

## Glowmarkt API documentation

### Using the Bright Application as an Individual User

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This document explains how to use the Glowmarkt platform APIs for an individual user who manages one or more sets of data (more sets of data is when a single user /account has multiple installations, i.e. multiple locations with smart meters).

### Prerequisites

To retrieve data from the API you need to do the following:

1. Download the Bright App (see instructions below)
2. Create an account using Bright (sign up following the App instructions)
3. Set up your data
  - a. If you have Glow hardware, set it up (connected to both the meter and the internet)
  - b. If you have a SMETS 2 smart meter, complete the verification process within the Bright App (on first time login) and wait for confirmation via the App and in an email that the verification has passed. The verification process is required whether you purchase hardware or not. (Hildebrand can retrieve delayed half hourly consumption data from the DCC because we are a DCC Other User).
4. If, in addition to the Glowmarkt API, you would like access to MQTT please do the following:
  - a. email [support@glowmarkt.com](mailto:support@glowmarkt.com) stating that you wish to use the MQTT
  - a. provide the Username you used when you created your Bright account and
  - b. the MAC ID on your Glow CAD (either the GlowStick or the IHD/CAD)

### Download Bright App

If you already have a Bright account, please skip this step.

#### Android and iOS:

Search using the words Bright and Hildebrand in the appropriate app store. If you can't find the app, use the following urls:

Android: <https://play.google.com/store/apps/details?id=uk.co.hildebrand.brightonic>

iOs: <https://itunes.apple.com/us/app/bright/id1369989022?ls=1&mt=8>

### Additional Material

Please refer to <https://bitbucket.org/ijosh/brightglowmarkt/src/master/>, which contains additional guides, tutorials, examples and more information about the capabilities of the Glowmarkt API.

### Feedback

If you have any suggestions or questions about this document, please drop us an email to [support@glowmarkt.com](mailto:support@glowmarkt.com).

Our forums may be of interest : <https://forum.glowmarkt.com/> - lots of customers are sharing their experience and work they've developed. Please feel free to join.

## High level definitions

The following high level definitions are useful to understand, prior to using the API.

Object	Description
<b>Device</b>	<p>The physical hardware that can be either:</p> <ul style="list-style-type: none"> <li>• a gateway - makes information available to the Glow Platform. The IHD/CAD and GlowSticks are examples of our gateways.</li> <li>• a sensor - detects events or changes to its environment and sends information to other devices (smart electricity meter)</li> <li>• an actuator - a controller, given specific predefined commands it can trigger events, change its environment or perform an operation (auxiliary load control switch in an electricity meter)</li> </ul> <p>API definition: <a href="https://api.glowmarkt.com/api-docs/v0-1/dmssys/#/">https://api.glowmarkt.com/api-docs/v0-1/dmssys/#/</a></p>
<b>Resource</b>	<p>A resource is a representation of data collected from a physical device, like sensor readings, or changes in an actuating device state etc.</p> <p>API definition: <a href="https://api.glowmarkt.com/api-docs/v0-1/resourcesys/#/">https://api.glowmarkt.com/api-docs/v0-1/resourcesys/#/</a></p>
<b>Virtual Entity</b>	<p>A virtual entity, is the virtual representation of a physical “thing” that is comprised of metadata and a collection of resources that define and describe it. An example of a Virtual Entity is a home with electricity energy readings sourced from a smart meter.</p> <p>API definition: <a href="https://api.glowmarkt.com/api-docs/v0-1/vesys/#/">https://api.glowmarkt.com/api-docs/v0-1/vesys/#/</a></p>

## Data Retrieval Procedure

There are four steps to retrieve data which will be detailed in the next sections:

1. Authenticate in the Glowmarkt Platform
2. Get all the virtual entities you have access to. Each virtual entity has a collection of resources (data streams) that belong to it
3. For a particular virtual entity get the full definition of resources that belong to it (optional).
4. Get the data of the specific resources you require
  - a. Time series data
  - b. Current values

The scope of this document describes the retrieval of time series data, a list of all the available Resource APIs can be found here (<https://api.glowmarkt.com/api-docs/v0-1/resourcesys/#/>).



