, open positions or trade history, or request a bitcoin withdrawal. These functionalities are called "endpoints" and are explained in detail in Section 3 of this document.

Some of the endpoints allow you to perform sensitive tasks, such initiating a bitcoin withdrawal. To access these endpoints securely, the API uses encryption techniques developed by the National Security Agency. Section 2 describes how to encrypt your communication with the API when accessing these endpoints.

You can implement the API using any programming language you like (e.g. C, C++, Java or PHP), as long as it is capable of managing HTTP requests. To save yourself some work, we strongly suggest you look at the code examples listed in Section 4.1. Also, you can test your implementation first in our test environment.

DISCLAIMER: Please use the API only if you have adequate programming skills and have fully understood its functionalities. We do not assume responsibility for any losses or damages resulting from erroneous use of the API, unavailability of the API, other technical failure or malfunction of the API or loss of API keys.

2 General Specifications

2.1 Generating API Keys

In order to use the API, you need to generate a pair of unique API keys on the Account Page of your Crypto Facilities account under "Settings" -> "API Keys". This will generate:

your `apiKey`

Example | `rRra59qKQs3y1egAgSaG0RJlBcbq97wTUXSxXxPdhRZdv7z9ijZRWgrf`

your `apiSecretKey`

Example | `rttp4AzwRfYEdQ7R7X8Z/04Y4TZPa97pqCypi3xXxAqftygftnI6H9yGV+O
cUOOJeFtZkr8mVwbAndU3Kz4Q+eG`

You can create three types of API keys:

1. **Read-only:** This is a read-only key and allows accessing only endpoints that do not write to the server.
2. **Read-write:** This is a read-write key and allows accessing all endpoints except bitcoin withdrawals.
3. **Master:** This is a master key and allows accessing all endpoints, including bitcoin withdrawals.

Please take a note of these keys as they will no longer be shown the next time the page is reloaded. Each key type can be re-generated at any time in which case the old key is replaced.

API keys should be kept in a safe location and should never be shared with anyone. **If you are not absolutely certain that you can store your Master `apiSecretKey` in a safe place, do not generate it.** API keys generated for the previous Version 1 of the API, will behave as Read-write key for this Version 2 of the API.

2.2 Generating Authentication Strings

Some of the API's endpoints allow performing sensitive operations such as to place orders or request a bitcoin withdrawal. These private endpoints can therefore be called only through encrypted requests, and an authentication string (`authent`) must be included in each such call. `authent` is computed from the following inputs:

PostData

`postData` is a "&" concatenation in the form `<argument>=<value>` and is specific to each endpoint, see Section 3.

Example | To operate the endpoint `orderbook` you choose the argument `symbol` with value `f-xbt:usd-sep16`. `postData` is then given by `symbol=f-xbt:usd-sep16`.

Nonce

`nonce` is a continuously incrementing integer parameter. A good `nonce` is your system time in milliseconds (in string format).

Example | `1415957147987`

Endpoint Path

`endpointPath` This is the URL extension of the endpoint.

Example | `/api/v2/orderbook`

API Secret Key

The `apiSecretKey` is obtained as described in the previous section.

Example | `rttp4AzwRfYEdQ7R7X8Z/04Y4TZPa97pqCypi3xXxAqftygftnI6H9yGV+O
cUOOJeFtZkr8mVwbAndU3Kz4Q+eG`

Based on these inputs, `authent` needs to be computed as follows:

1. Concatenate `postData` + `nonce` + `endpointPath`
2. Hash the result of step 1 with the SHA-256 algorithm¹
3. Base64-decode² your `apiSecretKey`
4. Use the result of step 3 to hash the result of step 2 with the HMAC-SHA-512 algorithm³
5. Base64-encode² the result of step 4

Example | The following shows an implementation of `authent` in Java. For full working examples in different programming languages, see Section 4.1.

```
public static String getAuthent(String postData, String
```

¹ <https://en.wikipedia.org/wiki/SHA-2>

² <https://en.wikipedia.org/wiki/Base64>

³ https://en.wikipedia.org/wiki/Hash-based_message_authentication_code

```

nonce, String endpointPath, String secretKeyBase64)
{
    Mac mac512;
    MessageDigest sha256;
    try
    {
        SecretKey secretKey = new SecretKeySpec
            (Base64.decode(secretKeyBase64.getBytes()
            ), HMAC_SHA_512);
        mac512 = Mac.getInstance(HMAC_SHA_512);
        mac512.init(secretKey);
        sha256 = MessageDigest.getInstance("SHA-
            256");
    }
    catch (IOException e)
    {
        ...
    }
    catch (InvalidKeyException e)
    {
        ...
    }
    catch (NoSuchAlgorithmException e)
    {
        ...
    }
    sha256.update(postData.getBytes());
    sha256.update(nonce.getBytes());
    sha256.update(endpointPath.getBytes());
    mac512.update(sha256.digest());
    return Base64.encodeBytes(mac512.doFinal()).trim();
}

```

2.3 API Calls

To access the API's endpoints, HTTP calls need to be sent to the following URL.

<https://www.cryptofacilities.com/derivatives/api/v2>

For calls of private endpoints, the following HTTP headers must be provided: `apiKey`, `nonce`, and `authent`.

Example

The following shows an example for the inclusion of HTTP headers in Java. For full working examples in different programming languages, see Section 4.1.

```

String url = "https://www.cryptofacilities.com/derivatives/
api/v2/sendOrder";
URL obj = new URL(url);
URLConnection con = (URLConnection) obj.openConnection();
...
con.setRequestProperty("APIKey", apiKey);
con.setRequestProperty("Nonce", nonce);
con.setRequestProperty("Authent", authent);

```

where `apiKey`, `nonce` and `authent` are determined as described earlier.

Calls of endpoints that do not change the state of the server should be submitted with `requestType = GET` and with `postData` being submitted in the URL. Calls of endpoints that do change the state of the server should be submitted with `requestType = POST` and with `postData` being submitted in the body of the request. Section 3 details for each endpoint which `requestType` should be used.

2.4 API Returns

The API's returns are in JSON format. If the call was successful, the return includes the requested information or feedback on the requested action. See Section 3 for a description of returns for each endpoint.

If a call was successful, the `result` key in the root structure will have the value `success`.

Example

The following shows the return of a successful call of the `sendorder` endpoint.

