

Ruckus SmartCell Insight API User Guide, 5.3.1

Supporting SmartCell Insight 5.3.1

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About This Guide

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This *SmartCell Insight API User Guide* provides instructions about how the Ruckus Wireless™ SmartCell Insight (SCI) APIs work to access the various functionalities provided by the core SCI engine.

This guide is written for service operators and system administrators who are responsible for managing, configuring, and troubleshooting Wi-Fi networks. It assumes basic working knowledge of local area networks, wireless networking, and wireless devices.

NOTE

Refer to the release notes shipped with your product to be aware of certain challenges when upgrading to this release.

Most user guides and release notes are available in Adobe Acrobat Reader Portable Document Format (PDF) or HTML on the Ruckus Wireless Support Web site at <https://support.ruckuswireless.com/contact-us>.

Document Conventions

[Document Conventions](#) and [Document Conventions](#) list the text and notice conventions that are used throughout this guide.



TABLE 1 Text conventions

| Convention | Description | Example |
|--------------------------------|--|---|
| message phrase | Represents messages displayed in response to a command or a status | [Device Name] > |
| user input | Represents information that you enter | [Device Name] > set ipaddr 10.0.0.12 |
| user interface controls | Keyboard keys, software buttons, and field names | Click Create New |
| Start > All Programs | Represents a series of commands, or menus and submenus | Select Start > All Programs |
| ctrl+V | Represents keyboard keys pressed in combination | Press ctrl+V to paste the text from the clipboard. |
| screen or page names | | Click Advanced Settings . The Advanced Settings page appears. |
| command name | Represents CLI commands | |
| parameter name | Represents a parameter in a CLI command or UI feature | |
| variable name | Represents variable data | {ZoneDirectorID} |
| filepath | Represents file names or URI strings | http://ruckuswireless.com |

TABLE 2 Notice conventions

| Notice type | Description |
|-------------|---|
| NOTE | Information that describes important features or instructions |

TABLE 2 Notice conventions (continued)

| Notice type | Description |
|--|--|
|  CAUTION | Information that alerts you to potential loss of data or potential damage to an application, system, or device |
|  WARNING | Information that alerts you to potential personal injury |

Related Documentation

For a complete list of documents that accompany this release, refer to the Release Notes.

Documentation Feedback

Ruckus Wireless is interested in improving its documentation and welcomes your comments and suggestions.

You can email your comments to Ruckus Wireless at: docs@ruckuswireless.com

When contacting us, please include the following information:

- Document title
- Document part number (on the cover page)
- Page number (if appropriate)

Overview

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SmartCell Insight (SCI) is a Big Data analytics and reporting engine that provides deep visibility into the performance and operational statistics of your Ruckus Wireless WiFi infrastructure.

SmartCell Insight (SCI) is designed to collect data from Ruckus network equipment, analyze that data, and then present it using a wide variety of standard and custom reports. SCI provides visibility, analytics and reports about network transmission statistics, equipment status and user traffic. It also provides details about the devices and applications that are used on the network, so that decision-makers can make better informed decisions about what types of devices and content their customers are using and will be using more of in the future.

SCI provides a rich set of APIs to access the various functionality provided by the core SCI engine.

This manual includes the following information:

- [Report Types](#) on page 7
- [Common Tasks](#) on page 8
- [Using the API Dialog Box](#) on page 9
- [Using SCI API Explorer](#) on page 11:
 - [Generating the Access Token](#) on page 13
 - [Querying to Obtain Report IDs](#) on page 15
 - [Querying to Obtain Section IDs of a Specific Report](#) on page 18
 - [Querying the Data Endpoint](#) on page 20
 - [Logging in to API Explorer Programmatically](#) on page 23

