smartsheet

# ENGAGE

# Rocket fuel for project teams

A deep dive into API integrations and automations with Smartsheet





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#### **Introductions**



Sergio Dominguez
Senior Solutions Architect, Specialized Services





## **Learning Objectives**

Understand Smartsheet's API offerings

2

Learn how to get started with the Smartsheet API

3

Gain insight into Integrations and Advanced Automations

4

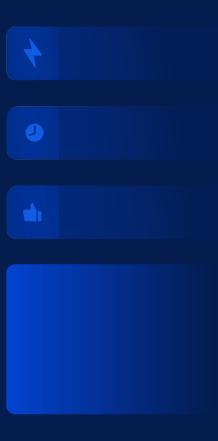
Understand Smartsheet Webhooks

5

Understand Smartsheet's SDK offerings



**Smartsheet's API offerings** 





#### **Smartsheet APIs**

**Products with API offerings** 

Resource Management

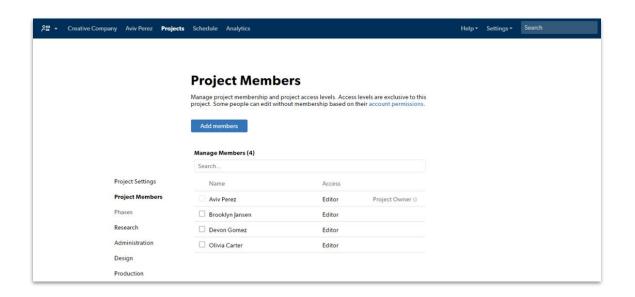
by **✓ smartsheet** 





# Resource Management

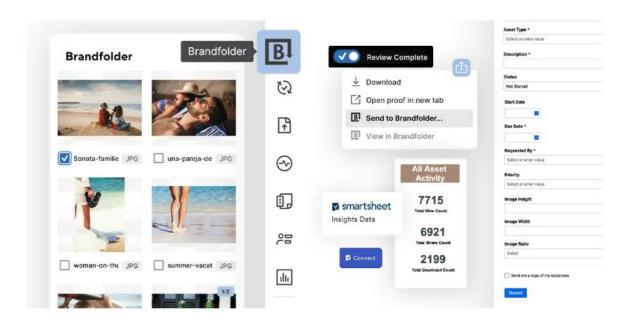
10kft.github.io/10kft-api





#### **Brandfolder**

developers.brandfolder.com





#### **Smartsheet REST API**

#### **Public documentation**

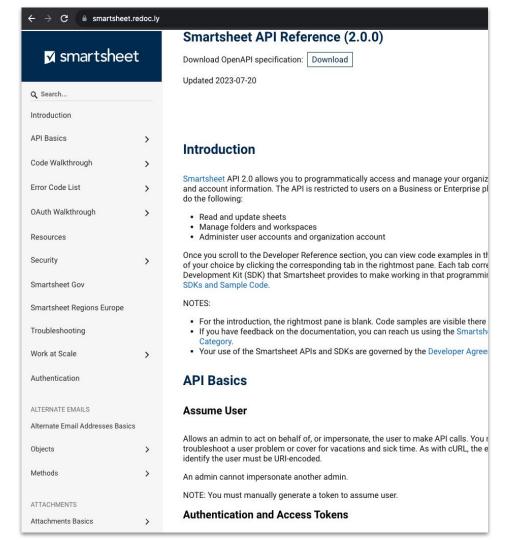
What's available

How it works

Limits

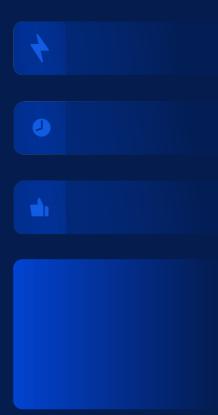
Samples in different programming languages





2

**Get started with the Smartsheet API** 





# **API Documentation: Access**

#### To make API calls, you'll need:

- An API client (Postman/cURL).
- Access tokens.

Remember that tokens act on your behalf

- Create one for each use case (each app, each project, etc.).
- Keep track of them somewhere safe and revoke/replace periodically.
- Use service account tokens when possible.

#### **Raw Token Requests**

If you want to get started quickly, or are developing a standalone application that can run with your

- 1. Click the "Account" button in the lower-left corner of the Smartsheet screen, and then click 2. Click the "API Access" tab.
- 3. Click the "Generate new access token" button to obtain an access token.