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "sendStatus":
    {
      "receivedTime": "2016-02-25T09:45:53.601Z",
      "status": "placed",
      "order_id": "c18f0c17-9971-40e6-8e5b-10df05d422f0",
    },
}
```

If a call was unsuccessful, the `result` key in the root structure will have the value `error`. See Section 3 for a description of possible errors for each endpoint.

Example

The following shows the return of an unsuccessful call of the `sendorder` endpoint.

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Note that if a call comes back with `result` equal to `success`, this merely means that the request has been received and assessed successfully. It does not necessarily mean that the desired operation has been performed. Details on the operation's status are returned in a `status` key, where applicable.

Example

The following shows the return of a successful call of the `sendorder` endpoint where the desired operation was not performed.

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "sendStatus":
    {
      "receivedTime": "2016-02-25T09:45:53.601Z",
      "status": "insufficientAvailableFunds",
    },
}
```

| }

2.5 Conventions and Definitions

2.5.1 Server Time

The server time is in Coordinated Universal Time (UTC).

2.5.2 Unique Identifiers

Our system constructs unique identifiers according to the Universally Unique Identifier (UUID)⁴ standard.

Example | `c18f0c17-9971-40e6-8e5b-10df05d422f0`

2.5.3 Dates and Times

The API requires dates and time arguments in the ISO8601 datetime format⁵ and returns all dates and times in the same format. The syntax of this format is `<yyyy>-<mm>-<dd>T<HH>:<MM>:<SS>.<sss>Z` where `<yyyy>` is the year, `<mm>` is the month, `<dd>` is the day, `<HH>` is the hour, `<MM>` is the minute, `<SS>` is the second and `<sss>` is the millisecond. When provided as an argument, `<sss>` is optional. `Z` denotes that the datetime is in UTC.

Examples | `2016-02-26T12:09:38.830Z`
 | `2016-02-26T12:09:38Z`

2.5.4 Symbols

Our system identifies Futures contracts and indices through symbols.

For **weekly Futures contracts** the `symbol` syntax is `f-xbt:usd-<mmm><yy>-w<w>` where `<mmm>` is the maturity month, `<yy>` is the maturity year and `<w>` is the number of the maturity week in the maturity month.

Examples | `f-xbt:usd-feb16-w4`
 | `f-xbt:usd-mar16-w1`
 | `f-xbt:usd-mar16-w2`

For **quarterly Futures contracts** the `symbol` syntax is `f-xbt:usd-<mmm><yy>` where `<mmm>` is the maturity month and `<yy>` is the maturity year.

Examples | `f-xbt:usd-mar16`
 | `f-xbt:usd-jun16`
 | `f-xbt:usd-sep16`

Further, we current maintain three indices, each with their own `symbol`. The `cf-bpi` is a real-time bitcoin spot price index (used for margining), the `cf-hbpi` is a 1 hour weighted bitcoin spot price index (calculated daily at 17:30 UTC and used for settlement), and the `cf-bpi-v` is a bitcoin volatility index (calculated as the annualized standard deviation of log returns of the last 60 observed minutely prices of the `cf-bpi` and provided only for informational purposes).

When provided as an argument, symbols are case insensitive.

⁴ https://en.wikipedia.org/wiki/Universally_unique_identifier

⁵ https://en.wikipedia.org/wiki/ISO_8601

2.5.5 Order of Arguments

When calling endpoints with required arguments, all arguments must be provided in the order they are listed in Section 3.

Example When calling the `sendorder` endpoint, arguments must be provided in the following order.

```
orderType, symbol, side, limitPrice, stopPrice
```

2.5.6 NA Fields

When the value of a return field is not applicable or not available, the API will eliminate the key/value pair from the structure containing the field, rather than returning an “NA” value.

Example When calling the `tickers` endpoint, the structure for `cf-bpi` will not contain the keys `suspended`, `lastSize`, `vol24h`, `bid`, `bidSize`, `ask`, `askSize`, and `markPrice`.

```
{
  "symbol": "cf-bpi",
  "last": 422.52,
  "lastTime": "2016-02-25T11:05:21.000Z",
  "open24h": 417.88,
  "high24h": 426.37,
  "low24h": 417.65
}
```

2.6 API Limits

The number of API calls is limited to 1 call every 0.1 seconds per IP address. If the API limit is exceeded, the API will return `error` equal to `apiLimitExceeded`.

Example The following shows the return of call of the `sendorder` endpoint where the API limit has been exceeded.

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

3 Endpoints

3.1 Public Endpoints

3.1.1 Instruments

Description

This endpoint returns key specifications for all currently listed Futures contracts and all indices.

Authentication is not required.

Endpoint	Request Type	Permissible API Keys
/api/v2/instruments	GET	N/A

Arguments

none

Sample Call

<https://www.cryptofacilities.com/derivatives/api/v2/instruments>

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "instruments":
    [
      {
        "symbol": "f-xbt:usd-feb16-w4",
        "type": "futures",
        "tradeable": "true",
        "underlying": "cf-hbpi",
        "lastTradingTime": "2016-02-26T16:00:00.000Z",
        "tickSize": 0.01,
        "contractSize": 1,
      },
      ...,
      {
        "symbol": "cf-bpi",
        "type": "spot index",
        "tradeable": "false",
      },
      {
        "symbol": "cf-hbpi",
        "type": "spot index",
        "tradeable": "false",
      },
      {
        "symbol": "cf-bpi-v",
        "type": "volatility index",
        "tradeable": "false",
      },
    ],
}
```

Field	Type	Description
result	string	Always <code>success</code>
serverTime	ISO8601 datetime	The server date and time
instruments	list of structures	A list containing a structures for each available instrument, see below. The list is in no particular order
symbol	string	The symbol of the Futures or index, see Section 2.5.4
type	string	The type of the instrument, either <code>futures</code> , <code>spot index</code> or

volatility index		
<code>tradeable</code>	boolean	True if the instrument can be traded on Crypto Facilities' platform, false otherwise
<code>underlying</code>	string	<ul style="list-style-type: none"> For Futures: The underlying of the Futures, always <code>cf-hbpi</code> For indices: Not returned because N/A
<code>lastTradingTime</code>	ISO8601 datetime	<ul style="list-style-type: none"> For Futures: The date and time at which the Futures stops trading For indices: Not returned because N/A
<code>tickSize</code>	positive float	<ul style="list-style-type: none"> For Futures: The tick size increment of the Futures, currently 0.01 U.S. dollars For indices: Not returned because N/A
<code>contractSize</code>	positive integer	<ul style="list-style-type: none"> For Futures: The contract size of the Futures, currently 1 bitcoin For indices: Not returned because N/A

Sample Return if Unsuccessful

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	Always <code>apiLimitExceeded</code> : the API limit for the calling IP address has been exceeded

3.1.2 Tickers

Description

This endpoint returns current market data for all currently listed Futures contracts and all indices.

Authentication is not required.

Endpoint

`/api/v2/tickers`

Request Type

GET

Permissible API Keys

N/A

Arguments

none

Sample Call

<https://www.cryptofacilities.com/derivatives/api/v2/tickers>

Sample Return if Successful