## Step 2. Get all virtual entities

To retrieve your virtual entities, use the following query:

<b>API req</b>	GET <a href="https://api.glowmarkt.com/api/v0-1/virtualentity">https://api.glowmarkt.com/api/v0-1/virtualentity</a>
<b>Authentication required</b>	JWT token and applicationId
<b>Headers</b>	Content-Type: application/json token: YOUR_TOKEN applicationId: b0f1b774-a586-4f72-9edd-27ead8aa7a8d
<b>Example cURL</b>	<pre>curl -X GET -H "Content-Type: application/json" -H "token: eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ0b2t1bkhhc2giOiJlOTRlYzE2MzgyMzE0YzdkMDdlZDliZmEwZGF1NDhhZTNhOTA0NDhlYjNjZTU0MzI4YWEwOTMwNTEzMjI4ZjY2ZjAwMWNiODRiYTlyZDczMjliZmZlMDlmZj1hZDFkZiIsImhhdCI6MTUzNjEzNDkxMCwiZShwIjoxNTM2NzM5NzEwQ.D1lTvyfo5ap69tT6MK9jceEFNLp-xmMAz6WGohIuUR4" -H "applicationId: b0f1b774-a586-4f72-9edd-27ead8aa7a8d" "https://api.glowmarkt.com/api/v0-1/virtualentity"</pre>
<b>Swagger reference</b>	<a href="https://api.glowmarkt.com/api-docs/v0-1/vesys/#/Virtual%20Entity/virtualentity_findAll">https://api.glowmarkt.com/api-docs/v0-1/vesys/#/Virtual%20Entity/virtualentity_findAll</a>

The response will be in JSON, and will be an array of virtual entity documents. Each virtual entity will have a name and a unique identifier (veId). In addition it will have field named resources, that will list all the resources that belong to that particular virtual entity.

```
[
  {
    "name": "Smart Home 1",
    "veId": "dc9069a7-7695-43fd-8f27-16b1c94213da",
    "veTypeId": "cc90b599-2705-4b13-98d4-3306f81169cf",
    "ownerId": "f78a3812-d4fc-4b00-99c5-20fd581721a6",
    "applicationId": "b0f1b774-a586-4f72-9edd-27ead8aa7a8d",
    "updatedAt": "2018-10-26T17:10:02.670Z",
    "createdAt": "2018-10-26T17:10:02.670Z",
    "resources": [
      {
        "resourceId": "73f70bcd-3743-4009-a2c4-e98cc959c030",
        "resourceTypeId": "ea02304a-2820-4ea0-8399-f1d1b430c3a0"
      },
      {
        "resourceId": "b120977-aeb6-4b56-a0d3-d4a9b485848a",
        "resourceTypeId": "b4158501-a678-484a-837a-874194d3bd48"
      },
      {
        "resourceId": "b320977-aeb6-4b56-a0d3-d4a9b485848a",
        "resourceTypeId": "32d9821b-34fd-46d1-9ba1-56259afd4734"
      },
      {
        "resourceId": "b420977-aeb6-4b56-a0d3-d4a9b485848a",
```

```
    "resourceTypeld": "672b8071-44ff-4f23-bca2-f50c6a3ddd02"
  }
]
},
{
  "name": "Smart Business 2",
  "veld": "dc9069a7-7695-43fd-8f27-16b1c94213da",
  "veTypeld": "cc90b599-2705-4b13-98d4-3306f81169cf",
  "ownerId": "f78a3812-d4fc-4b00-99c5-20fd581721a6",
  "applicationId": "b0f1b774-a586-4f72-9edd-27ead8aa7a8d",
  "updatedAt": "2018-11-26T17:10:02.670Z",
  "createdAt": "2018-11-26T17:10:02.670Z",
  "resources": [
    {
      "resourceId": "74f70bcd-3743-4009-a2c4-e98cc959c030",
      "resourceTypeld": "ea02304a-2820-4ea0-8399-f1d1b430c3a0"
    },
    {
      "resourceId": "c120977-aeb6-4b56-a0d3-d4a9b485848a",
      "resourceTypeld": "b4158501-a678-484a-837a-874194d3bd48"
    },
    {
      "resourceId": "c320977-aeb6-4b56-a0d3-d4a9b485848a",
      "resourceTypeld": "32d9821b-34fd-46d1-9ba1-56259afd4734"
    },
    {
      "resourceId": "c420977-aeb6-4b56-a0d3-d4a9b485848a",
      "resourceTypeld": "672b8071-44ff-4f23-bca2-f50c6a3ddd02"
    }
  ]
}
]
```

