GS1 US Data Hub®
API
“MyProduct”
Create/Manage
User Guide

Version 5.1
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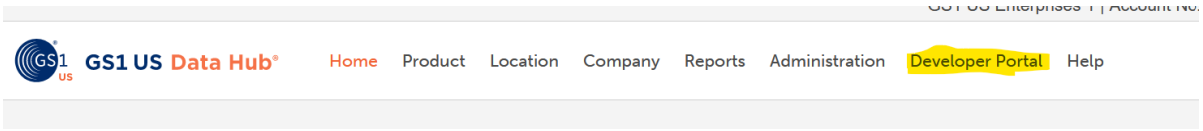
Table of Contents

Contents

The MyProduct API

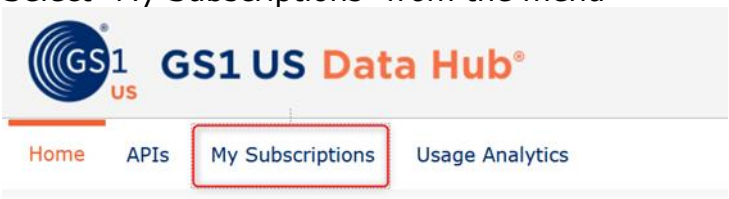
The GS1 US Product Create/Manage (C/M) API is based on the OpenAPI standard. GS1 US is introducing this feature as V.1. The Product C/M API is a full function API which enables Brand Owners to create and manage their product records in the Data Hub platform through and API interface. This guide will provide high-level direction on specific product management tasks using both the Open Source Postman® tool and the Data Hub Developer Portal.



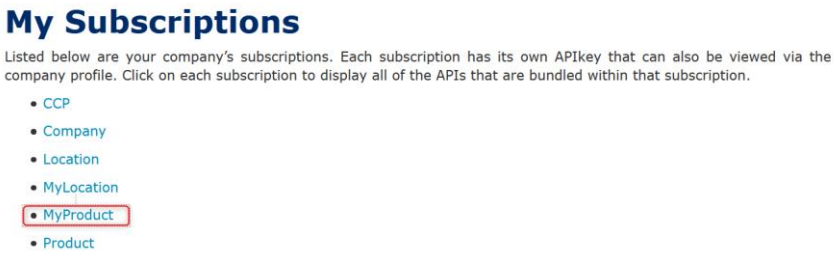
Finding Your API Keys

API Keys will be required as part of your Request Header information. To find your API keys, follow the steps outlined below:

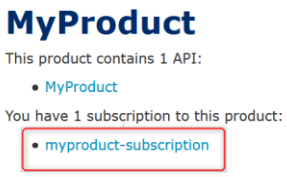
1) Log into GS1 US Data Hub Developers Portal https://developer.gs1us.org/
2) Select "My Subscriptions" from the menu



3) The API subscriptions for your company will be shown. If multiple subscriptions appear, select the correct subscription for the API you intend to use (in this case that would be the MyProduct subscription).



4) To get your API keys, select the subscription choice.



5) Once you have opened the subscription window, you will be presented with the subscription keys for all API subscriptions for your company. In this case, choose the MyProduct API subscription and click on the "show" hypertext under your primary key.

6) The API key to be used for your API requests will be shown. You'll need to copy this key and place it in the header information for all your API Requests.

Setting UP API Headers

In addition to the API Key, users will need account keys to identify their ability to work with specific product sets. Specifically, The header information in your API requests will need to include an entry for, "X-Product-Owner-Account-Id". The entry to this will be your company's 8 digit account number with GS1 US. You can find that number in the upper right corner of the Data Hub homepage, right next to your company's name.

Finally, for all requests that will include a body, the header information should include "Content -Type" with a value of, "application/json". If you are using Postman to manage your requests and view the "code" in the upper right of the screen, you should see something similar to what is shown below (for a simple PUT request)…followed by the request body.

```
curl --location --request PUT 'this will be the end-point URL' \
--header 'APIKey: this will be the API Key from GS1 US Developers Portal' \
--header 'X-Product-Owner-Account-Id: This will be your company account #' \
--header 'Content-Type: application/json' \
--data-raw '{
```

Supported API Requests

URL Route	Action	Description
/api/v1/myproduct/{gtin}	GET	Gets a Product using its GTIN
/api/v1/myproduct/{gtin}	PUT	Updates the specified Product
/api/v1/myproduct/{gtin}	POST	Creates a new Product
/api/v1/myproduct/{parentgtin}/child	GET	Gets the list of Child GTINs for and Upper-level-package (e.g. Case)
/api/v1/myproduct/{parentgtin}/child/{childgtin}	PUT	Adds/Updates Child Relationship
/api/v1/myproduct/{parentgtin}/child/{childgtin}	DELETE	Removes a Child Relationship

A typical product management session might include the above referenced requests and end-points as follows:

Reviewing and Modifying Product Data

1) The user sends a Product GET request to obtain the current attributes for a particular product in their portfolio (1st row of table above).
2) The user copies the response body into the request body and changes the GET to a PUT request and then makes their desired changes to the product attributes.
    a. The user should note the Product Management/Change Rules included in this Users Guide
    b. All Product attributes and changes are subject to the requirements of the GS1 General Specification.
    c. The user should now carefully complete each of the desired product attributes to define the new product
        i. All attributes which are indicated as "Y" under the column "Needed to Create" in the table outlining the Product Schema below **must** be completed for the new product to be successfully created in Data Hub.
        ii. The user should also refer to the Product Management Rules section of this guide for requirements and restrictions on specific product attributes as they build their new product records.

Creating a new Product Record

1) Before creating a product through the MyProduct API, the Brand Owner should reserve the GTIN to be assigned to the product record.
    a. Products cannot be manipulated with the MyProduct API in the 'Draft' status (without an assigned GTIN).
3) The user can either copy the response body from a product GET request (1st row of table above) into the POST Request Body or they can copy the JSON included in

Appendix A of this users guide into the POST Request Body.

a. The user must change the GTIN the Request Body (and in the endpoint URL) to the desired GTIN from their reserve.
b. The user should also refer to the Product Management Rules section of this guide for requirements and restrictions on specific product attributes as they build their new product records.

Managing Container Contents (Higher Level Packaging)

Similar to the request end-points supported for changes to base-level (Each) products, the user will first get the contents information for the container to be manipulated, then make the desired changes as follows:

1) The user sends a Child GTIN GET (4th row of table above) request to obtain the current contents of a particular upper-level-package (container) in their portfolio.
2) The user will then use the code segment below in the Child update PUT Request (5th row of table above) to add or modify child quantities within a container. Where "X" below would indicate the desired quantity of this particular Child GTIN within the container.

```
{
   "quantity": X
}
```

   a. The user should note that {childGTIN} in the PUT Request endpoint (5th row of table above) will represent the GTIN if the specific child to be manipulated; other child GTINs in this container will not be affected by this action.
   b. In addition to changing the quantity of a child GTIN within a container, this API request can **add a new child GTIN** to the container. In this case, the request body contains the quantity of the new child GTIN to be added.
3) If a user needs to remove contents from a container, the DELETE request in the table above can be used to remove the child GTIN.
   a. Note that there is no request body required for the child DELETE request

Product Management Rules

Some of the product management rules are included in this section of the User Guide. These rules are specific to GS1 US and if there is any difference between the rules outlined in this guide and the GS1 General Specification, the GS1 General Specification supersedes any rules set herein.