The access token must be sent with every API call in an HTTP authorization header (except for the requests to Get Access Token or Refresh Access Token). Once you have an access token, include it

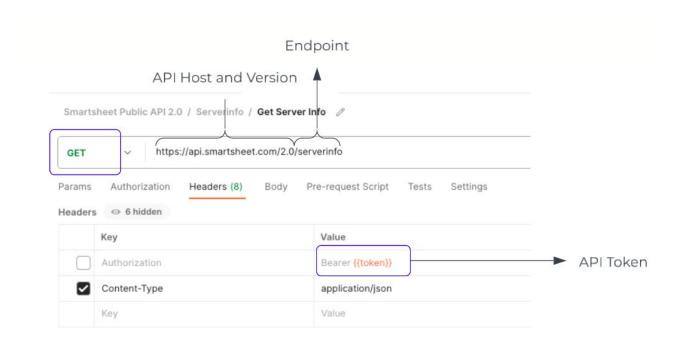
Authorization: Bearer JK1MNOpQ12RStUVwxYZAbcde3F5g6hijk1M789

The header name is Authorization and the value of the header is Bearer JKIMNOpQ12RStUVwxYZAbcde3F5g6hijkIM789. Since the access token is being transmitted in

NOTE: A best practice is to use a shared account, such as ticket-processor@example.com, rather



#### **API Documentation: Access**





## Astrocats, Inc.

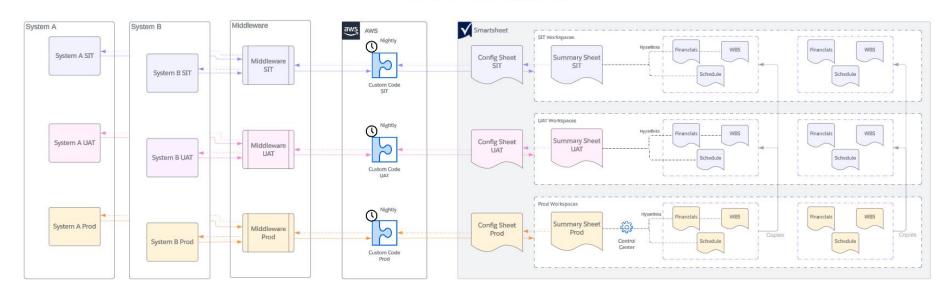
The Astrocats\* embark on integrations





#### Astrocats, Inc.

Smartsheet Integration Environments High Level Design





#### **API Documentation: Sheets**

Get Sheet - /sheets/{sheetId}

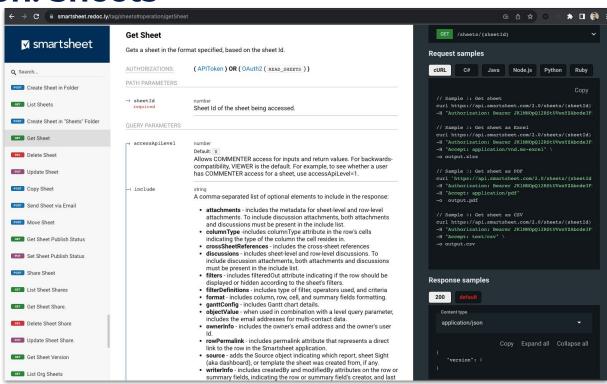
```
"id": 4225731770247044,
          "name": "test",
          "version": 19.
          "totalRowCount": 6,
          "accessLevel": "OWNER",
          "effectiveAttachmentOptions": [--
 16
          "ganttEnabled": false,
 17
          "dependenciesEnabled": false,
 18
          "resourceManagementEnabled": false,
 19
 20
          "resourceManagementType": "NONE",
          "cellImageUploadEnabled": true,
 21
 22 >
          "userSettings": {--
 25
          3,
          "userPermissions": {--
 26 >
 28
          "hasSummaryFields": false,
 29
          "permalink": "https://app.smartsheet.com/sheets/V9MVX9QpqxmCgcX7Xphc7GWhpgP3J7C6XV6x9m31",
 30
          "createdAt": "2021-07-23T18:17:27Z",
 31
          "modifiedAt": "2023-01-11T15:29:25Z",
 32
 33
          "isMultiPicklistEnabled": true,
 34 >
          "columns": [--
105
          "rows": [--
106 >
306
307
```



