Carbon Black Cloud Python API Documentation

Release 1.3.3

Carbon Black Developer Network

Aug 09, 2021

User Guide

Release v1.3.3.

The Carbon Black Cloud Python SDK provides an easy interface to connect with Carbon Black Cloud products, including Endpoint Standard, Audit and Remediation, and Enterprise EDR. Use this SDK to more easily query and manage your endpoints, manipulate data as Python objects, and harness the full power of Carbon Black Cloud APIs.

CHAPTER 1

Major Features

- **Supports the following Carbon Black Cloud Products with extensions for new features and products planned** Endpoint Standard, Audit and Remediation, and Enterprise EDR
- **Reduced Complexity** The SDK manages the differences among Carbon Black Cloud APIs behind a single, consistent Python interface. Spend less time learning specific API calls, and more time controlling your environment.
- **More Efficient Performance** A built-in caching layer makes repeated access to the same resource more efficient. Instead of making identical API requests repeatedly, the SDK caches the results of the request the first time, and references the cache when you make future requests for the resource. This reduces the time required to access the resource later.

CHAPTER 2

API Credentials

To use the SDK and access data in Carbon Black Cloud, you must set up API keys with the correct permissions. Different APIs have different permission requirements for use, which is explained in the Developer Network Authentication Guide.

The SDK manages your API credentials for you. There are multiple ways to supply the SDK with your API credentials, which is explained in *Authentication*.

CHAPTER 3

Getting Started

Get started with Carbon Black Cloud Python SDK here. For detailed information on the objects and methods exposed by Carbon Black Cloud Python SDK, see the full SDK Documentation below.

3.1 Installation

If you already have Python installed, skip to *Use Pip*.

3.1.1 Install Python

Carbon Black Cloud Python SDK is compatible with Python 3.6+. UNIX systems usually have Python installed by default; it will have to be installed on Windows systems separately.

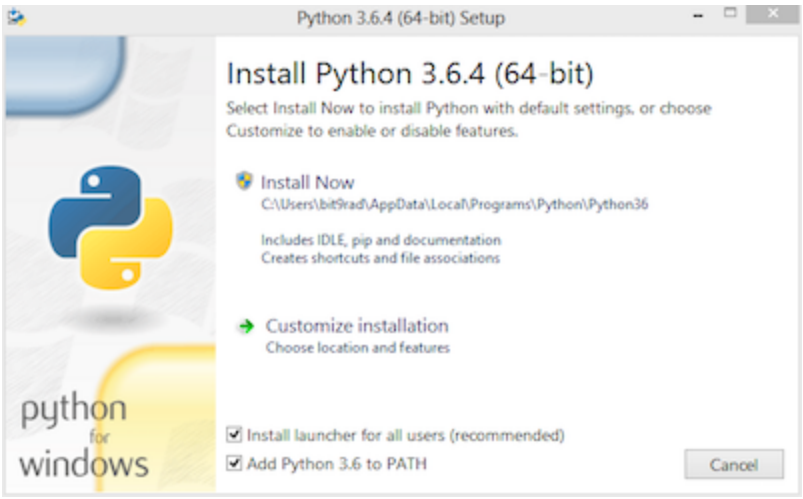
If you believe you have Python installed already, run the following two commands at a command prompt:

```
$ python --version
Python 3.7.5

$ pip --version
pip 20.2.3 from /usr/local/lib/python3.7/site-packages (python 3.7)
```

If "python –version" reports back a version of 3.6.x or higher, you're all set. If "pip" is not found, follow the instructions on this guide.

If you're on Windows, and Python is not installed yet, download the latest Python installer from python.org.



Ensure that the "Add Python to PATH" option is checked.

3.1.2 Use Pip

Once Python and Pip are installed, open a command prompt and type:

```
$ pip install carbon-black-cloud-sdk
```

This will download and install the latest version of the SDK from the Python PyPI packaging server.

3.1.3 Virtual Environments (optional)

If you are installing the SDK with the intent to contribute to it's development, it is recommended that you use virtual environments to manage multiple installations.

A virtual environment is a Python environment such that the Python interpreter, libraries and scripts installed into it are isolated from those installed in other virtual environments, and (by default) any libraries installed in a "system" Python, i.e., one which is installed as part of your operating system[1].

See the python.org virtual environment guide for more information.

3.1.4 Get Source Code

Carbon Black Cloud Python SDK is actively developed on GitHub and the code is available from the Carbon Black GitHub repository. The version of the SDK on GitHub reflects the latest development version.

To clone the latest version of the SDK repository from GitHub:

```
$ git clone git@github.com:carbonblack/carbon-black-cloud-sdk-python.git
```

Once you have a copy of the source, you can install it in "development" mode into your Python site-packages:

```
$ cd carbon-black-cloud-sdk-python
$ python setup.py develop
```

[1] https://docs.python.org/3/library/venv.html

This will link the version of carbon-black-cloud-sdk-python you cloned into your Python site-packages directory. Any changes you make to the cloned version of the SDK will be reflected in your local Python installation. This is a good choice if you are thinking of changing or further developing carbon-black-cloud-sdk-python.

3.2 Authentication

Carbon Black Cloud APIs require authentication to secure your data.

There are a few methods for authentication listed below. Every method requires an API Key. See the Developer Network Authentication Guide to learn how to generate an API Key.

The SDK only uses one API Key at a time. It is recommeded to create API Keys for specific actions, and use them as needed.

For example, if using the Platform Devices API to search for mission critical devices, and the Platform Live Response API to execute commands on those devices, generate one API Key with Custom Access Level with appropriate permissions. Store the Key with profile name, and reference the profile name when creating CBCloudAPI objects.

```
# import relevant modules
>>> from cbc_sdk.platform import Device
>>> from cbc_sdk import CBCloudAPI

# create Platform API object
>>> platform_api = CBCloudAPI(profile='platform')

# search for specific devices with Platform Devices API
>>> important_devs = platform_api.select(Device).set_target_priorities("MISSION_
↪CRITICAL")

# execute commands with Live Response API
>>> for device in important_devs:
...       lr_session = platform_api.live_response.request_session(device.id)
...       lr_session.create_process(r'cmd.exe /c "ping.exe 192.168.1.1"'))
...       lr_session.close()
```

For more examples on Live Response, check live-response

3.2.1 Authentication Methods

With a File:

Credentials may be stored in a `credentials.cbc` file. With support for multiple profiles, this method makes it easy to manage multiple API Keys for different products and permission levels.

```
>>> cbc_api = CBCloudAPI('~/.carbonblack/myfile.cbc', profile='default')
```

With Windows Registry:

Windows Registry is a secure option for storing API credentials on Windows systems.

```
>>> provider = RegistryCredentialProvider()
>>> cbc_api = CBCloudAPI(credential_provider=provider, profile='default')
```

With an External Credential Provider:

Credential Providers allow for custom methods of loading API credentials. This method requires you to write your own Credential Provider.

```
>>> provider = MyCredentialProvider()
>>> cbc_api = CBCloudAPI(credential_provider=provider, profile='default')
```

Not Recommended:

At Runtime:

Credentials may be passed into *CBCloudAPI()* via keyword parameters. This method should be used with caution, taking care to not share your API credentials when managing code with source control.

```
>>> cbc_api = CBCloudAPI(url='defense.conferdeploy.net', token=ABCD/1234,
...                      org_key='ABCDEFGH')
```

Not Recommended:

With Environmental Variables:

Environmental variables can be used for authentication, but pose a security risk. This method is not recommended unless absolutely necessary.

With a File

Credentials may be supplied in a file that resembles a Windows `.INI` file in structure, which allows for multiple "profiles" or sets of credentials to be supplied in a single file. The file format is backwards compatible with CBAPI, so older files can continue to be used. This is an example of a credentials file:

```
[default]
url=http://example.com
token=ABCDEFGHIJKLMNOPQRSTUVWX/12345678
org_key=A1B2C3D4
ssl_verify=false
ssl_verify_hostname=no
ssl_cert_file=foo.certs
ssl_force_tls_1_2=1
proxy=proxy.example
ignore_system_proxy=on
integration_name=MyScript/0.9.0

[production]
url=http://example.com
token=QRSTUVWXYZABCDEFGHIJKLMN/76543210
org_key=A1B2C3D4
ssl_verify=false
ssl_verify_hostname=no
ssl_cert_file=foo.certs
ssl_force_tls_1_2=1
proxy=proxy.example
ignore_system_proxy=on
integration_name=MyApplication/1.3.1
```

Individual profiles or sections are delimited in the file by placing their name within square brackets: `[profile_name]`. Within each section, individual credential values are supplied in a `keyword=value` format.

Unrecognized keywords are ignored.

By default, the CBC SDK looks for credentials files in the following locations:

- The `.carbonblack` subdirectory of the current directory of the running process.

- The `.carbonblack` subdirectory of the user's home directory.
- The `/etc/carbonblack` subdirectory on Unix, or the `C:\Windows\carbonblack` subdirectory on Windows.

Within each of these directories, the SDK first looks for the `credentials.cbc` file, then the `credentials.psc` file (the older name for the credentials file under CBAPI).

You can override the file search logic and specify the full pathname of the credentials file in the keyword parameter `credential_file` when creating the *CBCloudAPI* object.

In all cases, you will have to specify the name of the profile to be retrieved from the credentials file in the keyword parameter `profile` when creating the *CBCloudAPI* object.

Example:

```
>>> cbc_api = CBCloudAPI(credential_file='~/.carbonblack/myfile.cbc', profile='default
↪')
```

Note on File Security: It is recommended that the credentials file be secured properly on Unix. It should be owned by the user running the process, as should the directory containing it, and neither one should specify any file permissions for "group" or "other." In numeric terms, that means the file should have `400` or `600` permissions, and its containing directory should have `500` or `700` permissions. This is similar to securing configuration or key files for `ssh`. If these permissions are incorrect, a warning message will be logged; a future version of the CBC SDK will disallow access to files altogether if they do not have the correct permissions.

Credential files *cannot* be properly secured in this manner under Windows; if they are used in that environment, a warning message will be logged.

With Windows Registry

CBC SDK also provides the ability to use the Windows Registry to supply credentials, a method which is more secure on Windows than other methods.

N.B.: Presently, to use the Windows Registry, you must supply its credential provider as an "external" credential provider. A future version of the CBC SDK will move to using this as a default provider when running on Windows.

By default, registry entries are stored under the key `HKEY_CURRENT_USER\Software\VMware Carbon Black\Cloud Credentials`. Under this key, there may be multiple subkeys, each of which specifies a "profile" (as with credential files). Within these subkeys, the following named values may be specified:

*** Required**

Keyword	Value Type	Default
`url` *	`REG_SZ`	
`token` *	`REG_SZ`	
`org_key` *	`REG_SZ`	
`ssl_verify`	`REG_DWORD`	1
`ssl_verify_hostname`	`REG_DWORD`	1
`ignore_system_proxy`	`REG_DWORD`	0
`ssl_force_tls_1_2`	`REG_DWORD`	0
`ssl_cert_file`	`REG_SZ`	
`proxy`	`REG_SZ`	
`integration_name`	`REG_SZ`	

Unrecognized named values are ignored.

To use the Registry credential provider, create an instance of it, then pass the reference to that instance in the `credential_provider` keyword parameter when creating *CBCloudAPI*. As with credential files, the name of the profile to be retrieved from the Registry should be specified in the keyword parameter `profile`.

Example:

```
>>> provider = RegistryCredentialProvider()
>>> cbc_api = CBCloudAPI(credential_provider=provider, profile='default')
```

Advanced Usage: The parameters `keypath` and `userkey` to `RegistryCredentialProvider` may be used to control the exact location of the "base" registry key where the sections of credentials are located. The `keypath` parameter allows specification of the path from `HKEY_CURRENT_USER` where the base registry key is located. If `userkey`, which is `True` by default, is `False`, the path will be interpreted as being rooted at `HKEY_LOCAL_MACHINE` rather than `HKEY_CURRENT_USER`.

Example:

```
>>> provider = RegistryCredentialProvider('Software\\Contoso\\My CBC Application')
>>> cbc_api = CBCloudAPI(credential_provider=provider, profile='default')
```

Note the use of doubled backslashes to properly escape them under Python.

With an External Credential Provider

Credentials may also be supplied by writing a class that conforms to the `CredentialProvider` interface protocol. When creating *CBCloudAPI*, pass a reference to a `CredentialProvider` object in the `credential_provider` keyword parameter. Then pass the name of the profile you want to retrieve from the provider object using the keyword parameter `profile`.

Example:

```
>>> provider = MyCredentialProvider()
>>> cbc_api = CBCloudAPI(credential_provider=provider, profile='default')
```

Details of writing a credential provider may be found in the *Developing a Custom Credential Provider* document.

At Runtime

The credentials may be passed into the *CBCloudAPI* object when it is created via the keyword parameters `url`, `token`, `org_key`, and (optionally) `ssl_verify` and `integration_name`.

Example:

```
>>> api = CBCloudAPI(url='https://example.com', token='ABCDEFGHIJKLMNOPQRSTUVWX/
↪12345678',
...                   org_key='A1B2C3D4', ssl_verify=False, integration_name='MyScript/
↪1.0')
```

The `integration_name` may be specified even if using another credential provider. If specified as a parameter, this overrides any integration name specified by means of the credential provider.

With Environmental Variables

The credentials may be supplied to CBC SDK via the environment variables `CBC_URL`, `CBC_TOKEN`, `CBC_ORG_KEY`, and `CBC_SSL_VERIFY`. For backwards compatibility with CBAPI, the environment variables

`CBAPI_URL`, `CBAPI_TOKEN`, `CBAPI_ORG_KEY`, and `CBAPI_SSL_VERIFY` may also be used; if both are specified, the newer `CBC_xxx` environment variables override their corresponding `CBAPI_xxx` equivalents. To use the environment variables, they must be set before the application is run (at least `CBC_URL` or `CBAPI_URL`, and `CBC_TOKEN` or `CBAPI_TOKEN`), and the `credential_file` keyword parameter to *`CBCloudAPI`* must be either `None` or left unspecified. (The `profile` keyword parameter will be ignored.)

N.B.: Passing credentials via the environment can be insecure, and, if this method is used, a warning message to that effect will be generated in the log.

3.2.2 Explanation of API Credential Components

When supplying API credentials to the SDK *at runtime*, *with a file*, or *with Windows Registry*, the credentials include these components:

*** Required**

Keyword	Definition	Default
`url` *	The URL used to access the Carbon Black Cloud.	
`token` *	The access token to authenticate with. Same structure as `X-Auth-Token` defined in the Developer Network Authentication Guide. Derived from an API Key's Secret Key and API ID.	
`org_key` *	The organization key specifying which organization to work with.	
`ssl_verify`	A Boolean value (see below) indicating whether or not to validate the SSL connection.	`True`
`ssl_verify_hostname`	A Boolean value (see below) indicating whether or not to verify the host name of the server being connected to.	`True`
`ignore_system_proxy`	A Boolean value (see below). If this is `True`, any system proxy settings will be ignored in making the connection to the server.	`False`
`ssl_force_tls_1_2`	A Boolean value (see below). If this is `True`, the connection will be forced to use TLS 1.2 rather than any later version.	`False`
`ssl_cert_file`	The name of an optional certificate file used to validate the certificates of the SSL connection. If not specified, the standard system certificate verification will be used.	
`proxy`	If specified, this is the name of a proxy host to be used in making the connection.	
`integration_name`	The name of the integration to use these credentials. The string may optionally end with a slash character, followed by the integration's version number. Passed as part of the `User-Agent:` HTTP header on all requests made by the SDK.	

When supplying API credentials to the SDK *with environmental variables*, the credentials include these components:

Keyword	Legacy	Default
`CBC_URL`	`CBAPI_URL`	
`CBC_TOKEN`	`CBAPI_TOKEN`	
`CBC_ORG_KEY`	`CBAPI_ORG_KEY`	
`CBC_SSL_VERIFY`	`CBAPI_SSL_VERIFY`	`True`

Alternative keywords are available to maintain backwards compatibility with CBAPI.

Boolean Values

Boolean values are specified by using the strings `true`, `yes`, `on`, or `1` to represent a `True` value, or the strings `false`, `no`, `off`, or `0` to represent a `False` value. All of these are case-insensitive. Any other string value specified

will result in an error.

For example, to disable SSL connection validation, any of the following would work:

```
ssl_verify=False
ssl_verify=false
ssl_verify=No
ssl_verify=no
ssl_verify=Off
ssl_verify=off
ssl_verify=0
```

3.3 Getting Started with the Carbon Black Cloud Python SDK - "Hello CBC"

This document will help you get started with the Carbon Black Cloud Python SDK by installing it, configuring authentication for it, and executing a simple example program that makes one API call.

3.3.1 Installation

Make sure you are using Python 3. Use the command `pip install carbon-black-cloud-sdk` to install the SDK and all its dependencies. (In some environments, the correct command will be `pip3 install carbon-black-cloud-sdk` to use Python 3.)

You can also access the SDK in development mode by cloning the GitHub repository, and then executing `python setup.py develop` (in some environments, `python3 setup.py develop`) from the top-level directory. Setting your `PYTHONPATH` environment variable to the directory `[sdk]/src`, where `[sdk]` is the top-level directory of the SDK, will also work for these purposes. (On Windows, use `[sdk]\src`.)

See also the *Installation* section of this documentation for more information.

3.3.2 Authentication

In order to make use of the API, you will need an *API token,* which you will get from the Carbon Black Cloud UI. For the purposes of our example, we will need a custom key with the ability to list devices.

Log into the Carbon Black Cloud UI and go to `Settings > API Access`. Start by selecting `Access Levels` at the top of the screen and press `Add Access Level`. Fill in a name and description for your sample access level, keep `Copy permissions from` set to `None`, and, under the permission category `Device` and permission name `General information`, check the `Read` check box. Press `Save` to save and create the new access level.

Now select `API Keys` at the top of the screen and press `Add API Key`. Enter a name for the key, and, optionally, a description. For `Access Level type`, select `Custom`, and for `Custom Access Level`, select the access level you created above. Press `Save` to save and create the new API key. An `API Credentials` dialog will be displayed with the new API ID and secret key; this dialog may also be re-displayed at any time by finding the API key in the list, clicking the drop-down arrow under the `Actions` column, and selecting `API Credentials`.

We will use a credentials file to store the credential information by default. Create a directory named `.carbonblack` under your user home directory. (On Windows, this directory is generally `C:\Users\[username]`, where `[username]` is your user name.) Within this directory create a file `credentials.cbc` to store your credentials. Copy the following template to this new file:

```
[default]
url=
token=
org_key=
ssl_verify=True
```

Following the `url=` keyword, add the top-level URL you use to access the Carbon Black Cloud, including the `https://` prefix and the domain name, but without any of the path information following it.

Following the `token=` keyword, add the `API Secret Key` from the `API Credentials` dialog, followed by a forward slash (/) character, followed by the `API ID` from the `API Credentials` dialog. (The secret key is always 24 characters in length, and the API ID is always 10 characters in length.)

Following the `org_key=` keyword, add the organization key from your organization, which may be seen under the `Org Key:` heading at the top of the `API Keys` display under `Settings > API Access`. It is always 8 characters in length.

Save the completed `credentials.cbc` file, which should look like this *(example text only)*:

```
[default]
url=https://example.net
token=ABCDEFGHGIJKLMNOPQRSTUVWX/ABCDEFGHIJ
org_key=A1B2C3D4
ssl_verify=True
```

On UNIX systems, you must make sure that the `credentials.cbc` file is properly secured. The simplest commands for doing so are:

```
$ chmod 600 ~/.carbonblack/credentials.cbc
$ chmod 700 ~/.carbonblack
```

For further information, please see the *Authentication* section of the documentation, as well as the Authentication Guide on the Carbon Black Cloud Developer Network.

3.3.3 Running the Example

The example we will be running is `list_devices.py`, located in the `examples/platform` subdirectory of the GitHub repository. If you cloned the repository, change directory to `[sdk]/examples/platform`, where `[sdk]` is the top-level directory of the SDK. (On Windows, use `[sdk]\examples\platform`.) Alternately, you may view the current version of that script in "raw" mode in GitHub, and use your browser's `Save As` function to save the script locally. In that case, change directory to whichever directory you saved the script to.

Execute the script by using the command `python list_devices.py -q '1'` (in some environments, `python3 list_devices.py -q '1'`). If all is well, you will see a list of devices (endpoints) registered in your organization, showing their numeric ID, host name, IP address, and last checkin time.