NOTE

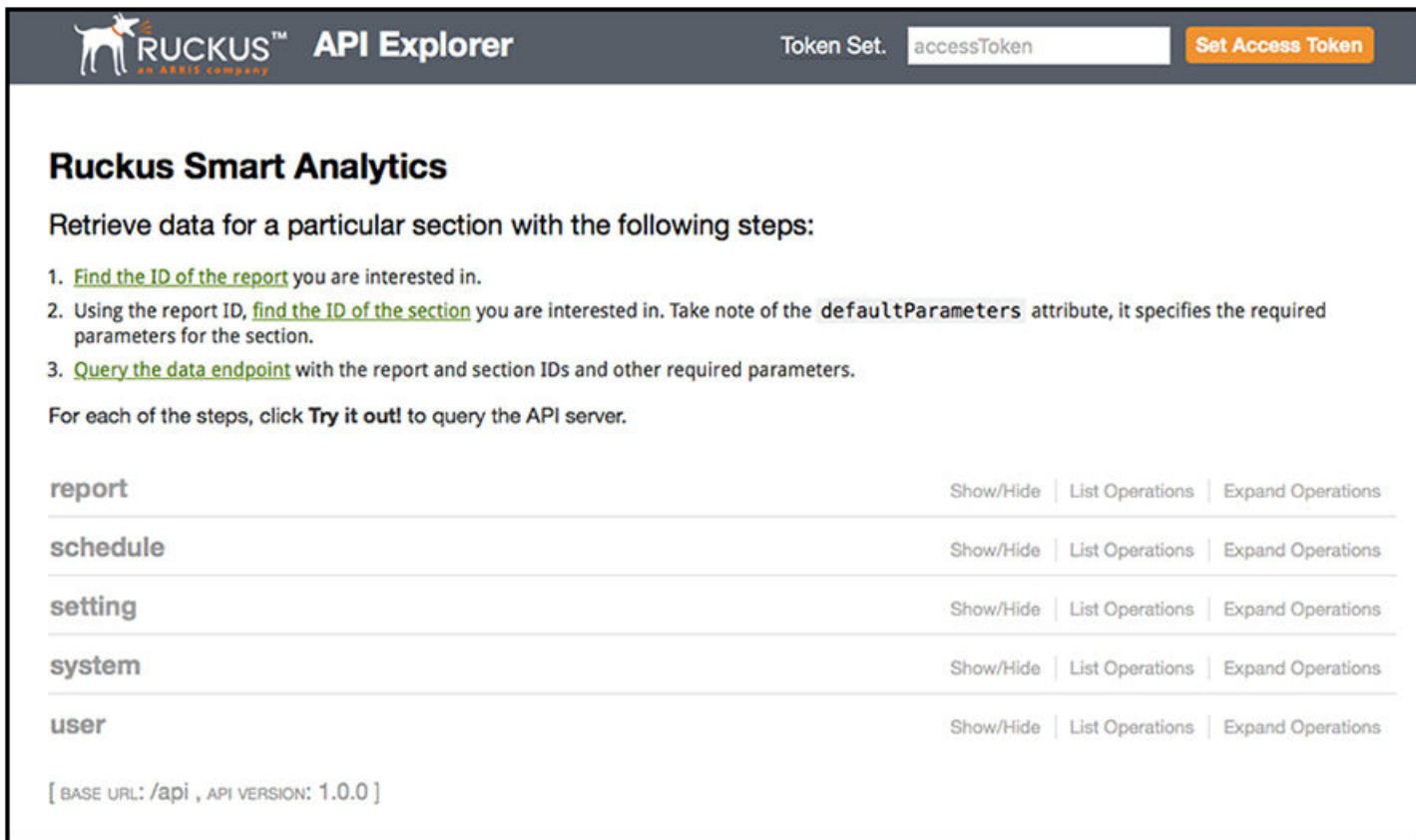
Refer to the "Ruckus Smart Analytics" section of this manual for information about how to use each of the APIs.

Report Types

This section lists and describes the report types available in SCI.

When you first enter the SCI API Explorer by entering `https://<your SCI IP address>/explorer` in your web browser, the following screen is displayed:

FIGURE 1 Ruckus Smart Analytics Screen when Entering API Explorer



Report types available in SCI are described in the following table:

| Report Type | Description |
|-------------|--|
| Report | Report type is for various reports available in the application such as Network, WLAN, and Clients. |
| Schedule | This is to schedule automatic report generation and delivery. You can also specify occurrences for a particular schedule. (Refer to the SCI user guide for details). |
| Setting | This report type is for system level settings including SMTP settings. |
| System | This report type is based on all the controllers that report to the SCI as data sources. |
| User | The user usage report returns activities pertaining to SCI across the user's accounts. |

Common Tasks

SCI's API allows you to build your custom specified reports, based on the available parameters. Each of these parameters has the following common tasks.