#### **API Documentation: Sheets**

#### **Common endpoints**

- Get sheet (list rows, get holidays, aggregate data),
- Get sheet version,
- Copy sheet (save as new),
- List sheets,
- Get sheet as CSV,
- List shares,
- Share sheet.







```
"columnId": 525094551244676,
  "value": "Hello, world 1",
  "displayValue": "Hello, world 1"
},
```



```
{
    "columnId": 5028694178615172,
    "value": 123.456,
    "displayValue": "123.456"
},
```



```
Boolean
```

```
{
    "columnId": 2776894364929924,
    "value": true
},
```

\*value can be absent

```
{
    "columnId": 120343275720580
},
```



Dates

2024-10-08





Start/End Dates (w/ Dependencies)

2024-10-23T16:59:59





Dropdowns

"A, B, C"





#### **Exceptional Cell Data**

```
"columnId": 4623942903091076,
    "value": "6d",
    "objectValue": {
        "objectType": "DURATION",
        "days": 6.0
    },
    "displayValue": "6d"
},
```

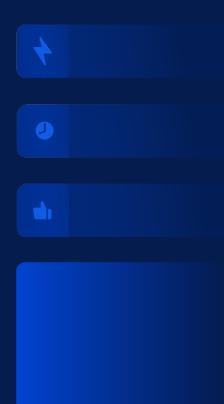
```
"columnId": 6435560108543876,
"value": "sergio.dominguez@smartsheet.com",
"objectValue": {
    "objectType": "CONTACT",
    "email": "sergio.dominguez@smartsheet.com",
    "name": "Sergio Dominguez",
    "imageId": "u!1!aUsrmj4dccs!nhEqv54nF2s!bc4z3Y5N9Mr"
"displayValue": "Sergio Dominguez"
"columnId": 4183760294858628,
"objectValue": {
    "objectType": "MULTI_CONTACT",
    "values": [
            "objectType": "CONTACT",
            "email": "sergio.dominguez@smartsheet.com",
            "name": "Sergio Dominguez",
            "imageId": "u!1!aUsrmj4dccs!nhEgv54nF2s!bc4z3Y5N9Mr"
            "objectType": "CONTACT",
            "email": "sergio.dominguez+internaladmin@smartsheet.com",
            "name": "sergio.dominguez+internaladmin@smartsheet.com"
"displayValue": "Sergio Dominguez, sergio.dominguez+internaladmin@smartsheet.com"
```



