ThreatQuotient



ThreatQ SDK User Guide

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Introduction

The purpose of this guide is to provide some basic examples for using the ThreatQ SDK.

Installing Pip

Before you install the SDK, you must first install Pip. If you have not already installed Pip on your system, open a terminal window and run the following command:

sudo easy install pip



Pip installation is not required on a Windows OS.

Upon success, you should see output similar the following:

```
Searching for pip

Best match: pip 8.0.2

Adding pip 8.0.2 to easy-install.pth file

Installing pip script to /usr/local/bin

Installing pip2.7 script to /usr/local/bin

Installing pip2 script to /usr/local/bin

Using /usr/local/lib/python2.7/site-packages

Processing dependencies for pip

Finished processing dependencies for pip
```

Installing the ThreatQ SDK on a Mac OS

After you install Pip, as described in <u>Installing Pip</u>, complete the following steps to install the ThreatQ SDK.



- 1. Open a terminal window.
- Create a directory called ~/.pip/ and create a file in that directory called pip.conf.Run the following command:

```
mkdir ~/.pip; touch ~/.pip/pip.conf
```

3. Open the **pip.conf** file in a text editor, by running the following command:

```
open -t pip.conf
```

4. In the text editor, enter the following:

```
[global]
index-url = https://system-updates.threatq.com/pypi

extra-index-url = https://USER:PASSWORD@ex-
tensions.threatq.com/threatq/integrations
https://USER:PASSWORD@extensions.threatq.com/threatq/sdk
```

- 5. Save and close pip.conf.
- 6. In the terminal window, run the following command:

```
sudo pip install threatqsdk
```

Installing the ThreatQ SDK on a Windows OS

Complete the following steps to install the ThreatQ SDK.

- 1. Open a Command Prompt window
- 2. Navigate to C:\Python27\Scripts:

```
cd c:\Python27\Scripts
```



3. Run the following command:

```
pip install -i https://[your yum/repo credentials]:[your
yum/repo password]@extensions.threatq.com/threatq/sdk
threatqsdk
```

Authentication

Before using the SDK, import the base Threatq object. This is required to interact with the ThreatQ API.

```
from threatqsdk import Threatq
```

Next, authenticate to the API, replacing all values with your specific details.



Working with Indicators

The following provides several examples of working with indicators.

- List All Indicators
- Search for a Specific Indicator
- Create a New Indicator
- Add an Attribute
- Update an Indicator's Status
- Get Related/Linked Objects
- Relate Link Objects
- Bulk Uploading Indicators

List All Indicators

To list all the indicators in ThreatQ, you can use the base tq.get() method to call API endpoints. This method makes an HTTP GET request, wrapping authentication against the API.

In this example, use the <code>/api/indicators</code> endpoint. This will return a <code>list</code> of <code>dict</code> representations of an indicator. If you print the first element of the <code>list</code>, you will see the following data returned by the API.

```
inds = tq.get('/api/indicators')
print(inds.get('data')[0])

{
    "last_detected_at": None,
    "hash": "51d81f46d7a042805c96e512a3e122ba",
    "status_id": 1,
```



```
"created_at": "2016-10-13 14:07:56",
"type_id": 10,
"updated_at": "2016-10-13 14:07:56",
"value": "1.234.62.166",
"id": 1,
"class": "network"
}
```

Search for a Specific Indicator

To search for a specific indicator, the base tq.get() method accepts a params parameter where you can specify an indicator value. This returns the same dict representation of an indicator as above.



Create a New Indicator

To create an indicator, you must import the Indicator and Source objects.

```
from threatqsdk import Indicator, Source
```

Next, to create a basic indicator, set the required values:

- value
- type
- status

```
ind = Indicator(tq)
ind.set_value('example.com')
ind.set_type('FQDN')
ind.set_status('Review')
```

Finally, upload the indicator and receive the new indicator ID

```
iid = ind.upload(sources=Source('Test'))
```

Add an Attribute

To add an attribute key/value pair to the indicator you created above:

```
ind.add_attribute('Disposition', 'Safe', sources=Source
('Test'))
```

Update an Indicator's Status

To update an indicator's status, you can utilize the base tq.put() method to make an HTTP PUT request, wrapping authentication against the API. To modify an indicator's



status, you will need its indicator ID to use the /api/indicators/INDICATOR_ID endpoint.