```

{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "tickers":
    [
      {
        "symbol": "f-xbt:usd-feb16-w4",
        "suspended": false,
        "last": 423.23,
        "lastTime": "2016-02-25T10:56:10.364Z",
        "lastSize": 5,
        "open24h": 418.21,
        "high24h": 426.49,
        "low24h": 416.97,
        "vol24h": 112
        "bid": 423.23,
        "bidSize": 5,
        "ask": 423.58,
        "askSize": 5,
        "markPrice": 422.7,
      },
      ...,
      {
        "symbol": "cf-bpi",
        "last": 422.52,
        "lastTime": "2016-02-25T11:05:21.000Z",
        "open24h": 417.88,
        "high24h": 426.37,
        "low24h": 417.65
      },
      {
        "symbol": "cf-hbpi",
        "last": 422.62,
        "lastTime": "2016-02-24T17:30:01.000Z",
        "open24h": 422.62,
        "high24h": 422.62,
        "low24h": 422.62
      },
      {
        "symbol": "cf-bpi-v",
        "last": 48.44,
        "lastTime": "2016-02-25T11:05:31.879Z"
      }
    ],
}

```

Field	Type	Description
result	string	Always <code>success</code>
serverTime	ISO8601 datetime	The server date and time
tickers	list of structures	A list containing a structures for each available instrument, see below. See below. The list is in no particular order
symbol	string	The symbol of the Futures or index, see Section 2.5.4

<code>suspended</code>	boolean	True if the market is suspended, false otherwise
<code>last</code>	positive float	<ul style="list-style-type: none"> For Futures: The price of the last fill For indices: The last calculated value. For spot indices, this is a U.S. dollar value. For the volatility index, this is a percentage value
<code>lastTime</code>	ISO8601 datetime	The date and time at which <code>last</code> was observed
<code>lastSize</code>	positive integer	<ul style="list-style-type: none"> For Futures: The size of the last fill For indices: Not returned because N/A
<code>open24h</code>	positive float	<ul style="list-style-type: none"> For Futures: The price of the fill observed 24 hours ago For <code>cf-bpi</code> and <code>cf-hbpi</code>: The value calculated 24 hours ago For <code>cf-bpi-v</code>: Not returned because N/A
<code>high24h</code>	positive float	<ul style="list-style-type: none"> For Futures: The highest price of all fills observed in the last 24 hours For <code>cf-bpi</code> and <code>cf-hbpi</code>: The highest value calculated in the last 24 hours For <code>cf-bpi-v</code>: Not returned because N/A
<code>low24h</code>	positive float	<ul style="list-style-type: none"> For Futures: The lowest price of all fills observed in the last 24 hours For <code>cf-bpi</code> and <code>cf-hbpi</code>: The lowest value calculated in the last 24 hours For <code>cf-bpi-v</code>: Not returned because N/A
<code>vol24h</code>	positive integer	<ul style="list-style-type: none"> For Futures: The sum of the sizes of all fills observed in the last 24 hours For indices: Not returned because N/A
<code>bid</code>	positive float	<ul style="list-style-type: none"> For Futures: The price of the current best bid For indices: Not returned because N/A
<code>bidSize</code>	positive integer	<ul style="list-style-type: none"> For Futures: The size of the current best bid For indices: Not returned because N/A
<code>ask</code>	positive float	<ul style="list-style-type: none"> For Futures: The price of the current best ask For indices: Not returned because N/A
<code>askSize</code>	positive integer	<ul style="list-style-type: none"> For Futures: The size of the current best ask For indices: Not returned because N/A
<code>markPrice</code>	positive float	<ul style="list-style-type: none"> For Futures: The price to which Crypto Facilities currently marks the Futures for margining purposes For indices: Not returned because N/A

Sample Return if Unsuccessful

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	Always <code>apiLimitExceeded</code> : the API limit for the calling IP address has been exceeded

3.1.3 Order Book

Description

This endpoint returns the **entire** order book of currently listed Futures contracts.

Authentication is not required.

Endpoint	Request Type	Permissible API Keys
<code>/api/v2/orderbook</code>	GET	N/A

Arguments

Argument	Type	Required	Description
<code>symbol</code>	string	Yes	The symbol of the Futures, see Section 2.5.4

Sample Call

```
https://www.cryptofacilities.com/derivatives/api/v2/orderbook?symbol=f-xbt:usd-sep16
```

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "orderBook": {
    "bids": [
      [
        421.30,
        2,
      ],
      [
        421.01,
        4,
      ],
      ...
    ],
    "asks": [
      [
        421.82,
        4,
      ],
    ]
  }
}
```

```

    [
      422.05,
      5,
    ],
    ...,
  ],
},
}

```

Field	Type	Description
<code>result</code>	string	Always <code>success</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>orderBook</code>	structure of lists	A structure containing lists with bid and ask prices and sizes, see below
<code>bids</code>	list of lists	The first value of the inner list is the bid price, the second is the bid size. The outer list is sorted descending by bid price
<code>asks</code>	list of lists	The first value of the inner list is the ask price, the second is the ask size. The outer list is sorted ascending by ask price

Sample Return if Unsuccessful

```

{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}

```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded <code>marketUnavailable</code>: the requested market is unavailable <code>requiredArgumentMissing</code>: a required argument was missing <code>invalidArgument</code>: <code><argument></code>: argument "<code><argument></code>" is invalid

3.1.4 History

Description

This endpoint returns the trading history of currently listed Futures contracts and of bitcoin spot indices.

Authentication is not required.

Endpoint	Request Type	Permissible API Keys
<code>/api/v2/history</code>	GET	N/A

Arguments

Argument	Type	Required	Description
<code>symbol</code>	string	Yes	The symbol of the Futures or index, see Section 2.5.4. The symbol <code>cf-bpi-v</code> is not supported
<code>lastTime</code>	ISO8601 datetime	No	If not provided, returns the last 100 entries of the history. If provided, returns the 100 entries before <code>lastTime</code>

Sample Call

```
https://www.cryptofacilities.com/derivatives/api/v2/history?symbol=f-xbt:usd-sep16&lastTime=2016-01-23T10:15:00.000Z
```