Product Database Schema

The data presented in the table below provides the schema for the base-level product attributes in the Data Hub platform.

Attribute	Data Type/Length	Default	Needed to Create?
Product Descr 1	String/200		Y
PD 1 Language	String Code/2 ISO 639 List	en	Y
Brand Name 1	String/70		Y
BN 1 Language	String Code/2 ISO 639 List	en	Y
Industry	List/20	General	N
Internal Part Number or SKU	String/70		N
Packaging Level	List/12	Each	Y
Is this item Variable Measure?	Boolean	False	Y
Can the item be purchased by the consumer?	Boolean	True	Y
GTIN	**String/14**		
Status	List/9	Draft	Y
Height	Decimal/8		N
Width	Decimal/8		N
Depth	Decimal/8		N
Dimension UOM	String/2		N
Net Weight	Decimal/8		N
Gross Weight	Decimal/8		N
Weight **UOM**	String/3		N
Product Descr 2	String /200		N
PD 2 Language	Code/2 ISO		N
Brand Name 2	String /75		N
BN 2 Language	Code/2 ISO 639 List		N
Image URL	String/2083		N
Target Market (Country of Sale)	String Code/2 ISO 3166 List		N
Global Product Classification	Numeric/8	99999999	N
Net Content Count 1	String (Decimal/8)		N
Unit of Measure (UOM) 1	String code/5 GDSN List		N
Net Content Count 2	String (Decimal/8)		N
Unit of Measure (UOM) 2	String code/5 GDSN		N

Net Content Count 3	String (Decimal/8)	N
Unit of Measure (UOM) 3	String code/5 GDSN	N
Sub-brand Name	String/70	N
Product Description Short	String/35	N
Label Description	String/500	N

Product Management Rules (by Product Status)

Product Statuses in Data Hub

Draft

The Draft state is used for a product that does not have an assigned GTIN. This state allows a Brand Owner to make rough changes to product attributes without concern for validation errors.

- Draft Products are not visible to Data Hub users outside of the Brand Owner
- Draft Products are not searchable with View/Use subscriptions
- Draft Products **cannot** be created or managed with the API
- Draft products can only be moved to the *PreMarket* state

PreMarket

A product record in Data Hub moves into the PreMarket state once the Brand Owner has assigned a GTIN to the product. As is the case with Draft products, the Brand Owner can make most changes to a PreMarket product without concern for violation of validation rules.

- PreMarket Products are not visible to Data Hub users outside of the Brand Owner
- PreMarket Products are not searchable with View/Use subscriptions
- PreMarket Products **can** be created or managed with the API
- Certain attribute changes are restricted for products in a PreMarket State (details below)
- PreMarket products can be moved to either the *In Use* state or the *Retracted* state
-

In Use

A product record in Data Hub moves into the In Use state once the Brand Owner has proactively selected to move a PreMarket product into this state. Once a product is 'In Use' there are numerous restrictions on any changes that can be made to the product attributes (details below).

- In Use Products **are** visible to Data Hub users outside of the Brand Owner

- In Use Products **are** searchable with View/Use subscriptions
- In Use Products **can** be created or managed with the API
- Many attribute changes are restricted for products in an In Use State (details below)
- In Use products can only be moved to the *Archived* state

Archived

A product record in Data Hub moves into the Archived state once the Brand Owner has proactively selected to move an In Use product into this state. Once a product is 'Archived' **no changes** can be made to the product attributes. This state temporarily removes a product from the market, but does not disassociate the attributes with the GTIN.

- Archived Products **are not** visible to Data Hub users outside of the Brand Owner
- Archived Products **are not** searchable with View/Use subscriptions
- Archived Products **can** be managed with the API
  - However, the sole action that can be taken for an Archived product is to change the status back to In Use (as noted below)
- Archived products can **only** be moved to the *In Use* state

Retracted

A product record in Data Hub moves into the Retracted state once the Brand Owner has proactively selected to move a PreMarket product into this state. Once a product is 'Retracted' the product attributes are disassociated from the GTIN and the product record is broken. Once a product is retracted, the GTIN moves into a 12 month hold, after which it is available to the Brand Owner to associate with new product attributes.

- Retracted Products **are not** visible to Data Hub users outside of the Brand Owner
- Retracted Products **are not** searchable with View/Use subscriptions
- Retracted Products **can not** be managed with the API
- Retracted products **can not** be moved to any state
  - The GTIN of a retracted product record is returned to the Brand Owners available pool after 12 months and any attributes associated with the GTIN are deleted

Product Attribute *Change* Restrictions

Product Descr 1 –	PreMarket: can change In Use: limited changes are allowed
PD 1 Language –	PreMarket: can change In Use: changes are allowed
Brand Name 1 –	PreMarket: can change In Use: changes are allowed
BN 1 Language –	PreMarket: can change In Use: changes are allowed

Industry – PreMarket: can change
In Use: **cannot change**
Internal Part Number or SKU – PreMarket: can change
In Use: can change
Packaging Level – PreMarket: can change
In Use: **cannot change**
Is this item Variable Measure? – PreMarket: **cannot change**
In Use: **cannot change**
Can the item be purchased by the consumer? –
PreMarket: **cannot change**
In Use: **cannot change**
GTIN – PreMarket: **cannot change**
In Use: **cannot change**
Status – PreMarket: can change to 'Retracted', or 'In Use'
In Use: can change to 'Archived'
Height – PreMarket: can change
In Use: changes are allowed (up to 20%)
Width – PreMarket: can change
In Use: changes are allowed (up to 20%)
Depth – PreMarket: can change
In Use: changes are allowed (up to 20%)
Dimension UOM – PreMarket: can change
In Use: **cannot change**
Net Weight – PreMarket: can change
In Use: changes are allowed (up to 20%)
Cannot exceed Gross Weight
Gross Weight – PreMarket: can change
In Use: changes are allowed (up to 20%)
Must be greater than Net Weight
Weight UOM – PreMarket: can change
In Use: **cannot change**
Product Descr 2 – PreMarket: can change
In Use: changes are allowed
PD 2 Language – PreMarket: can change
In Use: changes are allowed
Must not match PD Language 1
Brand Name 2 – PreMarket: can change
In Use: changes are allowed
BN 2 Language – PreMarket: can change
In Use: changes are allowed
Must not match BN Language 1
Image URL – PreMarket: can change
In Use: can change