In this example, you will modify the indicator you created above, changing its status from "Review" (set during creation) to "Active." This example will apply as long as <u>iid</u> is a valid indicator ID.

```
tq.put('/api/indicators/{}'.format(iid), data={'status': 'Act-
ive'})
```

Get Related/Linked Objects

To retrieve related or linked objects for an indicator, you can use the get_related_
objects() function. It takes the type of object (Indicator, Event, Adversary,
File, etc.) as its only argument.

Note: You will need to make sure you have previously imported the object first.

The get_related_object() function is also available to the Event, Adversary,
File, and Signature objects.

In this example, we have an Indicator object, ind, that we want to retrieve all of its related Indicator and Adversary objects. The result will be a list of Indicator and Adversary objects respectively.

```
rel_inds = ind.get_related_objects(Indicator)
rel_advs = ind.get_related_objects(Adversary)
```



Relate Link Objects

To relate or link an indicator with another object, you can use the relate_object() function. It takes a separate instance of an object (Indicator, Event, Adversary,
File, etc.) as its only argument.

The relate_object() function is also available to the Event, Adversary, File, and Signature objects.

In this example, we have two Indicator objects, ind_a and ind_b, that we want to relate or link together.

```
ind a.relate object(ind b)
```

Bulk Uploading Indicators

In most use-cases, you want to upload a large number of indicators at one time. To do this via the SDK, you can use the BulkIndicator object and tq.bulkup-loadindicators() method.

First, import the BulkIndicator:

```
from threatqsdk import BulkIndicator
```

Let's assume that you have a list of IOC data you want to parse and upload to ThreatQ. You must translate each into a BulkIndicator and then add them to a new list to be uploaded: bulk indicators.

First, create a new bulk indicators list:

```
bulk_indicators = []
```

Next, create a BulkIndicator object for each IOC we want to upload. The required values that need to be set are:



- ind_value
- ind_type
- ind_status

```
bi = BulkIndicator(tq)
bi.set_value(ind_value)
bi.set_type(ind_type)
bi.set_status(ind_status)
```

You can also add attributes and relate to other ThreatQ objects:

```
bi.add_attribute('Foo', 'Bar')
bi.relate_indicator('example.com', 'FQDN')
bi.relate_adversary(adversary_id)
bi.relate_event(event_id)
```

You would repeat/iterate the above over each item in your IOC list (for loop) and append each to bulk indicators:

```
bulk_indicators.append(bi)
```

Lastly, upload the bulk_indicators using the tq.bulkuploadindicators() method:

```
tq.bulkuploadindicators(bulk indicators, source='Test')
```



Working with Events

The following provides several examples of working with events.

- List All Indicators
- Search for a Specific Event
- Create a New Event

List All Events

To list all the events in ThreatQ, you can use the base tq.get() method against the /ap-i/events endpoint. This will return a list of dist representations of an event. If you print the first element of the list, you can see the data returned by the API.

```
events = tq.get('/api/events')
print(events.get('data')[0])

{
    "hash": "3ebe478a05e4a7981f94dfcfab31ee14",
    "description": "Desc for Internal Domain Controller Compromised",
    "title": "Internal Domain Controller Compromised",
    "created_at": "2016-10-21 11:43:37",
    "type_id": 5,
    "updated_at": "2016-10-21 11:43:37",
    "happened_at": "2016-10-21 11:43:35",
    "id": 2
}
```



Search for a Specific Event

To search for a specific event, pass the title to the params parameter. This will return the same dict representation of an event like above.

Create a New Event

To create an event, you must import the Event and Source objects.

```
from threatqsdk import Event, Source
```

Next, to create a basic event, set some required values:



- title
- type
- date

Optionally, you can also set a description.

```
event = Event(tq)
event.set_title('OMG MALWARE')
event.set_type('Incident')
event.set_date('2017-01-13 10:59:00')
event.set_desc('Foo')
```

Finally, upload the event and receive the new event ID

```
eid = event.upload(sources='Test')
```

To add an attribute key/value pair to the event we created above:

```
event.add attribute('Severity', 'High', sources='Test')
```



Working with Adversaries

The following provides several examples of working with adversaries.