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "history":
    [
      {
        "time": "2016-02-23T10:10:01.000Z",
        "trade_id": 865,
        "price": 432.16,
        "size": 5,
      },
      {
        "time": "2016-02-23T10:05:12.000Z",
        "trade_id": 864,
        "price": 432.41,
        "size": 2,
      },
      ...
    ],
}
```

Field	Type	Description
<code>result</code>	string	Always <code>success</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>history</code>	list of structures	A list containing structures with historical price information, see below. The list is sorted descending by <code>time</code>
<code>time</code>	ISO8601 datetime	The date and time of a trade or an index computation <ul style="list-style-type: none"> For Futures: The date and time of a trade. Data is not aggregated For indices: The date and time of an index computation. For <code>cf-bpi</code>, data is aggregated to the last computation of each full hour. For <code>cf-hbpi</code>, data is not aggregated

<code>trade_id</code>	positive integer	<ul style="list-style-type: none"> For Futures: A continuous index starting at 1 for the first fill in a Futures contract maturity For indices: Not returned because N/A
<code>price</code>	positive float	<ul style="list-style-type: none"> For Futures: The price of a fill For indices: The calculated value
<code>size</code>	positive integer	<ul style="list-style-type: none"> For Futures: The size of a fill For indices: Not returned because N/A

Sample Return if Unsuccessful

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded <code>marketUnavailable</code>: the requested market is unavailable <code>requiredArgumentMissing</code>: a required argument was missing <code>invalidArgument</code>: <code><argument></code>: argument "<code><argument></code>" is invalid

3.2 Private Endpoints

3.2.1 Account

This endpoint returns information on the bitcoin Futures margin account only. Use the new endpoint `"accounts"` to retrieve information on all cash and margin accounts.

Description

This endpoint returns key information on to the bitcoin Futures margin account. This includes bitcoin and Futures balances, margin requirements, margin trigger estimates and auxiliary information such as available funds, PnL of open positions, portfolio value and the virtual U.S. dollar balance.

Authentication is required.

Endpoint	Request Type	Permissible API Keys
<code>/api/v2/account</code>	GET	Read-only, Read-write, Master

Arguments

none

Sample Call

https://www.cryptofacilities.com/derivatives/api/v2/account

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "account": {
    "balances": {
      "f-xbt:usd-feb16-w4": 50,
      "f-xbt:usd-mar16-w1": -15,
      ...
      "xbt": 141.31756797,
    },
    "auxiliary": {
      "af": 100.73891563,
      "pnl": 12.42134766,
      "pv": 153.73891563,
      "usd": -119012.92,
    },
    "marginRequirements": {
      "im": 52.8,
      "mm": 23.76,
      "lt": 39.6,
      "tt": 15.84,
    },
    "triggerEstimates": {
      "im": 311,
      "mm": 300,
      "lt": 289,
      "tt": 283,
    },
  },
}
```

Field	Type	Description
result	string	Always <code>success</code>
serverTime	ISO8601 datetime	The server date and time
account	structure of structures	A structure containing structures with account-related information, see below
balances	structure	A structure containing account balances, see below
<symbol>	integer	The number of Futures with symbol <symbol> in the account, see Section 2.5.4
xbt	positive float	The account balance, a bitcoin figure
auxiliary	structure	A structure containing auxiliary account information,

		see below
<code>af</code>	float	The available funds of the account, a bitcoin figure
<code>pnl</code>	float	The PnL of current open positions of the account, a U.S. dollar figure
<code>pv</code>	positive float	The portfolio value of the account, a bitcoin figure
<code>usd</code>	float	The total price at which all current open positions of the account where bought or sold, a U.S. dollar figure
marginRequirements	structure	A structure containing the account's margin requirements, see below
<code>im</code>	positive float	The initial margin requirement of the account
<code>mm</code>	positive float	The maintenance margin requirement of the account
<code>lt</code>	positive float	The liquidation threshold of the account
<code>tt</code>	positive float	The termination threshold of the account
triggerEstimates	structure	A structure containing the account's margin trigger estimates, see below
<code>im</code>	positive integer	The approximate bitcoin spot price at which the account will reach its initial margin requirement
<code>mm</code>	positive integer	The approximate bitcoin spot price at which the account will reach its maintenance margin requirement
<code>lt</code>	positive integer	The approximate bitcoin spot price at which the account will reach its liquidation threshold
<code>tt</code>	positive integer	The approximate bitcoin spot price at which the account will reach its termination threshold

Sample Return if Unsuccessful

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded <code>authenticationError</code>: the request could not be authenticated <code>accountInactive</code>: the Crypto Facilities account the request refers to is inactive

3.2.2 Accounts

Description

This endpoint returns key information on all cash and margin accounts. This includes bitcoin balances, instrument balances, margin requirements, margin trigger estimates and auxiliary information such as available funds, PnL of open positions, portfolio value and the virtual U.S. dollar balance.

Authentication is required.

Endpoint	Request Type	Permissible API Keys
/api/v2/accounts	GET	Read-only, Read-write, Master

Arguments

none

Sample Call

<https://www.cryptofacilities.com/derivatives/api/v2/accounts>

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "accounts":
    {
      "bitcoinCash":
        {
          "balances":
            {
              "xbt": 141.31756797,
            },
          "bitcoinFutures":
            {
              "balances":
                {
                  "f-xbt:usd-feb16-w4": 50,
                  "f-xbt:usd-mar16-w1": -15,
                  "...",
                  "xbt": 141.31756797,
                },
              "auxiliary":
                {
                  "af": 100.73891563,
                  "pnl": 12.42134766,
                  "pv": 153.73891563,
                  "usd": -119012.92,
                },
              "marginRequirements":
                {
                  "im": 52.8,
                  "mm": 23.76,
                  "lt": 39.6,
                }
            }
        }
    }
}
```