You can change what devices are shown by modifying the query value supplied to the `-q` parameter, and also by using additional parameters to modify the search criteria. Execute the command `python list_devices.py --help` (in some environments, `python3 list_devices.py --help`) for a list of all possible command line parameters.

3.3.4 Inside the Example Script

Once the command-line arguments are parsed, we create a Carbon Black Cloud API object with a call to the helper function `get_cb_cloud_object()`. The standard `select()` method is used to create a query object that queries

for devices; the query string is passed to that object via the `where()` method, and other criteria are added using specific setters.

The query is an iterable object, and calling upon its iterator methods invokes the query, which, in this case, is the Search Devices API. The example script turns those results into an in-memory list, then iterates on that list, printing only certain properties of each retrieved Device object.

3.3.5 Calling the SDK Directly

Now we'll repeat this example, but using the Python command line directly without a script.

Access your Python interpreter with the `python` command (or `python3` if required) and type:

```
>>> from cbc_sdk.rest_api import CBCloudAPI
>>> from cbc_sdk.platform import Device
>>> cb = CBCloudAPI(profile='default')
```

This imports the necessary classes and creates an instance of the base `CBCloudAPI` object. By default, the file credentials provider is used. We set it to use the `default` profile in your `credentials.cbc` file, which you set up earlier.

N.B.: On Windows, a security warning message will be generated about file access to CBC SDK credentials being inherently insecure.

```
>>> query = cb.select(Device).where('1')
```

This creates a query object that searches for all devices (the '1' causes all devices to be matched, as in SQL).

```
>>> devices = list(query)
```

For convenience, we load the entirety of the query results into an in-memory list.

```
>>> for device in devices:
...     print(device.id, device.name, device.last_internal_ip_address, device.last_
↪contact_time)
...
```

Using a simple `for` loop, we print out the ID, host name, internal IP address, and last contact time from each returned device. Note that the contents of the list are `Device` objects, not dictionaries, so we access individual properties with the `object.property_name` syntax, rather than `object['property_name']`.

3.3.6 Setting the User-Agent

The SDK supports custom User-Agent's, which allow you to identify yourself when using the SDK to make API calls. The credential parameter `integration_name` is used for this. If you use a file to authenticate the SDK, this is how you could identify yourself:

```
[default]
url=http://example.com
token=ABCDEFGHIJKLMNOPQRSTUVWX/12345678
org_key=A1B2C3D4
integration_name=MyScript/0.9.0
```

See the *Authentication* documentation for more information about credentials.

3.4 Concepts

3.4.1 Platform Devices vs Endpoint Standard Devices

For most use cases, Platform Devices are sufficient to access information about devices and change that information. If you want to connect to a device using Live Response, then you must use Endpoint Standard Devices and a Live Response API Key.

```
# Device information is accessible with Platform Devices
>>> api = CBCloudAPI(profile='platform')
>>> platform_devices = api.select(platform.Device).set_os(["WINDOWS", "LINUX"])
>>> for device in platform_devices:
...   print(
      f'''
      Device ID: {device.id}
      Device Name: {device.name}

      ''')
Device ID: 1234
Device Name: Win10x64

Device ID: 5678
Device Name: UbuntuDev


# Live Response is accessible with Endpoint Standard Devices
>>> api = CBCloudAPI(profile='live_response')
>>> endpoint_standard_device = api.select(endpoint_standard.Device, 1234)
>>> endpoint_standard_device.lr_session()
url: /appservices/v6/orgs/{org_key}/liveresponse/sessions/428:1234 -> status: PENDING
[...]

For more examples on Live Response, check :doc:`live-response`
```

USB Devices

Note that `USBDevice` is distinct from either the Platform API `Device` or the Endpoint Standard `Device`. Access to USB devices is through the Endpoint Standard package `from cbc_sdk.endpoint_standard import` `from cbc_sdk.endpoint_standard`.

```
# USB device information is accessible with Endpoint Standard
>>> api = CBCloudAPI(profile='endpoint_standard')
>>> usb_devices = api.select(USBDevice).set_statuses(['APPROVED'])
>>> for usb in usb_devices:
...   print(f'''
            USB Device ID: {usb.id}
            USB Device: {usb.vendor_name} {usb.product_name}

            ''')
USB Device ID: 774
USB Device: SanDisk Ultra

USB Device ID: 778
USB Device: SanDisk Cruzer Mini
```

3.4.2 Queries

Generally, to retrieve information from your Carbon Black Cloud instance you will:

1. *Create a Query*
2. *Refine the Query*
3. *Execute the Query*

Create Queries with `CBCloudAPI.select()`

Data is retrieved from the Carbon Black Cloud with *`CBCloudAPI.select()`* statements. A `select()` statement creates a `query`, which can be further *refined with parameters or criteria*, and then *executed*.

```
# Create a query for devices
>>> device_query = api.select(platform.Device).where('avStatus:AV_ACTIVE')

# The query has not yet been executed
>>> type(device_query)
<class cbc_sdk.platform.devices.DeviceSearchQuery>
```

This query will search for Platform Devices with antivirus active.

Refine Queries with `where()`, `and_()`, and `or_()`

Queries can be refined during or after declaration with *`where()`*, *`and_()`*, and *`or_()`*.

```
# Create a query for events
>>> event_query = api.select(endpoint_standard.Event).where(hostName='Win10').and_
↪(ipAddress='10.0.0.1')

# Refine the query
>>> event_query.and_(applicationName='googleupdate.exe')
>>> event_query.and_(eventType='REGISTRY_ACCESS')
>>> event_query.and_(ownerNameExact='DevRel')
```

This query will search for Endpoint Standard Events created by the application `googleupdate.exe` accessing the registry on a device with a hostname containing `Win10`, an IP Address of `10.0.0.1`, and owned by `DevRel`.

Be Consistent When Refining Queries

All queries are of type *`QueryBuilder()`*, with support for either raw string-based queries , or keyword arguments.

```
# Equivalent queries
>>> string_query = api.select(platform.Device).where("avStatus:AV_ACTIVE")
>>> keyword_query = api.select(platform.Device).where(avStatus="AV_ACTIVE").
```

Queries must be consistent in their use of strings or keywords; do not mix strings and keywords.

```
# Not allowed
>>> mixed_query = api.select(platform.Device).where(avStatus='Win7x').and_(
↪"virtualMachine:true")
cbc_sdk.errors.ApiError: Cannot modify a structured query with a raw parameter
```

Execute a Query

A query is not executed on the server until it's accessed, either as an iterator (where it will generate results on demand as they're requested) or as a list (where it will retrieve the entire result set and save to a list).

```
# Create and Refine a query
>>> device_query = api.select(platform.Device).where('avStatus:AV_ACTIVE').set_os([
↪"WINDOWS"])

# Execute the query by accessing as a list
>>> matching_devices = [device for device in device_query]

>>> print(f"First matching device ID: {matching_devices[0].id}")
First matching device ID: 1234

# Or as an iterator
>>> for matching_device in device_query:
...   print(f"Matching device ID: {matching_device.id})
Matching device ID: 1234
Matching device ID: 5678
```

You can also call the Python built-in `len()` on this object to retrieve the total number of items matching the query.

```
# Retrieve total number of matching devices
>>> len(device_query)
2
```

In this example, the matching device ID's are accessed with `device.id`. If using Endpoint Standard Devices, the device ID's are accessed with `device.deviceId`.

Query Parameters vs Criteria

For queries, some Carbon Black Cloud APIs use `GET` requests with parameters, and some use `POST` requests with criteria.

Parameters

Parameters modify a query. When modifying a query with *`where()`*, *`and_()`*, and *`or_()`*, those modifications become query parameters when sent to Carbon Black Cloud.

```
>>> device_query = api.select(endpoint_standard.Device).where(hostName='Win7').and_
↪(ipAddress='10.0.0.1')
```

Executing this query results in an API call similar to `GET /integrationServices/v3/device?hostName='Win7'&ipAddress='10.0.0.1'`

Criteria

Criteria also modify a query, and can be used with or without parameters. When using CBC SDK, there are API-specific methods you can use to add criteria to queries.

```
# Create a query for alerts
>>> alert_query = api.select(cbc_sdk.Platform.Alert)

# Refine the query with parameters
>>> alert_query.where(alert_severity=9).or_(alert_severity=10)

# Refine the query with criteria
>>> alert_query.set_device_os(["MAC"]).set_device_os_versions(["10.14.6"])
```

Executing this query results in an API call to `POST /appservices/v6/orgs/{org_key}/alerts/_search` with this JSON Request Body:

```
{
  "query": "alert_severity:9 OR alert_severity:10",
  "criteria": {
    "device_os": ["MAC"],
    "device_os_version": ["10.14.6"]
  }
}
```

The query parameters are sent in `"query"`, and the criteria are sent in `"criteria"`.

Modules with Support for Criteria

Run

- *cbc_sdk.audit_remediation.base.RunQuery.device_ids()*
- *cbc_sdk.audit_remediation.base.RunQuery.device_types()*
- *cbc_sdk.audit_remediation.base.RunQuery.policy_id()*

Result and *Device Summary*

- *cbc_sdk.audit_remediation.base.ResultQuery.set_device_ids()*
- *cbc_sdk.audit_remediation.base.ResultQuery.set_device_names()*
- *cbc_sdk.audit_remediation.base.ResultQuery.set_device_os()*
- *cbc_sdk.audit_remediation.base.ResultQuery.set_policy_ids()*
- *cbc_sdk.audit_remediation.base.ResultQuery.set_policy_names()*
- cbc_sdk.audit_remediation.base.ResultQuery.set_status()

ResultFacet and *DeviceSummaryFacet*

- *cbc_sdk.audit_remediation.base.FacetQuery.set_device_ids()*
- *cbc_sdk.audit_remediation.base.FacetQuery.set_device_names()*
- *cbc_sdk.audit_remediation.base.FacetQuery.set_device_os()*
- *cbc_sdk.audit_remediation.base.FacetQuery.set_policy_ids()*
- *cbc_sdk.audit_remediation.base.FacetQuery.set_policy_names()*
- cbc_sdk.audit_remediation.base.FacetQuery.set_status()

USBDeviceApprovalQuery <cbc_sdk.endpoint_standard.usb_device_control.USBDeviceApprovalQuery

- *cbc_sdk.endpoint_standard.usb_device_control.USBDeviceApprovalQuery.set_device_ids()*
- *cbc_sdk.endpoint_standard.usb_device_control.USBDeviceApprovalQuery.set_product_names()*
- *cbc_sdk.endpoint_standard.usb_device_control.USBDeviceApprovalQuery.set_vendor_names()*

USBDeviceQuery <cbc_sdk.endpoint_standard.usb_device_control.USBDeviceQuery

- *cbc_sdk.endpoint_standard.usb_device_control.USBDeviceQuery.set_endpoint_names()*
- *cbc_sdk.endpoint_standard.usb_device_control.USBDeviceQuery.set_product_names()*
- *cbc_sdk.endpoint_standard.usb_device_control.USBDeviceQuery.set_serial_numbers()*
- *cbc_sdk.endpoint_standard.usb_device_control.USBDeviceQuery.set_statuses()*
- *cbc_sdk.endpoint_standard.usb_device_control.USBDeviceQuery.set_vendor_names()*

Alert

- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_categories()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_create_time()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_device_ids()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_device_names()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_device_os()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_device_os_versions()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_device_username()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_group_results()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_alert_ids()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_legacy_alert_ids()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_minimum_severity()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_policy_ids()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_policy_names()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_process_names()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_process_sha256()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_reputations()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_tags()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_target_priorities()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_threat_ids()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_types()*
- *cbc_sdk.platform.alerts.BaseAlertSearchQuery.set_workflows()*

WatchlistAlert

- *cbc_sdk.platform.alerts.WatchlistAlertSearchQuery.set_watchlist_ids()*
- *cbc_sdk.platform.alerts.WatchlistAlertSearchQuery.set_watchlist_names()*

CBAnalyticsAlert

- *cbc_sdk.platform.alerts.CBAnalyticsAlertSearchQuery.set_blocked_threat_categories()*
- *cbc_sdk.platform.alerts.CBAnalyticsAlertSearchQuery.set_device_locations()*
- *cbc_sdk.platform.alerts.CBAnalyticsAlertSearchQuery.set_kill_chain_statuses()*
- *cbc_sdk.platform.alerts.CBAnalyticsAlertSearchQuery.set_not_blocked_threat_categories(*
- *cbc_sdk.platform.alerts.CBAnalyticsAlertSearchQuery.set_policy_applied()*
- *cbc_sdk.platform.alerts.CBAnalyticsAlertSearchQuery.set_reason_code()*
- *cbc_sdk.platform.alerts.CBAnalyticsAlertSearchQuery.set_run_states()*
- *cbc_sdk.platform.alerts.CBAnalyticsAlertSearchQuery.set_sensor_actions()*
- *cbc_sdk.platform.alerts.CBAnalyticsAlertSearchQuery.set_threat_cause_vectors()*

`Event`

`Process`

Modules not yet Supported for Criteria

RunHistory

3.4.3 Asynchronous Queries

A number of queries allow for asynchronous mode of operation. Those utilize python futures and the request itself is performed in a separate worker thread. An internal thread pool is utilized to support multiple CBC queries executing in an asynchronous manner without blocking the main thread.

Execute an asynchronous query

Running asynchronous queries is done by invoking the `execute_async()` method, e.g:

```
>>> async_query = api.select(EnrichedEvent).where('process_name:chrome.exe').execute_
↪async()
```

The `execute_async()` method returns a python future object that can be later on waited for results.

Fetching asynchronous queries' results

Results from asynchronous queries can be retrieved by using the result() method since they are actually futures:

```
>>> print(async_query.result())
```

This would block the main thread until the query completes.

Modules with support for asynchronous queries

`Process`

`ProcessFacet`

`EnrichedEvent`

`EnrichedEventFacet`

`USBDeviceApprovalQuery`

`USBDeviceBlockQuery`

`USBDeviceQuery`

3.4.4 Facets

Facet search queries return statistical information indicating the relative weighting of the requested values as per the specified criteria. There are two types of criteria that can be set, one is the `range` type which is used to specify discrete values (integers or timestamps - specified both as seconds since epoch and also as ISO 8601 strings). The results are then grouped by occurence within the specified range. The other type is the `term` type which allow for one or more fields to use as a criteria on which to return weighted results.

Setting ranges

Ranges are configured via the `add_range()` method which accepts a dictionary of range settings or a list of range dictionaries:

```
>>> range = {
...                 "bucket_size": "+1DAY",
...                 "start": "2020-10-16T00:00:00Z",
...                 "end": "2020-11-16T00:00:00Z",
...                 "field": "device_timestamp"
...         }
>>> query = api.select(EnrichedEventFacet).where(process_pid=1000).add_range(range)
```

The range settings are as follows:

- `field` - the field to return the range for, should be a discrete one (integer or ISO 8601 timestamp)
- `start` - the value to begin grouping at
- `end` - the value to end grouping at
- `bucket_size`- how large of a bucket to group results in. If grouping an ISO 8601 property, use a string like '-3DAYS'

Multiple ranges can be configured per query by passing a list of range dictionaries.

Setting terms

Terms are configured via the `add_facet_field()` method:

```
>>> query = api.select(EnrichedEventFacet).where(process_pid=1000).add_facet_field(
↪"process_name")
```

The argument to add_facet_field method is the name of the field to be summarized.

Getting facet results

Facet results can be retrieved synchronously with the `.results` property, or asynchronously with the `.execute_async()` and `.result()` methods.

Create the query:

```
>>> event_facet_query = api.select(EventFacet).add_facet_field("event_type")
>>> event_facet_query.where(process_guid="WNEXFKQ7-00050603-0000066c-00000000-
↪1d6c9acb43e29bb")
>>> range = {
...                     "bucket_size": "+1DAY",
...                     "start": "2020-10-16T00:00:00Z",
...                     "end": "2020-11-16T00:00:00Z",
...                     "field": "device_timestamp"
...             }
>>> event_facet_query.add_range(range)
```

1. With the `.results` property:

```
>>> synchronous_results = event_facet_query.results
>>> print(synchronous_results)
EventFacet object, bound to https://defense-eap01.conferdeploy.net.
--------------------------------------------------------------------------------
↪-----
```

num_found: 16

processed_segments: 1

ranges: [{'start': '2020-10-16T00:00:00Z', 'end': '2020... terms: [{'values': [{'total': 14, 'id': 'modload', 'na...

total_segments: 1

2. With the `.execute_async()` and `.result()` methods:

```
>>> asynchronous_future = event_facet_query.execute_async()
>>> asynchronous_result = asynchronous_future.result()
>>> print(asynchronous_result)
EventFacet object, bound to https://defense-eap01.conferdeploy.net.
--------------------------------------------------------------------------------
↪-----
```

num_found: 16

processed_segments: 1

ranges: [{'start': '2020-10-16T00:00:00Z', 'end': '2020... terms: [{'values': [{'total': 14, 'id': 'modload', 'na...

total_segments: 1

The result for facet queries is a single object with two properties: `terms` and `ranges` that contain the facet search result weighted as per the criteria provided.

```
>>> print(synchronous_result.terms)
[{'values': [{'total': 14, 'id': 'modload', 'name': 'modload'}, {'total': 2, 'id':
↪'crossproc', 'name': 'crossproc'}], 'field': 'event_type'}]
>>> print(synchronous_result.ranges)
[{'start': '2020-10-16T00:00:00Z', 'end': '2020-11-16T00:00:00Z', 'bucket_size':
↪'+1DAY', 'field': 'device_timestamp', 'values': None}]
```

(continues on next page)

(continued from previous page)

Modules with support for facet searches

`ProcessFacet`

`EventFacet`

`EnrichedEventFacet`

3.4.5 Enriched Events

We can return the details for the enriched event for a specific event or we could return the details for all enriched events per alert.

Get details per event

```
>>> query = cb.select(EnrichedEvent).where(alert_category='THREAT')
>>> # get the first event returned by the query
>>> item = query[0]
>>> details = item.get_details()
>>> print(
    f'''
    Category: {details.alert_category}
    Type: {details.enriched_event_type}
    Alert Id: {details.alert_id}
    ''')
Category: ['THREAT'])
Type: CREATE_PROCESS
Alert Id: ['3F0D00A6']
```

Get details for all events per alert

```
# Alert information is accessible with Platform CBAnalyticsAlert
>>> api = CBCloudAPI(profile='platform')
>>> query = cb.select(CBAnalyticsAlert).set_create_time(range="-4w")
>>> # get the first alert returned by the query
>>> alert = query[0]
>>> for event in alert.get_events():
...   print(
      f'''
      Category: {event.alert_category}
      Type: {event.enriched_event_type}
      Alert Id: {event.alert_id}
      ''')
Category: ['OBSERVED']
Type: SYSTEM_API_CALL
Alert Id: ['BE084638']

Category: ['OBSERVED']
Type: NETWORK
Alert Id: ['BE084638']
```

3.5 Guides and Resources

Here we've listed a collection of tutorials, recorded demonstrations and other resources we think will be useful to get the most out of the Carbon Black Cloud Python SDK.

3.5.1 Recordings

Demonstrations are found on our YouTube channel.

A recent highlight shows how to schedule Audit and Remediation Tasks.

3.5.2 Guides

- device-control - Control the blocking of USB devices on endpoints.
- workload - Advanced protection purpose-built for securing modern workloads to reduce the attack surface and strengthen security posture.
- reputation-override - Manage reputation overrides for known applications, IT tools or certs.
- live-response - Live Response allows security operators to collect information and take action on remote endpoints in real time.
- unified-binary-store - The unified binary store (UBS) is responsible for storing all binaries and corresponding metadata for those binaries.
- users-grants - Work with users and access grants.
- watchlists-feeds-reports - Work with Enterprise EDR watchlists, feeds, reports, and Indicators of Compromise (IOCs).

3.5.3 Examples

The GitHub repository also has some example scripts which will help you get started using the SDK.

3.6 Porting Applications from CBAPI to Carbon Black Cloud SDK

This guide will help you migrate from CBAPI to the Carbon Black Cloud Python SDK.

Note: CBAPI applications using Carbon Black EDR (Response) or Carbon Black App Control (Protection) cannot be ported, as support for on-premise products is not present in the CBC SDK. Continue to use CBAPI for these applications.

3.6.1 Overview

CBC SDK has changes to package names, folder structure, and functions. Import statements will need to change for the packages, modules, and functions listed in this guide.

3.6.2 Package Name Changes

A number of packages have new name equivalents in the CBC SDK. Endpoint Standard and Enterprise EDR have had parts replaced to use the most current API routes.