- List All Adversaries
- Search for a Specific Adversary
- Create a New Adversary
- Add an Attribute

List All Adversaries

To list all the adversaries in ThreatQ, you can use the base tq.get method against the api/adversaries endpoint. This will return a list of dict representations of an adversary. If we print the first element of the list, we can see the data returned by the API.

```
adversaries = tq.get('/api/adversaries')
print(adversaries.get('data')[0])

{
    "updated_at": "2017-10-03 14:30:53",
    "touched_at": "2017-10-03 14:31:04",
    "created_at": "2017-10-03 14:30:53",
    "id": 2,
    "name": "Comment Panda"
}
```



Search for a Specific Adversary

To search for a specific adversary, pass the name to the params parameter. This will return the same dict representation of an adversary as above.

The SDK also has a search function for Adversary objects. Instead of returning the raw response from the API, the SDK will translate it to an Adversary object. Below, perform the same search as above, but instead of a dict object, we are now working with an Adversary object.

```
from threatqsdk import Adversary
adv = Adversary(tq)
aid = adv.search('PLA Unit 61398')
print aid
```



Create a New Adversary

To create an adversary, you must import the Adversary and Source objects.

```
from threatqsdk import Adversary, Source
```

Next, to create a basic adversary, set the required name attribute. You can also set a description.

```
adv = Adversary(tq)
adv.name = 'APT 99'
adv.description = 'Malicious attack group'
```

Finally, upload the adversary and receive the new adversary ID

```
aid = adv.upload(sources=Source('Test'))
```

Add an Attribute

To add an attribute key/value pair to the iadversary you created above

```
adv.add_attribute('Vertical', 'Hospitality', sources=Source
('Test'))
```



Working with Files

The following provides several examples of working with files.

- Upload a New File
- Parse and Import Indicators from a File

Upload a New File

To create a file, you must import the File and Source objects.

```
from threatqsdk import File, Source
```

Next, to create a basic file, set the required values:

- name
- ftype
- path

Optionally, you can also set a title.

```
file = File(tq)
file.name = 'my-intel-report'
file.ftype = 'Intelligence Report'
file.path = '~/report.pdf'
file.title = 'My Threat Report'
```

Finally, upload the file. The SDK will translate the API response and update the File object with the new file ID.

Note: This behavior differs from other objects.



```
file.upload(sources=Source('Test'))
print(file.fid
```

Parse and Import Indicators from a File

At times, files contain indicator values you may want to parse and add to your Threat Library. The SDK allows for this use case and only requires that a File be created and uploaded first before being parsed.

In this example, let's assume that a text file was uploaded and has a file ID of 2. To parse all the indicators, save them as *Active* and with the source *Test Source* The method below uses the default *Generic Text* parser.

```
file = File(tq)
file.fid = 2
file.parse_and_import('Test Source', status='Active')
```



Working with Signatures

The following provides an example of working with signatures.

Create a New Signature

Create a New Signature

To create a signature, you will first you will need to import the Signature and Source objects.

```
from threatqsdk import Signature, Source
```

Next, to create a basic signature, set the required values:

- value
- type
- status

```
signature_value = 'alert tcp $HOME_NET 666 -> 1.1.1.1 any
(msg:"MALWARE-BACKDOOR SatansBackdoor.2.0.Beta"; flow:to_cli-
ent,established; content:"Remote|3A| "; depth:11; nocase; con-
tent:"You are connected to me.|0D 0A|Remote|3A| Ready for
commands"; distance:0; nocase; metadata:ruleset community; ref-
erence:url,www.-
megasecurity.org/trojans/s/satanzbackdoor/SBD2.0b.html;
ref-
erence:url,www3.ca.com/securityadvisor/pest/pest.aspx?id=5260;
classtype:trojan-activity; sid:118; rev:12;)'
sig = Signature(tq)
```



```
sig.set_value(signature_value)
sig.set_type('Snort')
sig.set_status('Review')
```

Finally, upload the signature and receive the new signature ID

```
sid = sig.upload(sources=Source('Test'))
```



