GS1 US Data Hub®
View/Use
API
Developer Portal User Guide

Version 5.1
Date May 24, 2021

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GS1 US APIs

Product

GS1 US Product API is based on the OpenAPI standard. GS1 US is currently supporting 2 versions of this API, with V.4 being maintained in support of legacy API users. The Product API is a search API and is currently restricted to Data Hub View/Use subscriptions.

Product-API
- v4
  (OpenAPI)
- v5
  (OpenAPI)

Location

GS1 US Location APIs are based on the OData standard. GS1 US currently supports a search API for Data Hub View/Use subscriptions (Location-API) and a Create/Modify API for GLN Managers (MyLocation-API).

Location-API
- v2

MyLocation-API
- v2

Company

GS1 US Company API is based on the OData standard. GS1 US is currently supporting 2 versions of this API, with V.2 being maintained in support of legacy API users. The Company API is a search API and is restricted to Data Hub View/Use subscriptions.

Company-API
- v2
- v3

Details on the search terms available for filtering searches on GS1 US APIs can be identified by reviewing the API result examples shown in Appendix A, Appendix B, and Appendix C of this guide.

API Tools

GS1 US APIs operate under the OpenAPI (or Odata) standards. Information and tools associated with these platforms can be accessed directly from the managing organizations 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

OData Information and Tools

OData is an ISO/IEC approved, OASIS standard that defines a set of best practices for building and consuming RESTful APIs.

A set of code libraries for OData can be found at the URL below:

https://www.odata.org/libraries/

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:

GS1 US Data Hub Developer Portal Home Page

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.
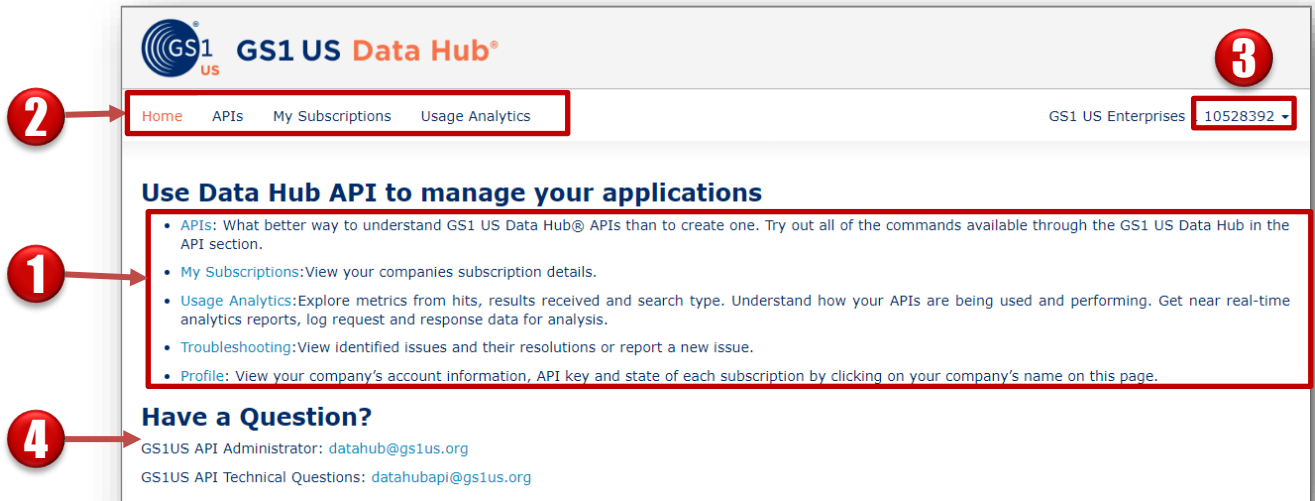
1 Click the hyperlinked titles to display the pages in the Developer's Portal. Alternatively, you can click the 'APIs' option in the menu, as described in step 1.

