User Guide: Developer Data APIs

Overview

The Stem Public APIs provide programmatic access to data. The REST API are based on REST.

Response values are in JSON format unless indicated otherwise and failures are reported using standard HTTP error codes

API Details

Base URL

The request URL for all APIs uses https and has the following base path:

```
https://app.stem.com/api/v1/
```

An example would be the stream API:

```
https://app.stem.com/api/v1/sites/{site
identifier}/streams
```

Authentication Token

Client applications use a developer API token, provided by Stem, which authorizes the use of the APIs. The api_key parameter must be passed in the Authorization header for the all API calls from Data API.

An example is shown below:

```
GET https://app.stem.com/api/v1/clients?
 Authorization: APIKEY your-api-key-here
```

Request a Token for API Use

Prerequisite:

You must have a user account set up for PowerScope. If you do not have an account, please contact Stem Customer Support.

Step 1:

Email support@stem.com to request API access.

Step 2:

Stem will generate a token and send it to you. The Stem team will also enable the permission module for Developer Data APIs for the users in your organization who require access.

Step 3:

Access API via Base URL

```
GET https://app.stem.com/api/v1/clients?
 Authorization: APIKEY your-api-key-here
```

Supported End Points

Resource	Description
GET ~/clients	Returns a list of clients - limited to those the user has been granted permission to access.
GET ~/clients/{client_identifier}	Returns information for a specific client, provided user has been granted permission to access the client.
GET ~/clients/{client_identifier}/sites	Returns a list of sites for a client – limited to those sites the user has been granted permission to access.
GET ~/sites/{site_identifier}	Returns the information for a specific site, provided the user has been granted permission to access this site.
GET ~/sites/{site_identifier}/streams	Returns the stream Telemetry Data Access API for a specific site, provided the user has been granted permission to access this site.

Obtaining clients

Obtaining a list of clients available to a user

GET ~/clients

Parameters:

Name	Description	Notes
name	A substring that could be used to limit the list of clients returned.	• *Mandatory:* No • *default* : None • *type* : string
page	Provide page number to be returned.	• *Mandatory:* No • *default* : 1 • *type* : int

per_page	Provide the number of clients to be returned per page.	• *Mandatory:* No • *default* : 100 • *type* : int

Response output

```
{
 'clients' : [
   { 'id': "client_identifier_string",
        'name' : 'This is the name of the
client',
        'link':
'/api/v1/clients/{client_identifier_string}'
   }
  ],
 'total': 1,
 'page': 1
}
```

Obtaining sites

Obtaining a list of sites available

GET ~/clients/{client_identifier}/sites

Parameters:

Name	Description	Notes
name	A substring that could be used to limit the list of sites returned.	• *Mandatory:* No • *default* : None • *type* : string
page	Provide page number to be returned.	• *Mandatory:* No • *default* : 1 • *type* : int
per_page	Provide the number of sites to be returned per page.	• *Mandatory:* No • *default* : 100 • *type* : int

Response output

```
{'sites' :
    [ { 'id': "site_identifier_string",
        'name' : 'This is the name of the
site',
        'link':
'/api/v1/sites/{site_identifier_string}',
  'stream_start_times': {
   'CONVERTER': '2014-02-14T00:00:00Z',
       'MONITOR': '2011-03-01T16:15:01Z',
  }
   }
    ]
 'total': 1,
 'page': 1
}
```

Reading stream Data

Reading stream data that is collected from e.g. Stem's PowerMonitor or originates from utility data and which can be retrieved using an HTTP GET for the following URL:

GET ~/sites/{site_identifier}/streams

Parameters:

Name	Description	Notes
start_datetime	Time in UTC to begin requesting data for. Assumes this is an end time so stream seconds is subtracted. Time is rounded to the nearest stream and 1 second will be added before requesting data from the database.	• *Mandatory: Yes* • *default* : None • *format :* YYYY-MM-DDTHH:MM:SSZ • *type* : str UTC time in ISO-8601 format
end_datetime	End time of data in UTC. Rounded to nearest stream and stream seconds (inputted as `resolution`) is subtracted.	• *Mandatory: Yes* • *default* : None • *format : YYYY-MM-DDTHH:MM:SSZ* • *type* : str UTC time in ISO-8601 format

resolution	Resolution of the stream data in seconds.	• *Mandatory:* No
		• *default* : 900
		• *possible values*:
		  • 900
		  • 1800
		  • 3600
		• *type* : int

stream_type	List of data types to fetch from Stem data store	• *Mandatory: No*
		• *default* :['MONITOR']
		• *possible values:*
		  • 'MONITOR'
		  • 'CONVERTER'
		  • 'INTERVAL_REVENUE'
		• *type* : list or a comma-separated string of stream types
		
		See streamTypes for more explanation

NOTE:

- The minimum range that can be requested for this API call is the resolution passed.
- The maximum range that can be requested for this API call is 1 year.

Example

The following request URL fetches the stream data for a site_identifier named "white_house" for Dec 31, 2014:
NOTE: Carriage returns only added for readability

```
https://app.stem.com/api/v1/sites/white_house/streams?
     &start_datetime=2014-12-31T00:00:01Z
     &end_datetime=2015-01-01T00:00:01Z
```

Response output

```
{
  "id": "site_identifier_string",
  "name": "This is the name of the site"
  "stream_types": [
    {
      "stream_type": "MONITOR",
      "streams": [
        {
          "start_datetime":
"2014-12-31T23:30:01+00:00",
          "end_datetime":
"2014-12-31T23:45:00+00:00",
          "kw_total_avg": 10.59252
        },
        {
          "start_datetime":
"2014-12-31T23:45:01+00:00",
          "end_datetime":
"2015-01-01T00:00:00+00:00",
          "kw_total_avg": 10.59369
        }
      ]
    },
    {
      "stream_type": "CONVERTER",
      "streams": [
        {
          "start_datetime":
"2014-12-31T23:30:01+00:00",
          "end_datetime":
"2014-12-31T23:45:00+00:00",
          "kw_total_avg": 0.59252
        },
        {
          "start_datetime":
"2014-12-31T23:45:01+00:00",
          "end_datetime":
"2015-01-01T00:00:00+00:00",
          "kw_total_avg": 0.59369
        }
      ]
    }
  ]
}
```

stream Types

The following table provides descriptions for the stream type as used by this API

stream Type	Description
MONITOR	Stem PowerMonitor data Monitor = Site meter + Stem Energy Storage System (ESS) Positive values indicate the site (building with ESS) is consuming (importing) e negative values indicate the site is generating more energy than being consur therefore exporting it back to the grid.
CONVERTER	Stem Energy Storage System (ESS) data Charging and Discharging Positive values indicate the battery was charging; negative values indicate the
INTERVAL_REVENUE	Revenue Quality meter data Meter data obtained from a third party

Error Responses

HTTP Error Codes

See REST API Best Practices (Errors)

The request URLs requests return a standard HTTP error codes with a more descriptive error message:

HTTP Error Code	HTTP Error	Reason	Content
200	OK	The request was successful	
400	BAD REQUEST	The request was incorrect (check parameters)	
401	UNAUTHORIZED	No api_key or no valid api_key was provided	
403	FORBIDDEN	A valid api_key is passed in but user does not have the right permissions for the API call	
404	NOT FOUND	A site resource could not be found	
405	METHOD NOT ALLOWED	If the request was made using anything other than Http GET	
500	INTERNAL SERVER ERROR	API cannot fulfill a valid request for some reason	

Error Payload

Here is an example of error response from the API:

```
{
  "errors": [
   {
    "message": "The requested stream type -
INTERVAL_REVENUE is unavailable for the
requested site.",
    "code": 400
   }
  ]
}
```