Target Market – (Country of Sale) PreMarket: can change
In Use: can change

Global Product Classification – PreMarket: can change
In Use: can change

Net Content Count 1 – PreMarket: can change
In Use: **cannot change**

Unit of Measure (UOM) 1 – PreMarket: can change
In Use: **cannot change**

Net Content Count 2 – PreMarket: can change
In Use: changes are allowed

Unit of Measure (UOM) 2 – PreMarket: can change
In Use: can change

Net Content Count 3 – PreMarket: can change
In Use: can change

Unit of Measure (UOM) 3 – PreMarket: can change
In Use: can change

Sub-brand Name – PreMarket: can change
In Use: can change

Product Description Short – PreMarket: can change
In Use: can change

Label Description – PreMarket: can change
In Use: can change

Upper Level Packaging Rules

Rule	Error Message
For a container to be placed 'In Use', all Child GTINs **must** be in an '**In Use**' state	This product contains items that are not 'In Use'. All Child GTINs of an 'In Use' container must be 'In Use'.
All Upper Level Packaging **cannot** contain children with Retracted GTINs.	This product cannot have children that are For Reuse.
A container in either Draft or PreMarket state **may** contain a child GTIN be in an 'Archived' state. Note that all children will need to be in an 'In Use' state before the container can be placed 'In Use'.	
A container with **any** Variable Measure GTINs within it must be **Variable Measure.**	This container is not Variable Measure and cannot contain Variable Measure products within it.
A container that is **Variable Measure must contain at least one** Variable Measure Child.	This container is Variable Measure; it must contain at least one Variable Measure products within it. Note that a "Case as Each" is considered base-level packaging.
A container with a Level Category (LC) of **Mixed Case**, or Mixed Module Pallet **must** contain more than one GTIN	This container is a Mixed Case it must contain more than 1 GTIN
A container can only contain products of **lower level hierarchy** Pallet>Case>Inner Pack>Each	This container is a case, it cannot contain a product that is a Pallet

API Tools

GS1 US APIs operate under the OpenAPI (or Odata) standards. The MyProduct API uses OpenAPI. Information and tools associated with the OpenAPI platform can be accessed directly from the managing organization as outlined below.

OpenAPI Information and Tools

The OpenAPI Specification is a community-driven open specification within the OpenAPI Initiative, a Linux Foundation Collaborative Project. OpenAPI documents describe an API's services and are represented in either YAML or JSON formats. These documents may either be produced and served statically or be generated dynamically from an application.

A list of known tools that implement the 3.0.0 specification of OpenAPI can be found at the URL below:

https://github.com/OAI/OpenAPI-Specification/blob/master/IMPLEMENTATIONS.md

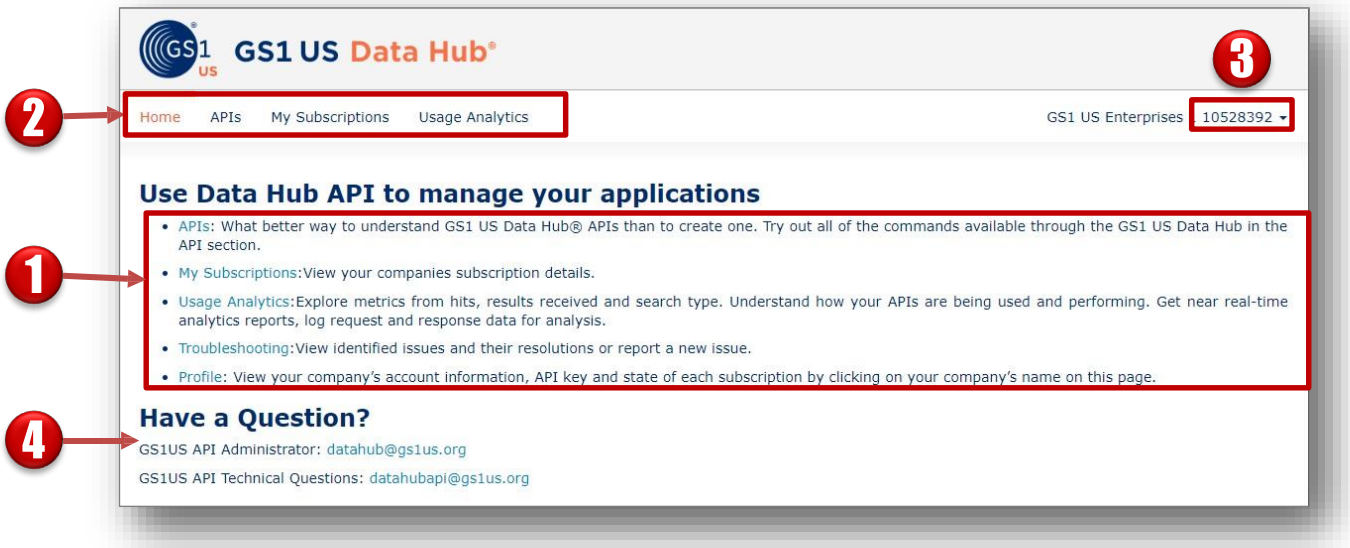
A list of issues, presented as a Users Forum, with the current specification of OpenAPI can be found at the URL below. This is an excellent resource for developers in identifying and addressing problems that they may have with the structure and behavior of their API(s). Note that this site also contains general notifications about meetings and activities of the community:

https://github.com/OAI/OpenAPI-Specification/issues

GS1 US Data Hub Developer Portal

Home Page Overview

GS1 US Data Hub Developer Portal operates under the Azure API Management capabilities. The Developer Portal provides you with a way to test your APIs, check usage, and manage your subscriptions.



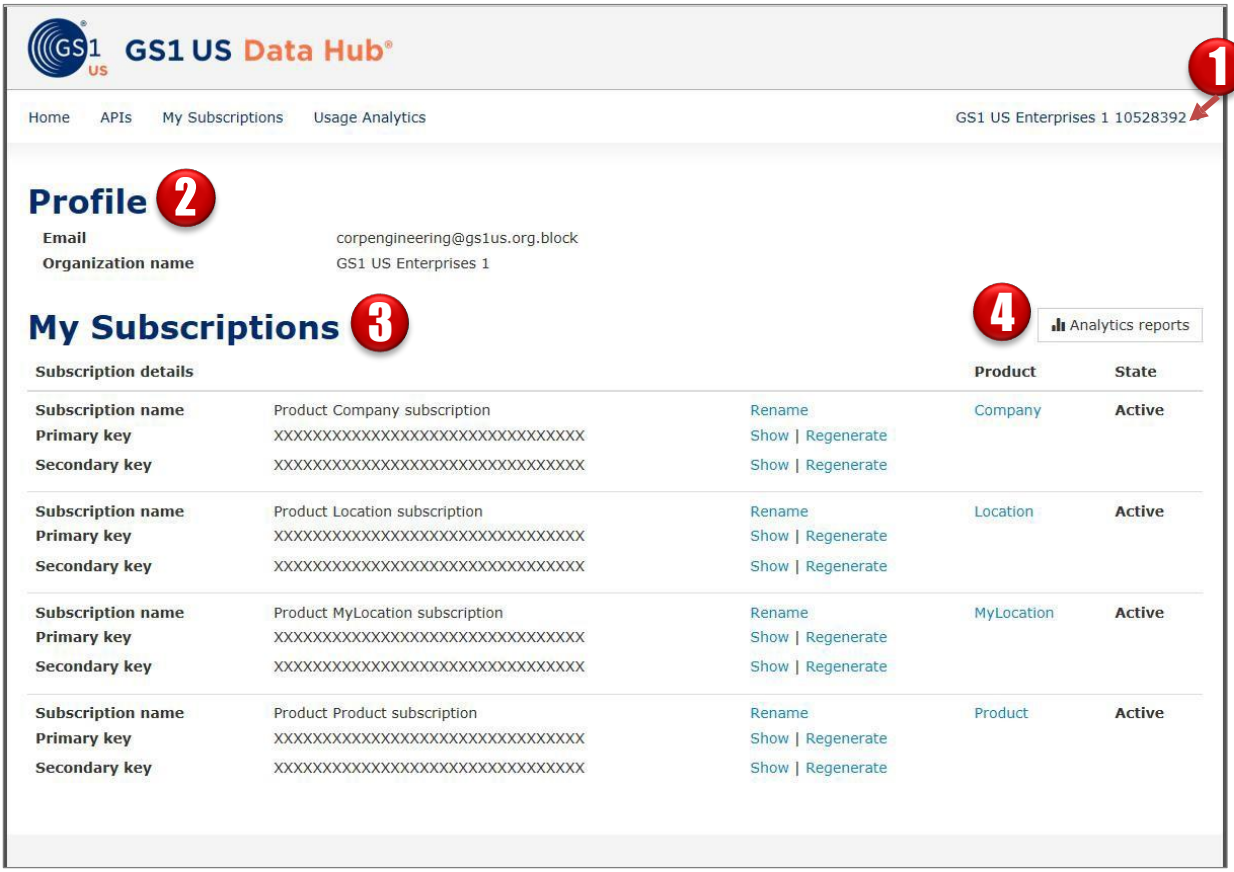
1. Click the hyperlinked titles to display the pages in the Developer's Portal. Alternatively, you can click the 'APIs' option in the menu, as described in step 1.
2. Use the menu to navigate within the Developer's Portal.
3. Click the down arrow on your company's account number for a profile of the subscription details and their status. This information includes the API Keys associated with your account
4. Contact GS1 US if you need support:

   For API Administration: direct your questions to datahub@gs1us.org

   For API Technical Questions: direct your questions to the datahubapi@gs1us.org mailbox

Profile Screen

The Profile screen provides information specific to your account and subscription details by GS1 US Data Hub subscription (Product, Company, Location, My Location) and status (Active, Inactive). This page allows you to customize the name of your API subscription, as well as display or regenerate primary and secondary keys.



1. **Username | GS1 US Account Number**: the organization name and account number of the subscription holder. **Click** on the down arrow to reveal the Profile screen.

2. **Email and Organization Name**: email address for the member who is currently signed in account (organization) name

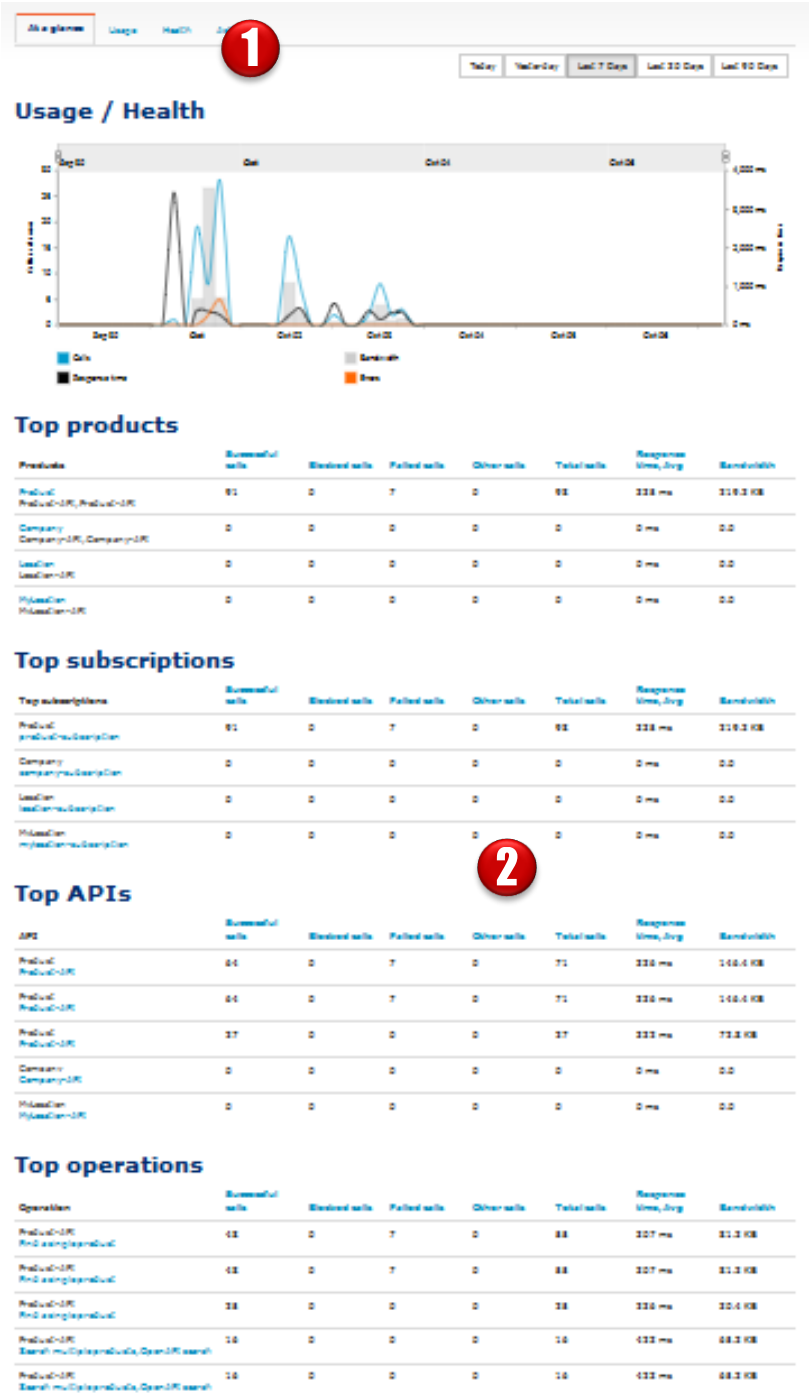
3. **My Subscriptions:** this section provides a summary of your subscriptions, allows for customization (Rename) of your subscription, enables you to display (show) or regenerate your API keys and shows the status of each subscription.

4. **Analytics Reports:** Click here to view the usage analytics of your API calls (see example on following page).

Profile Screen

1 Usage/Health: Graphic provides overall usage statistics for company APIs

2 Top Product:
Top Subscription:
Top APIs:
Top Operations: email address for the Tabular Statistics filtered and ordered by specific subscriptions

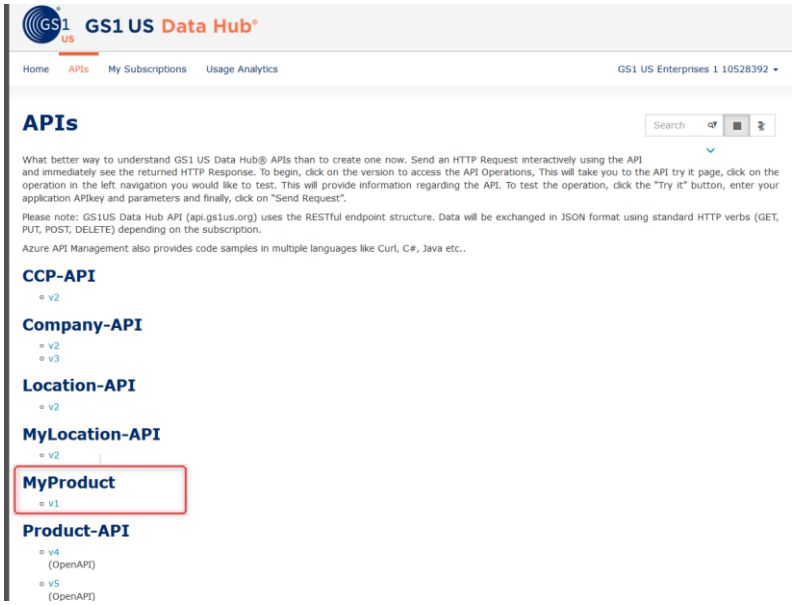


API Screen

On the API screen, you can view a listing of your currently subscribed API applications, categorized by Company, Location, MyLocation, MyProduct, and Product.