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
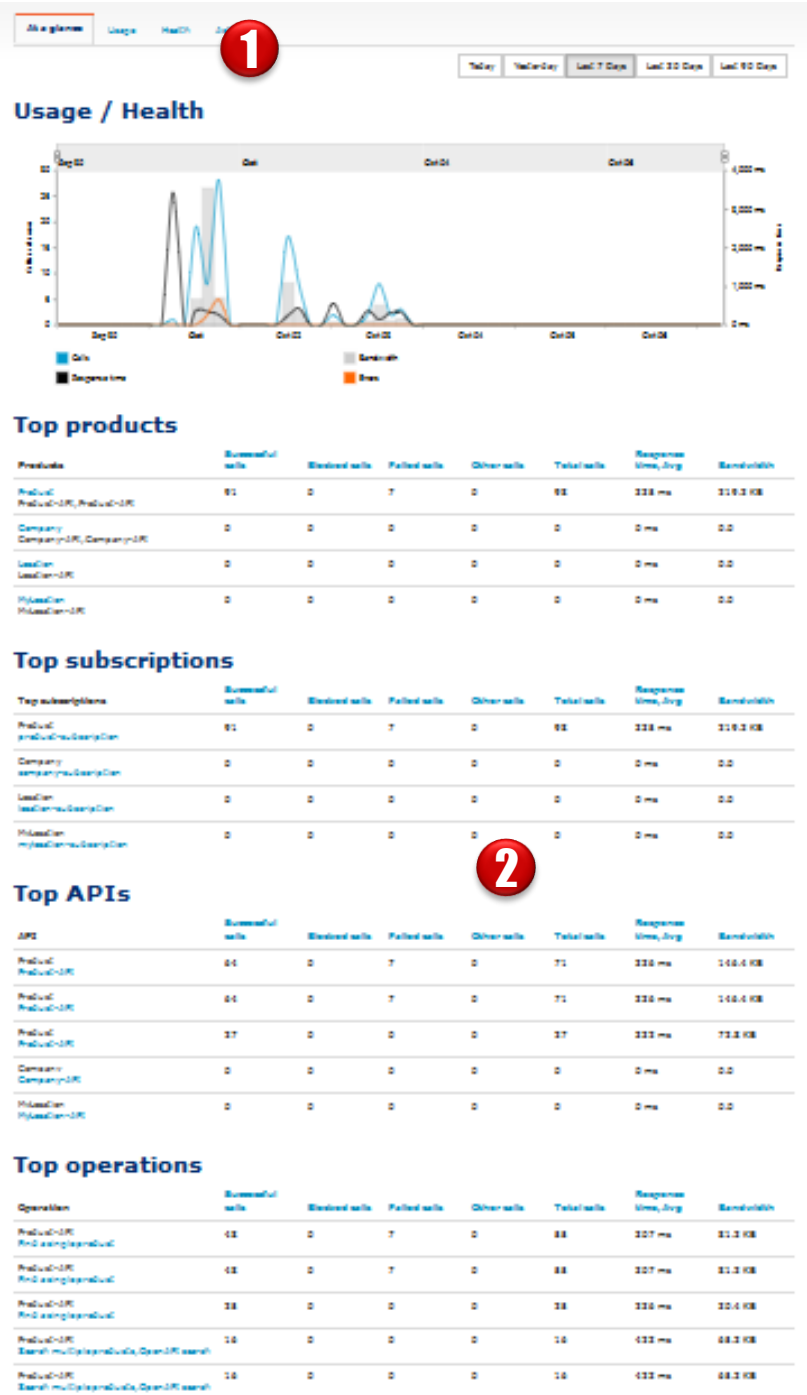
API Screen