Top-level Package Name Change

The top-level package name has changed from CBAPI to CBC SDK.

CBAPI Name (old)	CBC SDK Name (new)
cbapi.psc	cbc_sdk

Product Name Changes

Carbon Black Cloud product names have been updated in the SDK.

CBAPI Name (old)	CBC SDK Name (new)
cbapi.psc.defense	cbc_sdk.endpoint_standard
cbapi.psc.livequery	cbc_sdk.audit_remediation
cbapi.psc.threathunter	cbc_sdk.enterprise_edr
cbapi.psc	cbc_sdk.platform

Import statements will need to change:

```
# Endpoint Standard (Defense)

# CBAPI
from cbapi.psc.defense import Device, Event, Policy

# CBC SDK
from cbc_sdk.endpoint_standard import Device, Event, Policy
```

```
# Audit and Remediation (LiveQuery)

# CBAPI
from cbapi.psc.livequery import Run, RunHistory, Result, DeviceSummary

# CBC SDK
from cbc_sdk.audit_remediation import Run, RunHistory, Result, DeviceSummary
```

```
# Enterprise EDR (ThreatHunter)

# CBAPI
from cbapi.psc.threathunter import Feed, Report, Watchlist

# CBC SDK
from cbc_sdk.enterprise_edr import Feed, Report, Watchlist
```

Moved Packages and Models

Some modules have been moved to a more appropriate location.

CBAPI Name (old)	CBC SDK Name (new)
cbapi.example_helpers	cbc_sdk.helpers
cbapi.psc.alerts_query	cbc_sdk.platform
cbapi.psc.devices_query	cbc_sdk.platform

Import statements will need to change:

```
# Example Helpers

# CBAPI
from cbapi.example_helpers import build_cli_parser

# CBC SDK
from cbc_sdk.helpers import build_cli_parser
```

```
# Alerts

# CBAPI
from cbapi.psc.alerts_query import *

# CBC SDK
from cbc_sdk.platform import *
```

```
# Devices

# CBAPI
from cbapi.psc.devices_query import *

# CBC SDK
from cbc_sdk.platform import *
```

Replaced Modules

With the new Unified Platform Experience, Carbon Black Cloud APIs have been updated to provide a more consistent search experience. Platform search is replacing Endpoint Standard Event searching, and Enterprise EDR Process and Event searching.

For help beyond import statement changes, check out these resources:

- Unified Platform Experience: What to Expect
- Migration Guide: Carbon Black Cloud Events API
- Advanced Search Tips for Carbon Black Cloud Platform Search

Endpoint Standard

Endpoint Standard Events are being replaced with Enriched Events.

```
# Endpoint Standard Enriched Events

# CBAPI
from cbapi.psc.defense import Event

# CBC SDK
from cbc_sdk.endpoint_standard import EnrichedEvent
```

Enterprise EDR

Enterprise EDR Processes and Events have been removed and replaced with Platform Processes and Events.

```
# Enterprise EDR Process and Event

# CBAPI
from cbapi.psc.threathunter import Process, Event

# CBC SDK
from cbc_sdk.platform import Process, Event
```

3.6.3 Folder Structure Changes

The directory structure for the SDK has been refined compared to CBAPI.

- Addition of the Platform folder
- Removal of Response and Protection folders
- Consolidation of model objects and query objects
- Product-specific `rest_api.py` files replaced with package level `rest_api.py`
  - `from cbapi.psc.threathunter import CbThreatHunterAPI` becomes `from cbc_sdk import CBCloudAPI`, etc.

Directory Tree Changes

In general, each module's `models.py` and `query.py` files were combined into their respective `base.py` files.

CBAPI had the following abbreviated folder structure:

```
src
└── cbapi
    └── psc
        ├── defense
        │   ├── models.py
        │   │   ├── Device
        │   │   ├── Event
        │   │   └── Policy
        │   └── rest_api.py
        │       └── CbDefenseAPI
        ├── livequery
        │   ├── models.py
        │   │   ├── Run
        │   │   ├── RunHistory
        │   │   ├── Result
        │   │   ├── ResultFacet
        │   │   ├── DeviceSummary
        │   │   └── DeviceSummaryFacet
        │   └── rest_api.py
        │       └── CbLiveQueryAPI
        └── threathunter
            ├── models.py
            │   ├── Process
            │   ├── Event
            │   ├── Tree
            │   ├── Feed
            │   ├── Report
            │   ├── IOC
```

(continues on next page)

(continued from previous page)

```
│   ├── IOC_V2
│   ├── Watchlist
│   ├── ReportSeverity
│   ├── Binary
│   └── Downloads
└── rest_api.py
    └── CbThreatHunterAPI
```

Each product had a `models.py` and `rest_api.py` file.

CBC SDK has the following abbreviated folder structure:

```
src
└── cbc_sdk
    ├── audit_remediation
    │   └── base.py
    │       ├── Run
    │       ├── RunHistory
    │       ├── Result
    │       ├── ResultFacet
    │       ├── DeviceSummary
    │       └── DeviceSummaryFacet
    ├── endpoint_standard
    │   └── base.py
    │       ├── Device
    │       ├── Event
    │       ├── Policy
    │       ├── EnrichedEvent
    │       └── EnrichedEventFacet
    ├── enterprise_edr
    │   ├── base.py
    │   ├── threat_intelligence.py
    │   │   ├── Watchlist
    │   │   ├── Feed
    │   │   ├── Report
    │   │   ├── ReportSeverity
    │   │   ├── IOC
    │   │   └── IOC_V2
    │   └── ubs.py
    │       ├── Binary
    │       └── Downloads
    └── platform
    │   ├── alerts.py
    │   │   ├── WatchlistAlert
    │   │   ├── CBAnalyticsAlert
    │   │   ├── Workflow
    │   │   └── WorkflowStatus
    │   ├── processes.py
    │   │   ├── Process
    │   │   └── ProcessFacet
    │   ├── events.py
    │   │   ├── Event
    │   │   └── EventFacet
    │   └── devices.py
    │       └── Device
    └── rest_api.py
        └── CBCloudAPI.py
```

Now, each product has either a `base.py` file with all of its objects, or categorized files like `platform.alerts.py` and `platform.devices.py`. The package level `rest_api.py` replaced each product-specific `rest_api.py` file.

3.6.4 Function Changes

Helper Functions:

CBAPI Name (old)	CBC SDK Name (new)

`cbapi.example_helpers.get_cb_defense_object()`
`example_helpers.get_cb_livequery_object()`
`example_helpers.get_cb_threathunter_object()`
`example_helpers.get_cb_psc_object()`
	`cbapi.`
	`cbapi.`
	`cbapi.`
		`cbc_sdk.`
		`helpers.`
		`get_cb_cloud_object()`

Audit and Remediation Queries:

CBAPI Name (old)	CBC SDK Name (new)
`cb.query(sql_query)`	`cb.select(Run).where(sql=sql_query)`
`cb.query_history(query_string)`	`cb.select(RunHistory).where(query_string)`
`cb.query(sql_query).policy_ids()`	`cb.select(Run).policy_id()`

API Objects:

CBAPI Name (old)	CBC SDK Name (new)
`cbapi.psc.defense.CbDefenseAPI` `cbapi.psc.livequery.CbLiveQueryAPI` `cbapi.psc.threathunter.CbThreatHunterAPI` `cbapi.psc.CbPSCBaseAPI`	`cbc_sdk.` `CBCloudAPI`

3.7 Logging & Diagnostics

The cbc_sdk provides extensive logging facilities to track down issues communicating with the REST API and understand potential performance bottlenecks.

3.7.1 Enabling Logging

The cbc_sdk uses Python's standard `logging` module for logging. To enable debug logging for the cbc_sdk, you can do the following:

```
>>> import logging
>>> logging.basicConfig(level=logging.DEBUG)
```

All REST API calls, including the API endpoint, any data sent via POST or PUT, and the time it took for the call to complete:

```
>>> devices = [ device for device in cb.select(Device) ]
DEBUG:cbc_sdk.connection:Sending HTTP POST /appservices/v6/orgs/ABCD1234/devices/_
↪search with {"criteria": {}, "exclusions": {}, "query": ""}
DEBUG:urllib3.connectionpool:Starting new HTTPS connection (1): defense-eap01.
↪conferdeploy.net:443
```

(continues on next page)

(continued from previous page)

```
DEBUG:urllib3.connectionpool:https://defense-eap01.conferdeploy.net:443 "POST /
↪appservices/v6/orgs/ABCD1234/devices/_search HTTP/1.1" 200 None
DEBUG:cbc_sdk.connection:HTTP POST /appservices/v6/orgs/ABCD1234/devices/_search took␣
↪0.409s (response 200)
```

3.8 Testing

This document will provide information about how to run the functional tests for the CBC Python SDK in Linux and Windows platforms.

These instructions assume you already have the CBC SDK sources present locally. If not, they can be checked out from GitHub using the URL https://github.com/carbonblack/carbon-black-cloud-sdk-python; doing so will require you to either have Git installed or download the source tree packed as a zip archive from GitHub and then unarchive it.

3.8.1 Running the tests on Microsoft Windows

Install Python

From http://python.org, download the installer for the most recent Python 3.8 version (as of this writing, version 3.8.6 is the latest).

Fix the Execution PATH

Go to the Environment Variables dialog (System Control Panel or Properties page for My Computer/This PC, then select **Advanced system settings** and then the **Environment Variables** button). Ensure that the first two components of the user PATH environment variable are *%USERPROFILE%\AppData\Local\Programs\Python\Python38* and *%USERPROFILE%\AppData\Local\Programs\Python\Python38\Scripts*.

To test this, open a command window and use the command: `python --version`

It should run Python and show that you are running Python 3.8.

Install CBC Python SDK Requirements

From the top-level CBC SDK source directory, execute the following commands:

```
pip install -r requirements.txt
```

This will ensure that all required python modules are installed.

Execute the Functional Tests

From the top-level CBC SDK source directory, execute the following command:

```
pytest
```

The tests should return that they all completed successfully.

3.8.2 Running the tests on Linux

Carbon Black Cloud Python SDK provides a number of Dockerfiles inside the docker folder of the source root. Those contain the necessary instructions to build docker images containing a number of distributions with CBC Python SDK preinstalled in /app directory (relative to image root).

Build the docker image

Currently the following Dockerfiles are available:

- docker/amazon/Dockerfile - Amazon Linux (latest) image
- docker/ubuntu/Dockerfile - Ubuntu 18.04 image
- docker/rhel/Dockerfile - RHEL8 UBI image
- docker/suse/Dockerfile - OpenSUSE Leap (latest) image

Building the images should be done from the CBC SDK root directory by explicitly providing the path to the Dockerfile to be built, e.g for the RHEL one, the build command would be:

```
docker build -t cbc-sdk-python=rhel -f docker/rhel/Dockerfile .
```

By default, the docker Unix socket is owned by root user / docker group. In case you are running the build as a non-root user that isn't member of docker group, sudo should be used:

```
sudo docker build -t cbc-sdk-python-rhel -f docker/rhel/Dockerfile .
```

Run the container and execute the test

When the docker image builds, it should be started, e.g:

```
docker run -it cbc-sdk-python-rhel
```

This will run the container and spawn an interactive shell running in it. CBC Python SDK is installed in the /app directory, so pytest needs to be executed from there:

```
cd /app && pytest
```

3.9 Changelog

3.9.1 CBC SDK 1.3.3 - Released August 10, 2021

Bug Fixes:

- Dependency fix on schema library.

3.9.2 CBC SDK 1.3.2 - Released August 10, 2021

New Features:

- Added asynchronous query options to Live Response APIs.
- Added functionality for Watchlists, Reports, and Feeds to simplify developer interaction.

Updates:

- Added documentation on the mapping between permissions and Live Response commands.

Bug Fixes:

- Fixed an error using the STIX/TAXII example with Cabby.
- Fixed a potential infinite loop in getting detailed search results for enriched events and processes.
- Comparison now case-insensitive on UBS download.

3.9.3 CBC SDK 1.3.1 - Released June 15, 2021

New Features:

- Allow the SDK to accept a pre-configured `Session` object to be used for access, to get around unusual configuration requirements.

Bug Fixes:

- Fix functions in `Grant` object for adding a new access profile to a user access grant.

3.9.4 CBC SDK 1.3.0 - Released June 8, 2021

New Features

- Add User Management, Grants, Access Profiles, Permitted Roles
- Move Vulnerability models to Platform package in preparation for supporting Endpoints and Workloads
- Refactor Vulnerability models
  - `VulnerabilitySummary.get_org_vulnerability_summary` static function changed to `Vulnerability.OrgSummary` model with query class
  - `VulnerabilitySummary` model moved inside `Vulnerability` to `Vulnerability.AssetView` sub model
  - `OrganizationalVulnerability` and `Vulnerability` consolidated into a single model to include Carbon Black Cloud context and CVE information together
  - `Vulnerability(cb, CVE_ID)` returns Carbon Black Cloud context and CVE information
  - `DeviceVulnerability.get_vulnerability_summary_per_device` static function moved to `get_vulnerability_summary` function on `Device` model
  - `affected_assets(os_product_id)` function changed to `get_affected_assets()` function and no longer requires `os_product_id`
- Add dashboard export examples
- Live Response migrated from v3 to v6 (migration guide)
  - Live Response uses API Keys of type Custom
- Add function to get Enriched Events for Alert

Bug Fixes

- Fix validate query from dropping sort_by for Query class
- Fix the ability to set expiration for binary download URL
- Fix bug in helpers read_iocs functionality
- Fix install_sensor and bulk_install on ComputeResource to use id instead of uuid
- Fix DeviceSearchQuery from duplicating Device due to base index of 1

3.9.5 CBC SDK 1.2.3 - Released April 19, 2021

Bug Fixes

- Prevent alert query from retrieving past 10k limit

3.9.6 CBC SDK 1.2.3 - Released April 19, 2021

Bug Fixes

- Prevent alert query from retrieving past 10k limit

3.9.7 CBC SDK 1.2.2 - Released April 5, 2021

Bug Fixes

- Add support for full credential property loading through BaseAPI constructor

3.9.8 CBC SDK 1.2.1 - Released March 31, 2021

New Features

- Add *__str__* functions for Process.Tree and Process.Summary
- Add *get_details* for Process
- Add *set_max_rows* to DeviceQuery

Bug Fixes

- Modify base class for EnrichedEventQuery to Query from cbc_sdk.base to support entire feature set for searching
- Document fixes for changelog and Workload
- Fix *_spawn_new_workers* to correctly find active devices for Carbon Black Cloud

3.9.9 CBC SDK 1.2.0 - Released March 9, 2021

New Features

- VMware Carbon Black Cloud Workload support for managing workloads:
  - Vulnerability Assessment
  - Sensor Lifecycle Management
  - VM Workloads Search
- Add tutorial for Reputation Override

Bug Fixes

- Fix to initialization of ReputationOverride objects

3.9.10 CBC SDK 1.1.1 - Released February 2, 2021

New Features

- Add easy way to add single approvals and blocks
- Add Device Control Alerts
- Add deployment_type support to the Device model

Bug Fixes

- Fix error when updating iocs in a Report model
- Set max_retries to None to use Connection init logic for retries

3.9.11 CBC SDK 1.1.0 - Released January 27, 2021

New Features

- Reputation Overrides for Endpoint Standard with Enterprise EDR support coming soon
- Device Control for Endpoint Standard
- Live Query Templates/Scheduled Runs and Template History
- Add set_time_range for Alert query

Bug Fixes

- Refactored code base to reduce query inheritance complexity
- Limit Live Query results to 10k cap to prevent 400 Bad Request
- Add missing criteria for Live Query RunHistory to search on template ids
- Add missing args.orgkey to get_cb_cloud_object to prevent exception from being thrown
- Refactor add and update criteria to use CriteriaBuilderSupportMixin

3.9.12 CBC SDK 1.0.1 - Released December 17, 2020

Bug Fixes

- Fix readme links
- Few ReadTheDocs fixes

3.9.13 CBC SDK 1.0.0 - Released December 16, 2020

New Features

- Enriched Event searches for Endpoint Standard
- Aggregation search added for Enriched Event Query
- Add support for fetching additional details for an Enriched Event
- Facet query support for Enriched Events, Processes, and Process Events
- Addition of Python Futures to support asynchronous calls for customers who want to leverage that feature , while continuing to also provide the simplified experience which hides the multiple calls required.

- Added translation support for MISP threat intel to cbc_sdk threat intel example

Updates

- Improved information and extra calls for Audit and Remediation (Live Query)
- Great test coverage – create extensions and submit PRs with confidence
- Process and Process Event searches updated to latest APIs and moved to platform package
- Flake8 formatting applied to all areas of the code
- Converted old docstrings to use google format docstrings
- Migrated STIX/TAXII Threat Intel module from cbapi to cbc_sdk examples

Bug Fixes

- Fixed off by one error for process event pagination
- Added support for default profile using CBCloudAPI()
- Retry limit to Process Event search to prevent infinite loop

CHAPTER 4

Full SDK Documentation

See detailed information on the objects and methods exposed by the Carbon Black Cloud Python SDK here.

4.1 Audit and Remediation

4.1.1 Submodules

4.1.2 cbc_sdk.audit_remediation.base module

Model and Query Classes for Audit and Remediation

class DeviceSummary(*cb*, *initial_data*)

Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a DeviceSummary object in the Carbon Black server.

Variables

- ***id*** – The result's unique ID
- ***total_results*** – Number of results returned for this particular device
- ***device*** – Information associated with the device
- ***time_received*** – The time at which this result was received
- ***status*** – The result's status
- ***device_message*** – Placeholder
- ***metrics*** – Metrics associated with the device

Initialize a DeviceSummary object with initial_data.

class Metrics(*cb*, *initial_data*)

Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Metrics object in the Carbon Black server.

Initialize a DeviceSummary Metrics object with initial_data.

device = {}

device_message = None

id = None

metrics = []

metrics_
Returns the reified *DeviceSummary.Metrics* for this result.

primary_key = 'device_id'

status = None

time_received = None

total_results = None

urlobject = '/livequery/v1/orgs/{}/runs/{}/results/device_summaries/_search'

class DeviceSummaryFacet(*cb*, *initial_data*)
Bases: *cbc_sdk.audit_remediation.base.ResultFacet*

Represents a DeviceSummaryFacet object in the Carbon Black server.

Initialize a DeviceSummaryFacet object with initial_data.

urlobject = '/livequery/v1/orgs/{}/runs/{}/results/device_summaries/_facet'

class FacetQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.CriteriaBuilderSupportMixin*

Represents a query that receives facet information from a LiveQuery run.

Initialize a FacetQuery object.

facet_field(*field*)
Sets the facet fields to be received by this query.

Parameters **field** (*str or [str]*) – Field(s) to be received.

Returns FacetQuery that will receive field(s) facet_field.

Example:

```
>>> cb.select(ResultFacet).run_id(my_run).facet_field(["device.policy_name",
↪"device.os"])
```

run_id(*run_id*)
Sets the run ID to query results for.

Parameters **run_id** (*int*) – The run ID to retrieve results for.

Returns FacetQuery object with specified run_id.

Example: >>> cb.select(ResultFacet).run_id(my_run)

set_device_ids(*device_ids*)
Sets the device.id criteria filter.

Parameters **device_ids** (*[int]*) – Device IDs to filter on.

Returns The FacetQuery with specified device.id.

set_device_names(*device_names*)
Sets the device.name criteria filter.

Parameters **device_names** (*[str]*) – Device names to filter on.

Returns The FacetQuery with specified device.name.

set_device_os(*device_os*)
Sets the device.os criteria.

Parameters **device_os** (*[str]*) – Device OS's to filter on.

Returns The FacetQuery object with specified device_os.

Note: Device OS's can be one or more of ["WINDOWS", "MAC", "LINUX"].

---

set_policy_ids(*policy_ids*)
Sets the device.policy_id criteria.

Parameters **policy_ids** (*[int]*) – Device policy ID's to filter on.

Returns The FacetQuery object with specified policy_ids.

set_policy_names(*policy_names*)
Sets the device.policy_name criteria.

Parameters **policy_names** (*[str]*) – Device policy names to filter on.

Returns The FacetQuery object with specified policy_names.

set_statuses(*statuses*)
Sets the status criteria.

Parameters **statuses** (*[str]*) – Query statuses to filter on.

Returns The FacetQuery object with specified statuses.

MAX_RESULTS_LIMIT = 10000
Audit and Remediation Models

class Result(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Result object in the Carbon Black server.