### Step 3. Get a virtual entity with the full definition of resources

Your data is stored in what we call ‘resources’. Typically a resource represents a single data stream. Each resource has a unique identifier within the Glowmarkt platform (resourceId).

To retrieve the full definition of all the resources that belong to a virtual entity, use the following query:

<b>API req</b>	GET <a href="https://api.glowmarkt.com/api/v0-1/virtualentity/dc9069a7-7695-43fd-8f27-16b1c94213da/resources">https://api.glowmarkt.com/api/v0-1/virtualentity/dc9069a7-7695-43fd-8f27-16b1c94213da/resources</a>
<b>Authentication required</b>	JWT token and applicationId
<b>Headers</b>	Content-Type: application/json token: YOUR_TOKEN applicationId: b0f1b774-a586-4f72-9edd-27ead8aa7a8d
<b>Example cURL</b>	curl -X GET -H "Content-Type: application/json" -H "token: eyJhbGciOiJIUzI1NiIsInR5cGU6IjY0b2t1bkhhc2giOiJlOTRlYzE2MzgyMzE0YzdzMDdlZDliZmEwZGFhZTNDhhZTNhOTA0NDhlYjNjZTU0MzI4YWEwOTMwNTEzMjI4ZjY2ZjAwMWNiODRiYTlYzDczMjliZmZlMDlmZjhlZDFkZiIsIm1hdCI6MTUzNjEzNDkxMCwiZXhwIjoxNTM2NzNzEwfwQ.D1lTvyfo5ap69tT6MK9jceEFNLp-xmMAz6WGohIuUR4" -H "applicationId: b0f1b774-a586-4f72-9edd-27ead8aa7a8d" "https://api.glowmarkt.com/api/v0-1/virtualentity/dc9069a7-7695-43fd-8f27-16b1c94213da/resources"
<b>Swagger reference</b>	<a href="https://api.glowmarkt.com/api-docs/v0-1/vesys/#/Virtual%20Entity/virtualentity_findResourcesbyVeld">https://api.glowmarkt.com/api-docs/v0-1/vesys/#/Virtual%20Entity/virtualentity_findResourcesbyVeld</a>

The response will be in JSON, and will be the virtual entity document. Under the resources array, the full definition of each resource will be provided.

```
{
  "name": "Smart Home 1",
  "veId": "dc9069a7-7695-43fd-8f27-16b1c94213da",
  "veTypeId": "cc90b599-2705-4b13-98d4-3306f81169cf",
  "ownerId": "51ad1a43-cdaf-4f48-b48c-1577d2edd65b",
  "applicationId": "b0f1b774-a586-4f72-9edd-27ead8aa7a8d",
  "updatedAt": "2018-10-26T17:10:02.670Z",
  "createdAt": "2018-10-26T17:10:02.670Z",
  "resources": [
    {
      "resourceId": "73f70bcd-3743-4009-a2c4-e98cc959c030",
      "resourceTypeId": "ea02304a-2820-4ea0-8399-f1d1b430c3a0",
      "name": "electricity",
      "classifier": "electricity.consumption",
      "description": "electricity consumption",
      "ownerId": "f78a3812-d4fc-4b00-99c5-20fd581721a6",
      "baseUnit": "kWh",
      "active": true
    },
  ]
}
```

```

"resourceId": "b120977-aeb6-4b56-a0d3-d4a9b485848a",
"resourceTypeId": "b4158501-a678-484a-837a-874194d3bd48",
"name": "electricity cost",
"classifier": "electricity.consumption.cost",
"description": "electricity cost",
"ownerId": "f78a3812-d4fc-4b00-99c5-20fd581721a6",
"baseUnit": "pence",
"active": true
},
{
"resourceId": "b320977-aeb6-4b56-a0d3-d4a9b485848a",
"resourceTypeId": "32d9821b-34fd-46d1-9ba1-56259afd4734",
"name": "gas",
"classifier": "gas.consumption",
"description": "gas consumption",
"ownerId": "f78a3812-d4fc-4b00-99c5-20fd581721a6",
"baseUnit": "kWh",
"active": true
},
{
"resourceId": "b420977-aeb6-4b56-a0d3-d4a9b485848a",
"resourceTypeId": "672b8071-44ff-4f23-bca2-f50c6a3ddd02",
"name": "gas cost",
"classifier": "gas.consumption.cost",
"description": "gas cost",
"ownerId": "f78a3812-d4fc-4b00-99c5-20fd581721a6",
"baseUnit": "pence",
"active": true
}
]
}