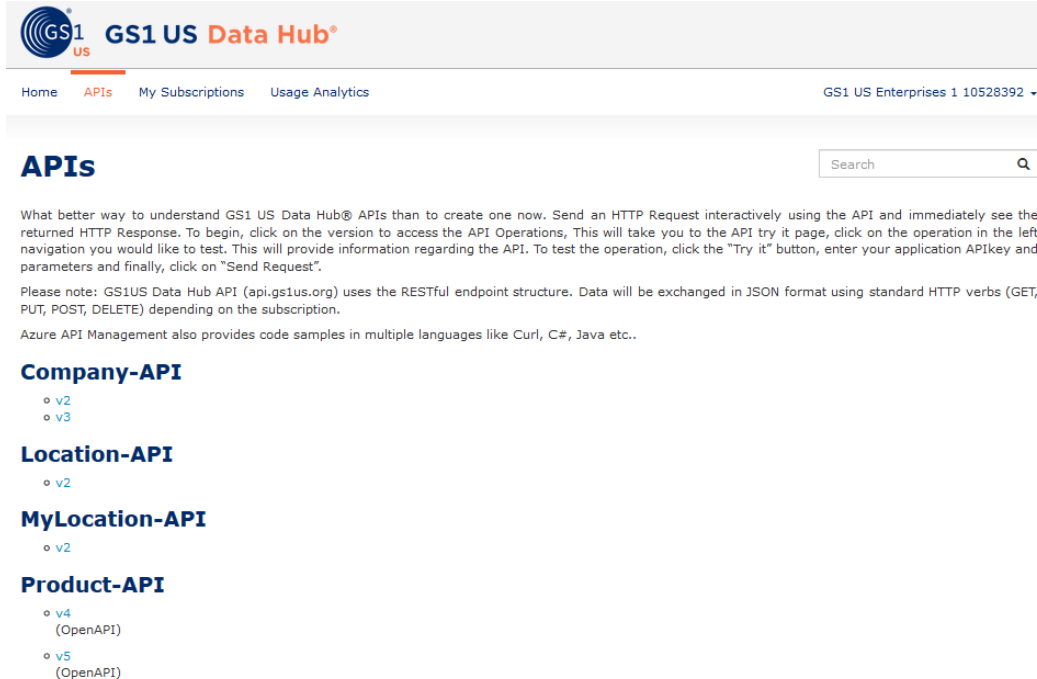On the API screen, you can view a listing of your currently defined applications, categorized by Company, Location, MyLocation and Product.

Click a version to hyperlink to the detail screen.

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

Three versions of Data Hub API are currently supported.

Version 2 (v2) uses the RESTful endpoint structure and exchanges data in JSON format using standard HTTP verbs (GET, PUT, POST, DELETE). Version 2 of the API also supports a subset of the features within the Odata specification including filtering and paging capabilities. **V2 will be sunset at the end of 2019.**

**Version 3** (v3) also uses the same endpoint structure and exchanges data in multiple formats (JSON, CURL, C++, Java, JavaScript, ObjC, PHP, Python and Ruby). Version 3 added modified date and range of date search capabilities not available with v2.

Version 4 (v4) is available for Products and includes OpenAPI (formerly Swagger Specification). OpenAPI versions for Location and Company are planned for future releases.

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 following pages provide highlights of each call.

Searches using the API may be performed using ODATA. Screen shots of OpenAPI searches are included at the end of this document. More information regarding the Odata specifications can be found at www.odata.org

---
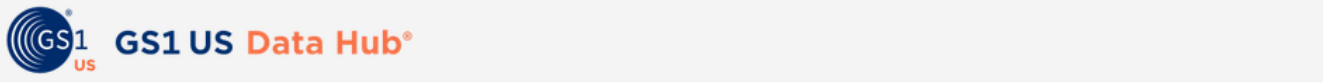
GS1 US Data Hub®

Home   APIs   My Subscriptions   Usage Analytics   GS1 US Enterprises 1 10528392 ▾

APIs   [Search   🔍]

What better way to understand GS1 US Data Hub® APIs than to create one now. Send an HTTP Request interactively using the API and immediately see the returned HTTP Response. To begin, click on the version to access the API Operations, This will take you to the API try it page, click on the operation in the left navigation you would like to test. This will provide information regarding the API. To test the operation, click the "Try it" button, enter your application APIkey and parameters and finally, click on "Send Request".

Please note: GS1US Data Hub API (api.gs1us.org) uses the RESTful endpoint structure. Data will be exchanged in JSON format using standard HTTP verbs (GET, PUT, POST, DELETE) depending on the subscription.

Azure API Management also provides code samples in multiple languages like Curl, C#, Java etc..

Company-API
  - v2
  - v3

Location-API
  - v2

MyLocation-API
  - v2

Product-API
  - v4
    (OpenAPI)
  - v5
    (OpenAPI)

"Try It" for Product

Follow the steps below for all of the API References.