- Show / Hide: This toggle command shows or hides the rows dynamically in a table.

- List Operations: This command displays the list of HTTP verbs such as GET, PUT, POST, HEAD or DELETE row dynamically in a table.
- Expand Operations: This command expands the API dialog box for each listed operation. Use List Operations to contract the view.

FIGURE 2 Common tasks

| | | | |
|-----------------|-----------|-----------------|-------------------|
| report | Show/Hide | List Operations | Expand Operations |
| schedule | Show/Hide | List Operations | Expand Operations |
| setting | Show/Hide | List Operations | Expand Operations |
| system | Show/Hide | List Operations | Expand Operations |
| user | Show/Hide | List Operations | Expand Operations |

Using the API Dialog Box

Use the API dialog box to view and modify the messages to generate your API reports.

On clicking each of the parameters and the resource URL the API dialog box is displayed.

FIGURE 3 API Dialog Box

occurrence
Show/Hide | List Operations | Expand Operations

GET /occurrences Find all instances of the model matched by filter from the data source.

Response Class (Status 200)

Model | Model Schema

```

[
  {
    "timestamp": "2016-07-26",
    "status": 0,
    "id": 0,
    "scheduleId": 0
  }
]
```

Response Content Type application/json

Parameters

| Parameter | Value | Description | Parameter Type | Data Type |
|-----------|--|--|----------------|-----------|
| filter | <input style="width: 80%;" type="text"/> | Filter defining fields, where, include, order, offset, and limit | query | string |

Try it out!

TABLE 3 API Dialog Box

| Name | Description |
|-----------------------|--|
| Response Class | The Response interface of the API represents the response to a request. |
| Response Content Type | Content-type: application/json; designates the content to be in JSON format. This is the default type. |
| Parameters | |
| Parameter | Use the filter parameter to supply a dimension you want to filter on, followed by the filter expression. |
| Value | The Parameter Value contains the value to be included in the request. |
| Description | Auto displays the parameter description |
| Parameter Type | Lists the API parameter types that you can use in the path or query parameters for your backend API methods, and the types you can use as method return types or request body types. |
| Data Type | Lists the data types used in API parameters and notification message fields. |
| Try it out | Click on this icon to view the response body based on the parameters set. |
| Curl | Curl is a command line tool and library for transferring data with URL syntax. Use the curl command to simulate HTTP verbs such as HEAD, GET, POST, PUT and DELETE request calls to the API. |
| Request URL | Contains the URL of the response. |
| Response Body | The response interface represents the response to a request. |
| Response Code | Contains the status code of the response. For example, 200 for a success. |
| Response Header | Contains the headers object associated with the response. |

Using SCI API Explorer

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- [Querying to Obtain Report IDs](#)..... 15
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After you log in to the SCI User Interface, you can access the SCI API Explorer to generate reports by using a variety of APIs that SCI supports.

This section provides steps on how to enter the SCI API Explorer to log in, after which the following tasks are shown:

- [Generating the Access Token](#) on page 13
 - [Querying to Obtain Report IDs](#) on page 15
 - [Querying to Obtain Section IDs of a Specific Report](#) on page 18
 - [Querying the Data Endpoint](#) on page 20
 - [Logging in to API Explorer Programmatically](#) on page 23
1. Enter `https://<your SCI IP address>/explorer` in your web browser.

