

Swarm Hive 1.3 API Integration Guide



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Introduction

Welcome to the Swarm API integration guide. We'll walk you through using our framework to give you access to your data.

What is a REST API anyway?

An API is an application programming interface - in short, it's a set of rules that lets programs talk to each other, exposing data and functionality across the internet in a consistent format.

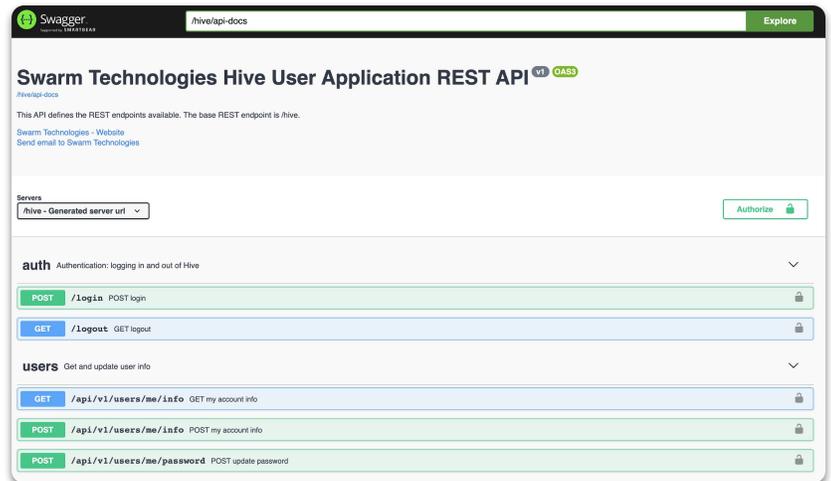
REST stands for Representational State Transfer. This is an architectural pattern that describes how distributed systems can expose a consistent interface.

The URLs on the next page represent various resources - any information or content accessed at that location, which can be returned as JSON. The following document highlights some of the more common endpoints using GET and POST methods over HTTP. Please visit our [Swagger documentation](#) for our most up to date API resources.

Hive Cloud Swagger

Once logged into the hive you can explore our api via our interactive Swagger documentation engine. It will guide you through all the detailed parameters needed to stay up to date with our latest API.

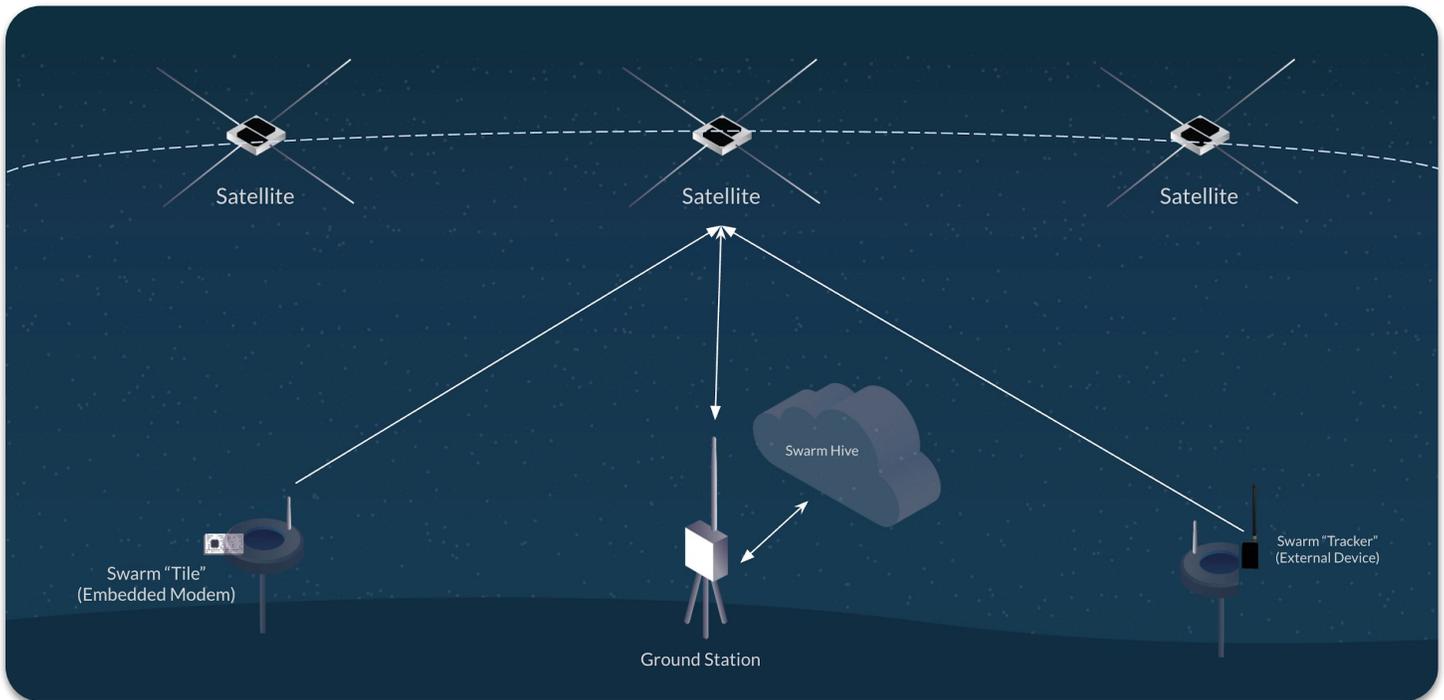
After logging in to the [Swarm Hive](#), navigate to the API docs to access the [Swagger documentation](#).