```

The classifier field on the resource document indicates the data type. Examples of classifiers are:

Classifier Identifier	Description
<b>electricity.consumption</b>	The electricity readings of a customer in energy units (kWh).
<b>electricity.consumption.cost</b>	The electricity readings of a customer in monetary units (pence).
<b>gas.consumption</b>	The gas readings of a customer in energy units (kWh).
<b>gas.consumption.cost</b>	The gas readings of a customer in monetary units (pence).

If you have an electricity and a gas meter there will four resources (electricity energy, electricity cost, gas energy, gas cost).

Electricity only customers will have two resources (electricity energy, electricity cost).





Query Parameter	Description
<b>period</b>	<p>The aggregation level in which the data is to be returned (ISO 8601).</p> <ul style="list-style-type: none"> <li>• PT1M (minute level, only elec)</li> <li>• PT30M (30 minute level)</li> <li>• PT1H (hour level)</li> <li>• P1D (day level)</li> <li>• P1W (week level, starting Monday)</li> <li>• P1M (month level)</li> <li>• P1Y (year level)</li> </ul>

This is an example response:

```
{
  "status": "OK",
  "name": "electricity consumption",
  "resourceTypeId": "ea02304a-2820-4ea0-8399-f1d1b430c3a0",
  "resourceId": "73f70bcd-3743-4009-a2c4-e98cc959c030",
  "query": {
    "from": "2018-04-10T00:00:00",
    "to": "2018-04-11T23:59:59",
    "period": "P1D"
  },
  "data": [
    [
      1523318400,
      48.79
    ],
    [
      1523404800,
      48.826
    ]
  ]
}
```

All the data is under the data field. The data is an array of arrays.

```
[
  [UTC timestamp, reading],
  [UTC timestamp, reading],
]
```

**Important:** depending on the aggregation period, there is a limit to the volume of data that can be requested per query as follows:

Period Parameter	Description	Limit in days
PT30M	30-minute level	10 days
PT1H	1-hour level	31 days
P1D	1-day level	31 days
P1W	1-week level	6 weeks
P1M	1-month level	366 days
P1Y	1-year level	366 days

Finally, be aware that when the aggregation periods of P1W and P1M are used, the start date of the query (“to” date) should be set to the beginning of the week (Monday) or month respectively (1st day).



Please note that for cost resources in the /current API we return the power (for electricity) and the cumulative reading (for gas).

In the case of electricity as unit rates are set in pence/kWh (energy units), you would need to set a time range to estimate your energy cost when the electricity power readings are being used. As this calculation involves an assumption we choose to not make it in our API.

In the case of gas (when that data starts to flow), as we are presenting the cumulative reading as seen on the meter, cost calculations are not relevant on that figure.

In the Bright application we show how much it would cost if the current electricity power was used over the period of an hour. To do this we have retrieved the instantaneous electricity consumption and the unit rate from the resource tariff API ([https://api.glowmarkt.com/api-docs/v0-1/resourcesys/#/Resource/resource\\_getTariff](https://api.glowmarkt.com/api-docs/v0-1/resourcesys/#/Resource/resource_getTariff)).