Variables

- ***id*** – The result's unique ID
- ***device*** – The device associated with the result
- ***status*** – The result's status
- ***time_received*** – The time at which this result was received
- ***device_message*** – Placeholder
- ***fields*** – The fields returned by the backing osquery query
- ***metrics*** – Metrics associated with the result's host

Initialize a Result object with initial_data.

Device, Fields, and Metrics objects are attached using initial_data.

class Device(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Device object in the Carbon Black server.

Initialize a Device Result object with initial_data.

primary_key = 'id'

class Fields(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Fields object in the Carbon Black server.

Initialize a Result Fields object with initial_data.

class Metrics(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Metrics object in the Carbon Black server.

Initialize a Result Metrics object with initial_data.

device = {}

device_
Returns the reified *Result.Device* for this result.

device_message = None

fields = {}

fields_
Returns the reified *Result.Fields* for this result.

id = None

metrics = {}

metrics_
Returns the reified *Result.Metrics* for this result.

primary_key = 'id'

query_device_summaries()
Returns a ResultQuery for a DeviceSummary.

This represents the search for a summary of results from a single device of a *Run*.

query_device_summary_facets()
Returns a ResultQuery for a DeviceSummaryFacet.

This represents the search for a summary of a single device summary of a *Run*.

query_result_facets()
Returns a ResultQuery for a ResultFacet.

This represents the search for a summary of results from a single field of a *Run*.

status = None

time_received = None

urlobject = '/livequery/v1/orgs/{}/runs/{}/results/_search'

class ResultFacet(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a ResultFacet object in the Carbon Black server.

Variables ***field*** – The name of the field being summarized

Initialize a ResultFacet object with initial_data.

class Values(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Values object in the Carbon Black server.

Initialize a ResultFacet Values object with initial_data.

field = None

primary_key = 'field'

urlobject = '/livequery/v1/orgs/{}/runs/{}/results/_facet'

values = []

values_
Returns the reified *ResultFacet.Values* for this result.

class ResultQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.CriteriaBuilderSupportMixin*

Represents a query that retrieves results from a LiveQuery run.

Initialize a ResultQuery object.

run_id(*run_id*)
Sets the run ID to query results for.

Parameters **run_id** (*int*) – The run ID to retrieve results for.

Returns ResultQuery object with specified run_id.

Example:

```
>>> cb.select(Result).run_id(my_run)
```

set_device_ids(*device_ids*)
Sets the device.id criteria filter.

Parameters **device_ids** (*[int]*) – Device IDs to filter on.

Returns The ResultQuery with specified device.id.

set_device_names(*device_names*)
Sets the device.name criteria filter.

Parameters **device_names** (*[str]*) – Device names to filter on.

Returns The ResultQuery with specified device.name.

set_device_os(*device_os*)
Sets the device.os criteria.

Parameters **device_os** (*[str]*) – Device OS's to filter on.

Returns The ResultQuery object with specified device_os.

Note: Device OS's can be one or more of ["WINDOWS", "MAC", "LINUX"].

set_policy_ids(*policy_ids*)
Sets the device.policy_id criteria.

Parameters **policy_ids** ([int]) – Device policy ID's to filter on.

Returns The ResultQuery object with specified policy_ids.

set_policy_names(*policy_names*)
Sets the device.policy_name criteria.

Parameters **policy_names** ([str]) – Device policy names to filter on.

Returns The ResultQuery object with specified policy_names.

set_statuses(*statuses*)
Sets the status criteria.

Parameters **statuses** ([str]) – Query statuses to filter on.

Returns The ResultQuery object with specified statuses.

sort_by(*key*, *direction='ASC'*)
Sets the sorting behavior on a query's results.

Parameters

- **key** (*str*) – The key in the schema to sort by.
- **direction** (*str*) – The sort order, either "ASC" or "DESC".

Returns ResultQuery object with specified sorting key and order.

Example:

```
>>> cb.select(Result).run_id(my_run).where(username="foobar").sort_by("uid")
```

class Run(*cb*, *model_unique_id=None*, *initial_data=None*)
Bases: *cbc_sdk.base.NewBaseModel*

Represents a Run object in the Carbon Black server.

Variables

- ***org_key*** – The organization key for this run
- ***name*** – The name of the Audit and Remediation run
- ***id*** – The run's unique ID
- ***sql*** – The Audit and Remediation query
- ***created_by*** – The user or API id that created the run
- ***create_time*** – When this run was created
- ***status_update_time*** – When the status of this run was last updated
- ***timeout_time*** – The time at which the query will stop requesting results from any devices who have not responded
- ***cancellation_time*** – The time at which a user or API id cancelled the run
- ***cancelled_by*** – The user or API id that cancelled the run
- ***notify_on_finish*** – Whether or not to send an email on query completion
- ***active_org_devices*** – The number of devices active in the organization
- ***status*** – The run status

- ***device_filter*** – Any device filter rules associated with the run
- ***last_result_time*** – When the most recent result for this run was reported
- ***total_results*** – The number of results received
- ***match_count*** – The number of devices which received a match to the query
- ***no_match_count*** – The number of devices which did not received a match to the query
- ***error_count*** – The number of devices which errored
- ***not_supported_count*** – The number of devices which do not support a portion of the osquery
- ***cancelled_count*** – The number of devices which were cancelled before they ran the query
- ***not_started_count*** – The number of devices which have not run the query
- ***success_count*** – The number of devices which succeeded in running the query
- ***in_progress_count*** – The number of devices which were currently executing the query
- ***recommended_query_id*** – The id of a query from the recommendedation route
- ***template_id*** – The template that created the run

Initialize a Run object with initial_data.

active_org_devices = None

cancellation_time = None

cancelled_by = None

cancelled_count = None

create_time = None

created_by = None

delete()

Delete a query.

Returns True if the query was deleted successfully, False otherwise.

Return type (bool)

device_filter = {}

error_count = None

id = None

in_progress_count = None

last_result_time = None

match_count = None

name = None

no_match_count = None

not_started_count = None

not_supported_count = None

notify_on_finish = None

org_key = None

primary_key = 'id'

recommended_query_id = None

schedule = {}

sql = None

status = None

status_update_time = None

stop()
Stop a running query.

Returns True if query was stopped successfully, False otherwise.

Return type (bool)

Raises `ServerError` – If the server response cannot be parsed as JSON.

success_count = None

template_id = None

timeout_time = None

total_results = None

urlobject = '/livequery/v1/orgs/{}/runs'

urlobject_single = '/livequery/v1/orgs/{}/runs/{}'

class RunHistory(*cb*, *initial_data=None*)
Bases: *cbc_sdk.audit_remediation.base.Run*

Represents a RunHistory object in the Carbon Black server.

Initialize a RunHistory object with initial_data.

urlobject_history = '/livequery/v1/orgs/{}/runs/_search'

class RunHistoryQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.CriteriaBuilderSupportMixin*

Represents a query that retrieves historic LiveQuery runs.

Initialize a RunHistoryQuery object.

set_template_ids(*template_ids*)
Sets the template_id criteria filter.

Parameters **template_ids** (*[str]*) – Template IDs to filter on.

Returns The ResultQuery with specified template_id.

sort_by(*key*, *direction='ASC'*)
Sets the sorting behavior on a query's results.

Parameters

- **key** (*str*) – The key in the schema to sort by.
- **direction** (*str*) – The sort order, either "ASC" or "DESC".

Returns RunHistoryQuery object with specified sorting key and order.

Example:

```
>>> cb.select(Result).run_id(my_run).where(username="foobar").sort_by("uid")
```

class RunQuery(*doc_class*, *cb*)

Bases: *cbc_sdk.base.BaseQuery*

Represents a query that either creates or retrieves the status of a LiveQuery run.

Initialize a RunQuery object.

device_ids(*device_ids*)

Restricts the devices that this Audit and Remediation run is performed on to the given IDs.

Parameters **device_ids** (*[int]*) – Device IDs to perform the Run on.

Returns The RunQuery with specified device_ids.

device_types(*device_types*)

Restricts the devices that this Audit and Remediation run is performed on to the given OS.

Parameters **device_types** (*[str]*) – Device types to perform the Run on.

Returns The RunQuery object with specified device_types.

Note: Device type can be one of [“WINDOWS”, “MAC”, “LINUX”].

---

name(*name*)

Sets this Audit and Remediation run’s name.

If no name is explicitly set, the run is named after its SQL.

Parameters **name** (*str*) – The name for this Run.

Returns The RunQuery object with specified name.

notify_on_finish()

Sets the notify-on-finish flag on this Audit and Remediation run.

Returns The RunQuery object with *notify_on_finish* set to True.

policy_id(*policy_id*)

Restricts this Audit and Remediation run to the given policy ID.

Parameters **policy_id** (*int) or (list[int]*) – Policy ID to perform the Run on.

Returns The RunQuery object with specified policy_id.

schedule(*rrule*, *timezone*)

Sets a schedule for the SQL Query to recur

A schedule requires an rrule and a timezone to determine the time to rerun the SQL query. rrule is defined in RFC 2445 however only a subset of the functionality is supported here. If a Run is created with a schedule then the Run will contain a template_id to the corresponding template and a new Run will be created each time the schedule is met.

Example RRule:

DAILY

Field | Values |

——— | ——- |
BYSECOND | 0 |
BYMINUTE | 0 or 30 |
BYHOUR | 0 to 23 |

Daily at 1:30PM RRULE:FREQ=DAILY;BYHOUR=13;BYMINUTE=30;BYSECOND=0

WEEKLY

Field | Values |
——— | ——————————— |
BYSECOND | 0 |
BYMINUTE | 0 or 30 |
BYHOUR | 0 to 23 |
BYDAY | One or more: SU, MO, TU, WE, TH, FR, SA |

Monday and Friday of the week at 2:30 AM RRULE:FREQ=WEEKLY;BYDAY=MO,FR;BYHOUR=13;BYMINUTE

MONTHLY

Note: Either (BYDAY and BYSETPOS) or BYMONTHDAY is required.

Field | Values |
———— | ——————————— |
BYSECOND | 0 |
BYMINUTE | 0 or 30 |
BYHOUR | 0 to 23 |
BYDAY | One or more: SU, MO, TU, WE, TH, FR, SA |
BYSETPOS | -1, 1, 2, 3, 4 |
BYMONTHDAY | One or more: 1 to 28 |

Last Monday of the Month at 2:30 AM RRULE:FREQ=MONTHLY;BYDAY=MO;BYSETPOS=-1;BYHOUR=2;BYMINUTE=30;BYSECOND=0

1st and 15th of the Month at 2:30 AM RRULE:FREQ=DAILY;BYMONTHDAY=1,15;BYHOUR=2;BYMINUTE=30;

Parameters

- **rrule** (*string*) – A recurrence rule (RFC 2445) specifying the frequency and time at which the query will recur
- **timezone** (*string*) – The timezone database name to use as a base for the rrule

Returns The RunQuery with a recurrence schedule.

submit()

Submits this Audit and Remediation run.

Returns A new *Run* instance containing the run's status.

Raises ApiError – If the Run does not have SQL set, or if the Run has already been submitted.

where(*sql*)
Sets this Audit and Remediation run's underlying SQL.

Parameters **sql** (*str*) – The SQL to execute for the Run.

Returns The RunQuery object with specified sql.

class Template(*cb*, *model_unique_id=None*, *initial_data=None*)
Bases: *cbc_sdk.audit_remediation.base.Run*

Represents a Template object in the Carbon Black server.

Variables

- ***org_key*** – The organization key for this run
- ***name*** – The name of the Audit and Remediation run
- ***id*** – The run's unique ID
- ***sql*** – The Audit and Remediation query
- ***created_by*** – The user or API id that created the run
- ***create_time*** – When this run was created
- ***status_update_time*** – When the status of this run was last updated
- ***timeout_time*** – The time at which the query will stop requesting results from any devices who have not responded
- ***cancellation_time*** – The time at which a user or API id cancelled the run
- ***cancelled_by*** – The user or API id that cancelled the run
- ***archive_time*** – The time at which a user or API id cancelled the run
- ***archived_by*** – The user or API id that archived the run
- ***notify_on_finish*** – Whether or not to send an email on query completion
- ***active_org_devices*** – The number of devices active in the organization
- ***status*** – The run status
- ***device_filter*** – Any device filter rules associated with the run
- ***last_result_time*** – When the most recent result for this run was reported
- ***total_results*** – The number of results received
- ***match_count*** – The number of devices which received a match to the query
- ***no_match_count*** – The number of devices which did not received a match to the query
- ***error_count*** – The number of devices which errored
- ***not_supported_count*** – The number of devices which do not support a portion of the osquery
- ***cancelled_count*** – The number of devices which were cancelled before they ran the query
- ***not_started_count*** – The number of devices which have not run the query
- ***success_count*** – The number of devices which succeeded in running the query
- ***in_progress_count*** – The number of devices which were currently executing the query

- ***recommended_query_id*** – The id of a query from the recommendedation route
- ***template_id*** – The template that created the run

Initialize a Template object with initial_data.

active_org_devices = None

archive_time = None

archived_by = None

cancellation_time = None

cancelled_by = None

cancelled_count = None

create_time = None

created_by = None

device_filter = {}

error_count = None

id = None

in_progress_count = None

last_result_time = None

match_count = None

name = None

no_match_count = None

not_started_count = None

not_supported_count = None

notify_on_finish = None

org_key = None

primary_key = 'id'

recommended_query_id = None

schedule = {}

sql = None

status = None

status_update_time = None

stop()

Stop a template.

Returns True if query was stopped successfully, False otherwise.

Return type (bool)

Raises `ServerError` – If the server response cannot be parsed as JSON.

success_count = None

template_id = None

timeout_time = None

total_results = None

urlobject = '/livequery/v1/orgs/{}/templates'

urlobject_single = '/livequery/v1/orgs/{}/templates/{}'

class TemplateHistory(*cb*, *initial_data=None*)

Bases: *cbc_sdk.audit_remediation.base.Template*

Represents a TemplateHistory object in the Carbon Black server.

Initialize a TemplateHistory object with initial_data.

urlobject_history = '/livequery/v1/orgs/{}/templates/_search'

class TemplateHistoryQuery(*doc_class*, *cb*)

Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.CriteriaBuilderSupportMixin*

Represents a query that retrieves historic LiveQuery templates.

Initialize a TemplateHistoryQuery object.

sort_by(*key*, *direction='ASC'*)

Sets the sorting behavior on a query's results.

Parameters

- **key** (*str*) – The key in the schema to sort by.
- **direction** (*str*) – The sort order, either "ASC" or "DESC".

Returns RunHistoryQuery object with specified sorting key and order.

Example:

```
>>> cb.select(Result).run_id(my_run).where(username="foobar").sort_by("uid")
```

4.1.3 Module contents

4.2 Credential Providers

4.2.1 Submodules

4.2.2 cbc_sdk.credential_providers.default module

Function which gives us the default credentials handler for use by CBCloudAPI.

class DefaultProvider

Bases: object

Intermediate class defined to allow insertion of a "test point" into default_credential_provider().

get_default_provider(*credential_file*)

Return the default credential provider that CBCloudAPI should use.

Parameters **credential_file** (*str*) – Credential file as specified to the initialization of the API.

Returns The default credential provider that CBCloudAPI should use.

Return type *CredentialProvider*

default_credential_provider(*credential_file*)
Return the default credential provider that CBCloudAPI should use.

Parameters **credential_file** (*str*) – Credential file as specified to the initialization of the API.

Returns The default credential provider that CBCloudAPI should use.

Return type *CredentialProvider*

4.2.3 cbc_sdk.credential_providers.environ_credential_provider module

Credentials provider that reads the credentials from the environment.

class EnvironCredentialProvider
Bases: *cbc_sdk.credentials.CredentialProvider*

The object which provides credentials based on variables in the environment.

Initializes the EnvironCredentialProvider.

get_credentials(*section=None*)
Return a Credentials object containing the configured credentials.

Parameters **section** (*str*) – The credential section to retrieve (not used in this provider).

Returns The credentials retrieved from that source.

Return type *Credentials*

Raises CredentialError – If there is any error retrieving the credentials.

4.2.4 cbc_sdk.credential_providers.file_credential_provider module

Credentials provider that reads the credentials from a file.

class FileCredentialProvider(*credential_file=None*)
Bases: *cbc_sdk.credentials.CredentialProvider*

The object which provides credentials based on a credential file.

Initialize the FileCredentialProvider.

Parameters **credential_file** (*object*) – A string or path-like object representing the credentials file, or a list of strings or path-like objects representing the search path for the credentials file.

get_credentials(*section=None*)
Return a Credentials object containing the configured credentials.

Parameters **section** (*str*) – The credential section to retrieve.

Returns The credentials retrieved from that source.

Return type *Credentials*

Raises CredentialError – If there is any error retrieving the credentials.

4.2.5 cbc_sdk.credential_providers.registry_credential_provider module

Credentials provider that reads the credentials from the environment.

OpenKey(*base*, *path*)
Stub to maintain source compatibility

QueryValueEx(*key*, *name*)
Stub to maintain source compatibility

class RegistryCredentialProvider(*keypath=None*, *userkey=True*)
Bases: *cbc_sdk.credentials.CredentialProvider*

The credentials provider that reads from the Windows Registry.

Initialize the RegistryCredentialProvider.

Parameters

- **keypath** (*str*) – Path from the selected base key to the key that will contain individual sections.
- **userkey** (*bool*) – True if the keypath starts at HKEY_CURRENT_USER, False if at HKEY_LOCAL_MACHINE.

Raises CredentialError – If we attempt to instantiate this provider on a non-Windows system.

get_credentials(*section=None*)
Return a Credentials object containing the configured credentials.

Parameters **section** (*str*) – The credential section to retrieve.

Returns The credentials retrieved from that source.

Return type *Credentials*

Raises CredentialError – If there is any error retrieving the credentials.

4.2.6 Module contents

4.3 Developing New Credential Providers

The credentials management framework for the CBC SDK is designed to allow different handlers to be implemented, which may supply credentials to the CBCloudAPI in ways not implemented by existing credential handlers.

4.3.1 Writing the Credential Provider

Find all classes required to implement a new credential provider in the cbc_sdk.credentials package. See below for descriptions of the classes. It is recommended, but not required, that your new credential provider inherit from the CredentialProvider abstract class, and that you implement the methods from that abstract class as detailed.

The arguments to the standard __init__() method are not defined by the interface specification; those may be used to initialize your credential provider in any desired fashion.

4.3.2 Using the Credential Provider

Create an instance of your credential provider object and pass it as the keyword parameter `credential_provider` when creating your `CBCloudAPI` object. Example:

```
>>> provider = MyCredentialProvider()
>>> cbc_api = CBCloudAPI(credential_provider=provider, profile='default')
```

Your credential provider's `get_credentials()` method will be called, passing in any profile specified in the `profile` keyword parameter used when creating `CBCloudAPI`.

4.3.3 Credential Provider Reference

These are the classes from the `cbc_sdk.credentials` package that are used in making a credential provider.

CredentialValue class

This class is of an enumerated type, and represents the various credential items loaded by the credential provider and fed to the rest of the SDK code. The possible values are:

- `URL` - The URL used to access the Carbon Black Cloud. This value *must* be specified.
- `TOKEN` - The access token to be used to authenticate to the server. It is the same structure as the `X-Auth-Token:` defined for direct API access in the developer documentation. This value *must* be specified.
- `ORG_KEY` - The organization key specifying which organization to work with. This value *must* be specified.
- `SSL_VERIFY` - A Boolean value indicating whether or not to validate the SSL connection. The default is `True`.
- `SSL_VERIFY_HOSTNAME` - A Boolean value indicating whether or not to verify the host name of the server being connected to. The default is `True`.
- `SSL_CERT_FILE` - The name of an optional certificate file used to validate the certificates of the SSL connection. If not specified, the standard system certificate verification will be used.
- `SSL_FORCE_TLS_1_2` - A Boolean value. If this is `True`, the connection will be forced to use TLS 1.2 rather than any later version. The default is `False`.
- `PROXY` - If specified, this is the name of a proxy host to be used in making the connection.
- `IGNORE_SYSTEM_PROXY` - A Boolean value. If this is `True`, any system proxy settings will be ignored in making the connection to the server. The default is `False`.
- `INTEGRATION` - The name of the integration to use these credentials. The string may optionally end with a slash character, followed by the integration's version number. Passed as part of the `User-Agent:` HTTP header on all requests made by the SDK.

Values of this type have one method:

requires_boolean_value

```
def requires_boolean_value(self):
```

Returns whether or not this particular credential item takes a Boolean value.