2. Log in using the following default credentials:

Username: admin

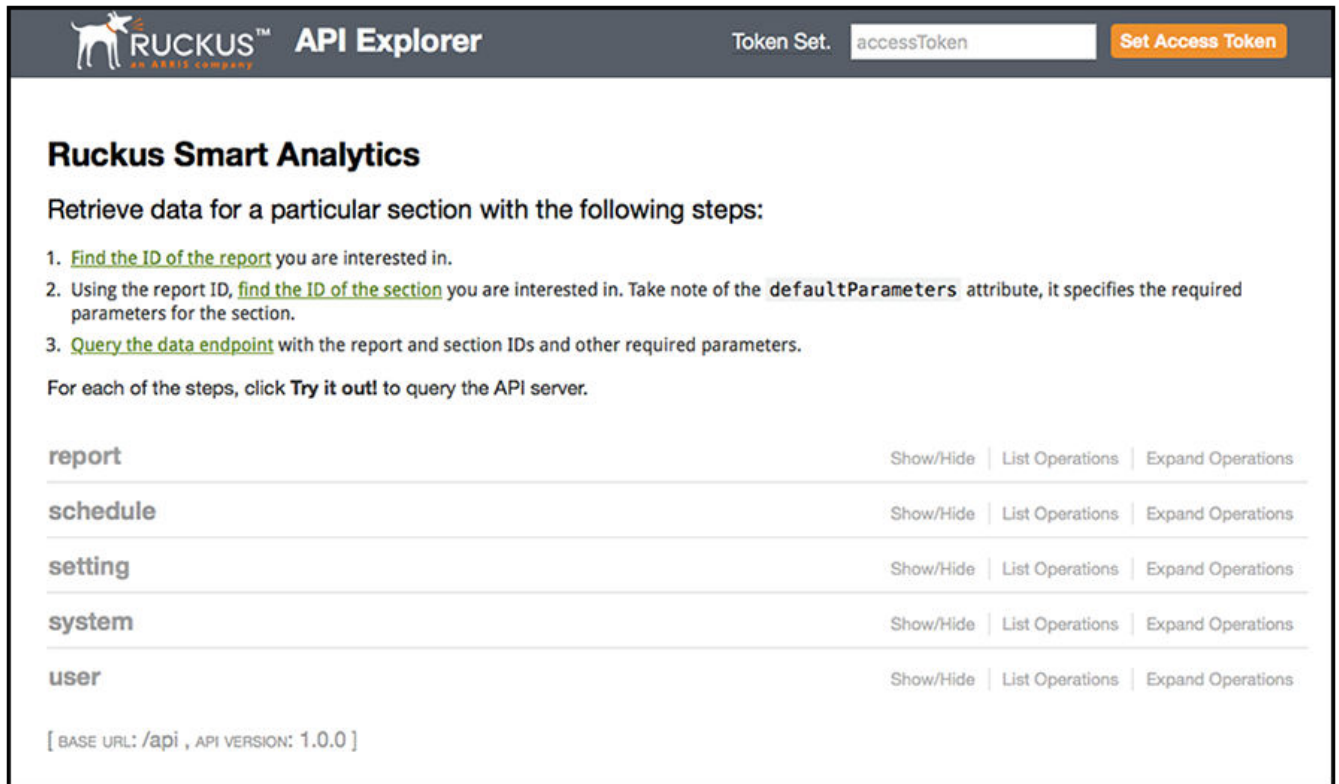
Password: password

NOTE

If you have changed the default password, please use the new password accordingly.

The following screen appears:

FIGURE 4 Ruckus Smart Analytics Screen when Entering API Explorer



This screen exposes all the APIs from the SCI core engine.

Generating the Access Token

Before you can access all the APIs, you need to generate an access token.

Follow the steps below to generate the API access token:

1. Click **User** on the screen shown above.

The screen expands as follows:

FIGURE 5 Clicking User

| USER | | Show/Hide | List Operations | Expand Operations |
|--------|--------------------------------|---|-----------------|-------------------|
| GET | /users | Find all instances of the model matched by filter from the data source. | | |
| PUT | /users | Update an existing model instance or insert a new one into the data source. | | |
| POST | /users | Create a new instance of the model and persist it into the data source. | | |
| GET | /users/{id} | Find a model instance by id from the data source. | | |
| HEAD | /users/{id} | Check whether a model instance exists in the data source. | | |
| PUT | /users/{id} | Update attributes for a model instance and persist it into the data source. | | |
| DELETE | /users/{id} | Delete a model instance by id from the data source. | | |
| GET | /users/{id}/accessTokens | Queries accessTokens of user. | | |
| POST | /users/{id}/accessTokens | Creates a new instance in accessTokens of this model. | | |
| DELETE | /users/{id}/accessTokens | Deletes all accessTokens of this model. | | |
| GET | /users/{id}/accessTokens/{fk} | Find a related item by id for accessTokens. | | |
| PUT | /users/{id}/accessTokens/{fk} | Update a related item by id for accessTokens. | | |
| DELETE | /users/{id}/accessTokens/{fk} | Delete a related item by id for accessTokens. | | |
| GET | /users/{id}/accessTokens/count | Counts accessTokens of user. | | |
| GET | /users/{id}/exists | Check whether a model instance exists in the data source. | | |
| GET | /users/change-stream | Create a change stream. | | |
| POST | /users/change-stream | Create a change stream. | | |
| GET | /users/confirm | Confirm a user registration with email verification token. | | |
| GET | /users/count | Count instances of the model matched by where from the data source. | | |
| GET | /users/findOne | Find first instance of the model matched by filter from the data source. | | |
| POST | /users/login | Login a user with username/email and password. | | |