1. Click the **GET** button to get a single product or expand the request url, parameters, headers, etc. This example displays the request parameters for a multiple product search. Input parameters are case sensitive

2. Click the "Try IT" button to test your search sample using OpenAPI.

3. Enter a shared GTIN to search

4. APIKey is required. Your primary and secondary key are located on your Profile screen.

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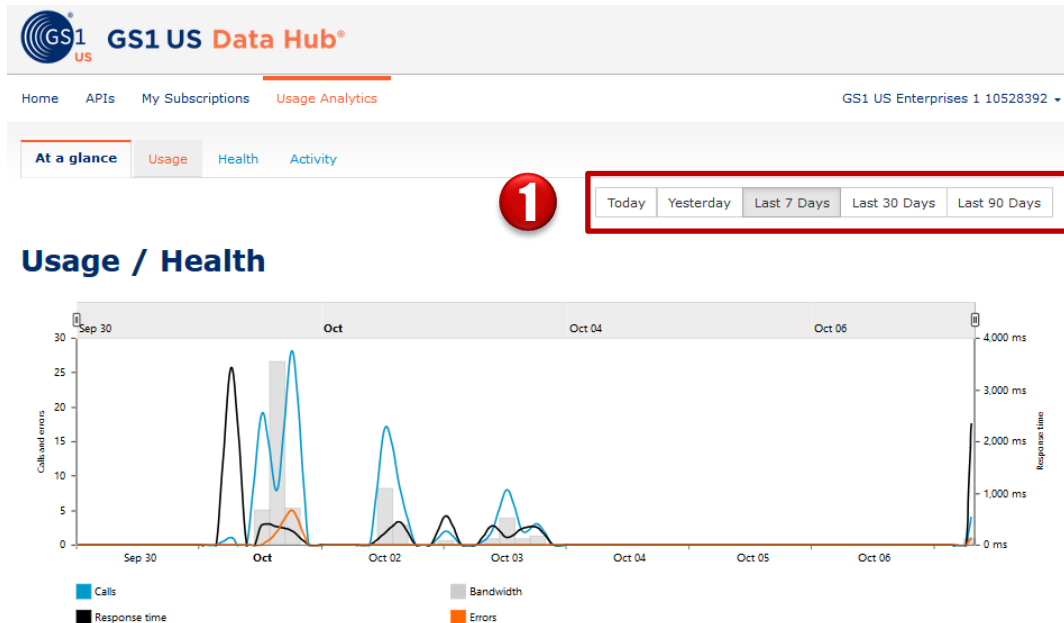
Select the desired time frame: Today, Yesterday, Last 7 Days, Last 30 Days or Last 90 Days.