```

        "tt": 15.84,
      },
      "triggerEstimates":
      {
        "im": 311,
        "mm": 300,
        "lt": 289,
        "tt": 283,
      },
    },
    "bitcoinTurbos":
    {
      "balances":
      {
        "t-xbt:usd-feb16-w4": 20,
        "t-xbt:usd-mar16-w1": 0,
        ...,
        "xbt": 9.99000000,
      },
      "auxiliary":
      {
        "af": 9.40973649,
        "pnl": -0.17210020,
        "pv": 9.81789976,
        "usd": -9097.20,
      },
      "marginRequirements":
      {
        "im": 0.40816327,
        "mm": 0.35714286,
        "lt": 0.30612245,
        "tt": 0.10204082,
      },
      "triggerEstimates":
      {
        "im": 307,
        "mm": 306,
        "lt": 305,
        "tt": 304,
      },
    },
  },
}

```

Field	Type	Description
<code>result</code>	string	Always <code>success</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>accounts</code>	structure of structures	A structure containing structures with account-related information, see below
<code><accountName></code>	structure of structures	Either <code>bitcoinCash</code> , <code>bitcoinFutures</code> or <code>bitcoinTurbos</code>
<code>balances</code>	structure	A structure containing account balances, see below

<code><symbol></code>	integer	The number of Futures with symbol <code><symbol></code> in the account, see Section 2.5.4
<code>xbt</code>	positive float	The account balance, a bitcoin figure
<code>auxiliary</code>	structure	A structure containing auxiliary account information, see below. Returned only for margin accounts
<code>af</code>	float	The available funds of the account, a bitcoin figure
<code>pnl</code>	float	The PnL of current open positions of the account, a U.S. dollar figure
<code>pv</code>	positive float	The portfolio value of the account, a bitcoin figure
<code>usd</code>	float	The total price at which all current open positions of the account where bought or sold, a U.S. dollar figure
<code>marginRequirements</code>	structure	A structure containing the account's margin requirements, see below. Returned only for margin accounts
<code>im</code>	positive float	The initial margin requirement of the account
<code>mm</code>	positive float	The maintenance margin requirement of the account
<code>lt</code>	positive float	The liquidation threshold of the account
<code>tt</code>	positive float	The termination threshold of the account
<code>triggerEstimates</code>	structure	A structure containing the account's margin trigger estimates, see below. Returned only for margin accounts
<code>im</code>	positive integer	The approximate bitcoin spot price at which the account will reach its initial margin requirement
<code>mm</code>	positive integer	The approximate bitcoin spot price at which the account will reach its maintenance margin requirement
<code>lt</code>	positive integer	The approximate bitcoin spot price at which the account will reach its liquidation threshold
<code>tt</code>	positive integer	The approximate bitcoin spot price at which the account will reach its termination threshold

Sample Return if Unsuccessful

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time

<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> • <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded • <code>authenticationError</code>: the request could not be authenticated • <code>accountInactive</code>: the Crypto Facilities account the request refers to is inactive
--------------------	--------	---

3.2.3 Send Order

Description

This endpoint allows sending a limit or stop order for a currently listed Futures contract.

Authentication is required.

Endpoint

`/api/v2/sendorder`

Request Type

POST

Permissible API Keys

Read-write, Master

Arguments

Argument	Type	Required	Description
<code>orderType</code>	string	Yes	The order type, either <code>lmt</code> for a limit order or <code>stp</code> for a stop order
<code>symbol</code>	string	Yes	The symbol of the Futures the order refers to, see Section 2.5.4
<code>side</code>	string	Yes	The direction of the order, either <code>buy</code> for a buy order or <code>sell</code> for a sell order
<code>size</code>	positive integer	Yes	The size associated with the order
<code>limitPrice</code>	positive float	Yes	The limit price associated with the order. Must not have more than 2 decimal places
<code>stopPrice</code>	positive float	No	The stop price associated with a stop order. Required if <code>orderType</code> is <code>stp</code> . Must not have more than 2 decimal places. Note that for <code>stp</code> orders, <code>limitPrice</code> is also required and denotes the worst price at which the <code>stp</code> order can get filled

Sample Call

```
https://www.cryptofacilities.com/derivatives/api/v2/sendorder?orderType=stp&symbol=f-xbt:usd-sep16&side=buy&size=10&limitPrice=425.5&stopPrice=420.25
```

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "sendStatus":
    {
```

```

    "receivedTime": "2016-02-25T09:45:53.601Z",
    "status": "placed",
    "order_id": "c18f0c17-9971-40e6-8e5b-10df05d422f0",
  },
}

```

Field	Type	Description
<code>result</code>	string	Always <code>success</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>sendStatus</code>	structure	A structure containing information on the send order request, see below
<code>receivedTime</code>	ISO8601 datetime	The date and time the order was received
<code>status</code>	string	The status of the order, either of: <ul style="list-style-type: none"> • <code>placed</code>: the order was placed successfully • <code>invalidSize</code>: the order was not placed because <code>size</code> is invalid • <code>invalidPrice</code>: the order was not placed because <code>limitPrice</code> and/or <code>stopPrice</code> are invalid • <code>insufficientAvailableFunds</code>: the order was not placed because available funds are insufficient • <code>selfFill</code>: the order was not placed because it would be filled against an existing order belonging to the same account • <code>marketSuspended</code>: the order was not placed because the market is suspended • <code>marketInactive</code>: the order was not placed because the market is inactive
<code>order_id</code>	UUID	The unique identifier of the order

Sample Return if Unsuccessful

```

{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}

```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> • <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded • <code>authenticationError</code>: the request could not be authenticated • <code>accountInactive</code>: the Crypto Facilities account the request

refers to is inactive

- `requiredArgumentMissing`: a required argument was missing
- `invalidArgument`: `<argument>`: argument "`<argument>`" is invalid

3.2.4 Cancel Order

Description

This endpoint allows cancelling an open order for a Futures contract.

Authentication is required.

Endpoint

`/api/v2/cancelorder`

Request Type

POST

Permissible API Keys

Read-write, Master

Arguments

Argument	Type	Required	Description
<code>order_id</code>	UUID	Yes	The unique identifier of the order to be cancelled

Sample Call

```
https://www.cryptofacilities.com/derivatives/api/v2/cancelorder?order_id=c18f0c17-9971-40e6-8e5b-10df05d422f0
```

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "cancelStatus": {
    "receivedTime": "2016-02-25T09:45:53.601Z",
    "status": "cancelled",
  },
}
```

Field	Type	Description
<code>result</code>	string	Always <code>success</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>cancelStatus</code>	structure	A structure containing information on the cancellation request, see below
<code>receivedTime</code>	ISO8601 datetime	The date and time the order cancellation was received
<code>status</code>	string	The status of the order cancellation, either of: <ul style="list-style-type: none"> • <code>cancelled</code>: the order was found untouched and the entire size was cancelled successfully • <code>partiallyFilled</code>: the order was found partially filled and

the unfilled size was cancelled successfully

- `filled`: the order was found completely filled and could not be cancelled
- `notFound`: the order was not found, either because it had already been cancelled or it never existed

Sample Return if Unsuccessful

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> • <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded • <code>authenticationError</code>: the request could not be authenticated • <code>accountInactive</code>: the Crypto Facilities account the request refers to is inactive • <code>requiredArgumentMissing</code>: a required argument was missing

3.2.5 Batch Order

Description

This endpoint allows sending limit or stop order(s) and/or cancelling open order(s) for a currently listed Futures contract in batch.

Please do not submit more than 200 sending or cancellation instructions in one batch.

Authentication is required.

Endpoint	Request Type	Permissible API Keys
<code>/api/v2/batchorder</code>	POST	Read-write, Master

Arguments

```
json =
  {
    "batchOrder":
      [
        {
          "order": "send",
          "order_tag": "1",
          "orderType": "lmt",
```