Returns: `True` if the credential item takes a Boolean value, `False` if the credential item takes a string value.

Credentials class

The class that holds credentials retrieved from the credential provider, and is used by the rest of the SDK. It is effectively immutable after creation.

__init__

```
def __init__(self, values=None):
```

Initializes a new `Credentials` object.

Parameters:

- `values` (type `dict`): A dictionary containing the values to initialize the `Credentials` object with. The keys of this dictionary may be either `CredentialValue` objects or their lowercase string equivalents, e.g. `CredentialValue.URL` or `"url"`. The values in the dict are strings for those credential items with string values. For credential items with Boolean values, the values may be either `bool` values, numeric values (with 0 being treated as `False` and non-zero values treated as `True`), or string values. In the case of string values, the value must be "0", "false", "off", or "no" to be treated as a `False` falue, or "1", "true", "on", or "yes" to be treated as a `True` value (all values case-insensitive). If an unrecognized string is used for a Boolean value, `CredentialError` will be raised. Unrecognized keys in the dict are ignored. Any missing items will be replaced by the default for that item.

Raises:

- `CredentialError` - If there is an error parsing a Boolean value string.

get_value

```
def get_value(self, key):
```

Retrieves a specific credential value from this object.

Parameters:

- `key` (type `CredentialValue`): Indicates which item to retrieve.

Returns: The value of that credential item (`str` or `bool` type).

__getattr__

```
def __getattr__(self, name):
```

Retrieves a specific credential value from this object. This is a bit of "syntactic sugar" allowing other code to access credential values, for instance, as `cred_object.url` instead of `cred_object.get_value(CredentialValue.URL)`.

Parameters:

- `name` (type `str`): Indicates which item to retrieve.

Returns: The value of that credential item (`str` or `bool` type).

Raises:

- `AttributeError` - If the credential item `name` was unrecognized.

CredentialProvider class

All credential providers *should* extend this abstract class, but, in any event, *must* implement the protocol it defines.

get_credentials

```
def get_credentials(self, section=None):
```

Return a Credentials object containing the configured credentials.

Parameters:

- `section` (type `str`): Indicates the credential section to retrieve. May be interpreted by the credential provider in amy manner it likes; may also be ignored.

Returns: A `Credentials` object containing the retrieved credentials.

Raises:

- `CredentialError` - If there is an error retrieving the credentials.

4.4 Endpoint Standard

4.4.1 Submodules

4.4.2 cbc_sdk.endpoint_standard.base module

Model and Query Classes for Endpoint Standard

class EndpointStandardMutableModel(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=False*)

Bases: *cbc_sdk.base.MutableBaseModel*

Represents a EndpointStandardMutableModel object in the Carbon Black server.

Initialize an EndpointStandardMutableModel with model_unique_id and initial_data.

class EnrichedEvent(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=True*)

Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a EnrichedEvent object in the Carbon Black server.

Initialize the EnrichedEvent object.

Parameters

- **cb** (*CBCloudAPI*) – A reference to the CBCloudAPI object.
- **model_unique_id** (*Any*) – The unique ID for this particular instance of the model object.
- **initial_data** (*dict*) – The data to use when initializing the model object.
- **force_init** (*bool*) – True to force object initialization.
- **full_doc** (*bool*) – True to mark the object as fully initialized.

approve_process_sha256(*description=''*)

Approves the application by adding the process_sha256 to the WHITE_LIST

Parameters **description** – The justification for why the application was added to the WHITE_LIST

Returns

ReputationOverride object created in the Carbon Black Cloud

Return type *ReputationOverride* (cbc_sdk.platform.ReputationOverride)

ban_process_sha256(*description=''*)

Bans the application by adding the process_sha256 to the BLACK_LIST

Parameters **description** – The justification for why the application was added to the BLACK_LIST

Returns

ReputationOverride object created in the Carbon Black Cloud

Return type *ReputationOverride* (cbc_sdk.platform.ReputationOverride)

default_sort = 'device_timestamp'

get_details(*timeout=0*, *async_mode=False*)
Requests detailed results.

Parameters

- **timeout** (*int*) – Event details request timeout in milliseconds.
- **async_mode** (*bool*) – True to request details in an asynchronous manner.

Note:

- When using asynchronous mode, this method returns a python future. You can call result() on the future object to wait for completion and get the results.

---

primary_key = 'event_id'

process_sha256
Returns a string representation of the SHA256 hash for this process.

Returns SHA256 hash of the process.

Return type hash (str)

class EnrichedEventFacet(*cb*, *model_unique_id*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a EnrichedEventFacet object in the Carbon Black server.

Variables

- ***job_id*** – The Job ID assigned to this query
- ***terms*** – Contains the Enriched Event Facet search results
- ***ranges*** – Groupings for search result properties that are ISO 8601 timestamps or numbers
- ***contacted*** – The number of searchers contacted for this query
- ***completed*** – The number of searchers that have reported their results

Initialize the Terms object with initial data.

class Ranges(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Ranges object in the Carbon Black server.

Initialize an EnrichedEventFacet Ranges object with initial_data.

facets
Returns the reified *EnrichedEventFacet.Terms._facets* for this result.

fields
Returns the ranges fields for this result.

class Terms(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Terms object in the Carbon Black server.

Initialize an EnrichedEventFacet Terms object with initial_data.

facets
Returns the terms' facets for this result.

fields
Returns the terms facets' fields for this result.

completed = None

contacted = None

job_id = None

num_found = None

primary_key = 'job_id'

ranges = []

ranges_
Returns the reified *EnrichedEventFacet.Ranges* for this result.

result_url = '/api/investigate/v2/orgs/{}/enriched_events/facet_jobs/{}/results'

submit_url = '/api/investigate/v2/orgs/{}/enriched_events/facet_jobs'

terms = {}

terms_
Returns the reified *EnrichedEventFacet.Terms* for this result.

class EnrichedEventQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.Query*

Represents the query logic for an Enriched Event query.

This class specializes *Query* to handle the particulars of enriched events querying.

Initialize the EnrichedEventQuery object.

Parameters

- **doc_class** (*class*) – The class of the model this query returns.
- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.

aggregation(*field*)
Performs an aggregation search where results are grouped by an aggregation field

Parameters **field** (*str*) – The aggregation field, either 'process_sha256' or 'device_id'

or_(***kwargs*)
or_ criteria are explicitly provided to EnrichedEvent queries although they are endpoint_standard.

This method overrides the base class in order to provide or_() functionality rather than raising an exception.

set_rows(*rows*)
Sets the 'rows' query body parameter to the 'start search' API call, determining how many rows to request.

Parameters **rows** (*int*) – How many rows to request.

timeout(*msecs*)
Sets the timeout on a event query.

Parameters **msecs** (*int*) – Timeout duration, in milliseconds.

Returns

The Query object with new milliseconds parameter.

Return type *Query* (*EnrichedEventQuery*)

Example: >>> cb.select(EnrichedEvent).where(process_name="foo.exe").timeout(5000)

class Event(*cb*, *model_unique_id*, *initial_data=None*)
Bases: *cbc_sdk.base.NewBaseModel*

Represents a Event object in the Carbon Black server.

Initialize an Event with model_unique_id and initial_data.

info_key = 'eventInfo'

primary_key = 'eventId'

urlobject = '/integrationServices/v3/event'

class Policy(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=False*)
Bases: *cbc_sdk.endpoint_standard.base.EndpointStandardMutableModel*, *cbc_sdk.base.CreatableModelMixin*

Represents a Policy object in the Carbon Black server.

Initialize an EndpointStandardMutableModel with model_unique_id and initial_data.

add_rule(*new_rule*)
Adds a rule to this Policy.

Parameters **new_rule** (*dict(str,str)*) – The new rule to add to this Policy.

Notes

- The new rule must conform to this dictionary format:

  {"action": "ACTION", "application": {"type": "TYPE", "value": "VALUE"}, "operation": "OPERATION", "required": "REQUIRED"}

- The dictionary keys have these possible values:

  "action": ["IGNORE", "ALLOW", "DENY", "TERMINATE_PROCESS",
  "TERMINATE_THREAD", "TERMINATE"]

  "type": ["NAME_PATH", "SIGNED_BY", "REPUTATION"] "value": Any string value to match on "operation": ["BYPASS_ALL", "INVOKE_SCRIPT", "INVOKE_SYSAPP",

  "POL_INVOKE_NOT_TRUSTED", "INVOKE_CMD_INTERPRETER", "RANSOM", "NETWORK", "PROCESS_ISOLATION", "CODE_INJECTION", "MEMORY_SCRAPE", "RUN_INMEMORY_CODE", "ESCALATE", "RUN"]

  "required": [True, False]

delete_rule(*rule_id*)
Deletes a rule from this Policy.

description = None

id = None

info_key = 'policyInfo'

latestRevision = None

name = None

policy = {}

priorityLevel = None

replace_rule(*rule_id*, *new_rule*)
Replaces a rule in this policy.

rules
Returns a dictionary of rules and rule IDs for this Policy.

systemPolicy = None

urlobject = '/integrationServices/v3/policy'

version = None

class Query(*doc_class*, *cb*, *query=None*)
Bases: *cbc_sdk.base.PaginatedQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*

Represents a prepared query to the Cb Endpoint Standard server.

This object is returned as part of a *CBCloudAPI.select* operation on models requested from the Cb Endpoint Standard server. You should not have to create this class yourself.

The query is not executed on the server until it's accessed, either as an iterator (where it will generate values on demand as they're requested) or as a list (where it will retrieve the entire result set and save to a list). You can also call the Python built-in 'len() on this object to retrieve the total number of items matching the query.

Example: >>> from cbc_sdk import CBCloudAPI >>> cb = CBCloudAPI()

Notes

- The slicing operator only supports start and end parameters, but not step. `[1:-1]` is legal, but `[1:2:-1]` is not.
- You can chain where clauses together to create AND queries; only objects that match all `where` clauses will be returned. - Device Queries with multiple search parameters only support AND operations, not OR. Use of Query.or_(myParameter='myValue') will add 'AND myParameter:myValue' to the search query.

Initialize a Query object.

or_(***kwargs*)
Unsupported. Will raise if called.

Raises `ApiError` – .or_() cannot be called on Endpoint Standard queries.

prepare_query(*args*)
Adds query parameters that are part of a *select().where()* clause to the request.

log = <Logger cbc_sdk.endpoint_standard.base (WARNING)>
Endpoint Standard Models

4.4.3 cbc_sdk.endpoint_standard.usb_device_control module

Model and Query Classes for USB Device Control

class USBDevice(*cb*, *model_unique_id*, *initial_data=None*)

Bases: *cbc_sdk.base.NewBaseModel*

Represents a USBDevice object in the Carbon Black server.

Variables

- ***created_at*** – the UTC date the external USB device configuration was created in ISO 8601 format
- ***device_friendly_name*** – human readable name for the external USB device
- ***device_name*** – name of the external USB device
- ***device_type*** – type of external USB device
- ***endpoint_count*** – number of endpoints that the external USB device has connected to
- ***first_seen*** – first timestamp that the external USB device was seen
- ***id*** – the id for this external USB device
- ***interface_type*** – type of interface used by external USB device
- ***last_endpoint_id*** – ID of the last endpoint the device accessed
- ***last_endpoint_name*** – name of the last endpoint the device accessed
- ***last_policy_id*** – ID of the last policy associated with the device
- ***last_seen*** – last timestamp that the external USB device was seen
- ***org_key*** – unique org key of the organization that the external USB device was connected to
- ***product_id*** – product ID of the external USB device in decimal form
- ***product_name*** – product name of the external USB device
- ***serial_number*** – serial number of external device
- ***status*** – Calculated status of device
- ***updated_at*** – the UTC date the external USB device configuration was updated in ISO 8601 format
- ***vendor_id*** – ID of the Vendor for the external USB device in decimal form
- ***vendor_name*** – vendor name of the external USB device

Initialize the USBDevice object.

Parameters

- **cb** (*BaseAPI*) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – ID of the alert represented.
- **initial_data** (*dict*) – Initial data used to populate the alert.

approve(*approval_name*, *notes*)

Creates and saves an approval for this USB device, allowing it to be treated as approved from now on.

Parameters

- **approval_name** (*str*) – The name for this new approval.
- **notes** (*str*) – Notes to be added to this approval.

Returns The new approval.

Return type *USBDeviceApproval*

created_at = None

device_friendly_name = None

device_name = None

device_type = None

endpoint_count = None

first_seen = None

get_endpoints()
Returns the information about endpoints associated with this USB device.

Returns List of information about USB endpoints, each item specified as a dict.

Return type list

classmethod get_vendors_and_products_seen(*cb*)
Returns all vendors and products that have been seen for the organization.

Parameters **cb** (BaseAPI) – Reference to API object used to communicate with the server.

Returns A list of vendors and products seen for the organization, each vendor being represented by a dict.

Return type list

id = None

interface_type = None

last_endpoint_id = None

last_endpoint_name = None

last_policy_id = None

last_seen = None

org_key = None

primary_key = 'id'

product_id = None

product_name = None

serial_number = None

status = None

updated_at = None

urlobject = '/device_control/v3/orgs/{0}/devices'

urlobject_single = '/device_control/v3/orgs/{0}/devices/{1}'

vendor_id = None

vendor_name = None

class USBDeviceApproval(*cb*, *model_unique_id*, *initial_data=None*)

Bases: *cbc_sdk.base.MutableBaseModel*

Represents a USBDeviceApproval object in the Carbon Black server.

Variables

- ***approval_name*** – the name of the approval
- ***created_at*** – the UTC date the approval was created in ISO 8601 format
- ***id*** – the id for this approval
- ***notes*** – the notes for the approval
- ***product_id*** – product ID of the approval's external USB device in hex form
- ***product_name*** – product name of the approval's external USB device
- ***serial_number*** – serial number of the approval's external device
- ***updated_at*** – the UTC date the approval was updated in ISO 8601 format
- ***updated_by*** – the user who updated the record last
- ***vendor_id*** – ID of the Vendor for the approval's external USB device in hex form
- ***vendor_name*** – vendor name of the approval's external USB device

Initialize the USBDeviceApproval object.

Parameters

- **cb** (*BaseAPI*) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – ID of the alert represented.
- **initial_data** (*dict*) – Initial data used to populate the alert.

approval_name = None

classmethod bulk_create(*cb*, *approvals*)

Creates multiple approvals and returns the USBDeviceApproval objects. Data is supplied as a list of dicts.

Parameters

- **cb** (*BaseAPI*) – Reference to API object used to communicate with the server.
- **approvals** (*list*) – List of dicts containing approval data to be created, formatted as shown below.

Example

[

{ "approval_name": "string", "notes": "string", "product_id": "string", "serial_number": "string", "vendor_id": "string"

}

]

Returns A list of USBDeviceApproval objects representing the approvals that were created.

Return type list

classmethod bulk_create_csv(*cb*, *approval_data*)
Creates multiple approvals and returns the USBDeviceApproval objects. Data is supplied as text in CSV format.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **approval_data** (*str*) – CSV data for the approvals to be created. Header line MUST be included as shown below.

Example

vendor_id,product_id,serial_number,approval_name,notes string,string,string,string,string

Returns A list of USBDeviceApproval objects representing the approvals that were created.

Return type list

classmethod create_from_usb_device(*usb_device*)
Creates a new, unsaved approval object from a USBDeviceObject, filling in its basic fields.

Parameters **usb_device** (USBDevice) – The USB device to create the approval from.

Returns The new approval object.

Return type *USBDeviceApproval*

created_at = None

id = None

notes = None

primary_key = 'id'

product_id = None

product_name = None

serial_number = None

updated_at = None

updated_by = None

urlobject = '/device_control/v3/orgs/{0}/approvals'

urlobject_single = '/device_control/v3/orgs/{0}/approvals/{1}'

vendor_id = None

vendor_name = None

class USBDeviceApprovalQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.CriteriaBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.AsyncQueryMixin*

Represents a query that is used to locate USBDeviceApproval objects.

Initialize the USBDeviceApprovalQuery.

Parameters

- **doc_class** (*class*) – The model class that will be returned by this query.

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.

set_device_ids(*device_ids*)
Restricts the device approvals that this query is performed on to the specified device IDs.

Parameters **device_ids** (*list*) – List of string device IDs.

Returns This instance.

Return type *USBDeviceApprovalQuery*

set_product_names(*product_names*)
Restricts the device approvals that this query is performed on to the specified product names.

Parameters **product_names** (*list*) – List of string product names.

Returns This instance.

Return type *USBDeviceApprovalQuery*

set_vendor_names(*vendor_names*)
Restricts the device approvals that this query is performed on to the specified vendor names.

Parameters **vendor_names** (*list*) – List of string vendor names.

Returns This instance.

Return type *USBDeviceApprovalQuery*

class USBDeviceBlock(*cb*, *model_unique_id*, *initial_data=None*)
Bases: *cbc_sdk.base.NewBaseModel*

Represents a USBDeviceBlock object in the Carbon Black server.

Variables

- ***created_at*** – the UTC date the block was created in ISO 8601 format
- ***id*** – the id for this block
- ***policy_id*** – policy id which is blocked
- ***updated_at*** – the UTC date the block was updated in ISO 8601 format

Initialize the USBDeviceBlock object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – ID of the alert represented.
- **initial_data** (*dict*) – Initial data used to populate the alert.

classmethod bulk_create(*cb*, *policy_ids*)
Creates multiple blocks and returns the USBDeviceBlocks that were created.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **policy_ids** (*list*) – List of policy IDs to have blocks created for.

Returns A list of USBDeviceBlock objects representing the approvals that were created.

Return type list

classmethod create(*cb*, *policy_id*)
Creates a USBDeviceBlock for a given policy ID.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **policy_id** (*str/int*) – Policy ID to create a USBDeviceBlock for.

Returns New USBDeviceBlock object representing the block.

Return type *USBDeviceBlock*

created_at = None

delete()
Delete this object.

id = None

policy_id = None

primary_key = 'id'

updated_at = None

urlobject = '/device_control/v3/orgs/{0}/blocks'

urlobject_single = '/device_control/v3/orgs/{0}/blocks/{1}'

class USBDeviceBlockQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.AsyncQueryMixin*

Represents a query that is used to locate USBDeviceBlock objects.

Initialize the USBDeviceBlockQuery.

Parameters

- **doc_class** (*class*) – The model class that will be returned by this query.
- **cb** (BaseAPI) – Reference to API object used to communicate with the server.

class USBDeviceQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.CriteriaBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.AsyncQueryMixin*

Represents a query that is used to locate USBDevice objects.

Initialize the USBDeviceQuery.

Parameters

- **doc_class** (*class*) – The model class that will be returned by this query.
- **cb** (BaseAPI) – Reference to API object used to communicate with the server.

VALID_FACET_FIELDS = ['vendor_name', 'product_name', 'endpoint.endpoint_name', 'status

VALID_STATUSES = ['APPROVED', 'UNAPPROVED']

facets(*fieldlist*, *max_rows=0*)
Return information about the facets for all known USB devices, using the defined criteria.

Parameters

- **fieldlist** (*list*) – List of facet field names. Valid names are “vendor_name”, “product_name”, “endpoint.endpoint_name”, and “status”.
- **max_rows** (*int*) – The maximum number of rows to return. 0 means return all rows.

Returns A list of facet information specified as dicts.

Return type list

set_endpoint_names(*endpoint_names*)
Restricts the devices that this query is performed on to the specified endpoint names.

Parameters **endpoint_names** (*list*) – List of string endpoint names.

Returns This instance.

Return type *USBDeviceQuery*

set_product_names(*product_names*)
Restricts the devices that this query is performed on to the specified product names.

Parameters **product_names** (*list*) – List of string product names.

Returns This instance.

Return type *USBDeviceQuery*

set_serial_numbers(*serial_numbers*)
Restricts the devices that this query is performed on to the specified serial numbers.

Parameters **serial_numbers** (*list*) – List of string serial numbers.

Returns This instance.

Return type *USBDeviceQuery*

set_statuses(*statuses*)
Restricts the devices that this query is performed on to the specified status values.

Parameters **statuses** (*list*) – List of string status values. Valid values are APPROVED and UNAPPROVED.

Returns This instance.

Return type *USBDeviceQuery*

set_vendor_names(*vendor_names*)
Restricts the devices that this query is performed on to the specified vendor names.

Parameters **vendor_names** (*list*) – List of string vendor names.

Returns This instance.

Return type *USBDeviceQuery*

sort_by(*key*, *direction='ASC'*)
Sets the sorting behavior on a query's results.