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.
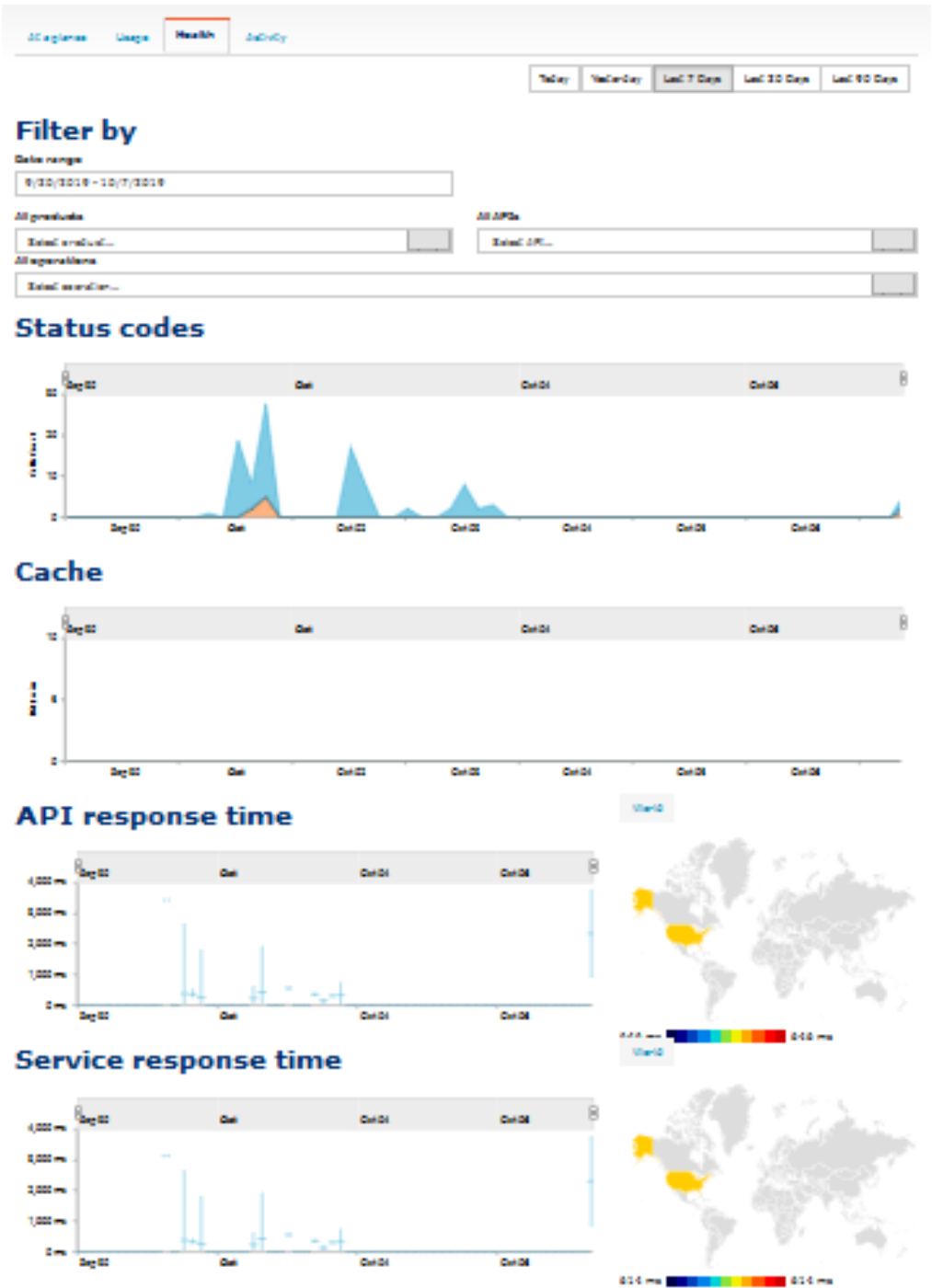
Activity Summary

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)

Browser Considerations

Warnings/Issues (Chrome Browser)

There is a known limitation within the Google Chrome browser for searches beyond a 1000 record limit. This issue will result in a page freeze for Data Hub API users who run their searches through the Developers Portal and who are using the Chrome browser.

The issue does not restrict any API searches performed outside of the platform and is a browser restriction (not a Data Hub platform restriction). API searches of greater than 1000 records operate properly within the Developer's Portal for all other Browsers (note that IE is not supported by Data Hub).

The browser limitation results in the frozen state pictured below.

Useful Tools
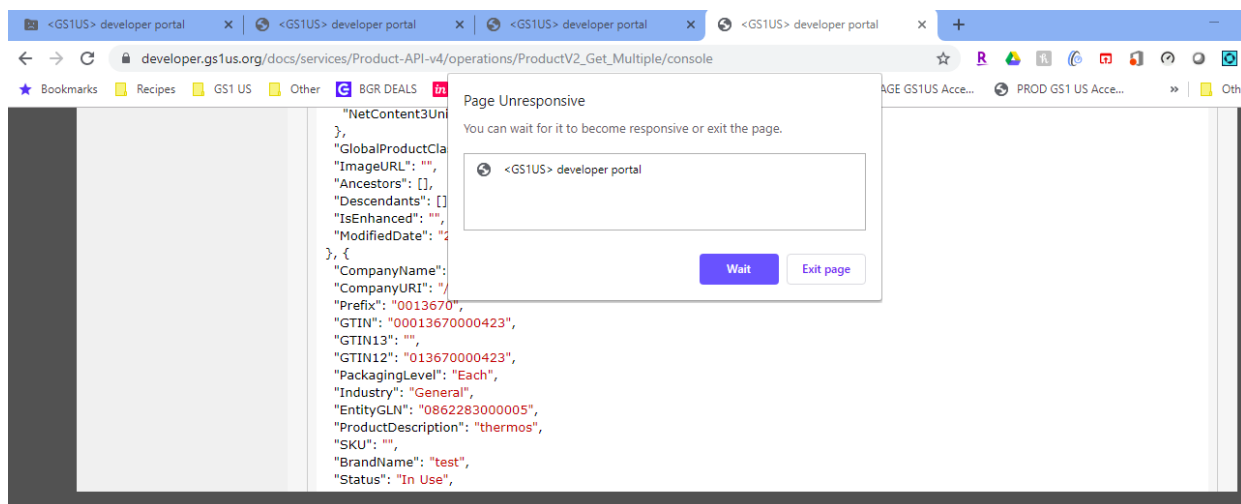
Accessing Very Large Data Blocks (100K+ records)