Click a version to hyperlink to the detail screen. Note that the Product Create/Manage API is the “MyProduct” API. Depending on your company’s subscriptions, you may not see some of the API options shown below.

Each application has an access application identifier and an access application key.

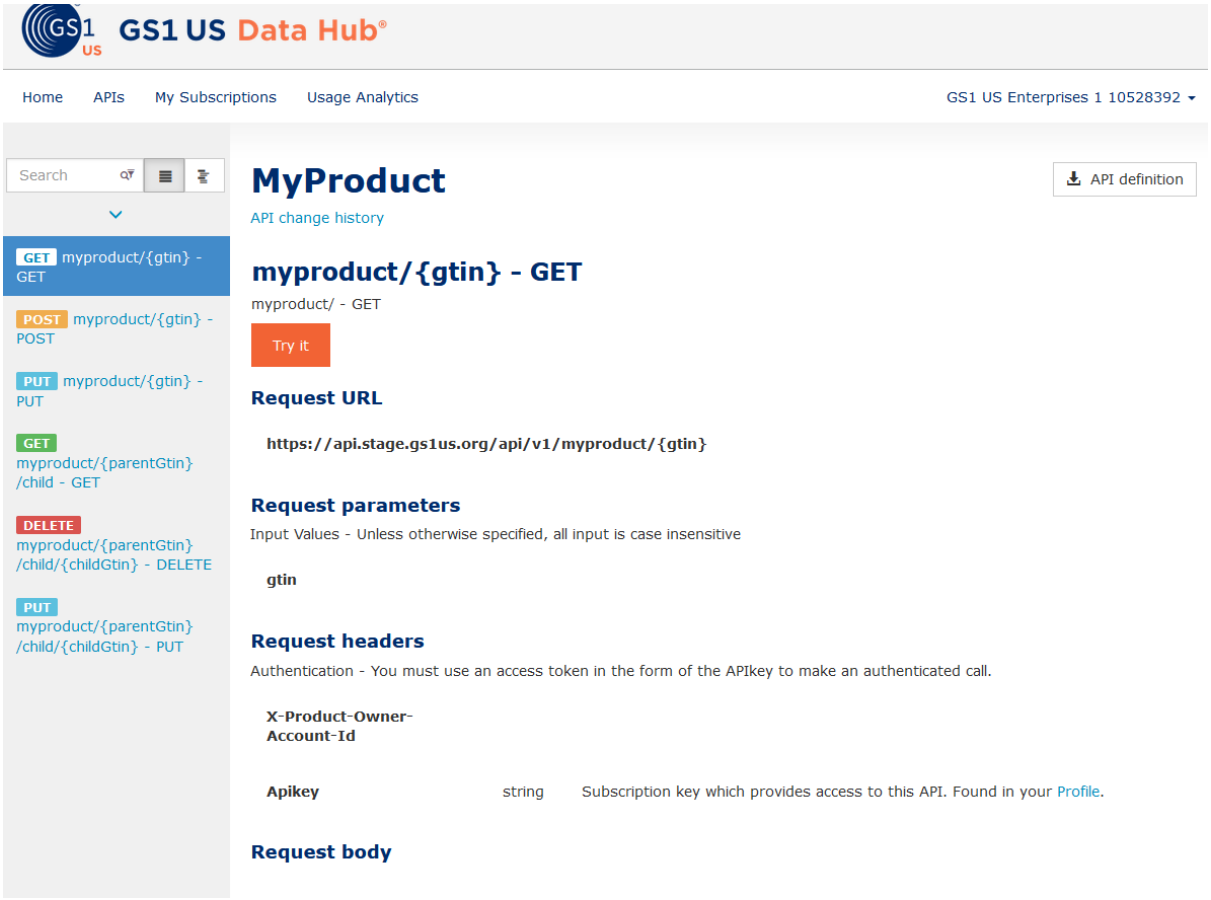


This is the first release of the MyProduct API and there is currently only one version available (OpenAPI).

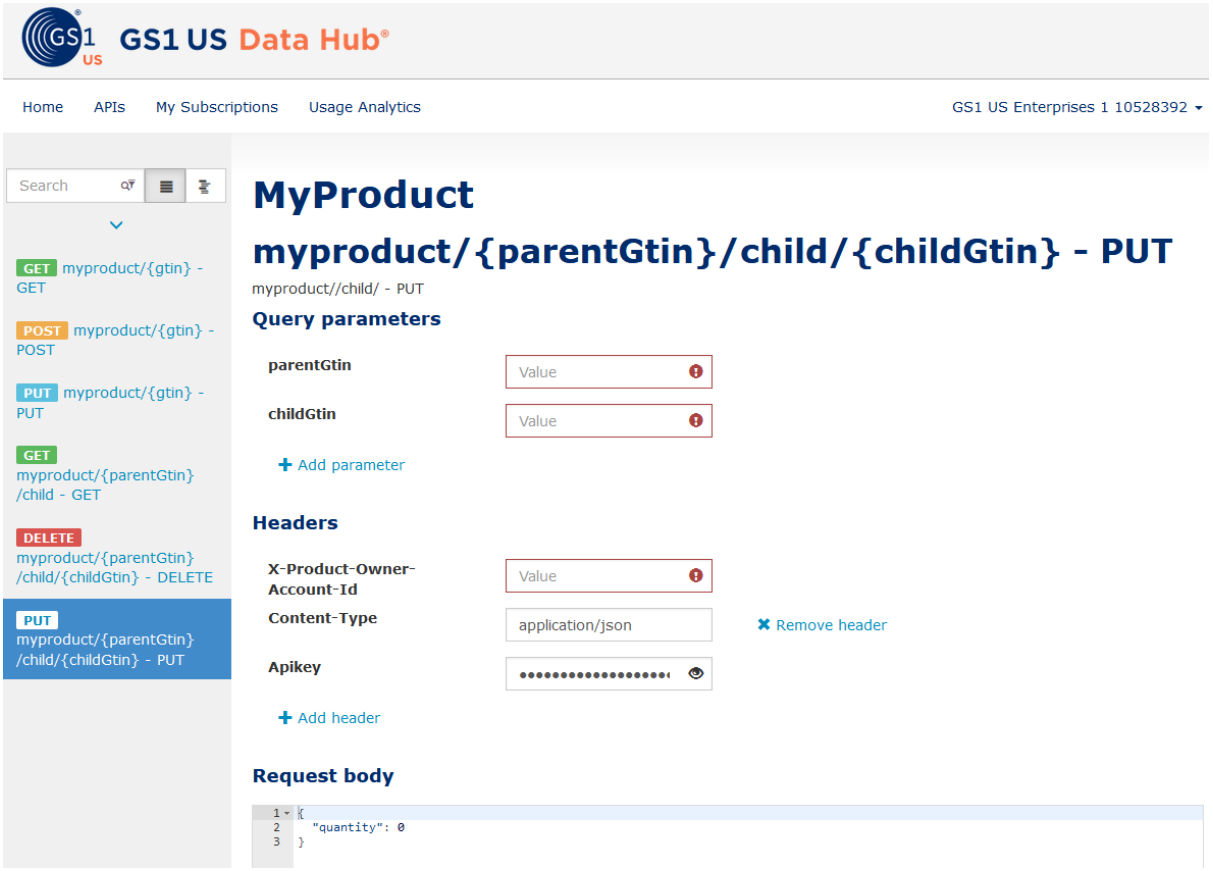
API "Try It" and Search Functionality

Before you invest in building your API, use the "Try It" feature on any API call. With Try It, you can send an HTTP request interactively using the API Reference and immediately see the returned HTTP Response on the Developer Portal screen.