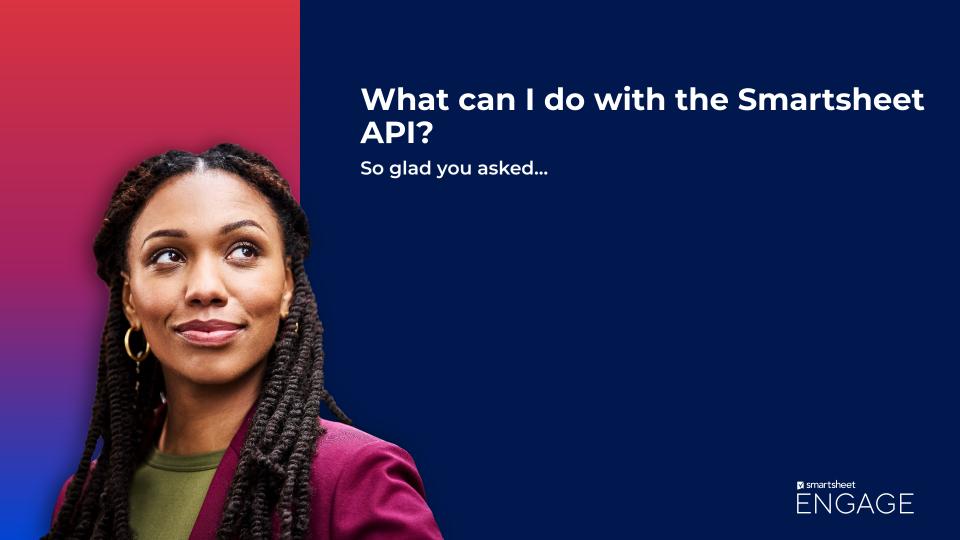




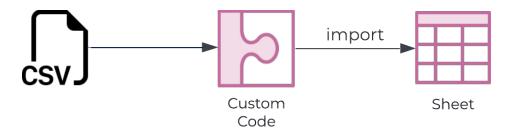
A primer

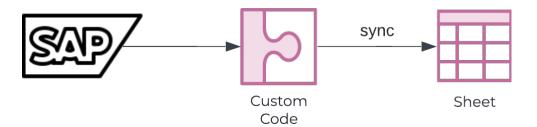






#### **Transfer data**

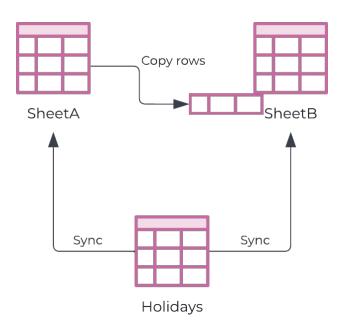






#### **Automate your Mondays**

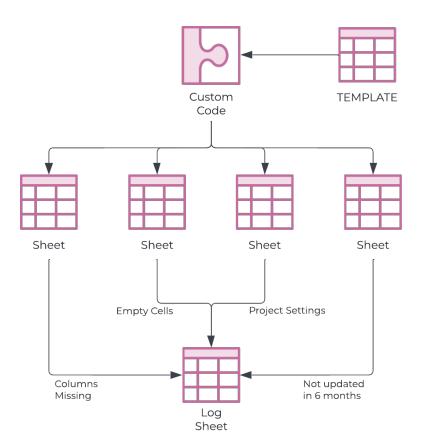
If you've done it manually more than once, it should be automated.





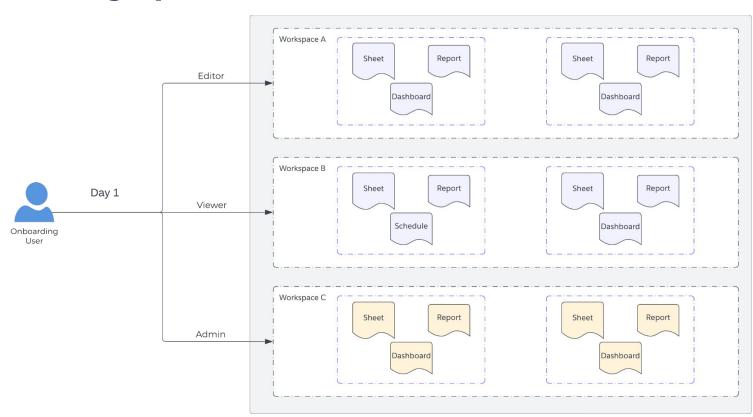
# **Quality checks**







# **Manage permissions**







With great

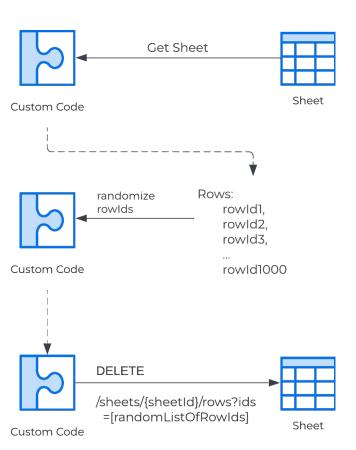
power comes great responsibility.

- "Ben Parker"
  - Sergio Dominguez



#### Be an agent of chaos

But, seriously, don't.





## **Developing API integrations**

#### Things you'll need:

- Software development experience (Python, JavaScript, C#, Java, Ruby).
- Resources to develop the application(s).
- Resources to maintain the application(s).
- Hosting solutions (AWS, Google Cloud, Microsoft Azure).

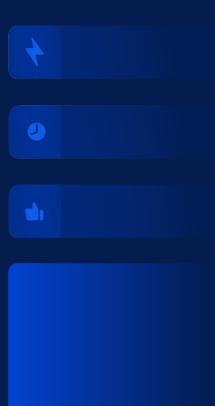
#### Things you can do:

• Supercharge your Smartsheet projects

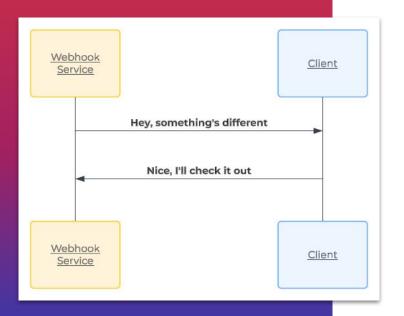




**Smartsheet Webhooks** 







#### Webhooks

Holler If You Hear Me



#### **Using Webhooks**



Registration



Verification



Anatomy of a Callback Event



**Processing Events** 



**Duplicate Webhooks** 



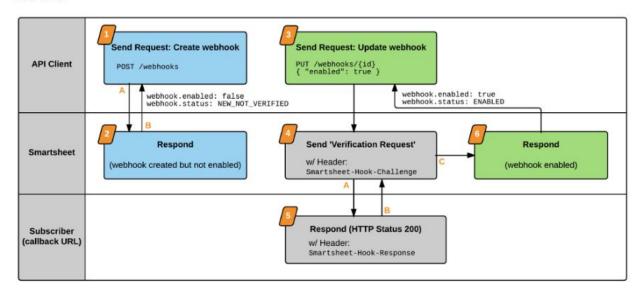
Callback Authentication



#### **Registration & Verification**

#### **Creating a Webhook**

An API client can create a webhook by using the Create Webhook operation. A newly created webhook is disabled by default. After successfully creating a webhook, the API client must subsequently initiate and complete the verification process before the webhook is enabled. The following diagram illustrates the process of creating and enabling a webhook.



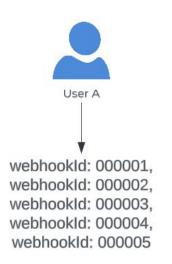


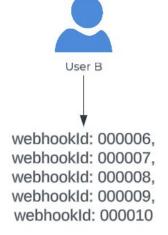
#### Webhook Management

Owned by Smartsheet user who created them

Can only be viewed/edited/deleted by owner

Not API token-dependent







### **Anatomy of a Callback Event**

Callback Event

```
"nonce": "f0377980-ba92-43cd-8dcd-443414347967",
     "timestamp": "2024-07-17T23:54:38.660+00:00",
      "webhookId": 3163967318189956,
        "scope": "sheet"
        "scopeObjectId"
                         1636581748199300
                                                                                SheetId
      events":
                "objectType": "cell",
10
                "eventType": "updated",
11
              "rowId": 7663406202064772,

    A cell has changed

              columnId": 607709735899012.
12
             "userId": 4316535717160836,
13
14
              "timestamp": "2024-07-17T23:54:33.000+00:00"
15
16
                "objectType": "cell",
17
                "eventType": "updated",
                "rowId": 7663406202064772,
19
              ... "columnId": 8429653726285700.
20
              "userId": 4316535717160836,
21
22
             "timestamp": "2024-07-17T23:54:33.000+00:00"
23
24
25
```



### **Processing Events**

#### Check for challenge

#### Group events by rowld

Callback Event - Group

```
By SheetId/Rowld
         "nonce": "f0377980-ba92-43cd-8dcd-443414347967",
         "timestamp": "2024-07-17T23:54:38.660+00:00",
       "webhookId": 3163967318189956,
       -- "scope": - "sheet"
         "scopeObjectId": 1636581748199300,

    SheetId

         "events":
                 "objectType": "cell",
                  "eventType": "updated"
11
                  "rowId": 7663406202064772.
12
                 "columnId": 607709735899012.
13
                  "userId": 4316535717160836,
                  "timestamp": "2024-07-17T23:54:33.000+00:00"
15
                                                                                     Group by rowld
16
17
                 "objectType": "cell",
18
                  "eventType": "updated",
                  "rowId": 7663406202064772,
19
20
                  "columnId": 8429653726285700,
21
                 "userId": 4316535717160836.
22
                 "timestamp": "2024-07-17T23:54:33.000+00:00"
23
24
```

Webhook retries with exponential backoff



### **Duplicate Webhooks**

Duplicate webhooks are defined as two or more webhooks that meet the following conditions:

- on the same sheet
- created by the same user
- have identical: callbackUrl and subscope properties.

As of January 2023, Smartsheet will deduplicate webhook callbacks. This means for every set of duplicate webhooks on a sheet, Smartsheet will no longer issue one callback per webhook, and will instead only issue one total callback, for only the oldest enabled webhook.