The tools being used have a restriction at 100K records (for search/extract). For users who need to access a larger data set through an API, the algorithm below provides one mechanism to met this goal. This algorithm makes use of the Modified Date filters to break out the records into groups that can be more easily extracted. User should review all available filters as even filtering by date will not completely reconcile all records from the platform.

```
--ALGORITHM---
//make sure you fail at 100K

//implement windowing logic modifiedStart, modifiedEnd

Step: 1: Declarations
var pageSize = 100
var baseURL = appsettings
var incrementDimension = "days" //configure
var incrementValue = 1 //configure

Step 2 : Get latest
modifiedStart of products in cosmo.
var modifiedStart = Get pagesize=1, page=1 sort by modifiedStart ASC; //earlier
product that was modified
 //pick up modifieddate in JSON of Product 1/13/2011 12:30 PM

Step: 3: Derive
modifiedEnd form start date and increment dimension.

modifiedEnd = GetNextDate(modifiedStart, incrementDimension , incrementValue );

Step: 4 : Call Search API till below condition
while(
modifiedStart < DateTime.Now
)
{
//setup first time window & enter loop
while (results >0)
{
   results = QUERY; with (modifiedStart & modifiedEnd) : This is call to API
```

Accessing Very Large Data Blocks (100K+ records) (cont.)

```
STEP : 5 Do custom logic
  DoSomething(results);
  page=page++;
  //TODO: Handle case when this window results over 100K
}
    Step : 6 Derive new start and end modified dates
modifiedStart = GetNextDate(modifiedStart, incrementDimension , incrementValue
);

modifiedEnd = GetNextDate(modifiedEnd, incrementDimension , incrementValue );
}

function DoSomething(results)
{
 Console.WriteLine (Page 1 of x, xx records)
}

function GetNextDate(modifiedStart, incrementDimension , incrementValue );
{
  if(incrementDimension = days")
   return modifiedStart.AddDays(incrementValue)
  if(incrementDimension = hours")
   return modifiedStart.AddHours(incrementValue)
  if(incrementDimension = minutes")
   return modifiedStart.AddMinutes(incrementValue)
}
```