Threat Library Search

To perform a Threat Library Search you will first you will need to import the ThreatLibrary object.

```
from threatqsdk import ThreatLibrary
search = ThreatLibrary(tq) # tq is an instance of the Threatq
object
```

Next, you will need to decide whether you want to construct your own API query, or use a saved search name to execute a search. If you decide the former, you will need to understand the query format. The easiest way to learn about the format is to use the "Network" developer tools in your browser to analyze the searches that you make. Below is an example that will search for all objects from the source, 'Analyst', and has an attribute named, 'Confidence' with a value of 'High:

If you decide the latter, and want to use a Threat Library Saved Search/Collection, you first need to create the saved search in the Threat Library. In this example, we'll name the saved search/collection High Confidence Indicators. Second, you simply need to reference that name within your code, like so:

```
search.get_saved_search('High Confidence Indicators')
```

What the above snippet will do is fetch the saved search/collection, including the search query and other metadata surrounding the saved search/collection such as name, hash, etc.



Next, you will want to execute the actual search in order to get the results. The <code>execute()</code> method is a generator, meaning it yields incremental results. By default, the method yields one object at a time. You will need to iterate over the call to get the results, like so:

```
# If you used a custom query
for indicator in search.execute('indicators', custom_query-
y=query, page_limit=100):

# If you fetched a saved search
for indicator in search.execute('indicators', page_limit=100):
```

The above code tells the SDK to fetch all "indicators" based on the query, and limit the results to 100 items per request. You can change the actual object type by modifying "indicators" string to the name of the object you want.

Here is a full list of parameters that the execute () function supports:

- object type (str): The name of the object you want to fetch
- custom_query (dict): A custom query to use (if you aren't using a saved search) Optional
- page_limit (int): The number of items to return per-request (default: 1000)
- page_offset (int): The offset to start at (default: 0)
- max_results (int): The maximum amount of results to return (default: None [unlimited])
 - This is only necessary for a use-case where you may only need 'x' amount of results, max.
- yield_batches (bool): Determines whether to yield batches of indicators (by page limit). This forces the method to yield all the results per-request, rather than one at a time (default: False)



- fields (list): List of strings specifying which fields to return from the API (default: AII fields)
 - Using this field is optional, but will greatly reduce the memory footprint of your requests by requesting only the information you need.

Below is a full example of using the ThreatLibrary class to execute a saved search, transform the data, and upload it in batches to a given API:

In addition to executing saved searches, you can also create a named or unnamed saved search. The difference is, a named saved search will be available via the UI. An unnamed saved search will create a "hash" for the saved search, which will allow you to reference it via a URL. Though, it will not create a saved search in the UI.

You can create a saved search executing the <code>create_search()</code> method. Here is an example for creating a named saved search that looks for keywords:



```
from threatqsdk import ThreatLibrary
search = ThreatLibrary(tq) # tq is an instance of the Threatq
object
search.create_search(
   name='Ransomware Search'
   keywords=[
       'NotPetya',
       'CryptoLocker',
       'WannaCry'
]
```

You can then execute that newly created search by running the execute () function shown in the previous example.

Here is a full list of parameters that the create search() function supports:

- name (str): The name of the saved search Optional
- keywords (list): List of keywords to search for (OR logic) Optional
- api_query (dict): If you have a literal saved search API query that you'd built, you
 can specify that query here, to be saved Optional



Working with Operations

The following provides several examples of working with operations.

- Import the Operation Object
- List Enabled Operations and their Actions
- Perform an Operation Action

Import the Operation Object

To interact with Operations, you will first you will need to import the Operation object.

```
from threatqsdk import Operation
```

List Enabled Operations and their Actions

To list the enabled Operations, you can use the <code>list_from_tq()</code> function. This is a class method and will return a list of <code>Operation</code> objects.

```
ops = Operation.list_from_tq(tq)
```

To iterate over each resulting Operation and print their actions, you can run the following:

```
for o in ops:
    print(o.name)

for a in o.actions:
    print('{}: {}'.format(a['name'], a['description']))
    print '\n'
```