```

    "symbol": "f-xbt:usd-sep16",
    "side": "buy",
    "size": 10,
    "limitPrice": 425.5,
    "stopPrice": 420.25,
  },
  ...,
  {
    "order": "cancel",
    "order_id": "c18f0c17-9971-40e6-8e5b-10df05d4
    22f0",
  },
]
}

```

Argument	Type	Required	Description
<code>json</code>	structure of list	Yes	Contains the list <code>batchOrder</code>
<code>batchOrder</code>	list of structures	Yes	A list containing structures of order sending and order cancellation instructions, see below. The list is in no particular order
Order sending			
<code>order</code>	string	Yes	Always <code>send</code>
<code>order_tag</code>	string	Yes	An arbitrary string provided client-side to tag the order for the purpose of mapping order sending instructions to the API's response
<code>orderType</code>	string	Yes	The order type, either <code>lmt</code> for a limit order or <code>stp</code> for a stop order
<code>symbol</code>	string	Yes	The symbol of the Futures the order refers to, see Section 2.5.4
<code>side</code>	string	Yes	The direction of the order, either <code>buy</code> for a buy order or <code>sell</code> for a sell order
<code>size</code>	positive integer	Yes	The size associated with the order
<code>limitPrice</code>	positive float	Yes	The limit price associated with the order. Must not have more than 2 decimal places
<code>stopPrice</code>	positive float	No	The stop price associated with a stop order. Required if <code>orderType</code> is <code>stp</code> . Must not have more than 2 decimal places. Note that for <code>stp</code> orders, <code>limitPrice</code> is also required and denotes the worst price at which the <code>stp</code> order can get filled
Order cancellation			
<code>order</code>	string	Yes	Always <code>cancel</code>
<code>order_id</code>	UUID	Yes	The unique identifier of the order to be cancelled

Sample Call

```
https://www.cryptofacilities.com/derivatives/api/v2/batchorder?json={"batch
order": [{"stopPrice": 420.25, "order": "send", "limitPrice": 425.5,
"order_tag": "1", "side": "buy", "orderType": "lmt", "symbol": "f-xbt:usd-
sep16", "size": 10}, {"order": "cancel", "order_id": "c18f0c17-9971-40e6-
8e5b-10df05d422f0"}]}
```

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "batchStatus":
    [
      {
        "receivedTime": "2016-02-25T09:45:53.601Z",
        "status": "placed",
        "order_id": "c18f0c17-9971-40e6-8e5b-10df05d422f0",
        "order_tag": "1",
      },
      {
        ...
      },
      {
        "receivedTime": "2016-02-25T09:45:53.601Z",
        "status": "cancelled",
      },
    ],
}
```

Field	Type	Description
<code>result</code>	string	Always <code>success</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>batchStatus</code>	list of structures	A list containing structures with information on the send order request(s) and order cancellation request(s), see below. The list is in no particular order
Sent orders		
<code>receivedTime</code>	ISO8601 datetime	The date and time the order was received
<code>status</code>	string	The status of the order, either of: <ul style="list-style-type: none"> <code>placed</code>: the order was placed successfully <code>invalidSize</code>: the order was not placed because <code>size</code> is invalid <code>invalidPrice</code>: the order was not placed because <code>limitPrice</code> and/or <code>stopPrice</code> are invalid <code>insufficientAvailableFunds</code>: the order was not placed because available funds are insufficient <code>selfFill</code>: the order was not placed because it would be filled against an existing order belonging to the same account <code>marketSuspended</code>: the order was not placed because the market is suspended

		<ul style="list-style-type: none"> <code>marketInactive</code>: the order was not placed because the market is inactive
<code>order_id</code>	UUID	The unique identifier of the order
<code>order_tag</code>	string	The arbitrary string provided client-side when the order was sent for the purpose of mapping order sending instructions to the API's response
Order cancellations		
<code>receivedTime</code>	ISO8601 datetime	The date and time the order cancellation was received
<code>status</code>	string	The status of the order cancellation, either of: <ul style="list-style-type: none"> <code>cancelled</code>: the order was found untouched and the entire size was cancelled successfully <code>partiallyFilled</code>: the order was found partially filled and the unfilled size was cancelled successfully <code>filled</code>: the order was found completely filled and could not be cancelled <code>notFound</code>: the order was not found, either because it had already been cancelled or it never existed

Sample Return if Unsuccessful

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded <code>authenticationError</code>: the request could not be authenticated <code>accountInactive</code>: the Crypto Facilities account the request refers to is inactive <code>marketUnavailable</code>: the requested market is unavailable <code>requiredArgumentMissing</code>: a required argument was missing <code>invalidArgument</code>: <code><argument></code>: argument "<code><argument></code>" is invalid

3.2.6 Open Orders

Description

This endpoint returns information on **all** open orders for all Futures contracts.

Authentication is required.

Endpoint	Request Type	Permissible API Keys
<code>/api/v2/openorders</code>	GET	Read-only, Read-write, Master

Arguments

none

Sample Call

`https://www.cryptofacilities.com/derivatives/api/v2/openorders`

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "openOrders":
    [
      {
        "receivedTime": "2016-02-25T09:45:53.601Z",
        "status": "partiallyFilled",
        "order_id": "c18f0c17-9971-40e6-8e5b-10df05d422f0",
        "orderType": "stp",
        "symbol": "f-xbt:usd-sep16",
        "side": "buy",
        "unfilledSize": 5,
        "filledSize": 5,
        "limitPrice": 425.5,
        "stopPrice": 420.25,
      },
      {
        "receivedTime": "2016-02-24T11:32:01.102Z",
        "status": "untouched",
        "order_id": "e35d61dd-8a30-4d5f-a574-b5593ef0c050",
        "orderType": "lmt",
        "symbol": "f-xbt:usd-sep16",
        "side": "sell",
        "unfilledSize": 10,
        "filledSize": 0,
        "limitPrice": 430.11,
      },
      ...
    ],
}
```

Field	Type	Description
<code>result</code>	string	Always <code>success</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>openOrders</code>	list of structures	A list containing structures with information on open orders, see below. The list is sorted descending by <code>receivedTime</code>
<code>receivedTime</code>	ISO8601 datetime	The date and time the order was received
<code>status</code>	string	The status of the order, either of: <ul style="list-style-type: none"> <code>untouched</code>: the entire size of the order is unfilled <code>partiallyFilled</code>: the size of the order is partially but not entirely filled
<code>order_id</code>	UUID	The unique identifier of the order
<code>orderType</code>	string	The order type, either <code>lmt</code> for a limit order or <code>stp</code> for a stop order
<code>symbol</code>	string	The symbol of the Futures the order refers to, see Section 2.5.4
<code>side</code>	string	The direction of the order, either <code>buy</code> for a buy order or <code>sell</code> for a sell order
<code>unfilledSize</code>	positive integer	The unfilled size associated with the order
<code>filledSize</code>	positive integer	The filled size associated with the order
<code>limitPrice</code>	positive float	The limit price associated with the order
<code>stopPrice</code>	positive float	<ul style="list-style-type: none"> If <code>orderType</code> is <code>stp</code>: The stop price associated with the order If <code>orderType</code> is <code>lmt</code>: Not returned because N/A

Sample Return if Unsuccessful

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded <code>authenticationError</code>: the request could not be authenticated <code>accountInactive</code>: the Crypto Facilities account the request refers to is inactive

3.2.7 Fills

Description

This endpoint returns information on filled orders for all Futures contracts.

Authentication is required.

Endpoint	Request Type	Permissible API Keys
<code>/api/v2/fills</code>	GET	Read-only, Read-write, Master

Arguments

Argument	Type	Required	Description
<code>lastFillTime</code>	ISO8601 datetime	No	If not provided, returns the last 100 fills in any Futures contract. If provided, returns the 100 entries before <code>lastFillTime</code>

Sample Call