Swarm 1.0 Network Architecture

Components:

- Swarm M138 Modem (Embedded Modem)
- Satellite
- Ground Station
- Swarm Hive



RESTful endpoints available

- Login request
[/login](#)
- Logout request
[/logout](#)
- Message Access and Retrieval
[/api/v1/messages](#)
- Message Acknowledgement
[/api/v1/messages/rxack/{packetId}](#)
- Message Delivery (Downlink Communication)
[/api/v1/messages/](#)
- Other common functions are available for customers via [Swagger documentation](#)

Authentication

Users must login to access the API. Logging in with the provided username/password and required AppID (assigned at customer account creation) creates a secure session.

On a successful login, POST [/login](#) returns a Set-Cookie header in its response, which contains a JSESSIONID token that can be used to authenticate requests. You may need to append a -v (verbose) flag to view these contents in a Terminal session.

The Authentication token remains valid for up to 30 mins of no activity.

Definitions

- Organization ID
 - This is the ID assigned to each Hive account. The organization ID for any Hive account can be found by first logging into [Hive](#), and then navigating to “Account” → “My Profile”.
- Application ID
 - All messages sent to, or from, the Hive have an Application ID tag associated with them. The Application ID can be an arbitrary number from 0 to 64999 and may be used to organize messages (ex: Application ID 1000 could be used for device telemetry, 2000 for commands to the device and 3000 for sensor data). Swarm reserves the use of Application IDs from 65000 - 65535.

Login

On success, returns a valid session token as the JSESSIONID cookie and remains valid until 15 mins of no activity. Further requests will require the JSESSIONID cookie (e.g. the header "Cookie: JSESSIONID=B120DCEBC05C9F6CE3FBCA259356C17E") from the login response Set-Cookie header. You may need to append a -v (verbose) flag to view these contents in a Terminal session.

Endpoint	/login
Server	Domain Name
Port	443
Protocol	HTTPS
Method	POST
Example URL	https://bumblebee.hive.swarm.space/hive/login
Example Request Body	<pre>{"username": "USERNAME", "password": "PASSWORD"}</pre>
Request Headers	Content-Type: application/x-www-form-urlencoded
Response Success Status	200
Response Success Body	N/A
Example Response Success Set-Cookie Header	JSESSIONID=EXAMPLE_COOKIE_101010101010101010; Path=/hive; Domain=bumblebee.hive.swarm.space; HttpOnly;
Response Failure Status	401 Unauthorized

Logout

Swarm provides the option for customer to logout via API of the current session. Returns 204 No Content on success, or 401 Unauthorized if not currently logged in.

Endpoint	/logout
Server	Domain Name
Port	443
Protocol	HTTPS
Method	GET
Example URL	https://bumblebee.hive.swarm.space/hive/logout
Request Body	N/A
Response Success Status	204 No Content
Response Success Body	N/A
Response Failure	If the user is not logged in, return 401 Unauthorized

Message Retrieval

Use message endpoint URL to retrieve messages for a specific account. Responses are returned as a JSON list. The data in each message is encoded in Base64 so the message can carry binary data. Each will need to be **decoded from Base64** to return the original data.