This will print something similar to:



```
passive_total
get_passive_dns: Retrieve Passive DNS associated with Indic-
ators
get_WHOIS: Get WHOIS
enrich: Enrichment
get_samples: Get Malware Samples
query_for_registered_domains: Searches WHOIS data by Email
Address to return all domains registered to that Email Address
vulners
search_CVE: Query CVE against Vulners DB
```

Perform an Operation Action

To perform a specific Operation action, first create a new instance of the Operation object with your intended Operation name (friendly_name) as the second argument. In this case, we will be leveraging the **PassiveTotal** Operation.

```
op = Operation(tq, 'passive_total')
```

Next, you can use the <code>execute()</code> function. It takes the following arguments:

- action name
- ThreatQ object ID
- ThreatQ object type

In this example, we are running the *Get WHOIS* (get_WHOIS) action against and *Indicator* of ID 43.

```
iid = 43
resp = op.execute('get_WHOIS', iid, 'indicator')
```



The execute () function will return the resulting data in JSON format.

```
{
    "indicators": [
        {
            "type": "Email Address",
            "value": "abuse@godaddy.com"
        },
        {
            "type": "FQDN",
            "value": "ns11.domaincontrol.com"
        },
        {
            "type": "FQDN",
            "value": "ns12.domaincontrol.com"
        },
        {
            "type": "FQDN",
            "value": "whois.godaddy.com"
        }
    ],
    "attributes": [
        {
            "name": "Registrant Contact Name",
            "value": "****** ******
        } ,
        {
            "name": "Registrar",
            "value": "GoDaddy.com, LLC"
        },
        {
```



```
"name": "Updated At",
        "value": "May 23 2017 11:52:46 AM "
    },
    {
        "name": "Registered Date",
        "value": "May 22 2014 05:11:26 PM "
    },
    {
        "name": "Expires At",
        "value": "May 22 2018 05:11:26 PM "
    }
],
"raw data": {
    "contactEmail": "abuse@godaddy.com",
    "whoisServer": "whois.godaddy.com",
    "name": "****** *******
    "billing": [],
    "nameServers": [
        "ns11.domaincontrol.com",
        "ns12.domaincontrol.com"
    ],
    "registered": "2014-05-22T17:11:26.000-0700",
    "lastLoadedAt": "2017-12-19T11:13:18.419-0800",
    "telephone": "N/A",
    "registryUpdatedAt": "2017-05-23T11:52:46.000-0700",
    "admin": [],
    "expiresAt": "2018-05-22T17:11:26.000-0700",
    "tech": [],
    "registrar": "GoDaddy.com, LLC",
    "domain": "aadroid.net",
```



```
"organization": "N/A",

"zone": [],

"registrant": {
        "name": "*************,
        "email": "abuse@godaddy.com"
}
}
```



Working with Feeds

The following provides several examples of working with feeds.

- Import the Feed Object
- Retrieve a Specific Feed by Name
- Retrieve a Specific Feed by ID
- Enable and Disable a Feed

Import the Feed Object

To interact with Incoming Feeds, you will first you will need to import the Feed object.

```
from threatqsdk import Feed
```

Retrieve a Specific Feed by Name

To retrieve the settings for a specific feed, querying by name, you will first need to create a new instance of a Feed object and use the by_name() function, which takes the feed name as its only parameter.

```
f = Feed(tq)
f.by_name('Bambenek Consulting - Murofet Master')
```

This will fill the properties of the Feed object you created (in the example above, f). Feed objects have the following properties:

- category
- gate_oauth2_client_id
- name



- · connector_definition_id
- updated_at
- is_active
- created_at
- namespace
- last_import_at
- last_import_count
- frequency
- tlp_id
- indicator_status_id
- category_id
- id
- custom_fields

Retrieve a Specific Feed by ID

Similar to above, if you want to query by feed ID instead of name, you will first need to create a new instance of a Feed object and use the $\overline{\texttt{by_id}}$ () function, which takes the feed ID as its only parameter.

```
f = Feed(tq)
f.by_id(1)
```

Enable and Disable a Feed

To enable a feed, you can use the enable() function.

```
f.enable()
```

Likewise, to disable a feed, you can use the disable() function.



f.disable()



Change Log

- Version 1.8.0
 - Added preliminary Python 3 support
 - Added dependency fixes
 - Threat Library Search replaces Advanced Search