The screen shot below shows what the Try It screen looks like with each of the available calls listed on the left. Any call can be chosen and the "Try It" function initiated by pressing the orange button.



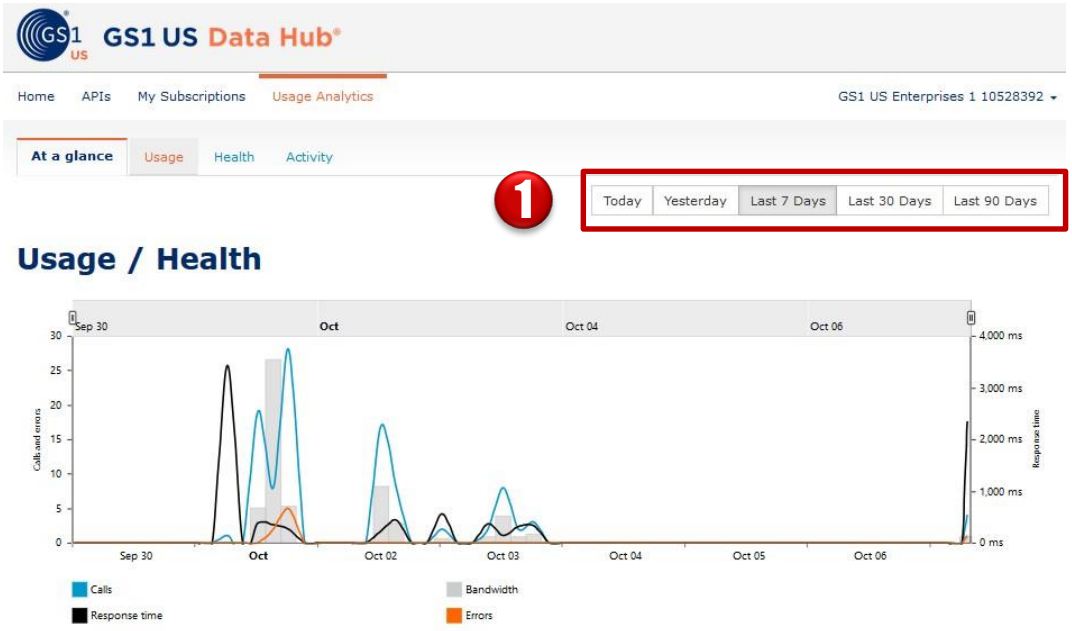
Once a call has been selected, the required input parameters and header information are presented to the user so that the API Request can be run. An example (below) shows the screen to execute the "Adds/Updates Child Relationship" request, which allows the user to manage contents of upper-level packaging (e.g. contents of a Case)



Usage Analytics

With Usage Analytics you will be able to measure utilization, or in other words, the number of times your application interacts with the Data Hub API.

The At a Glance screen allows you to view up to 90 days of activity.



1. Select the desired time frame: Today, Yesterday, Last 7 Days, Last 30 Days or Last 90 Days.

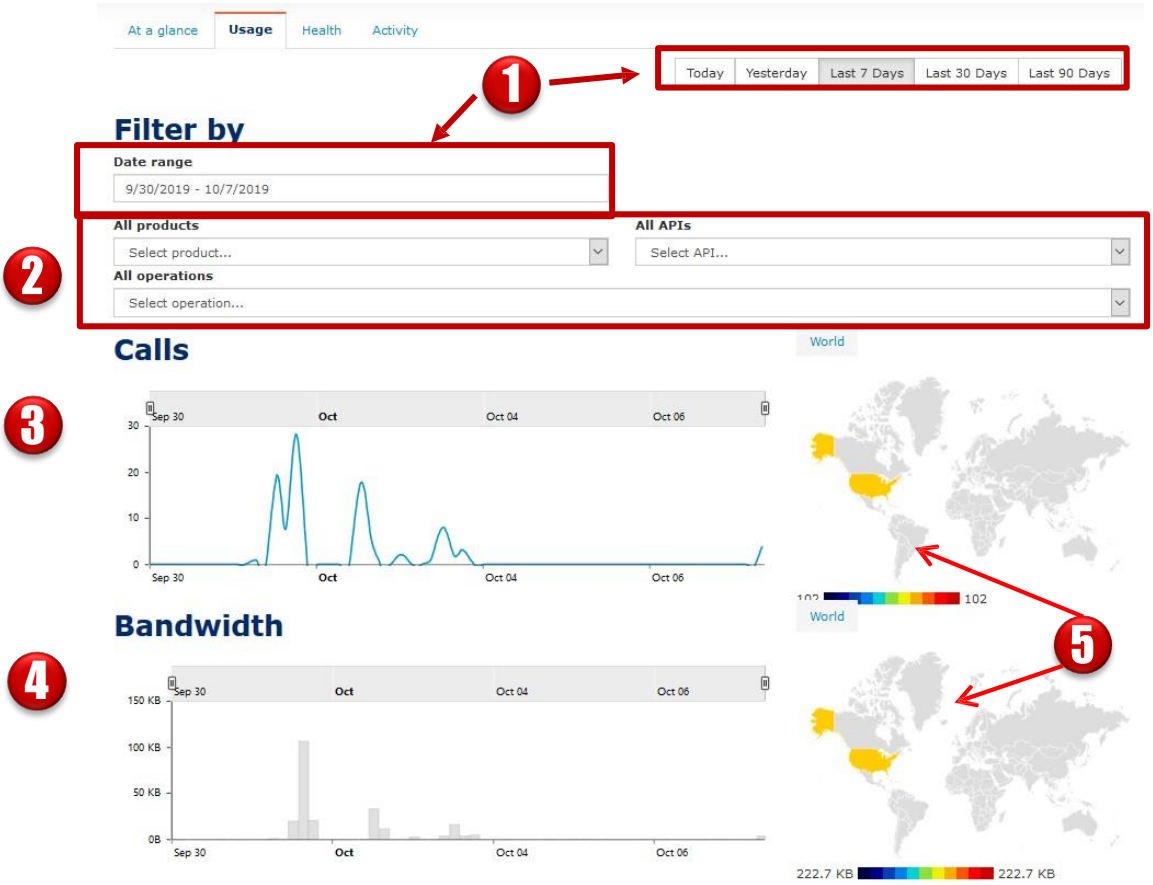
2. Usage / Health results will be summarized graphically for Calls, Response Time, Bandwidth and Errors.