```
https://www.cryptofacilities.com/derivatives/api/v2/fills?lastFillTime=2016-02-26T00:00:00.000Z
```

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "fills":
    [
      {
        "fillTime": "2016-02-25T09:47:01.000Z",
        "order_id": "c18f0c17-9971-40e6-8e5b-10df05d422f0",
        "fill_id": "522d4e08-96e7-4b44-9694-bfaea8fe215e",
        "symbol": "f-xbt:usd-sep16",
        "side": "buy",
        "size": 2,
        "price": 425.5,
      },
      {
        "fillTime": "2016-02-25T09:47:01.000Z",
        "order_id": "c18f0c17-9971-40e6-8e5b-10df05d422f0",
        "fill_id": "865cc3d0-12ee-4ac5-8418-233ea40e6b39",
        "symbol": "f-xbt:usd-sep16",
        "side": "buy",
        "size": 3,
        "price": 425.5,
      },
      ...
    ],
}
```

Field	Type	Description
<code>result</code>	string	Always <code>success</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>fills</code>	list of structures	A list containing structures with information on filled orders, see below. The list is sorted descending by <code>fillTime</code>
<code>fillTime</code>	ISO8601 datetime	The date and time the order was filled
<code>order_id</code>	UUID	The unique identifier of the order
<code>fill_id</code>	UUID	The unique identifier of the fill. Note that several <code>fill_id</code> can pertain to one <code>order_id</code> (but not vice versa)
<code>symbol</code>	string	The symbol of the Futures the fill occurred in, see Section 2.5.4
<code>side</code>	string	The direction of the order, either <code>buy</code> for a buy order or <code>sell</code> for a sell order
<code>size</code>	positive integer	The size of the fill
<code>price</code>	positive float	The price of the fill

Sample Return if Unsuccessful

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded <code>authenticationError</code>: the request could not be authenticated <code>accountInactive</code>: the Crypto Facilities account the request refers to is inactive

3.2.8 Open Positions

Description

This endpoint returns **all** open positions in all Futures contracts. This includes Futures contracts that have matured but have not yet been settled.

Notes:

- Our platform closes out open positions on a first-in-first-out (FIFO) basis

- A filled order to buy 5 Futures contracts will result in 5 positions of size 1 each

Authentication is required.

Endpoint	Request Type	Permissible API Keys
<code>/api/v2/openpositions</code>	GET	Read-only, Read-write, Master

Arguments

none

Sample Call

`https://www.cryptofacilities.com/derivatives/api/v2/openpositions`

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "openPositions":
    [
      {
        "fillTime": "2016-02-25T09:47:01.000Z",
        "symbol": "f-xbt:usd-sep16",
        "side": "long",
        "size": 1,
        "price": 425.5,
      },
      {
        "fillTime": "2016-02-25T09:47:01.000Z",
        "symbol": "f-xbt:usd-sep16",
        "side": "buy",
        "size": 1,
        "price": 425.5,
      },
      ...
    ],
}
```

Field	Type	Description
<code>result</code>	string	Always <code>success</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>openPositions</code>	list of structures	A list containing structures with information on open positions, see below. The list is sorted descending by <code>fillTime</code>
<code>fillTime</code>	ISO8601 datetime	The date and time the position was entered into
<code>symbol</code>	string	The symbol of the Futures the position is in, see Section 2.5.4
<code>side</code>	string	The direction of the position, either <code>long</code> for a long position or <code>short</code> for a short position
<code>size</code>	positive integer	The size of the position, currently always 1

<code>price</code>	positive float	The price at which the position was entered into
--------------------	----------------	--

Sample Return if Unsuccessful

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded <code>authenticationError</code>: the request could not be authenticated <code>accountInactive</code>: the Crypto Facilities account the request refers to is inactive

3.2.9 Withdrawal

Description

This endpoint allows submitting a request to withdraw bitcoins from a Crypto Facilities account.

Authentication is required.

Endpoint	Request Type	Permissible API Keys
<code>/api/v2/withdrawal</code>	POST	Master

Arguments

Argument	Type	Required	Description
<code>targetAddress</code>	string	Yes	The bitcoin address to which the withdrawal shall be made
<code>amount</code>	positive float	Yes	The amount of bitcoins that shall be withdrawn. Must not have more than 8 decimal places

Sample Call

```
https://www.cryptofacilities.com/derivatives/api/v2/withdrawal?targetAddress=1A1zP1eP5QGefi2DMPTfTL5SLmv7DivfNa&amount=0.12345678
```

Sample Return if Successful

```
{
  "result": "success",
}
```

```

    "serverTime": "2016-02-25T09:45:53.818Z",
    "withdrawal":
      {
        "receivedTime": "2016-02-25T09:47:01.000Z",
        "status": "accepted",
        "transfer_id": "b243cf7a-657d-488e-ab1c-cfb0f95362ba",
      },
  },
}

```

Field	Type	Description
<code>result</code>	string	Always <code>success</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>withdrawal</code>	structure	A structure containing information on the bitcoin withdrawal request, see below
<code>receivedTime</code>	ISO8601 datetime	The date and time the withdrawal request was received
<code>status</code>	string	The status of the withdrawal request, either of: <ul style="list-style-type: none"> <code>accepted</code>: the withdrawal request was accepted and will be processed soon <code>insufficientAvailableFunds</code> the withdrawal request was not accepted because available funds are insufficient <code>invalidAmount</code>: the withdrawal request was not accepted because <code>amount</code> is invalid <code>invalidAddress</code>: the withdrawal request was not accepted because <code>targetAddress</code> is not a valid bitcoin address <code>failed</code>: the withdrawal request was not accepted because an error occurred
<code>transfer_id</code>	UUID	<ul style="list-style-type: none"> If <code>status</code> is <code>accepted</code>: The unique identifier of the withdrawal request Otherwise: Not returned because N/A

Sample Return if Unsuccessful