2. Click on POST /users/login on the screen shown above.

- In the **credentials** section, enter the user credentials you used to log into the user interface, which, by default, are:
Username: admin
Password: password
Input the string in the format **{"username":"admin", "password":"password"}** as shown below:

FIGURE 6 Credentials

The screenshot shows the 'Parameters' section of an API Explorer. The 'Response Content Type' is set to 'application/json'. A table lists parameters:

| Parameter | Value | Description | Parameter Type | Data Type |
|--------------------|---|---|----------------|----------------------------|
| credentials | <code>{"username":"admin", "password":"admin"}</code> | | body | Model Model Schema {} |
| include | | Related objects to include in the response. See the description of return value for more details. | query | string |

Buttons at the bottom: 'Try it out!' and 'Hide Response'.

- Click the **Try it out!** tab in the Credentials section.
The access code you need is generated in the Response body of the curl script, as displayed below:

FIGURE 7 Access Token

The screenshot shows the 'Curl' section with the following command:

```
curl -X POST --header "Content-Type: application/json" --header "Accept: application/json" -d "{\"username\":\"rsa\", \"password\":\"password\"}"
```

The 'Request URL' is:

```
https://rsa-staging.ruckuslbs.com/api/users/login?access_token=Jn4mgkN18dIEFAAR4nvtwGFJ6KuCedGTxZ5uZFnSS0ZdLFJ3gApGbWj3
```

The 'Response Body' is:

```
{  
  "id": "tn33XDf40CsAiWmP0hXUu3I1KNUTWtUVlf8MJ9aUwmoIZTziimahD9GnvLD0RbTb",  
  "ttl": 1209600,  
  "created": "2016-07-21T02:39:03.265Z",  
  "userId": 1  
}
```

- Copy this access token (*without the quotation marks*) and paste it in the **Set Access Token** field displayed at the top of the SCI user interface.

6. Click **Set Access Token**.

If successful, the "Token Set" string displays to the left of the space where you pasted in the token:

FIGURE 8 Token Set



NOTE

Now you can access all the API reports in the system. You might not get the whole report in the Response Body if it is a large amount of data. You can access the reports by using:

- A Request URL. Paste this URL in a web browser to access the reports.
- A curl script to SSH on to your machine and direct those reports to a desired location.

Querying to Obtain Report IDs

Each report in the SCI user interface is associated with a unique Report ID in the API. Each report consequently contains unique section IDs for each section within a report. This will also be shown in the following examples.

Follow the steps below to determine the list of IDs for each report.

1. Click **Report** on the Ruckus Smart Analytics screen.

You should then get a display that includes the following:

FIGURE 9 Display after clicking on Report

| report | | Show/Hide | List Operations | Expand Operations |
|--------|---------------------------------|-----------|-----------------|---|
| GET | /reports | | | Find all instances of the model matched by filter from the data source. |
| PUT | /reports | | | Update an existing model instance or insert a new one into the data source. |
| POST | /reports | | | Create a new instance of the model and persist it into the data source. |
| GET | /reports/{id} | | | Find a model instance by id from the data source. |
| HEAD | /reports/{id} | | | Check whether a model instance exists in the data source. |
| PUT | /reports/{id} | | | Update attributes for a model instance and persist it into the data source. |
| DELETE | /reports/{id} | | | Delete a model instance by id from the data source. |
| POST | /reports/{id}/download/{format} | | | |
| GET | /reports/{id}/exists | | | Check whether a model instance exists in the data source. |
| GET | /reports/{id}/facet | | | Fetches belongsTo relation facet. |
| GET | /reports/{id}/facet/data | | | |
| POST | /reports/{id}/facets/apmac | | | |

2. Click **GET/reports**.

You should then get a display such as the following:

FIGURE 10 GET/reports Response

GET /reports Find all instances of the model matched by filter from

Response Class (Status 200)

