Swarm Hive 1.1 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.

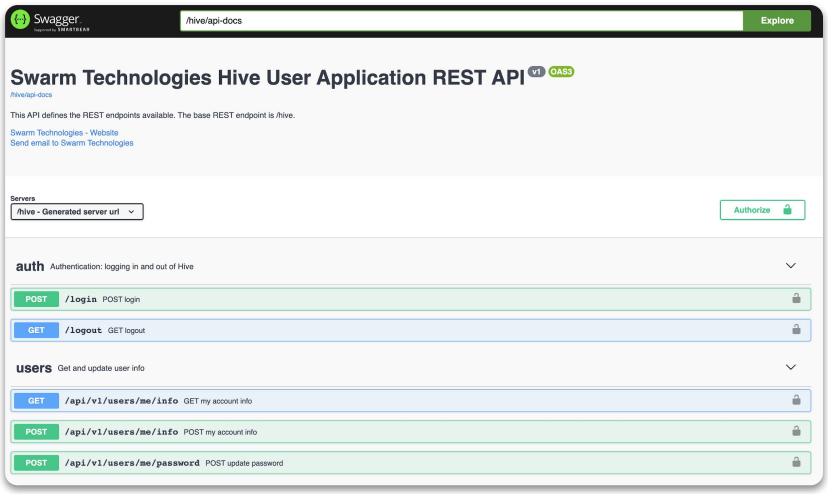
REST stands for Representational State Transfer. This is an architectural pattern that describes how distributed systems can expose a consistent interface.

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.

Using the link below log in, navigate to the help tab and click the link under API documentation to access the swagger page: https://bumblebee.hive.swarm.space/hive/login



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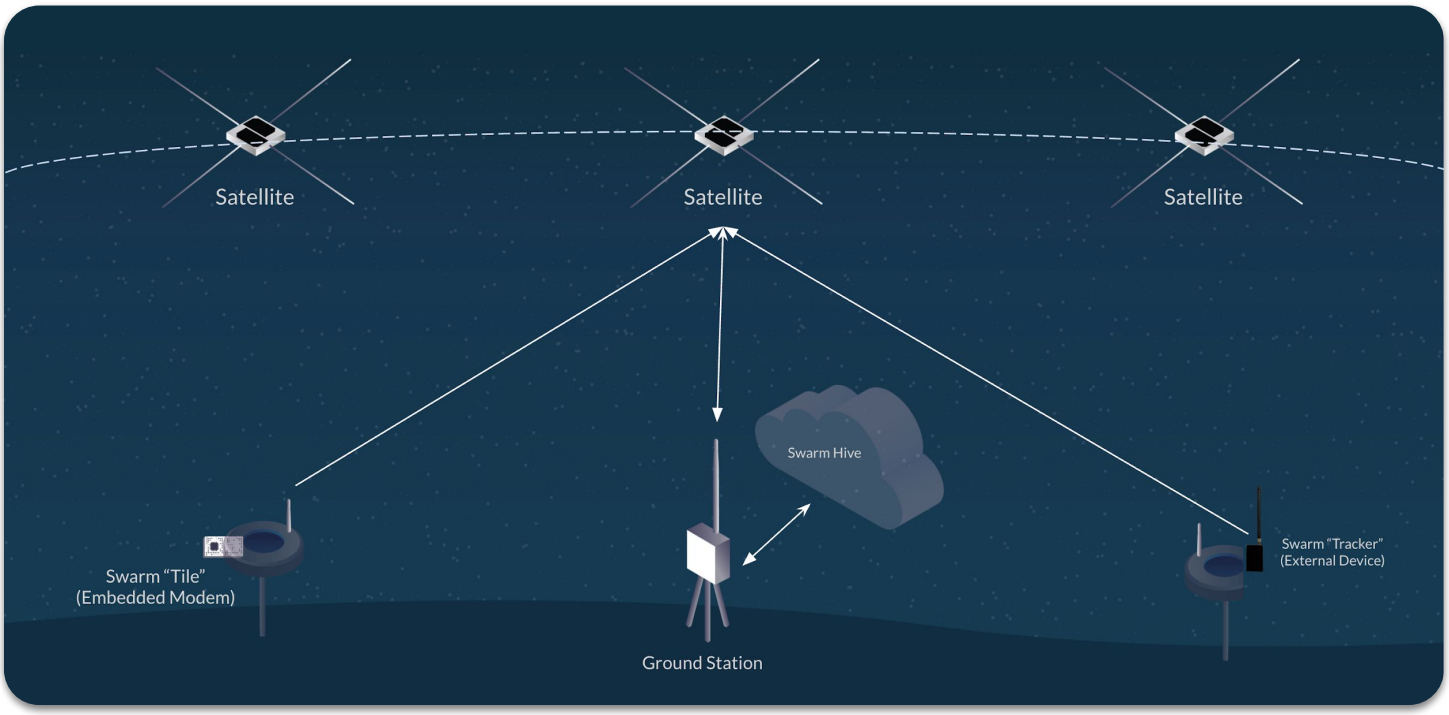
Swarm 1.0 Network Architecture

Components:

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



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RESTful endpoints available

- Login request
  /login
- Logout request
  /logout
- Message Access and Retrieval
  /api/v1/messages/{appId}
- Message Acknowledgement
  /api/v1/messages/{appId}/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.

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 JSESSONID 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	`{"username": "USERNAME", "password": "PASSWORD"}`
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`

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Logout

Swarm provides the option for customer to logout via API of the current session. On success, returns a 302 redirect to the login page.

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	`302 Redirect`
Response Success Body	`N/A`
Response Failure	`If the user is not logged in, still 302 Redirect to /login page`

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Message Retrieval

Use message endpoint URL to retrieve messages for a specific account. Responses are returned as a JSON list, messages are stored in Base64 so that binary data can exist in the message – each will need to be **decoded from Base64** to return the original data.

Endpoint	`/api/v1/messages`
Server	`Domain Name`
Port	`443`
Protocol	`HTTPS`
Method	`GET`
Example URL	`https://bumblebee.hive.swarm.space/hive/api/v1/messages`
Request Body	`N/A`
Example Request Cookie	`JSESSIONID=B120DCEBC05C9F6CE3FBCA259356C17E`
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/{appId} with query parameter `status=2`. Responses are returned as JSON.

Endpoint	`/api/v1/messages/rxack/{packetId}`
Server	`Domain Name`
Port	`443`
Protocol	`HTTPS`
Method	`GET`
Example URL	`https://bumblebee.hive.swarm.space/hive/api/v1/messages/9999/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

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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 Tile.
- Value for key “deviceId” is the *integer value* of the device hex ID (0x01234 = 4660).
- Value for key **“**len” must be the length of the original (decoded) data string.
- 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	`{"deviceType": 1, "deviceId": 4660, “userApplicationId”: 3010, “len”: 17,“data”: “SGVsbG8gZnJvbSBTcGFjZSE=”}`
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, or two-way communication not enabled

Message Count

Gets the count of messages associated with user ApplicationIds accessible to the current logged-in user. 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`