**Recommendation:** When creating a webhook, first check to make sure that the sheet doesn't already contain an identical webhook. If it does, and it's disabled, re-enable it. If it's already enabled, do nothing.



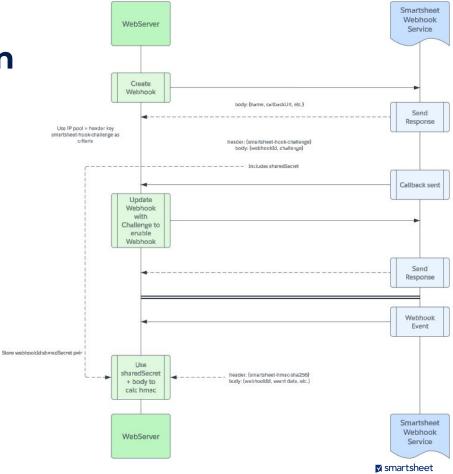
### **Callback Authentication**

#### **HMAC Validation**

smartsheet-hmac-sha256: "xyz"

#### **Callback URL parameter**

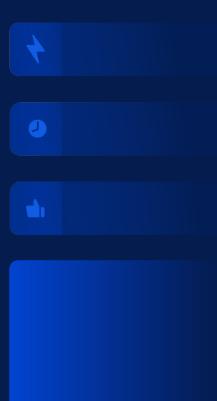
https://www.myserver.com/endpoint?param=XYZ



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**Smartsheet's SDK offerings** 





### **Smartsheet Software Development Kits (SDKs)**

Language	SDK	Sample application
C#	smartsheet-csharp-sdk	csharp-read-write-sheet
Java	smartsheet-java-sdk	java-read-write-sheet
Node.js	smartsheet-javascript-sdk	node-read-write-sheet
Python	smartsheet-python-sdk	python-read-write-sheet
Ruby*	smartsheet-ruby-sdk	ruby-read-write-sheet

#### Benefits include:

- Retry with backoff to automatically recover from network errors or rate limiting
- Request & response logging
- Native object models for request and responses (Java and C# only)

To use an SDK for development work, follow the instructions in the SDK readme to download and install the SDK. Then download the sample app and run it. Once you've run the sample application, you can clone it and use the structure it provides to start building your own applications.



<sup>\*</sup>The Ruby SDK is no longer maintained. It is still usable, but new functionality may be missing.

### Add Rows (cURL)

#### **Command Line HTTP Request**

```
curl https://api.smartsheet.com/2.0/sheets/{sheetId}/rows \
    -H "Authorization: Bearer JKUNNOpQ12RStUVwxYZAbcde3F5g6hijklM789" \
    -H "Content-Type: application/json" \
    -X POST \
    -d '[{"toTop":true, "cells": [ {"columnId": 7960873114331012, "value": true}, {"columnId": 642523719853956, "value": "New status", "strict": false} ] }, {"toTop":true, "cells": [ {"columnId": 7960873114331012, "value": true}, {"columnId": 642523719853956, "value": "New status", "strict": false} ] }]'
```

```
"message": "SUCCESS",
  "resultCode": 0,
- "result": [
         "id": 0,
         "sheetId": 0,
         "rowNumber": 1.
         "expanded": true,
         "createdAt": "2019-08-24T14:15:22Z",
         "modifiedAt": "2019-08-24T14:15:22Z".
       - "cells": [
                "columnId": 0,
                "columnType": "string",
                "value": "string",
                "displayValue": "string"
         "version": 0
```



### Add Rows - C#

### Java

```
Cell[] cellsToInsert = new Cell[]
  new Cell
   ColumnId = addedColumns[0].Id,
   ObjectValue = new MultiPicklistObjectValue(new string[] {"Bat", "Cat"})
Row rowA = new Row
 ToTop = true.
 Cells = cellsToInsert
// Specify cell values of second row
Cell[] cellsB = new Cell[] {
 new Cell
   ColumnId = 7960873114331012,
   Value = true
  new Cell
   ColumnId = 642523719853956,
   Value = "New status"
Row rowB = new Row
 ToTop = true,
 Cells = cellsB
 / Add rows to sheet
IList<Row> newRows = smartsheet.SheetResources.RowResources.AddRows(
  new Row[] { rowA, rowB }
```