```

{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}

```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded

- `authenticationError`: the request could not be authenticated
- `accountInactive`: the Crypto Facilities account the request refers to is inactive
- `requiredArgumentMissing`: a required argument was missing

3.2.10 Transfers

Description

This endpoint returns information on bitcoin deposits and withdrawals to and from a Crypto Facilities account.

Authentication is required.

Endpoint	Request Type	Permissible API Keys
<code>/api/v2/transfers</code>	GET	Read-only, Read-write, Master

Arguments

Argument	Type	Required	Description
<code>lastTransferTime</code>	ISO8601 datetime	No	If not provided, returns the last 100 bitcoin deposits or withdrawals w.r.t. <code>receivedTime</code> . If provided, returns the 100 entries before <code>lastTransferTime</code> w.r.t. <code>receivedTime</code>

Sample Call

```
https://www.cryptofacilities.com/derivatives/api/v2/transfers?lastTransferTime=2016-02-26T00:00:00.000Z
```

Sample Return if Successful

```
{
  "result": "success",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "transfers":
    [
      {
        "receivedTime": "2016-01-28T07:09:42.000Z",
        "completedTime": "2016-01-28T08:26:46.000Z",
        "status": "processed",
        "transfer_id":
          "b243cf7a-657d-488e-ab1c-cfb0f95362ba",
        "transaction_id":
          "4a5e1e4baab89f3a32518a88c31bc87f618f76673e2cc77ab2127b7afdeda33b",
        "targetAddress":
          "1A1zP1eP5QGefi2DMPTfTL5SLmv7DivfNa",
        "transferType": "deposit"
        "amount": 2.58,
      },
    ]
}
```

```

    {
      "receivedTime": "2016-01-28T07:09:42.000Z",
      "status": "pending",
      "transfer_id":
        "b243cf7a-657d-488e-ab1c-cfb0f95362ba",
      "targetAddress":
        "1A1zP1eP5QGefi2DMPTfTL5SLmv7DivfNa",
      "transferType": "withdrawal"
      "amount": -49.9999,
    },
    ...
  ],
}

```

Field	Type	Description
<code>result</code>	string	Always <code>success</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
transfers	list of structures	A list containing structures with information on the account's transfer history, see below. The list is sorted descending by <code>receivedTime</code>
<code>receivedTime</code>	ISO8601 datetime	<ul style="list-style-type: none"> If <code>transferType</code> is <code>deposit</code>: The date and time the deposit was first detected on the bitcoin network If <code>transferType</code> is <code>withdrawal</code>: The date and time the withdrawal request was received
<code>completedTime</code>	ISO8601 datetime	<ul style="list-style-type: none"> If <code>status</code> is <code>processed</code>: The date and time the transfer has received 3 or more confirmations on the bitcoin blockchain If <code>status</code> is <code>pending</code>: Not returned because N/A
<code>status</code>	string	<p>The status of the transfer, either of:</p> <ul style="list-style-type: none"> <code>processed</code>: the transfer has received 3 or more confirmations on the bitcoin blockchain <code>pending</code>: the transfer has received less than 3 confirmations on the bitcoin blockchain <p>Note: Deposits become available only when <code>processed</code>, withdrawals are deducted once the withdrawal request has been received</p>
<code>transfer_id</code>	UUID	The unique identifier of the transfer
<code>transaction_id</code>	string	<ul style="list-style-type: none"> If <code>status</code> is <code>processed</code>: The blockchain transaction id of the transfer if the transfer involves an external bitcoin address and <code>Internal Transaction</code> if the transaction is sent to an address controlled by Crypto Facilities If <code>status</code> is <code>pending</code>: Not returned because N/A
<code>targetAddress</code>	string	The bitcoin address to which the transfer is sent
<code>transferType</code>	string	The type of the transfer, either <code>deposit</code> or <code>withdrawal</code>
<code>amount</code>	float	The bitcoin amount that was transferred. Positive for deposits and negative for withdrawals

Sample Return if Unsuccessful

```
{
  "result": "error",
  "serverTime": "2016-02-25T09:45:53.818Z",
  "error": "apiLimitExceeded",
}
```

Field	Type	Description
<code>result</code>	string	Always <code>error</code>
<code>serverTime</code>	ISO8601 datetime	The server date and time
<code>error</code>	string	The reason the API call failed, either of: <ul style="list-style-type: none"> <code>apiLimitExceeded</code>: the API limit for the calling IP address has been exceeded <code>authenticationError</code>: the request could not be authenticated <code>accountInactive</code>: the Crypto Facilities account the request refers to is inactive <code>invalidArgument</code>: <code><argument></code>: argument "<code><argument></code>" is invalid

4 Additional Resources

4.1 Sample Implementations

Sample implementations of the API in **Java**, **Python**, **C#** and **Visual Basic .NET** can be found on our Github page:

<https://github.com/cryptofacilities>

If you have implemented the API in a language not listed here and would like to share your code, please contact us on support@cryptofacilities.co.uk.

4.2 Test Environment

Implementations of the API can be tested in our test environment before deploying them in production. To configure your test environment, please proceed as follows:

1. Please contact support@cryptofacilities.co.uk to receive the test server IP address. Register an account on the test server
2. In your test account, generate your `apiKey` and `apiSecretKey` on the Account Page under "Settings" -> "API Keys"
3. Test against your test account using your test account API keys and the following test server API URL

<https://<test server IP address>/derivatives/api/v2>

Note that you may have to deactivate SSL certificate verification when calling the test server API or your calls may fail.

4.3 Whitelisting Your IP Address

As mentioned in Section 2.6, calling the API is subject to frequency limitations. If you are a market maker or other higher frequency trader and have a fixed IP address, you can submit a request to support@cryptofacilities.co.uk for your IP address to be whitelisted. API limits will then no longer apply to that IP address. Only IP addresses of verified accountholders can be whitelisted.

4.4 Support and Malfunction Reporting

If you require assistance regarding your API implementation, or if you have questions regarding the API's functionalities or suggestions for improvements, please do not hesitate to contact us on support@cryptofacilities.co.uk. We also appreciate any feedback regarding unexpected behaviour of the API or shortcomings of the API documentation.

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