Model **Model Schema**

```
[
  {
    "title": "string",
    "urlSegmentName": "string",
    "filterDataSource": "string",
    "excludedFilters": [
      {}
    ],
  },
  "layout": [
    {}
  ]
}
```

Response Content Type

Parameters

| Parameter | Value | Description | Parameter Type | Data Type |
|-----------|----------------------|--|----------------|-----------|
| filter | <input type="text"/> | Filter defining fields, where, include, order, offset, and limit | query | string |

3. Click **Try it out!**

Check the output in the Response Body. The following is a portion of that output:

```
[
  {
    "title": "Clients Report",
    "urlSegmentName": "clients",
    "filterDataSource": "binnedSessions",
    "excludedFilters": null,
    "layout": [
      {
        "desiredWidth": "full",
        "layout": [
          {
            "section": 12,
            "desiredWidth": "half"
          },
          {
            "section": 13,
            "desiredWidth": "half"
          }
        ]
      },
      {
        "desiredWidth": "full",
        "section": 14
      },
      {
        "desiredWidth": "full",
        "section": 15
      },
      {
        "desiredWidth": "full",
        "section": 16
      }
    ],
    "headers": [
      "reportFilter",
      "periodButton",
      "savedFilters",
      "downloadButton"
    ],
    "routeParameters": null,
    "id": 1,
    "facetId": null
  },
]
```

The code block shown above is for the "Clients Report," as you can see by the title in the first line of the code block. The Report ID is 1, which you can see near the end of the code block. The ID is always shown at the *end* of the corresponding report. Similarly, you can scroll through the output in the Response Body to obtain all the report IDs. For example, you will find that "Network Report" is ID 2.

Querying to Obtain Section IDs of a Specific Report

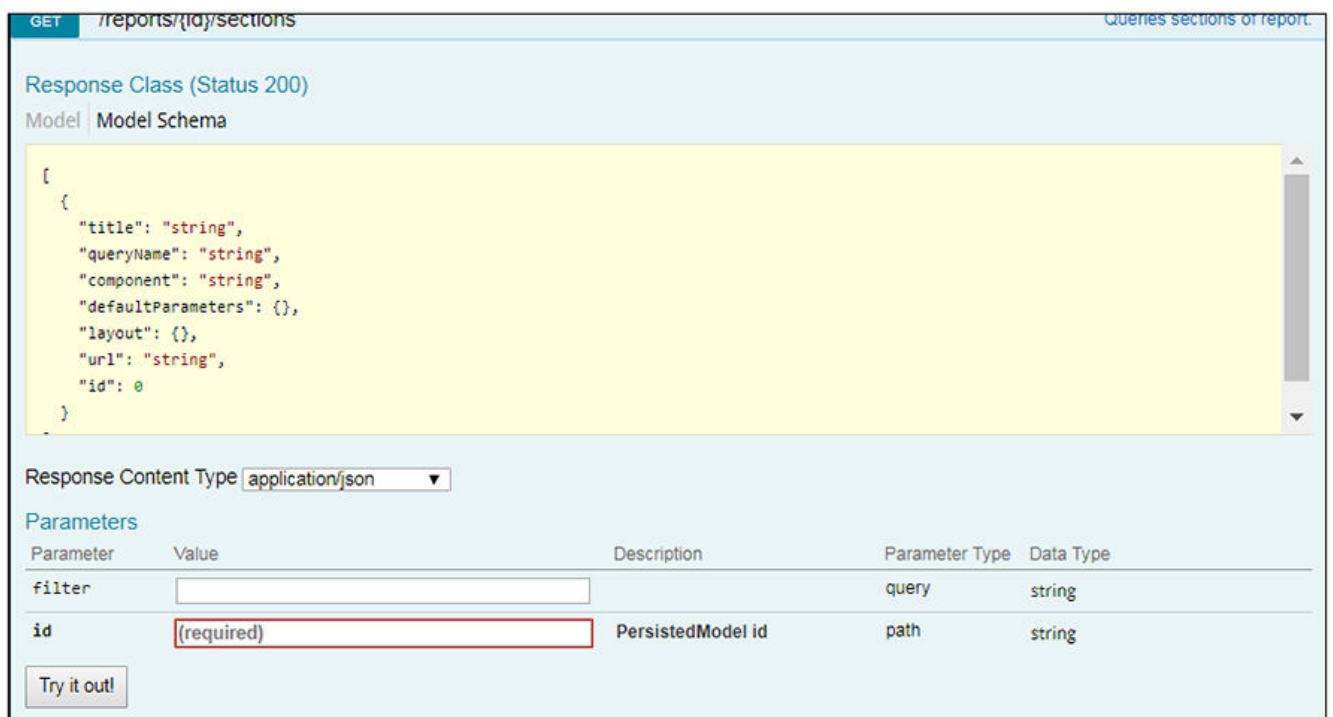
Each report in SCI contains multiple sections. Once you know the report IDs, you can obtain the names of each section within a report and their corresponding, unique section IDs.