### Cell[] cellsToInsert = new Cell[] new Cell ColumnId = addedColumns[0].Id, ObjectValue = new MultiPicklistObjectValue(new string[] {"Bat", "Cat"}) Row rowA = new Row ToTop = true, Cells = cellsToInsert Cell[] cellsB = new Cell[] { new Cell ColumnId = 7960873114331012, Value = true new Cell ColumnId = 642523719853956, Value = "New status" Row rowB = new Row ToTop = true, Cells = cellsB IList<Row> newRows = smartsheet.SheetResources.RowResources.AddRows( new Row[] { rowA, rowB }

### **NodeJS**

```
var row = [
   "toTop": true,
   "cells": [
        "columnId": 7960873114331012,
        "value": true
        "columnId": 642523719853956.
        "value": "New status",
        "strict": false
   "toTop": true,
   "cells": [
        "columnId": 7960873114331012,
        "value": true
        "columnId": 642523719853956,
        "value": " New status",
        "strict": false
var options = {
 sheetId: 2252168947361668.
 body: row
// Add rows to sheet
smartsheet.sheets.addRows(options)
 .then(function(newRows) {
   console.log(newRows);
  .catch(function(error) {
   console.log(error);
```



### **Add Rows - Python**

```
# Specify cell values for one row
row a = smartsheet.models.Row()
row a.to top = True
row a.cells.append({
 'column id': 7960873114331012,
 'value': True
row a.cells.append({
 'column_id': 642523719853956
 'value': 'New Status',
 'strict': False
row b = smartsheet.models.Row()
row b.to top = True
row b.cells.append({
 'column id': 7960873114331012,
 'value': True
row b.cells.append({
 'column id': 642523719853956
 'value': 'New Status',
 'strict': False
# Add rows to sheet
response = smartsheet client.Sheets.add rows(
 [row a, row b])
```

### Ruby

```
body = {
  to bottom: true,
  cells: [
      column id: 495660408563588,
      value: 'New Status'
  locked: false
# Add rows to a sheet
response = smartsheet.sheets.rows.add(
  sheet id: 2331373580117892,
 body: body
```



Limits and error handling

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### **API limits**



#### **Rate Limits**

There is a limit of 300 calls per access token per minute.



#### **Concurrent updates**

No single access token can perform parallel updates on the same sheet at the same time.



#### Attachment size (30MB)

The max file size for uploads through the API is limited to 30MB.

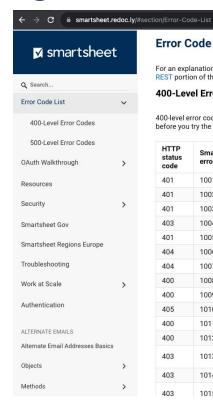


# **Error handling**



### **Error handling**

#### **Error codes**



#### **Error Code List**

For an explanation of the logic behind Smartsheet error codes and error handling, see the HTTP and REST portion of the Introduction.

#### 400-Level Error Codes

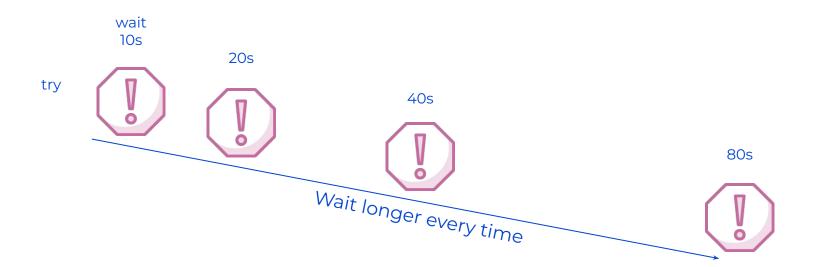
400-level error codes generally indicate that there is something you should fix or add to your request before you try the request again.

HTTP status code	Smartsheet errorCode	Smartsheet message
401	1001	An Access Token is required.
401	1002	Your Access Token is invalid.
401	1003	Your Access Token has expired.
403	1004	You are not authorized to perform this action.
401	1005	Single Sign-On is required for this account.
404	1006	Not Found.
404	1007	Version not supported.
400	1008	Unable to parse request. The following error occurred: {0}
400	1009	A required parameter is missing from your request: {0}.
405	1010	HTTP Method not supported.
400	1011	A required header was missing or invalid: {0}
400	1012	A required object attribute is missing from your request: {0}.
403	1013	The operation you are attempting to perform is not supported by your plan.
403	1014	There are no licenses available on your account.
403	1015	The user exists in another account. The user must be removed