Example

```
>>> cb.select(USBDevice).sort_by("product_name")
```

Parameters

- **key** (*str*) – The key in the schema to sort by.
- **direction** (*str*) – The sort order, either "ASC" or "DESC".

Returns This instance.

Return type *USBDeviceQuery*

log = <Logger cbc_sdk.endpoint_standard.usb_device_control (WARNING)>
USB Device Control models

4.4.4 Module contents

4.5 Enterprise EDR

4.5.1 Submodules

4.5.2 cbc_sdk.enterprise_edr.threat_intelligence module

Model Classes for Enterprise Endpoint Detection and Response

class Feed(*cb*, *model_unique_id=None*, *initial_data=None*)
Bases: *cbc_sdk.enterprise_edr.threat_intelligence.FeedModel*

Represents a Feed object in the Carbon Black server.

Variables

- ***name*** – A human-friendly name for this feed
- ***owner*** – The feed owner's connector ID
- ***provider_url*** – A URL supplied by the feed's provider
- ***summary*** – A human-friendly summary for the feed
- ***category*** – The feed's category
- ***source_label*** – The feed's source label
- ***access*** – The feed's access (public or private)
- ***id*** – The feed's unique ID

Initialize the Feed object.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **model_unique_id** (*str*) – The unique ID of the feed.
- **initial_data** (*dict*) – The initial data for the object.

class FeedBuilder(*cb*, *info*)
Bases: object

Helper class allowing Feeds to be assembled.

Creates a new FeedBuilder object.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **info** (*dict*) – The initial information for the new feed.

add_reports(*reports*)
Adds new reports to the new feed.

Parameters **reports** (*list[Report]*) – New reports to be added to the feed.
Returns This object.
Return type *FeedBuilder*

build()
Builds the new Feed.
Returns The new Feed.
Return type *Feed*

set_category(*category*)
Sets the category for the new feed.
Parameters **category** (*str*) – New category for the feed.
Returns This object.
Return type *FeedBuilder*

set_name(*name*)
Sets the name for the new feed.
Parameters **name** (*str*) – New name for the feed.
Returns This object.
Return type *FeedBuilder*

set_provider_url(*provider_url*)
Sets the provider URL for the new feed.
Parameters **provider_url** (*str*) – New provider URL for the feed.
Returns This object.
Return type *FeedBuilder*

set_source_label(*source_label*)
Sets the source label for the new feed.
Parameters **source_label** (*str*) – New source label for the feed.
Returns This object.
Return type *FeedBuilder*

set_summary(*summary*)
Sets the summary for the new feed.
Parameters **summary** (*str*) – New summary for the feed.
Returns This object.
Return type *FeedBuilder*

access = None

append_reports(*reports*)
Append the given Reports to this Feed's current Reports.

Parameters **reports** (*[Report]*) – List of Reports to append to Feed.

Raises InvalidObjectError – If *id* is missing.

append_reports_rawdata(*report_data*)
Append the given report data, formatted as per the API documentation for reports, to this Feed's Reports.

Parameters **report_data** (*list[dict]*) –

Raises InvalidObjectError – If *id* is missing or validation of the data fails.

category = None

classmethod create(*cb*, *name*, *provider_url*, *summary*, *category*)
Begins creating a new feed by making a FeedBuilder to hold the new feed data.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **name** (*str*) – Name for the new feed.
- **provider_url** (*str*) – Provider URL for the new feed.
- **summary** (*str*) – Summary for the new feed.
- **category** (*str*) – Category for the new feed.

Returns The new FeedBuilder object to be used to create the feed.

Return type *FeedBuilder*

delete()
Deletes this feed from the Enterprise EDR server.

Raises InvalidObjectError – If *id* is missing.

id = None

name = None

owner = None

primary_key = 'id'

provider_url = None

replace_reports(*reports*)
Replace this Feed's Reports with the given Reports.

Parameters **reports** (*[Report]*) – List of Reports to replace existing Reports with.

Raises InvalidObjectError – If *id* is missing.

replace_reports_rawdata(*report_data*)
Replace this Feed's Reports with the given reports, specified as raw data.

Parameters **report_data** (*list[dict]*) –

Raises InvalidObjectError – If *id* is missing or validation of the data fails.

reports
Returns a list of Reports associated with this feed.

Returns List of Reports in this Feed.

Return type Reports ([*Report*])

save(*public=False*)
Saves this feed on the Enterprise EDR server.

Parameters **public** (*bool*) – Whether to make the feed publicly available.

Returns The saved Feed.

Return type *Feed* (*Feed*)

source_label = None

summary = None

update(***kwargs*)
Update this feed's metadata with the given arguments.

Parameters ****kwargs** (*dict(str, str)*) – The fields to update.

Raises

- `InvalidObjectError` – If *id* is missing or Feed.validate() fails.
- `ApiError` – If an invalid field is specified.

Example:

```
>>> feed.update(access="private")
```

urlobject = '/threathunter/feedmgr/v2/orgs/{}/feeds'

urlobject_single = '/threathunter/feedmgr/v2/orgs/{}/feeds/{}'

validate()
Checks to ensure this feed contains valid data.

Raises `InvalidObjectError` – If the feed contains invalid data.

class FeedModel(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=False*)
Bases: *cbc_sdk.base.UnrefreshableModel*, *cbc_sdk.base.CreatableModelMixin*, *cbc_sdk.base.MutableBaseModel*

Represents a FeedModel object in the Carbon Black server.

Initialize the NewBaseModel object.

Parameters

- **cb** (*CBCloudAPI*) – A reference to the CBCloudAPI object.
- **model_unique_id** (*Any*) – The unique ID for this particular instance of the model object.
- **initial_data** (*dict*) – The data to use when initializing the model object.
- **force_init** (*bool*) – True to force object initialization.
- **full_doc** (*bool*) – True to mark the object as fully initialized.

SCHEMA_IOCV2 = Schema({'id': And(And(<class 'str'>), <built-in function len>), 'match

SCHEMA_REPORT = Schema({'id': And(And(<class 'str'>), <built-in function len>), 'time

class FeedQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.SimpleQuery*

Represents the logic for a Feed query.

```
>>> cb.select(Feed)
>>> cb.select(Feed, id)
>>> cb.select(Feed).where(include_public=True)
```

Initialize the FeedQuery object.

Parameters

- **doc_class** (*class*) – The class of the model this query returns.
- **cb** (*CBCloudAPI*) – A reference to the CBCloudAPI object.

results
Return a list of Feed objects matching self._args parameters.

where(***kwargs*)
Add kwargs to self._args dictionary.

class IOC(*cb*, *model_unique_id=None*, *initial_data=None*, *report_id=None*)
Bases: *cbc_sdk.enterprise_edr.threat_intelligence.FeedModel*

Represents a IOC object in the Carbon Black server.

Variables

- ***md5*** – A list of MD5 checksums
- ***ipv4*** – A list of IPv4 addresses
- ***ipv6*** – A list of IPv6 addresses
- ***dns*** – A list of domain names
- ***query*** – A list of dicts, each containing an IOC query

Creates a new IOC instance.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – Unique ID of this IOC.
- **initial_data** (*dict*) – Initial data used to populate the IOC.
- **report_id** (*str*) – ID of the report this IOC belongs to (if this is a watchlist IOC).

Raises ApiError – If *initial_data* is None.

dns = []

ipv4 = []

ipv6 = []

md5 = []

query = []

validate()
Checks to ensure this IOC contains valid data.

Raises InvalidObjectError – If the IOC contains invalid data.

class IOC_V2(*cb*, *model_unique_id=None*, *initial_data=None*, *report_id=None*)
Bases: *cbc_sdk.enterprise_edr.threat_intelligence.FeedModel*

Represents a IOC_V2 object in the Carbon Black server.

Variables

- ***id*** – The IOC_V2's unique ID
- ***match_type*** – How IOCs in this IOC_V2 are matched
- ***values*** – A list of IOCs
- ***field*** – The kind of IOCs contained in this IOC_V2
- ***link*** – A URL for some reference for this IOC_V2

Creates a new IOC_V2 instance.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **model_unique_id** (*Any*) – Unused.

- **initial_data** (*dict*) – Initial data used to populate the IOC.
- **report_id** (*str*) – ID of the report this IOC belongs to (if this is a watchlist IOC).

Raises ApiError – If *initial_data* is None.

classmethod create_equality(*cb*, *iocid*, *field*, **values*)
Creates a new "equality" IOC.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **iocid** (*str*) – ID for the new IOC. If this is None, a UUID will be generated for the IOC.
- **field** (*str*) – Name of the field to be matched by this IOC.
- ***values** (*list (str)*) – String values to match against the value of the specified field.

Returns New IOC data structure.

Return type *IOC_V2*

Raises ApiError – If there is not at least one value to match against.

classmethod create_query(*cb*, *iocid*, *query*)
Creates a new "query" IOC.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **iocid** (*str*) – ID for the new IOC. If this is None, a UUID will be generated for the IOC.
- **query** (*str*) – Query to be incorporated in this IOC.

Returns New IOC data structure.

Return type *IOC_V2*

Raises ApiError – If the query string is not present.

classmethod create_regex(*cb*, *iocid*, *field*, **values*)
Creates a new "regex" IOC.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **iocid** (*str*) – ID for the new IOC. If this is None, a UUID will be generated for the IOC.
- **field** (*str*) – Name of the field to be matched by this IOC.
- ***values** (*list (str)*) – Regular expression values to match against the value of the specified field.

Returns New IOC data structure.

Return type *IOC_V2*

Raises ApiError – If there is not at least one regular expression to match against.

field = None

id = None

ignore()
Sets the ignore status on this IOC.

Only watchlist IOCs have an ignore status.

Raises InvalidObjectError – If *id* is missing or this IOC is not from a Watchlist.

ignored
Returns whether or not this IOC is ignored.

Only watchlist IOCs have an ignore status.

Returns True if the IOC is ignored, False otherwise.

Return type bool

Raises InvalidObjectError – If this IOC is missing an *id* or is not a Watchlist IOC.

Example:

```
>>> if ioc.ignored:
...     ioc.unignore()
```

classmethod ipv6_equality_format(*input*)
Turns a canonically-formatted IPv6 address into a string suitable for use in an equality IOC.

Parameters **input** (*str*) – The IPv6 address to be translated.

Returns The translated form of IPv6 address.

Return type str

Raises ApiError – If the string is not in valid format.

link = None

match_type = None

primary_key = 'id'

unignore()
Removes the ignore status on this IOC.

Only watchlist IOCs have an ignore status.

Raises InvalidObjectError – If *id* is missing or this IOC is not from a Watchlist.

validate()
Checks to ensure this IOC contains valid data.

Raises InvalidObjectError – If the IOC contains invalid data.

values = []

class Report(*cb*, *model_unique_id=None*, *initial_data=None*, *feed_id=None*, *from_watchlist=False*)
Bases: *cbc_sdk.enterprise_edr.threat_intelligence.FeedModel*

Represents a Report object in the Carbon Black server.

Variables

- ***id*** – The report's unique ID
- ***timestamp*** – When this report was created
- ***title*** – A human-friendly title for this report
- ***description*** – A human-friendly description for this report

- ***severity*** – The severity of the IOCs within this report
- ***link*** – A URL for some reference for this report
- ***tags*** – A list of tags for this report
- ***iocs_v2*** – A list of IOC_V2 dicts associated with this report
- ***visibility*** – The visibility of this report

Initialize the ReportSeverity object.

Parameters

- **cb** (*CBCloudAPI*) – A reference to the CBCloudAPI object.
- **model_unique_id** (*Any*) – Unused.
- **initial_data** (*dict*) – The initial data for the object.
- **feed_id** (*str*) – The ID of the feed this report is for.
- **from_watchlist** (*str*) – The ID of the watchlist this report is for.

class ReportBuilder(*cb*, *report_body*)

Bases: object

Helper class allowing Reports to be assembled.

Initialize a new ReportBuilder.

Parameters

- **cb** (*CBCloudAPI*) – A reference to the CBCloudAPI object.
- **report_body** (*dict*) – Partial report body which should be filled in with all "required" fields.

add_ioc(*ioc*)

Adds an IOC to the new report.

Parameters **ioc** (*IOC_V2*) – The IOC to be added to the report.
Returns This object.
Return type *ReportBuilder*

add_tag(*tag*)

Adds a tag value to the new report.

Parameters **tag** (*str*) – The new tag for the object.
Returns This object.
Return type *ReportBuilder*

build()

Builds the actual Report from the internal data of the ReportBuilder.

Returns The new Report.
Return type *Report*

set_description(*description*)

Set the description for the new report.

Parameters **description** (*str*) – New description for the report.
Returns This object.
Return type *ReportBuilder*

set_link(*link*)

Set the link for the new report.

Parameters **link** (*str*) – New link for the report.
Returns This object.

Return type *ReportBuilder*

set_severity(*severity*)
Set the severity for the new report.
Parameters **severity** (*int*) – New severity for the report.
Returns This object.
Return type *ReportBuilder*

set_timestamp(*timestamp*)
Set the timestamp for the new report.
Parameters **timestamp** (*int*) – New timestamp for the report.
Returns This object.
Return type *ReportBuilder*

set_title(*title*)
Set the title for the new report.
Parameters **title** (*str*) – New title for the report.
Returns This object.
Return type *ReportBuilder*

set_visibility(*visibility*)
Set the visibility for the new report.
Parameters **visibility** (*str*) – New visibility for the report.
Returns This object.
Return type *ReportBuilder*

append_iocs(*iocs*)
Append a list of IOCs to this Report.

Parameters **iocs** (*list[IOC_V2]*) – List of IOCs to be added.

classmethod create(*cb*, *title*, *description*, *severity*, *timestamp=None*, *tags=None*)
Begin creating a new Report by returning a ReportBuilder.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **title** (*str*) – Title for the new report.
- **description** (*str*) – Description for the new report.
- **severity** (*int*) – Severity value for the new report.
- **timestamp** (*int*) – UNIX-epoch timestamp for the new report. If omitted, current time will be used.
- **tags** (*list[str]*) – Tags to be added to the report. If omitted, there will be none.

Returns Reference to the ReportBuilder object.

Return type *ReportBuilder*

custom_severity
Returns the custom severity for this report.

Returns

The custom severity for this Report, if it exists.

Return type *ReportSeverity* (*ReportSeverity*)

Raises InvalidObjectError – If *id* ismissing or this Report is from a Watchlist.

delete()
Deletes this report from the Enterprise EDR server.

Raises InvalidObjectError – If *id* is missing, or *feed_id* is missing and this report is a Feed Report.

Example:

```
>>> report.delete()
```

description = None

id = None

ignore()
Sets the ignore status on this report.

Only watchlist reports have an ignore status.

Raises InvalidObjectError – If *id* is missing or this Report is not from a Watchlist.

ignored
Returns the ignore status for this report.

Only watchlist reports have an ignore status.

Returns True if this Report is ignored, False otherwise.

Return type (bool)

Raises InvalidObjectError – If *id* is missing or this Report is not from a Watchlist.

Example:

```
>>> if report.ignored:
...     report.unignore()
```

iocs = {}

iocs_
Returns a list of IOC_V2's associated with this report.

Returns List of IOC_V2's for associated with the Report.

Return type *IOC_V2* ([*IOC_V2*])

Example:

```
>>> for ioc in report.iocs_:
...     print(ioc.values)
```

iocs_v2 = []

link = None

primary_key = 'id'

remove_iocs(*iocs*)
Remove a list of IOCs from this Report.

Parameters **iocs** (*list[IOC_V2]*) – List of IOCs to be removed.

remove_iocs_by_id(*ids_list*)
Remove IOCs from this report by specifying their IDs.

Parameters **ids_list** (*list[str]*) – List of IDs of the IOCs to be removed.

save_watchlist()
Saves this report *as a watchlist report*.

Note: This method **cannot** be used to save a feed report. To save feed reports, create them with *cb.create* and use *Feed.replace*.

Raises InvalidObjectError – If Report.validate() fails.

severity = None

tags = []

timestamp = None

title = None

unignore()
Removes the ignore status on this report.

Only watchlist reports have an ignore status.

Raises InvalidObjectError – If *id* is missing or this Report is not from a Watchlist.

update(***kwargs*)
Update this Report with the given arguments.

Parameters ****kwargs** (*dict(str, str)*) – The Report fields to update.

Returns The updated Report.

Return type *Report* (*Report*)

Raises InvalidObjectError – If *id* is missing, or *feed_id* is missing and this report is a Feed Report, or Report.validate() fails.

Note: The report's timestamp is always updated, regardless of whether passed explicitly.

```
>>> report.update(title="My new report title")
```

urlobject = '/threathunter/feedmgr/v2/orgs/{}/feeds/{}/reports'

validate()
Checks to ensure this report contains valid data.

Raises InvalidObjectError – If the report contains invalid data.

visibility = None

class ReportQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.SimpleQuery*

Represents the logic for a Report query.

Note:

Only feed reports can be queried. Watchlist reports should be interacted with via Watchlist.reports().

Example: >>> cb.select(Report).where(feed_id=id)

Initialize the ReportQuery object.

Parameters

- **doc_class** (*class*) – The class of the model this query returns.
- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.

results
Return a list of Report objects matching self._args['feed_id'].

where (***kwargs*)
Add kwargs to self._args dictionary.

class ReportSeverity(*cb*, *initial_data=None*)
Bases: *cbc_sdk.enterprise_edr.threat_intelligence.FeedModel*

Represents a ReportSeverity object in the Carbon Black server.

Variables

- ***report_id*** – The unique ID for the corresponding report
- ***severity*** – The severity level

Initialize the ReportSeverity object.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **initial_data** (*dict*) – The initial data for the object.

primary_key = 'report_id'

report_id = None

severity = None

class Watchlist(*cb*, *model_unique_id=None*, *initial_data=None*)
Bases: *cbc_sdk.enterprise_edr.threat_intelligence.FeedModel*

Represents a Watchlist object in the Carbon Black server.

Variables

- ***name*** – A human-friendly name for the watchlist
- ***description*** – A short description of the watchlist
- ***id*** – The watchlist's unique id
- ***tags_enabled*** – Whether tags are currently enabled
- ***alerts_enabled*** – Whether alerts are currently enabled
- ***create_timestamp*** – When this watchlist was created
- ***last_update_timestamp*** – Report IDs associated with this watchlist
- ***report_ids*** – Report IDs associated with this watchlist
- ***classifier*** – A key, value pair specifying an associated feed

Initialize the Watchlist object.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.

- **model_unique_id** (*str*) – The unique ID of the watch list.
- **initial_data** (*dict*) – The initial data for the object.

class WatchlistBuilder(*cb*, *name*)

Bases: object

Helper class allowing Watchlists to be assembled.

Creates a new WatchlistBuilder object.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **name** (*str*) – Name for the new watchlist.

add_report_ids(*report_ids*)

Adds report IDs to the watchlist.

Parameters **report_ids** (*list[str]*) – List of report IDs to add to the watchlist.
Returns This object.
Return type *WatchlistBuilder*

add_reports(*reports*)

Adds reports to the watchlist.

Parameters **reports** (*list[Report]*) – List of reports to be added to the watchlist.
Returns This object.
Return type *WatchlistBuilder*

build()

Builds the new Watchlist using information in the builder. The new watchlist must still be saved.

Returns The new Watchlist.
Return type *Watchlist*

set_alerts_enabled(*flag*)

Sets whether alerts will be enabled on the new watchlist.

Parameters **flag** (*bool*) – True to enable alerts, False to disable them. Default is False.
Returns This object.
Return type *WatchlistBuilder*

set_description(*description*)

Sets the description for the new watchlist.

Parameters **description** (*str*) – New description for the watchlist.
Returns This object.
Return type *WatchlistBuilder*

set_name(*name*)

Sets the name for the new watchlist.

Parameters **name** (*str*) – New name for the watchlist.
Returns This object.
Return type *WatchlistBuilder*

set_tags_enabled(*flag*)

Sets whether tags will be enabled on the new watchlist.

Parameters **flag** (*bool*) – True to enable tags, False to disable them. Default is True.
Returns This object.
Return type *WatchlistBuilder*

add_report_ids(*report_ids*)

Adds new report IDs to the watchlist.

Parameters **report_ids** (*list[str]*) – List of report IDs to be added to the watchlist.

add_reports(*reports*)
Adds new reports to the watchlist.

Parameters **reports** (*list[Report]*) – List of reports to be added to the watchlist.

alerts_enabled = None

classifier = {}

classifier_
Returns the classifier key and value, if any, for this watchlist.

Returns Watchlist's classifier key and value. None: If there is no classifier key and value.