Follow these steps to obtain the section titles and corresponding section IDs for all sections in a given report.

1. Once you know the ID of the report you want, click **GET/reports/{id}/sections**.

The following is displayed.

FIGURE 11 Display from clicking GET/reports/{id}/sections



2. Enter the Report ID in the "id" field. For example, for the Clients Report, enter an ID of 1.

3. Click **Try it out!**

A portion of the Response Body output is shown below:

```
[
  {
    "title": "Overview",
    "queryName": "overview",
    "component": "ReportOverview",
    "defaultParameters": {
      "granularity": "all"
    },
    "layout": {
      "width": "half",
      "widgetTheme": "blue"
    },
    "url": null,
    "id": 12
  },
  {
    "title": "Top 10 Unique Clients by Traffic",
    "queryName": "topChart",
    "component": "BarChart",
    "defaultParameters": {
      "granularity": "all",
      "metric": "traffic"
    },
    "layout": {
      "width": "half",
      "headers": [
        {
          "component": "SelectFilter",
          "name": "metric",
          "options": {
            "traffic": "User Traffic",
            "rxBytes": "Rx User",
            "txBytes": "Tx User"
          }
        }
      ]
    },
    "format": "bytesFormat",
    "colors": [
      "#5BA1E0",
      "#5BA1E0",
      "#5BA1E0",
      "#76CEF5",
      "#76CEF5",
      "#76CEF5",
      "#D9E6F5",
      "#D9E6F5",
      "#D9E6F5",
      "#D9E6F5"
    ],
    "drillDownRoute": "/report/client/${x}"
  },
  {
    "url": null,
    "id": 13
  },
],
```

The code block shown above is for the sections of the "Clients Report." The first segment of the Response Body above shows the title of "Overview." If you scroll down to the end of that segment, you see that the ID for that section is 12. The ID of a section is always shown at the *end* of the corresponding segment for the section. The ID for the next section shown above, "Top 10 Unique Clients by Traffic", is 13. You can scroll through the output in the Response Body to obtain all the section IDs for the report you have identified.

Querying the Data Endpoint

Once you know the Report ID and the Section ID you are interested in, you can query for specific data.

Follow these steps to query for specific data based on the Report ID and Section IDs.

1. Click **POST/reports/{id}/sections/{sectionId}/data**.

The following parameters are displayed.

FIGURE 12 Display from clicking POST/reports/{id}/sections/{sectionId}/data

Response Content Type: application/json

Parameters

| Parameter | Value | Description | Parameter Type | Data Type |
|-------------------|------------|--|----------------|-----------|
| id | (required) | Report Id | path | string |
| sectionId | (required) | Section Id | path | string |
| start | (required) | 2016-04-06T16:04:46+00:00 | formData | string |
| end | (required) | 2016-04-07T16:04:46+00:00 | formData | string |
| granularity | | fifteen_minute, thirty_minute, hour, day | formData | string |
| metric | | Specifying the metric to sort | formData | string |
| filter | | Body object for aggregation, see implementation notes for an example | formData | string |
| limit | | limit number of records, etc, 10 | formData | double |
| pagingIdentifiers | | Query results will return a pagingIdentifiers JSON object that can be reused in the next query for pagination. | formData | string |

Try it out!

2. Fill out the required fields, using the Report ID and Section ID that you have already determined from the previous queries described above.

To determine if the metric parameter is required, look at the Response Body from for the section you are interested in, and check if "metric" is found under "defaultParameters". If it is, enter one of the values listed under "options." The figure below illustrates this scenario.