   Below the Usage / Health chart, are summaries of Successful, Blocked and Failed Calls, Other calls, Total calls, Average Response Time and Bandwidth for each of these categories:

   - Top Products
   - Top Subscriptions
   - Top APIs
   - Top Operations

Usage Filters

The Usage tab allows you to filter by date range, API type (product) and the operation (Get, Post).



1. Select **Time Period** and/or **date range**

2. Identify the subscription type (Product) using drop down menus and zero in on the specific operation of the API.

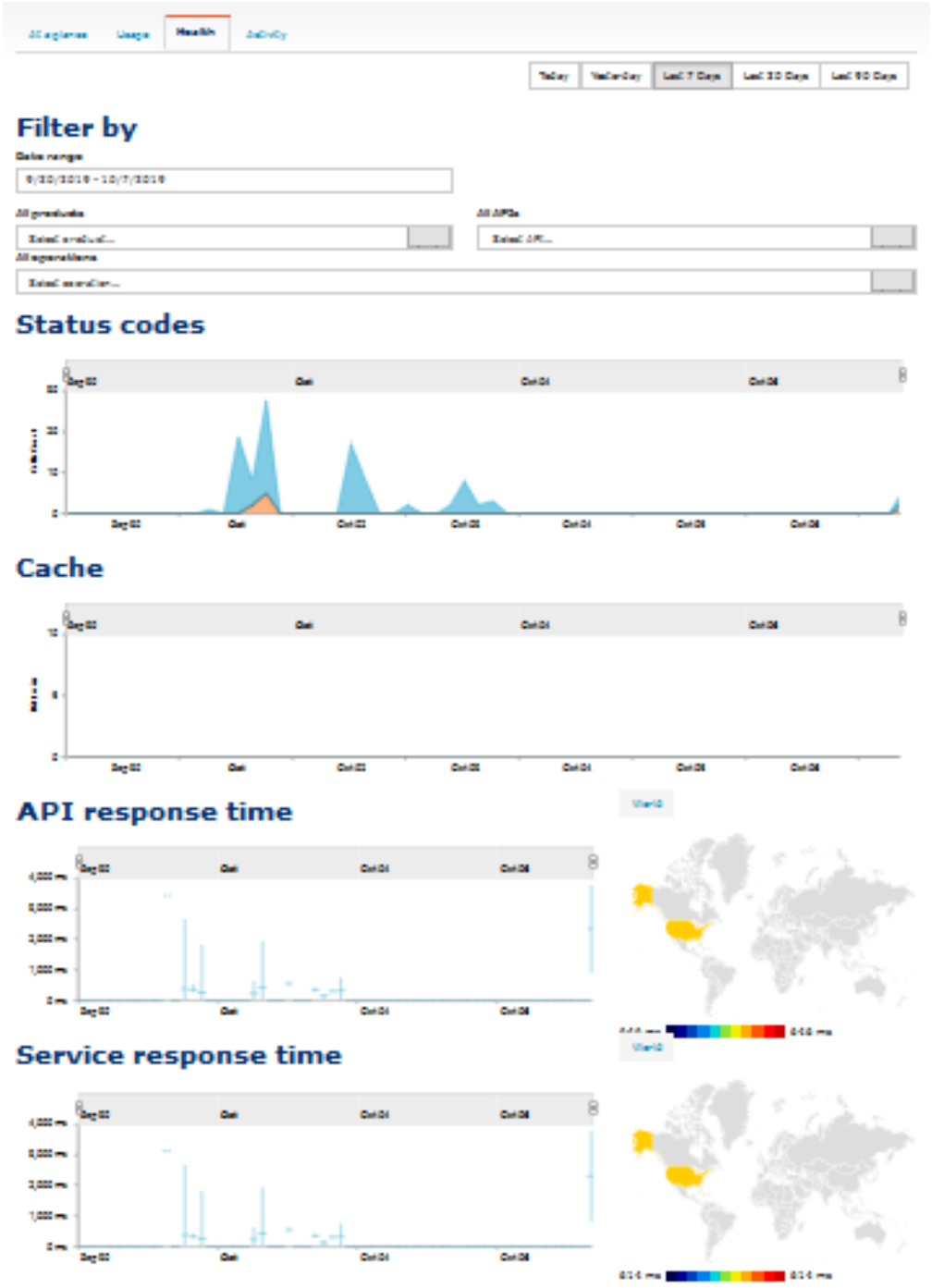
3. View **Calls**. This counts the number of times your application has sent a request to the Data Hub API. In the example above the application initiated a single request on February 1 between 6 and 9 am .