Endpoint	<code>/api/v1/messages</code>
Server	Domain Name
Port	443
Protocol	HTTPS
Method	GET
Example URL	<code>https://bumblebee.hive.swarm.space/hive/api/v1/messages</code>
Request Body	N/A
Example Request Cookie	<code>JSESSIONID=B120DCEBC05C9F6CE3FBCA259356C17E</code>
Response Success Status	200

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**Example Response
Success Body**

```
[
  {
    "packetId": 123456,
    "deviceType": 1,
    "deviceId": 1234,
    "viaDeviceId": 12345,
    "dataType": 6,
    "userApplicationId": 1234,
    "len": 12,
    "data":
"SGVsbG8gZnJvbSBTd2FybSA6LSk=",
    "ackPacketId": 0,
    "status": 0,
    "hiveRxTime": "2020-08-26T21:10:24"
  }
]
```

Response Failure

401 Unauthorized or 403 Forbidden

Message Acknowledgment

Each message should be ACK'd back to the Hive. This tells the Hive that the message was successfully retrieved and removes it from the active message list.

ACK'd messages can still be retrieved later with GET /api/v1/messages/ with query parameter status=2. Responses are returned as JSON.

Endpoint	/api/v1/messages/rxack/{packetId}
Server	Domain Name
Port	443
Protocol	HTTPS
Method	POST
Example URL	https://bumblebee.hive.swarm.space/hive/api/v1/messages/rxack/1111111
Request Body	N/A
Example Request Cookie	JSESSIONID=B120DCEBC05C9F6CE3FBCA259356C17E
Response Success Status	200
Example Success Body	{ "packetId": 1111111, "status": "OK" }
Response Failures	401 Unauthorized - if not logged in 403 Forbidden - if user doesn't have permission to access this application id

Message Delivery (Downlink Communication)

Posts a UserMessage (JSON formatted object) for delivery to a Swarm device. The current user must have access to the userApplicationId and device given inside the UserMessage JSON. The device must also have the ability to receive messages from the Hive ("two-way communication") enabled.

- Value **1** for key "deviceType" is a Swarm M138 Modem.
- Value for key "deviceId" is the *integer value* of the device hex ID (0x01234 = 4660).
- All "data" values **must be Base64 encoded** to allow binary data to be sent.
- Responses are returned with message packetID and status ("OK" or "ERROR").

Endpoint	/api/v1/messages/
Server	Domain Name
Port	443
Protocol	HTTPS
Method	POST
Example URL	https://bumblebee.hive.swarm.space/hive/api/v1/messages/
Example Request Body	<pre>{"deviceType": 1, "deviceId": 4660, "userApplicationId": 3010, "data": "SGVsbG8gZnJvbSBTcGFjZSE="}</pre>
Example Request Cookie	JSESSIONID=B120DCEBC05C9F6CE3FBCA259356C17E
Response Success Status	200
Example Success Body	<pre>{ "packetId": 1111111, "status": "OK" }</pre>
Response Failures	401 Unauthorized - if not logged in 403 Forbidden - if user doesn't have permission to access this application id, or two-way communication not enabled

Message Count

Gets the count of messages accessible to the current logged-in user, grouped by applicationId. Counts messages both received (from edge devices) and sent (to edge devices) through the Swarm network. Ignores messages marked as duplicate messages.

Endpoint	/api/v1/messages/count
Server	Domain Name
Port	443
Protocol	HTTPS
Method	GET
Example URL	https://bumblebee.hive.swarm.space/hive/api/v1/messages/count
Request Body	N/A
Example Request Cookie	JSESSIONID=B120DCEBC05C9F6CE3FBCA259356C17E
Response Success	200

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Example Success Body

```

{
  "totalMessageCount": 5,
  "totalFromDeviceMessageCount": 4,
  "totalToDeviceMessageCount": 1,
  "messageCountsByApplicationId": [
    {
      "applicationId": 100,
      "messageCount": 5,
      "fromDeviceMessageCount": 4,
      "toDeviceMessageCount": 1,
      "messageCountsByDevice": [
        {
          "messageCount": 3,
          "fromDeviceMessageCount": 2,
          "toDeviceMessageCount": 1,
          "deviceType": 1,
          "deviceId": 1564
        },
        {
          "messageCount": 2,
          "fromDeviceMessageCount": 2,
          "toDeviceMessageCount": 0,
          "deviceType": 1,
          "deviceId": 1565
        }
      ]
    }
  ]
}

```

Response Failure

401 Unauthorized or 403 Forbidden