FIGURE 13 Response Body that indicates a Metric is required

```
Response Body
{
  "title": "Top 10 Unique Clients by Traffic",
  "queryName": "clients/topChart",
  "component": "BarChart",
  "defaultParameters": {
    "granularity": "all",
    "metric": "traffic"
  },
  "layout": {
    "width": "half",
    "headers": [
      {
        "component": "SelectFilter",
        "name": "metric",
        "options": {
          "traffic": "Rx + Tx",
          "rxBytes": "Rx",
          "txBytes": "Tx"
        }
      }
    ]
  },
  "formatMetadata": {
```

- You can also use the optional parameters. An example would be filtering on an AP MAC address of: 00:AA:BB:CC:44:D0. To do this, you would enter this exact string shown below into the filter field in the screen above: {"type":"or", "fields":[{"type":"selector", "dimension":"apMac", "value":"00:AA:BB:CC:44:D0"}]}

If you want to generate a report using this filter, the Report ID of 1 (Clients Report), Section ID 12 (Overview section of Clients Report), and a time interval of your choice, the parameters once you have entered the information would appear as follows:

FIGURE 14 Parameter Example for Querying Data on a Specific Section ID

| Parameter | Value | Description | Parameter Type | Data Type |
|-------------------|---|--|----------------|-----------|
| id | 1 | Report Id | path | string |
| sectionId | 12 | Section Id | path | string |
| start | 2017-09-18T16:04:46+00:00 | 2016-04-06T16:04:46+00:00 | formData | string |
| end | 2017-09-19T16:04:46+00:00 | 2016-04-07T16:04:46+00:00 | formData | string |
| granularity | | fifteen_minute, thirty_minute, hour, day | formData | string |
| metric | | Specifying the metric to sort | formData | string |
| filter | {"type":"or", "fields":[{"type":"selector", "dimension":"apMac", "value":"00:AA:BB:CC:44:D0"}]} | Body object for aggregation, see implementation notes for an example | formData | string |
| limit | | limit number of records, etc, 10 | formData | double |
| pagingIdentifiers | | Query results will return a pagingIdentifiers JSON object that can be reused in the next query for pagination. | formData | string |

Try it out! [Hide Response](#)

Curl

```
curl -X POST --header "Content-Type: application/x-www-form-urlencoded" --header "Accept: application/json" -d "start=2017-09-18T16:04:46+00:00&end=2017-09-19T16:04:46+00:00&granularity=fifteen_minute&metric=&filter={%22type%3A%22or%22%2C%22fields%3A%5B%7B%22type%3A%22selector%22%2C%22dimension%3A%22apMac%22%2C%22value%3A%2200%3A%22AA%3A%22BB%3A%22CC%3A%2244%3A%22D0%22%7D%5D%7D%7D"
```

Other values you can use for dimensions in the "filter" string are shown below:

TABLE 4 Dimensions to use in filter string parameter

| Dimension portion of filter string | Value to use for Dimension |
|------------------------------------|----------------------------|
| System Name | "system" |
| Controller MAC | "ctrlMac" |
| Controller Name | "ctrlName" |
| Controller Serial | "ctrlSerial" |
| Zone | "zoneName" |
| AP Group | "apGroup" |
| AP MAC | "apMAC" |
| AP Name | "apName" |
| AP Serial | "apSerial" |
| SSID | "ssid" |
| Radio | "radio" |

TABLE 4 Dimensions to use in filter string parameter (continued)

| Dimension portion of filter string | Value to use for Dimension |
|------------------------------------|----------------------------|
| Session Type | "sessionType" |

4. **Click Try it out!**

The data output is displayed in the Response Body.

Logging in to API Explorer Programmatically

You can log in using the curl command for POST /users/login. Ensure you use the -k option in the curl command.

The response to the call will contain a token that you can use in subsequent calls.

In subsequent calls, you can pass this token as a header "Authorization:<token>".

The following example shows how to query section 28 for report ID 7 programmatically using the curl command.

```
curl -k -X POST --header "Content-Type: application/x-www-form-urlencoded" --header "Authorization: <your-  
auth-token>" --header "Accept:  
application/json" -d "start=2016-12-13T20%3A30%3A46%2B00%3A00&end=2016-12-13T20%3A45%3A46%2B00%3A00"  
"https://<your-SCI-I  
P>/api/reports/7/sections/28/data"
```



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