Return type tuple(str, str)

classmethod create(*cb*, *name*)
Starts creating a new Watchlist by returning a WatchlistBuilder that can be used to set attributes.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **name** (*str*) – Name for the new watchlist.

Returns The builder for the new watchlist. Call build() to create the actual Watchlist.

Return type *WatchlistBuilder*

classmethod create_from_feed(*feed*, *name=None*, *description=None*, *enable_alerts=False*, *enable_tags=True*)
Creates a new Watchlist that encapsulates a Feed.

Parameters

- **feed** (Feed) – The feed to be encapsulated by this Watchlist.
- **name** (*str*) – Name for the new watchlist. The default is to use the Feed name.
- **description** (*str*) – Description for the new watchlist. The default is to use the Feed summary.
- **enable_alerts** (*bool*) –
- **enable_tags** (*bool*) –

Returns A new Watchlist object, which must be saved to the server.

Return type *Watchlist*

create_timestamp = None

delete()
Deletes this watchlist from the Enterprise EDR server.

Raises InvalidObjectError – If *id* is missing.

description = None

disable_alerts()
Disable alerts for this watchlist.

Raises InvalidObjectError – If *id* is missing.

disable_tags()
Disable tagging for this watchlist.

Raises InvalidObjectError – if *id* is missing.

enable_alerts()
Enable alerts for this watchlist. Alerts are not retroactive.

Raises InvalidObjectError – If *id* is missing.

enable_tags()
Enable tagging for this watchlist.

Raises InvalidObjectError – If *id* is missing.

feed
Returns the Feed linked to this Watchlist, if there is one.

id = None

last_update_timestamp = None

name = None

report_ids = []

reports
Returns a list of Report objects associated with this watchlist.

Returns List of Reports associated with the watchlist.

Return type Reports ([*Report*])

Note: If this Watchlist is a classifier (i.e. feed-linked) Watchlist, *reports* will be empty. To get the reports associated with the linked Feed, use feed like:

```
>>> for report in watchlist.feed.reports:
...     print(report.title)
```

---

save()
Saves this watchlist on the Enterprise EDR server.

Returns The saved Watchlist.

Return type *Watchlist* (*Watchlist*)

Raises InvalidObjectError – If Watchlist.validate() fails.

tags_enabled = None

update(***kwargs*)
Updates this watchlist with the given arguments.

Parameters ****kwargs** (*dict(str, str)*) – The fields to update.

Raises

- InvalidObjectError – If *id* is missing or Watchlist.validate() fails.
- ApiError – If *report_ids* is given and is empty.

Example:

```
>>> watchlist.update(name="New Name")
```

urlobject = '/threathunter/watchlistmgr/v2/watchlist'

urlobject_single = '/threathunter/watchlistmgr/v2/watchlist/{}'

validate()
Checks to ensure this watchlist contains valid data.

Raises InvalidObjectError – If the watchlist contains invalid data.

class WatchlistQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.SimpleQuery*

Represents the logic for a Watchlist query.

```
>>> cb.select(Watchlist)
```

Initialize the WatchlistQuery object.

Parameters

- **doc_class** (*class*) – The class of the model this query returns.
- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.

results
Return a list of all Watchlist objects.

log = <Logger cbc_sdk.enterprise_edr.threat_intelligence (WARNING)>
Models

4.5.3 cbc_sdk.enterprise_edr.ubs module

Model Classes for Enterprise Endpoint Detection and Response

class Binary(*cb*, *model_unique_id*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Binary object in the Carbon Black server.

Variables

- ***sha256*** – The SHA-256 hash of the file
- ***md5*** – The MD5 hash of the file
- ***file_available*** – If true, the file is available for download
- ***available_file_size*** – The size of the file available for download
- ***file_size*** – The size of the actual file (represented by the hash)
- ***os_type*** – The OS that this file is designed for
- ***architecture*** – The set of architectures that this file was compiled for
- ***lang_id*** – The Language ID value for the Windows VERSIONINFO resource
- ***charset_id*** – The Character set ID value for the Windows VERSIONINFO resource
- ***internal_name*** – The internal name from FileVersionInformation
- ***product_name*** – The product name from FileVersionInformation
- ***company_name*** – The company name from FileVersionInformation
- ***trademark*** – The trademark from FileVersionInformation
- ***file_description*** – The file description from FileVersionInformation
- ***file_version*** – The file version from FileVersionInformation

- ***comments*** – Comments from FileVersionInformation
- ***original_filename*** – The original filename from FileVersionInformation
- ***product_description*** – The product description from FileVersionInformation
- ***product_version*** – The product version from FileVersionInformation
- ***private_build*** – The private build from FileVersionInformation
- ***special_build*** – The special build from FileVersionInformation

Initialize the Binary object.

Parameters

- **cb** (*CBCloudAPI*) – A reference to the CBCloudAPI object.
- **model_unique_id** (*str*) – The SHA-256 of the binary being retrieved.

class Summary(*cb*, *model_unique_id*)

Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Summary object in the Carbon Black server.

Initialize the Summary object.

Parameters

- **cb** (*CBCloudAPI*) – A reference to the CBCloudAPI object.
- **model_unique_id** (*str*) – The SHA-256 of the binary being retrieved.

primary_key = 'sha256'

urlobject_single = '/ubs/v1/orgs/{}/sha256/{}/summary/device'

architecture = []

available_file_size = None

charset_id = None

comments = None

company_name = None

download_url(*expiration_seconds=3600*)

Returns a URL that can be used to download the file for this binary. Returns None if no download found.

Parameters **expiration_seconds** (*int*) – How long the download should be valid for.

Returns A pre-signed AWS download URL. None: If no download is found.

Return type URL (str)

Raises *InvalidObjectError* – If the URL retrieval should be retried.

file_available = None

file_description = None

file_size = None

file_version = None

internal_name = None

lang_id = None

md5 = None

original_filename = None

os_type = None

primary_key = 'sha256'

private_build = None

product_description = None

product_name = None

product_version = None

sha256 = None

special_build = None

summary
Returns organization-specific information about this binary.

trademark = None

urlobject_single = '/ubs/v1/orgs/{}/sha256/{}/metadata'

class Downloads(*cb*, *shas*, *expiration_seconds=3600*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Downloads object in the Carbon Black server.

Initialize the Downloads object.

Parameters

- **cb** (*CBCloudAPI*) – A reference to the CBCloudAPI object.
- **shas** (*list*) – A list of SHA hash values for binaries.
- **expiration_seconds** (*int*) – Number of seconds until this request expires.

class FoundItem(*cb*, *item*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a FoundItem object in the Carbon Black server.

Initialize the FoundItem object.

Parameters

- **cb** (*CBCloudAPI*) – A reference to the CBCloudAPI object.
- **item** (*dict*) – The values for a successfully-retrieved item.

primary_key = 'sha256'

found
Returns a list of Downloads.FoundItem, one for each binary found in the binary store.

urlobject = '/ubs/v1/orgs/{}/file/_download'

4.5.4 Module contents

4.6 Platform

4.6.1 Submodules

4.6.2 cbc_sdk.platform.alerts module

Model and Query Classes for Platform Alerts and Workflows

class BaseAlert(*cb*, *model_unique_id*, *initial_data=None*)
Bases: *cbc_sdk.platform.base.PlatformModel*

Represents a BaseAlert object in the Carbon Black server.

Variables

- ***category*** – Alert category - Monitored vs Threat
- ***create_time*** – Time the alert was created
- ***device_id*** – ID of the device
- ***device_name*** – Device name
- ***device_os*** – Device OS
- ***device_os_version*** – Device OS Version
- ***device_username*** – Logged on user during the alert. This is filled on a best-effort approach. If the user is not available it may be populated with the device owner
- ***first_event_time*** – Time of the first event in an alert
- ***group_details*** – Group details for when alert grouping is on
- ***id*** – Unique ID for this alert
- ***last_event_time*** – Time of the last event in an alert
- ***last_update_time*** – Time the alert was last updated
- ***legacy_alert_id*** – Unique short ID for this alert. This is deprecated and only available on alerts stored in the old schema.
- ***notes_present*** – Are notes present for this threatId
- ***org_key*** – Unique identifier for the organization to which the alert belongs
- ***policy_id*** – ID of the policy the device was in at the time of the alert
- ***policy_name*** – Name of the policy the device was in at the time of the alert
- ***severity*** – Threat ranking
- ***tags*** – Tags for the alert
- ***target_value*** – Device priority as assigned via the policy
- ***threat_id*** – ID of the threat to which this alert belongs. Threats are comprised of a combination of factors that can be repeated across devices.
- ***type*** – Type of the alert
- ***workflow*** – User-updatable status of the alert

Initialize the BaseAlert object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – ID of the alert represented.
- **initial_data** (*dict*) – Initial data used to populate the alert.

category = None

create_time = None

device_id = None

device_name = None

device_os = None

device_os_version = None

device_username = None

dismiss (*remediation=None*, *comment=None*)
Dismisses this alert.

Parameters

- **remediation** (*str*) – The remediation status to set for the alert.
- **comment** (*str*) – The comment to set for the alert.

dismiss_threat (*remediation=None*, *comment=None*)
Dismisses all alerts with the same threat ID, past or future.

Parameters

- **remediation** (*str*) – The remediation status to set for the alert.
- **comment** (*str*) – The comment to set for the alert.

first_event_time = None

group_details = {}

id = None

last_event_time = None

last_update_time = None

legacy_alert_id = None

notes_present = None

org_key = None

policy_id = None

policy_name = None

primary_key = 'id'

severity = None

tags = []

target_value = None

threat_id = None

type = None

update(*remediation=None*, *comment=None*)
Updates this alert while leaving it open.

Parameters

- **remediation** (*str*) – The remediation status to set for the alert.
- **comment** (*str*) – The comment to set for the alert.

update_threat(*remediation=None*, *comment=None*)
Updates the status of all alerts with the same threat ID, past or future, while leaving them in OPEN state.

Parameters

- **remediation** (*str*) – The remediation status to set for the alert.
- **comment** (*str*) – The comment to set for the alert.

urlobject = '/appservices/v6/orgs/{0}/alerts'

urlobject_single = '/appservices/v6/orgs/{0}/alerts/{1}'

workflow = {}

workflow_
Returns the workflow associated with this alert.

Returns The workflow associated with this alert.

Return type *Workflow*

class BaseAlertSearchQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.CriteriaBuilderSupportMixin*

Represents a query that is used to locate BaseAlert objects.

Initialize the BaseAlertSearchQuery.

Parameters

- **doc_class** (*class*) – The model class that will be returned by this query.
- **cb** (BaseAPI) – Reference to API object used to communicate with the server.

VALID_ALERT_TYPES = ['CB_ANALYTICS', 'DEVICE_CONTROL', 'WATCHLIST']

VALID_CATEGORIES = ['THREAT', 'MONITORED', 'INFO', 'MINOR', 'SERIOUS', 'CRITICAL']

VALID_FACET_FIELDS = ['ALERT_TYPE', 'CATEGORY', 'REPUTATION', 'WORKFLOW', 'TAG', 'POLI

VALID_REPUTATIONS = ['KNOWN_MALWARE', 'SUSPECT_MALWARE', 'PUP', 'NOT_LISTED', 'ADAPTIV

VALID_WORKFLOW_VALS = ['OPEN', 'DISMISSED']

dismiss(*remediation=None*, *comment=None*)
Dismiss all alerts matching the given query. The alerts will be left in a DISMISSED state after this request.

Parameters

- **remediation** (*str*) – The remediation state to set for all alerts.
- **comment** (*str*) – The comment to set for all alerts.

Returns The request ID, which may be used to select a WorkflowStatus object.

Return type str

facets (*fieldlist*, *max_rows=0*)
Return information about the facets for this alert by search, using the defined criteria.

Parameters

- **fieldlist** (*list*) – List of facet field names. Valid names are "ALERT_TYPE", "CATEGORY", "REPUTATION", "WORKFLOW", "TAG", "POLICY_ID", "POLICY_NAME", "DEVICE_ID", "DEVICE_NAME", "APPLICATION_HASH", "APPLICATION_NAME", "STATUS", "RUN_STATE", "POLICY_APPLIED_STATE", "POLICY_APPLIED", and "SENSOR_ACTION".
- **max_rows** (*int*) – The maximum number of rows to return. 0 means return all rows.

Returns A list of facet information specified as dicts.

Return type list

set_alert_ids (*alert_ids*)
Restricts the alerts that this query is performed on to the specified alert IDs.

Parameters **alert_ids** (*list*) – List of string alert IDs.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_categories (*categories*)
Restricts the alerts that this query is performed on to the specified categories.

Parameters **categories** (*list*) – List of categories to be restricted to. Valid categories are "THREAT", "MONITORED", "INFO", "MINOR", "SERIOUS", and "CRITICAL."

Returns This instance.

Return type *BaseAlertSearchQuery*

set_create_time (**args*, ***kwargs*)
Restricts the alerts that this query is performed on to the specified creation time.

The time may either be specified as a start and end point or as a range.

Parameters

- ***args** (*list*) – Not used.
- ****kwargs** (*dict*) – Used to specify start= for start time, end= for end time, and range= for range.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_device_ids (*device_ids*)
Restricts the alerts that this query is performed on to the specified device IDs.

Parameters **device_ids** (*list*) – List of integer device IDs.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_device_names (*device_names*)
Restricts the alerts that this query is performed on to the specified device names.

Parameters **device_names** (*list*) – List of string device names.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_device_os(*device_os*)
Restricts the alerts that this query is performed on to the specified device operating systems.

Parameters **device_os** (*list*) – List of string operating systems. Valid values are "WINDOWS", "ANDROID", "MAC", "IOS", "LINUX", and "OTHER."

Returns This instance.

Return type *BaseAlertSearchQuery*

set_device_os_versions(*device_os_versions*)
Restricts the alerts that this query is performed on to the specified device operating system versions.

Parameters **device_os_versions** (*list*) – List of string operating system versions.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_device_username(*users*)
Restricts the alerts that this query is performed on to the specified user names.

Parameters **users** (*list*) – List of string user names.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_group_results(*do_group*)
Specifies whether or not to group the results of the query.

Parameters **do_group** (*bool*) – True to group the results, False to not do so.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_legacy_alert_ids(*alert_ids*)
Restricts the alerts that this query is performed on to the specified legacy alert IDs.

Parameters **alert_ids** (*list*) – List of string legacy alert IDs.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_minimum_severity(*severity*)
Restricts the alerts that this query is performed on to the specified minimum severity level.

Parameters **severity** (*int*) – The minimum severity level for alerts.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_policy_ids(*policy_ids*)
Restricts the alerts that this query is performed on to the specified policy IDs.

Parameters **policy_ids** (*list*) – List of integer policy IDs.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_policy_names(*policy_names*)
Restricts the alerts that this query is performed on to the specified policy names.

Parameters **policy_names** (*list*) – List of string policy names.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_process_names(*process_names*)
Restricts the alerts that this query is performed on to the specified process names.

Parameters **process_names** (*list*) – List of string process names.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_process_sha256(*shas*)
Restricts the alerts that this query is performed on to the specified process SHA-256 hash values.

Parameters **shas** (*list*) – List of string process SHA-256 hash values.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_reputations(*reps*)
Restricts the alerts that this query is performed on to the specified reputation values.

Parameters **reps** (*list*) – List of string reputation values. Valid values are "KNOWN_MALWARE", "SUSPECT_MALWARE", "PUP", "NOT_LISTED", "ADAPTIVE_WHITE_LIST", "COMMON_WHITE_LIST", "TRUSTED_WHITE_LIST",

and "COMPANY_BLACK_LIST".

Returns This instance.

Return type *BaseAlertSearchQuery*

set_tags(*tags*)
Restricts the alerts that this query is performed on to the specified tag values.

Parameters **tags** (*list*) – List of string tag values.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_target_priorities(*priorities*)
Restricts the alerts that this query is performed on to the specified target priority values.

Parameters **priorities** (*list*) – List of string target priority values. Valid values are "LOW", "MEDIUM", "HIGH", and "MISSION_CRITICAL".

Returns This instance.

Return type *BaseAlertSearchQuery*

set_threat_ids(*threats*)
Restricts the alerts that this query is performed on to the specified threat ID values.

Parameters **threats** (*list*) – List of string threat ID values.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_time_range(*key*, ***kwargs*)
Restricts the alerts that this query is performed on to the specified time range.

The time may either be specified as a start and end point or as a range.

Parameters

- **key** (*str*) – The key to use for criteria one of create_time, first_event_time, last_event_time, or last_update_time
- ****kwargs** (*dict*) – Used to specify start= for start time, end= for end time, and range= for range.

Returns This instance.

Return type *BaseAlertSearchQuery*

set_types(*alerttypes*)

Restricts the alerts that this query is performed on to the specified alert type values.

Parameters **alerttypes** (*list*) – List of string alert type values. Valid values are "CB_ANALYTICS", and "WATCHLIST".

Returns This instance.

Return type *BaseAlertSearchQuery*

set_workflows(*workflow_vals*)

Restricts the alerts that this query is performed on to the specified workflow status values.

Parameters **workflow_vals** (*list*) – List of string alert type values. Valid values are "OPEN" and "DISMISSED".

Returns This instance.

Return type *BaseAlertSearchQuery*

sort_by(*key*, *direction='ASC'*)

Sets the sorting behavior on a query's results.

Example

```
>>> cb.select(BaseAlert).sort_by("name")
```

Parameters

- **key** (*str*) – The key in the schema to sort by.
- **direction** (*str*) – The sort order, either "ASC" or "DESC".

Returns This instance.

Return type *BaseAlertSearchQuery*

update(*remediation=None*, *comment=None*)

Update all alerts matching the given query. The alerts will be left in an OPEN state after this request.

Parameters

- **remediation** (*str*) – The remediation state to set for all alerts.
- **comment** (*str*) – The comment to set for all alerts.

Returns The request ID, which may be used to select a WorkflowStatus object.

Return type str

class CBAnalyticsAlert(*cb*, *model_unique_id*, *initial_data=None*)
Bases: *cbc_sdk.platform.alerts.BaseAlert*

Represents a CBAnalyticsAlert object in the Carbon Black server.

Initialize the BaseAlert object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – ID of the alert represented.
- **initial_data** (*dict*) – Initial data used to populate the alert.

get_events(*timeout=0*, *async_mode=False*)
Requests enriched events detailed results.

Parameters

- **timeout** (*int*) – Event details request timeout in milliseconds.
- **async_mode** (*bool*) – True to request details in an asynchronous manner.

Returns EnrichedEvents matching the legacy_alert_id

Return type list

Note:

- When using asynchronous mode, this method returns a python future. You can call result() on the future object to wait for completion and get the results.

---

urlobject = '/appservices/v6/orgs/{0}/alerts/cbanalytics'

class CBAnalyticsAlertSearchQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.platform.alerts.BaseAlertSearchQuery*

Represents a query that is used to locate CBAnalyticsAlert objects.

Initialize the CBAnalyticsAlertSearchQuery.

Parameters

- **doc_class** (*class*) – The model class that will be returned by this query.
- **cb** (BaseAPI) – Reference to API object used to communicate with the server.

VALID_KILL_CHAIN_STATUSES = ['RECONNAISSANCE', 'WEAPONIZE', 'DELIVER_EXPLOIT', 'INSTALL

VALID_LOCATIONS = ['ONSITE', 'OFFSITE', 'UNKNOWN']

VALID_POLICY_APPLIED = ['APPLIED', 'NOT_APPLIED']

VALID_RUN_STATES = ['DID_NOT_RUN', 'RAN', 'UNKNOWN']

VALID_SENSOR_ACTIONS = ['POLICY_NOT_APPLIED', 'ALLOW', 'ALLOW_AND_LOG', 'TERMINATE', '

VALID_THREAT_CATEGORIES = ['UNKNOWN', 'NON_MALWARE', 'NEW_MALWARE', 'KNOWN_MALWARE', '

VALID_THREAT_CAUSE_VECTORS = ['EMAIL', 'WEB', 'GENERIC_SERVER', 'GENERIC_CLIENT', 'REM

set_blocked_threat_categories(*categories*)
Restricts the alerts that this query is performed on to the specified threat categories that were blocked.

Parameters **categories** (*list*) – List of threat categories to look for. Valid values are "UNKNOWN", "NON_MALWARE", "NEW_MALWARE", "KNOWN_MALWARE", and "RISKY_PROGRAM".

Returns This instance.

Return type *CBAnalyticsAlertSearchQuery*

set_device_locations(*locations*)
Restricts the alerts that this query is performed on to the specified device locations.