Appendix A: Sample Product API Search Results

```json
{
    "product": {
        "Id": 20275799,
        "CompanyName": "ALL 4 U LLC",
        "CompanyURI":
"/company/v3/company/GLN/0192408000000",
        "Prefix": "0192408",
        "GTIN": "00192408145701",
        "GTIN13": "",
        "GTIN12": "192408145701",
        "PackagingLevel": "Each",
        "Industry": "General",
        "EntityGLN": "0192408000000",
        "ProductDescription": "USS Widgeon ASR-1
License Plate Frame",
        "ProductDescriptionLanguage1": "en",
        "ProductDescription2": "",
        "ProductDescriptionLanguage2": "",
        "SKU": "LSFASR-1",
        "BrandName": "MilitaryBest",
        "BrandNameLanguage1": "en",
        "BrandName2": "",
        "BrandNameLanguage2": "",
        "Status": "In Use",
        "IsVariable": false,
        "IsPurchasable": false,
        "Dimensions": {
            "Height": null,
            "Width": null,
            "Depth": null,
            "DimensionMeasure": ""
        },
        "Weight": {
            "GrossWeight": null,
            "NetWeight": null,
            "WeightMeasure": ""
        },
        "Comments": null,
        "TargetMarket": [],
        "ChildGTINs": null,
        "Quantity": null,
        "SubBrandName": "",
        "ProductDescriptionShort": "",
        "LabelDescription": "",
```

```
"NetPackageContent": {
        "NetContent1Count": "",
        "NetContent1UnitOfMeasure": "",
        "NetContent2Count": "",
        "NetContent2UnitOfMeasure": "",
        "NetContent3Count": "",
        "NetContent3UnitOfMeasure": ""
    },
    "GlobalProductClassification": "",
    "ImageURL": "",
    "Ancestors": [],
    "Descendants": [],
    "IsEnhanced": "",
    "ModifiedDate": "2017-10-
10T21:07:24.5700000Z"
  },
  "messages": [],
  "responseCode": "VB0001",
  "responseMessage": "Product lookup is
successful"
}
```

Appendix B: Sample Location API Search Results

```
Pragma: no-cache
Cache-Control: no-cache
Date: Tue, 08 Oct 2019 17:28:29 GMT
Set-Cookie:
ApplicationGatewayAffinity=9e2f486c7acfd5cf59a5
616f300d9b6cf221101dd76920dd0124009a562c25d8;Pa
th=/;Domain=internaldh.stage.gs1us.org
X-AspNet-Version: 4.0.30319
X-Powered-By: ASP.NET
Content-Length: 735
Content-Type: application/json; charset=utf-8
Expires: -1

{
  "name": "Johnson & Johnson - HCS",
  "name2": "",
  "gln": "0705038000007",
  "parentGln": null,
  "replacedGln": null,
  "status": "Active",
  "prefix": null,
  "industry": "Healthcare",
  "roleInSupplyChain": "Supplier",
  "address": {
    "addressLine1": "425 HOES LN",
    "addressLine2": "",
    "addressLine3": "",
    "city": "PISCATAWAY",
    "state": "NJ",
    "zip": "08854-4103",
    "country": "US",
    "phone": "732-562-3293",
    "dateUspsVerified": "2016-02-03T00:00:00",
    "bypassAddressVerification": false
  },
  "locationTypes": ["Bill To", "Org Entity"],
  "conditionalAttributes": [{
    "attributeName": "Business Sector",
    "attributeValue": "Health Care - Medical
Devices"
  }],
  "GDSNGLNLocationTypes": [],
  "createDate": "2010-08-10T10:53:47",
  "updateDate": "2010-08-10T10:53:47",
  "reValidationDate": null,
  "GPO": null,
  "selfManaged": false
}
```

Appendix C: Sample Company API Search Results

```
Pragma: no-cache
Cache-Control: no-cache
Date: Tue, 08 Oct 2019 17:38:04 GMT
Set-Cookie:
ApplicationGatewayAffinity=af5c790b2bd506af5f5d
e3350dad737f2bfadd050d015ae06b2a4963c1e8c943;Pa
th=/;Domain=internaldh.stage.gs1us.org
X-AspNet-Version: 4.0.30319
X-Powered-By: ASP.NET
Content-Length: 439
Content-Type: application/json; charset=utf-8
Expires: -1
```

```json
[{
  "Source": "GS1 US, INC.",
  "EntityGLN": "0705038000007",
  "CompanyName": "Johnson & Johnson Health Care
Systems, Inc.",
  "StreetAddress1": "PO BOX 6800",
  "StreetAddress2": "",
  "StreetAddress3": "",
  "City": "PISCATAWAY",
  "StateProvince": "NJ",
  "ZipCode": "08855-6800",
  "Country": "USA",
  "GSRN": "101234500011954334",
  "ModifiedDate": "2014-10-18",
  "Prefixes": {
    "UPCPrefix": "705038",
    "GS1Prefix": "0705038",
    "PrefixStatus": "Active",
    "ModifiedDate": "2014-10-18T00:00:00"
  }
}]
```

Appendix D: 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.

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 all GS1 identifiers 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.