## **Error handling**

### **Exponential backoff**

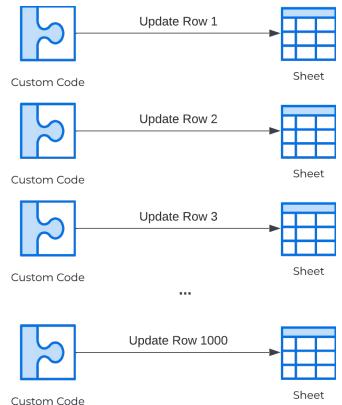




# **Best practices**

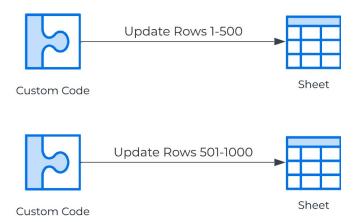


## **Optimize your actions**



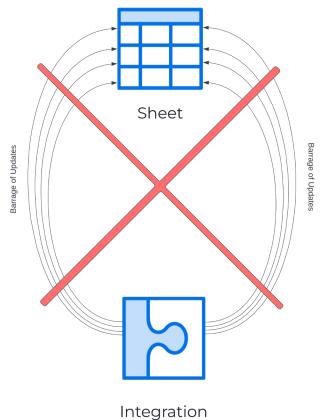


# **Optimize your actions**





# **Rapid-fire updates**



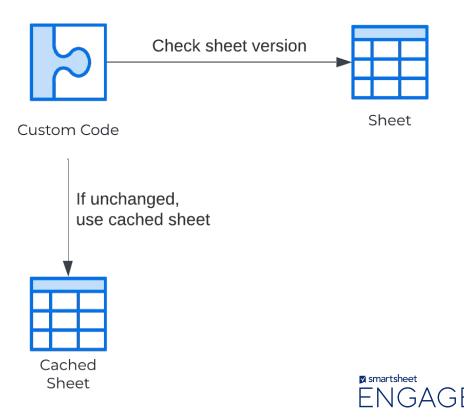


# Be mindful of your impact



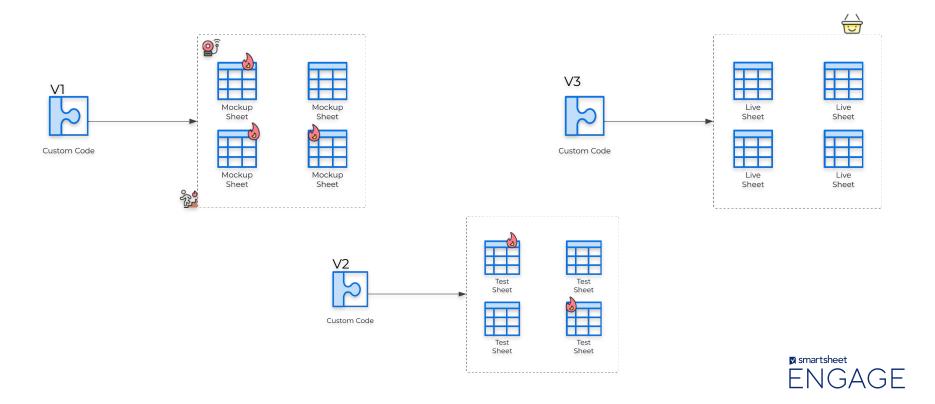


### Cache me if you can



### Test, test, test

And then test some more!



### **Learning Objectives**

Understand Smartsheet's API offerings

2

Learn how to get started with the Smartsheet API

3

Gain insight into Integrations and Advanced Automations

4

Understand Smartsheet Webhooks

5

Understand Smartsheet's SDK offerings



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# Thank you

N smartsheet ENGAGE

### **Register for upcoming User Groups**



# Continue to expand your Smartsheet skills and connections by attending a User Group.

### **Smartsheet User Groups**

- Discover how others are using Smartsheet
- Network with the Smartsheet team and your peers
- Virtual and in-person events around the globe



# Next steps...

- Think of all the ways that your team can benefit from APIs.
- Review the documentation.
- Take a look for yourself.

### Take the survey

We'd love to hear your thoughts on the session.

Open this session in the mobile app, click "Survey," and answer two questions — it's that easy!

Thank you.

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