4. View **Bandwidth**. Hovering over the Calls graphic will also display bandwidth results for that day/time.

5. This is a geographic representation where the API originated.

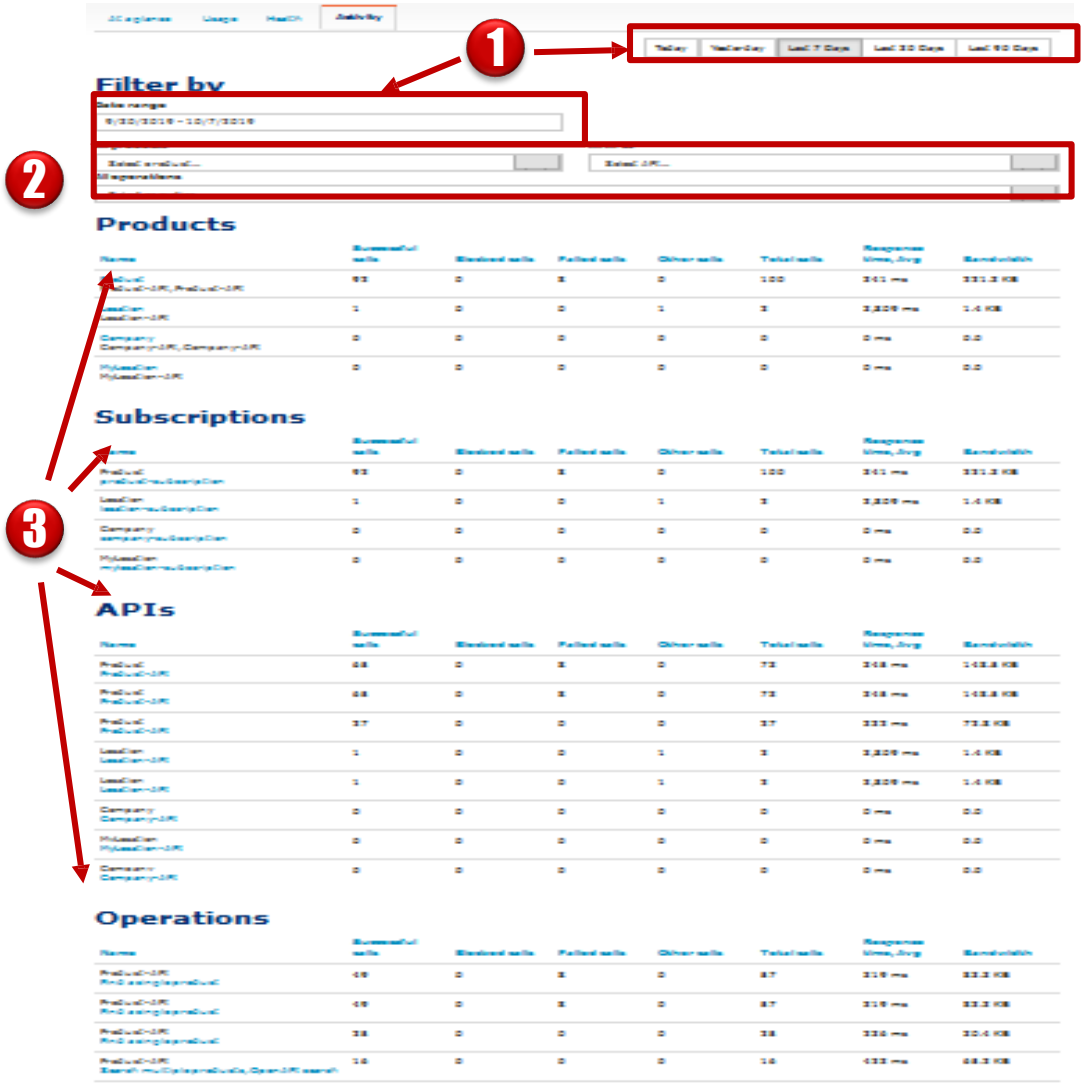
Health Filters

The Health filter allow you to further capture results of status codes, cache, API and service response times. Hover over any date to view values displayed graphically.



Activity Summary

The Activity tab provides columnar summary views based on your selection criteria: by timeframe, date range, subscription type and operation.



1. Select **Time Period** and/or **date range**

2. Identify the subscription type (1) All Products, (2) All APIs, and (3) All operations; by using drop down menus to focus on the specific operation of the API.

3. Review the summary tables provided below the filter for APIs, call requests (APIs and Operations) and Subscription Types (Products and Subscriptions)

Appendix A: Product Record in JSON


```
{
    "product": {
        "prefix": "081414100",
        "gtin": "00814141000658",
        "industry": "General",
        "packagingLevel": "Each",
        "productDescription": [
            {
                "Value": "Joan's Scotch Bonnet Peppers 16 oz Jars",
                "Language": "en"
            }
        ],
        "sku": "",
        "brandName": [
            {
                "Value": "Aja's Caribbean Foods",
                "Language": "en"
            }
        ],
        "status": "In Use",
        "isVariable": false,
        "isPurchasable": true,
        "dimensions": {
            "Height": 12,
            "Width": 12,
            "Depth": 12,
            "DimensionMeasure": "in"
        },
        "weight": {
            "GrossWeight": 24,
            "NetWeight": 16,
            "WeightMeasure": "oz"
        },
        "comments": "",
        "targetMarket": [
            "JM"
        ],
        "subBrandName": "",
        "productDescriptionShort": "",
        "labelDescription": "",
        "imageURL": "https://gs1us.org/Portals/0/Images/VBG/tropical-beach-
1920x1080-ocean-hawaii-coast-4k-5336.jpg",
        "netContent": [
            {
                "Count": 16,
                "UnitOfMeasure": "ONZ"
```

```
            }
        ],
        "globalProductClassification": "99999999",
        "children": null
    }
}
```

Appendix B: Error Messages

GS1 US error messaging for API services generally follow REST HTTP Status Code standards using the below table.

HTTP Status Code	Description
`200 OK`	Successful.
`201 Created`	Created.
`400 Bad Request`	Bad input parameter. Error message should indicate which one and why.
`401 Unauthorized`	The client passed in the invalid Auth token. Client should refresh the token and then try again.
`403 Forbidden`	Customer doesn’t exist. Application not registered. Application try to access to properties not belong to an App.
`404 Not Found`	Resource not found.
`405 Method Not Allowed`	The resource doesn't support the specified HTTP verb.
`409 Conflict`	Conflict.
`412 Precondition Failed`	Precondition failed.
`500 Internal Server Error`	Servers are not working as expected. The request is probably valid but needs to be requested again later.
`503 Service Unavailable`	Service Unavailable.

Glossary of Terms

Business Terms

BrandName: Indicates the name of the product line used with consumers

Entity GLN: A GLN that uniquely identifies a company that has a business relationship with GS1 US or another GS1 Member Organization. A single entity GLN can be associated with other GLNs or with one or more GS1 Company Prefixes.

GLN: Global Location Numbers are used to identify parties to business transactions; functional groups within a company; or real, physical "places" that might ship, receive, process, or hold inventories.

GS1 Company Prefix: The GS1 Company Prefix is at the heart of the GS1 system of identifiers. It forms the base for a family of identifiers that are globally unique and can be used for a host of different applications. GS1 assigns GS1 Company Prefixes to entities that administer the allocation of GS1 System identification numbers. GS1 Company Prefixes are between 7 and 11 digits in length. The GS1 Company Prefix is located on your prefix certificate, and it begins with a zero "0."

GTIN: Global Trade Item Numbers uniquely identify trade items at all item and package levels, ensuring that they are always identified correctly anywhere in the world. Each trade item that is different from another is allocated a separate, unique GTIN. GTINs are encountered most frequently at retail point of sale and on inner packs, cases, and pallets of products in a distribution/warehouse environment. They are commonly used on purchase orders and in delivery and payment documents.

Industry: The "Industry" attribute in Data Hub refers to the market vertical under which a particular product or company operates. Choices for Industry are: General (this is the default), CPG (Consumer Package Goods), Healthcare, Apparel

Packaging Level: The "Packaging Level" attribute in Data Hub refers to the market vertical under which a particular product or company operates. Choices for Packaging level are: Each (this is a base product level), Inner Pack, Case, Mixed Case, Case as Each (this is a base product level), Display Shipper, Pallet

SKU: (Stock Keeping Unit) Internal company identifier

Target Market: Designated market of sale for the product

U.P.C. Company Prefix: A special representation of a GS1 Company Prefix, it is only used to create GTIN-12, Coupon-12, RCN-12, and VMN-12, which are encoded in a UPC-A Bar Code. This prefix is used specifically for creating a GTIN-12 for items that cross the point of sale. U.P.C. Company Prefixes are between 6 and 10 digits in length.

Technical Terms

AI: Application Identifier. AIs identify the meaning and format of data within a barcode.

API: Application Programming Interface. The API provided by GS1 US in the form of a web service exposing GS1 US certified data to licensed parties. GS1 US is the API provider. The licensed parties are the API consumers. API consumers create the end user product or service that retrieves GS1 US certified data in real-time, seamlessly integrated into licensed parties' business applications.

APIM: API Management. Tools to help publish APIs to external, partner, and employee developers securely and at scale.

EAN: International Article Number, European Article Number. Barcode encoding 13 digit number for retail point-of-sale

EDI: Electronic Data Interchange. EDI enables the computer-to-computer exchange of business documents between companies using a standardized format.

GDSN: Global Data Synchronization Network. An Internet-based, interconnected network of interoperable data pools and the GS1 Global Registry® that enables companies to exchange standardized and synchronized supply chain data and accurate product information

GRP: GS1 Registry Platform. A "primary node" of authoritative data about GS1 licenses and GTIN information on the web.

JSON: JavaScript Object Notation. JSON is the Internet media type returned by the API provider within the HTTP response.

REST: Representational State Transfer: This has emerged as a predominant web API design model.