Parameters **locations** (*list*) – List of device locations to look for. Valid values are "ON-SITE", "OFFSITE", and "UNKNOWN".

Returns This instance.

Return type *CBAnalyticsAlertSearchQuery*

set_kill_chain_statuses(*statuses*)
Restricts the alerts that this query is performed on to the specified kill chain statuses.

Parameters **statuses** (*list*) – List of kill chain statuses to look for. Valid values are "RECONNAISSANCE", "WEAPONIZE", "DELIVER_EXPLOIT", "IN-STALL_RUN","COMMAND_AND_CONTROL", "EXECUTE_GOAL", and "BREACH".

Returns This instance.

Return type *CBAnalyticsAlertSearchQuery*

set_not_blocked_threat_categories(*categories*)
Restricts the alerts that this query is performed on to the specified threat categories that were NOT blocked.

Parameters **categories** (*list*) – List of threat categories to look for. Valid values are "UNKNOWN", "NON_MALWARE", "NEW_MALWARE", "KNOWN_MALWARE", and "RISKY_PROGRAM".

Returns This instance.

Return type *CBAnalyticsAlertSearchQuery*

set_policy_applied(*applied_statuses*)
Restricts the alerts that this query is performed on to the specified policy status values.

Parameters **applied_statuses** (*list*) – List of status values to look for. Valid values are "APPLIED" and "NOT_APPLIED".

Returns This instance.

Return type *CBAnalyticsAlertSearchQuery*

set_reason_code(*reason*)
Restricts the alerts that this query is performed on to the specified reason codes (enum values).

Parameters **reason** (*list*) – List of string reason codes to look for.

Returns This instance.

Return type *CBAnalyticsAlertSearchQuery*

set_run_states(*states*)
Restricts the alerts that this query is performed on to the specified run states.

Parameters **states** (*list*) – List of run states to look for. Valid values are "DID_NOT_RUN", "RAN", and "UNKNOWN".

Returns This instance.

Return type *CBAnalyticsAlertSearchQuery*

set_sensor_actions(*actions*)
Restricts the alerts that this query is performed on to the specified sensor actions.

Parameters **actions** (*list*) – List of sensor actions to look for. Valid values are "POLICY_NOT_APPLIED", "ALLOW", "ALLOW_AND_LOG", "TERMINATE", and "DENY".

Returns This instance.

Return type *CBAnalyticsAlertSearchQuery*

set_threat_cause_vectors(*vectors*)
Restricts the alerts that this query is performed on to the specified threat cause vectors.

Parameters **vectors** (*list*) – List of threat cause vectors to look for. Valid values are "EMAIL", "WEB", "GENERIC_SERVER", "GENERIC_CLIENT", "REMOTE_DRIVE", "REMOVABLE_MEDIA", "UNKNOWN", "APP_STORE", and "THIRD_PARTY".

Returns This instance.

Return type *CBAnalyticsAlertSearchQuery*

class DeviceControlAlert(*cb*, *model_unique_id*, *initial_data=None*)
Bases: *cbc_sdk.platform.alerts.BaseAlert*

Represents a DeviceControlAlert object in the Carbon Black server.

Initialize the BaseAlert object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – ID of the alert represented.
- **initial_data** (*dict*) – Initial data used to populate the alert.

urlobject = '/appservices/v6/orgs/{0}/alerts/devicecontrol'

class DeviceControlAlertSearchQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.platform.alerts.BaseAlertSearchQuery*

Represents a query that is used to locate DeviceControlAlert objects.

Initialize the CBAnalyticsAlertSearchQuery.

Parameters

- **doc_class** (*class*) – The model class that will be returned by this query.
- **cb** (BaseAPI) – Reference to API object used to communicate with the server.

set_external_device_friendly_names(*names*)
Restricts the alerts that this query is performed on to the specified external device friendly names.

Parameters **names** (*list*) – List of external device friendly names to look for.

Returns This instance.

Return type *DeviceControlAlertSearchQuery*

set_external_device_ids(*ids*)
Restricts the alerts that this query is performed on to the specified external device IDs.

Parameters **ids** (*list*) – List of external device IDs to look for.

Returns This instance.

Return type *DeviceControlAlertSearchQuery*

set_product_ids(*ids*)
Restricts the alerts that this query is performed on to the specified product IDs.

Parameters **ids** (*list*) – List of product IDs to look for.

Returns This instance.

Return type *DeviceControlAlertSearchQuery*

set_product_names(*names*)
Restricts the alerts that this query is performed on to the specified product names.

Parameters **names** (*list*) – List of product names to look for.

Returns This instance.

Return type *DeviceControlAlertSearchQuery*

set_serial_numbers(*serial_numbers*)
Restricts the alerts that this query is performed on to the specified serial numbers.

Parameters **serial_numbers** (*list*) – List of serial numbers to look for.

Returns This instance.

Return type *DeviceControlAlertSearchQuery*

set_vendor_ids(*ids*)
Restricts the alerts that this query is performed on to the specified vendor IDs.

Parameters **ids** (*list*) – List of vendor IDs to look for.

Returns This instance.

Return type *DeviceControlAlertSearchQuery*

set_vendor_names(*names*)
Restricts the alerts that this query is performed on to the specified vendor names.

Parameters **names** (*list*) – List of vendor names to look for.

Returns This instance.

Return type *DeviceControlAlertSearchQuery*

class WatchlistAlert(*cb*, *model_unique_id*, *initial_data=None*)
Bases: *cbc_sdk.platform.alerts.BaseAlert*

Represents a WatchlistAlert object in the Carbon Black server.

Initialize the BaseAlert object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – ID of the alert represented.
- **initial_data** (*dict*) – Initial data used to populate the alert.

urlobject = '/appservices/v6/orgs/{0}/alerts/watchlist'

class WatchlistAlertSearchQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.platform.alerts.BaseAlertSearchQuery*

Represents a query that is used to locate WatchlistAlert objects.

Initialize the WatchlistAlertSearchQuery.

Parameters

- **doc_class** (*class*) – The model class that will be returned by this query.
- **cb** (BaseAPI) – Reference to API object used to communicate with the server.

set_watchlist_ids(*ids*)
Restricts the alerts that this query is performed on to the specified watchlist ID values.

Parameters **ids** (*list*) – List of string watchlist ID values.

Returns This instance.

Return type *WatchlistAlertSearchQuery*

set_watchlist_names(*names*)
Restricts the alerts that this query is performed on to the specified watchlist name values.

Parameters **names** (*list*) – List of string watchlist name values.

Returns This instance.

Return type *WatchlistAlertSearchQuery*

class Workflow(*cb*, *initial_data=None*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Workflow object in the Carbon Black server.

Variables

- ***changed_by*** – Username of the user who changed the workflow
- ***comment*** – Comment when updating the workflow
- ***last_update_time*** – When the workflow was last updated
- ***remediation*** – Alert remediation code. Indicates the result of the investigation into the alert
- ***state*** – State of the workflow

Initialize the Workflow object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **initial_data** (*dict*) – Initial data used to populate the workflow.

changed_by = None

comment = None

last_update_time = None

remediation = None

state = None

class WorkflowStatus(*cb*, *model_unique_id*, *initial_data=None*)

Bases: *cbc_sdk.platform.base.PlatformModel*

Represents a WorkflowStatus object in the Carbon Black server.

Variables

- ***errors*** – Errors for dismiss alerts or threats, if no errors it won't be included in response
- ***failed_ids*** – Failed ids
- ***id*** – Time based id for async job, it's not unique across the orgs
- ***num_hits*** – Total number of alerts to be operated on
- ***num_success*** – Successfully operated number of alerts
- ***status*** – Status for the async progress
- ***workflow*** – Requested workflow change

Initialize the BaseAlert object.

Parameters

- **cb** (*BaseAPI*) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – ID of the request being processed.
- **initial_data** (*dict*) – Initial data used to populate the status.

errors = []

failed_ids = []

finished

Returns whether this request has been completed.

Returns True if the request is in "finished" state, False if not.

Return type bool

id = None

id_

Returns the request ID of the associated request.

Returns The request ID of the associated request.

Return type str

in_progress

Returns whether this request is currently in progress.

Returns True if the request is in "in progress" state, False if not.

Return type bool

num_hits = None

num_success = None

primary_key = 'id'

queued

Returns whether this request has been queued.

Returns True if the request is in "queued" state, False if not.

Return type bool

status = None

urlobject_single = '/appservices/v6/orgs/{0}/workflow/status/{1}'

workflow = {}

workflow_
Returns the current workflow associated with this request.

Returns The current workflow associated with this request.

Return type *Workflow*

4.6.3 cbc_sdk.platform.base module

Model and Query Classes for Platform

class PlatformModel(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=False*)
Bases: *cbc_sdk.base.NewBaseModel*

Represents a PlatformModel object in the Carbon Black server.

Initialize the PlatformModel object.

Parameters

- **cb** (*CBCloudAPI*) – A reference to the CBCloudAPI object.
- **model_unique_id** (*Any*) – The unique ID for this particular instance of the model object.
- **initial_data** (*dict*) – The data to use when initializing the model object.
- **force_init** (*bool*) – True to force object initialization.
- **full_doc** (*bool*) – True to mark the object as fully initialized.

log = <Logger cbc_sdk.platform.base (WARNING)>
Platform Models

4.6.4 cbc_sdk.platform.devices module

Model and Query Classes for Platform Devices

class Device(*cb*, *model_unique_id*, *initial_data=None*)
Bases: *cbc_sdk.platform.base.PlatformModel*

Represents a Device object in the Carbon Black server.

Variables

- ***activation_code*** – Device activation code
- ***activation_code_expiry_time*** – When the expiration code expires and cannot be used to register a device
- ***ad_group_id*** – Device's AD group
- ***av_ave_version*** – AVE version (part of AV Version)
- ***av_engine*** – Current AV version
- ***av_last_scan_time*** – Last AV scan time

- ***av_master*** – Whether the device is an AV Master (?)
- ***av_pack_version*** – Pack version (part of AV Version)
- ***av_product_version*** – AV Product version (part of AV Version)
- ***av_status*** – AV Statuses
- ***av_update_servers*** – Device's AV servers
- ***av_vdf_version*** – VDF version (part of AV Version)
- ***current_sensor_policy_name*** – Current MSM policy name
- ***deregistered_time*** – When the device was deregistered with the PSC backend
- ***device_id*** – ID of the device
- ***device_meta_data_item_list*** – MSM Device metadata
- ***device_owner_id*** – ID of the user who owns the device
- ***email*** – Email of the user who owns the device
- ***encoded_activation_code*** – Encoded device activation code
- ***first_name*** – First name of the user who owns the device
- ***id*** – ID of the device
- ***last_contact_time*** – Time the device last checked into the PSC backend
- ***last_device_policy_changed_time*** – Last time the device's policy was changed
- ***last_device_policy_requested_time*** – Last time the device requested policy updates
- ***last_external_ip_address*** – Device's external IP
- ***last_internal_ip_address*** – Device's internal IP
- ***last_location*** – Location of the device (on-/off-premises)
- ***last_name*** – Last name of the user who owns the device
- ***last_policy_updated_time*** – Last time the device was MSM processed
- ***last_reported_time*** – Time when device last reported an event to PSC backend
- ***last_reset_time*** – When the sensor was last reset
- ***last_shutdown_time*** – When the device last shut down
- ***linux_kernel_version*** – Linux kernel version
- ***login_user_name*** – Last acive logged in username
- ***mac_address*** – Device's hardware MAC address
- ***middle_name*** – Middle name of the user who owns the device
- ***name*** – Device Hostname
- ***organization_id*** – Org ID to which the device belongs
- ***organization_name*** – Name of the org that owns this device
- ***os*** – Device type
- ***os_version*** – Version of the OS

- ***passive_mode*** – Whether the device is in passive mode (bypass?)
- ***policy_id*** – ID of the policy this device is using
- ***policy_name*** – Name of the policy this device is using
- ***policy_override*** – Manually assigned policy (overrides mass sensor management)
- ***quarantined*** – Whether the device is quarantined
- ***registered_time*** – When the device was registered with the PSC backend
- ***scan_last_action_time*** – When the background scan was last active
- ***scan_last_complete_time*** – When the background scan was last completed
- ***scan_status*** – Background scan status
- ***sensor_out_of_date*** – Whether the device is out of date
- ***sensor_states*** – Active sensor states
- ***sensor_version*** – Version of the PSC sensor
- ***status*** – Device status
- ***target_priority_type*** – Priority of the device
- ***uninstall_code*** – Code to enter to uninstall this device
- ***vdi_base_device*** – VDI Base device
- ***virtual_machine*** – Whether this device is a Virtual Machine (VMware AppDefense integration
- ***virtualization_provider*** – VM Virtualization Provider
- ***windows_platform*** – Type of windows platform (client/server, x86/x64)
- ***deployment_type*** – Classification determined by the device lifecycle management policy

Initialize the Device object.

Parameters

- **cb** (*BaseAPI*) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – ID of the alert represented.
- **initial_data** (*dict*) – Initial data used to populate the alert.

activation_code = None

activation_code_expiry_time = None

ad_group_id = None

av_ave_version = None

av_engine = None

av_last_scan_time = None

av_master = None

av_pack_version = None

av_product_version = None

av_status = []

av_update_servers = []

av_vdf_version = None

background_scan(*flag*)
Set the background scan option for this device.

Parameters **flag** (*bool*) – True to turn background scan on, False to turn it off.

Returns The JSON output from the request.

Return type str

bypass(*flag*)
Set the bypass option for this device.

Parameters **flag** (*bool*) – True to enable bypass, False to disable it.

Returns The JSON output from the request.

Return type str

current_sensor_policy_name = None

delete_sensor()
Delete this sensor device.

Returns The JSON output from the request.

Return type str

deployment_type = None

deregistered_time = None

deviceId
Warn user that Platform Devices use 'id', not 'device_id'.

Platform Device API's return 'id' in API responses, where Endpoint Standard API's return 'deviceId'.

device_id = None

device_meta_data_item_list = []

device_owner_id = None

email = None

encoded_activation_code = None

first_name = None

get_vulnerability_summary(*category=None*)
Get the vulnerabilities associated with this device

Parameters **category** (*string*) – (optional) vulnerabilty category (OS, APP)

Returns summary for the vulnerabilities for this device

Return type dict

get_vulnerabilties()
Get an Operating System or Application Vulnerability List for a specific device.

Returns vulnerabilities for this device

Return type dict

id = None

last_contact_time = None

last_device_policy_changed_time = None

last_device_policy_requested_time = None

last_external_ip_address = None

last_internal_ip_address = None

last_location = None

last_name = None

last_policy_updated_time = None

last_reported_time = None

last_reset_time = None

last_shutdown_time = None

linux_kernel_version = None

login_user_name = None

lr_session(*async_mode=False*)

Retrieve a Live Response session object for this Device.

Returns Live Response session for the Device.

Return type *LiveResponseSession*

Raises `ApiError` – If there is an error establishing a Live Response session for this Device.

mac_address = None

middle_name = None

name = None

organization_id = None

organization_name = None

os = None

os_version = None

passive_mode = None

policy_id = None

policy_name = None

policy_override = None

primary_key = 'id'

quarantine(*flag*)

Set the quarantine option for this device.

Parameters **flag** (*bool*) – True to enable quarantine, False to disable it.

Returns The JSON output from the request.

Return type str

quarantined = None

registered_time = None

scan_last_action_time = None

scan_last_complete_time = None

scan_status = None

sensor_out_of_date = None

sensor_states = []

sensor_version = None

status = None

target_priority_type = None

uninstall_code = None

uninstall_sensor()
Uninstall this sensor device.

Returns The JSON output from the request.

Return type str

update_policy(*policy_id*)
Set the current policy for this device.

Parameters **policy_id** (*int*) – ID of the policy to set for the devices.

Returns The JSON output from the request.

Return type str

update_sensor_version(*sensor_version*)
Update the sensor version for this device.

Parameters **sensor_version** (*dict*) – New version properties for the sensor.

Returns The JSON output from the request.

Return type str

urlobject = '/appservices/v6/orgs/{0}/devices'

urlobject_single = '/appservices/v6/orgs/{0}/devices/{1}'

vdi_base_device = None

virtual_machine = None

virtualization_provider = None

vulnerability_refresh()
Perform an action on a specific device. Only REFRESH is supported.

windows_platform = None

class DeviceSearchQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.CriteriaBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.AsyncQueryMixin*

Represents a query that is used to locate Device objects.

Initialize the DeviceSearchQuery.

Parameters

- **doc_class** (*class*) – The model class that will be returned by this query.
- **cb** (BaseAPI) – Reference to API object used to communicate with the server.

VALID_DEPLOYMENT_TYPES = ['ENDPOINT', 'WORKLOAD']

VALID_DIRECTIONS = ['ASC', 'DESC']

VALID_OS = ['WINDOWS', 'ANDROID', 'MAC', 'IOS', 'LINUX', 'OTHER']

VALID_PRIORITIES = ['LOW', 'MEDIUM', 'HIGH', 'MISSION_CRITICAL']

VALID_STATUSES = ['PENDING', 'REGISTERED', 'UNINSTALLED', 'DEREGISTERED', 'ACTIVE', 'I

background_scan(*scan*)
Set the background scan option for the specified devices.

Parameters **scan** (*bool*) – True to turn background scan on, False to turn it off.

Returns The JSON output from the request.

Return type str

bypass(*enable*)
Set the bypass option for the specified devices.

Parameters **enable** (*bool*) – True to enable bypass, False to disable it.

Returns The JSON output from the request.

Return type str

delete_sensor()
Delete the specified sensor devices.

Returns The JSON output from the request.

Return type str

download()
Uses the query parameters that have been set to download all device listings in CSV format.

Example

```
>>> cb.select(Device).set_status(["ALL"]).download()
```

Returns The CSV raw data as returned from the server.

Return type str

Raises ApiError – If status values have not been set before calling this function.

quarantine(*enable*)
Set the quarantine option for the specified devices.

Parameters **enable** (*bool*) – True to enable quarantine, False to disable it.

Returns The JSON output from the request.

Return type str

set_ad_group_ids(*ad_group_ids*)
Restricts the devices that this query is performed on to the specified AD group IDs.

Parameters **ad_group_ids** (*list*) – List of AD group IDs to restrict the search to.

Returns This instance.

Return type *DeviceSearchQuery*

Raises `ApiError` – If invalid (non-int) values are passed in the list.

set_deployment_type(*deployment_type*)
Restricts the devices that this query is performed on to the specified deployment types.

Parameters **deployment_type** (*list*) – List of deployment types to restrict search to.

Returns This instance.

Return type *DeviceSearchQuery*

Raises `ApiError` – If invalid deployment type values are passed in the list.

set_device_ids(*device_ids*)
Restricts the devices that this query is performed on to the specified device IDs.

Parameters **device_ids** (*list*) – List of device IDs to restrict the search to.

Returns This instance.

Return type *DeviceSearchQuery*

Raises `ApiError` – If invalid (non-int) values are passed in the list.

set_exclude_sensor_versions(*sensor_versions*)
Restricts the devices that this query is performed on to exclude specified sensor versions.

Parameters **sensor_versions** (*list*) – List of sensor versions to be excluded.

Returns This instance.

Return type *DeviceSearchQuery*

Raises `ApiError` – If invalid (non-string) values are passed in the list.

set_last_contact_time(**args*, ***kwargs*)
Restricts the devices that this query is performed on to the specified last contact time.

Parameters

- ***args** (*list*) – Not used, retained for compatibility.
- ****kwargs** (*dict*) – Keyword arguments to this function. The critical ones are "start" (the start time), "end" (the end time), and "range" (the range value).

Returns This instance.

Return type *DeviceSearchQuery*

Raises `ApiError` – If an invalid combination of keyword parameters are specified.

set_max_rows(*max_rows*)
Sets the max number of devices to fetch in a singular query

Parameters **max_rows** (*integer*) – Max number of devices

Returns This instance.

Return type *DeviceSearchQuery*

Raises `ApiError` – If rows is negative or greater than 10000

set_os(*operating_systems*)
Restricts the devices that this query is performed on to the specified operating systems.

Parameters **operating_systems** (*list*) – List of operating systems to restrict search to. Valid values in this list are "WINDOWS", "ANDROID", "MAC", "IOS", "LINUX", and "OTHER".

Returns This instance.

Return type *DeviceSearchQuery*

Raises ApiError – If invalid operating system values are passed in the list.

set_policy_ids(*policy_ids*)
Restricts the devices that this query is performed on to the specified policy IDs.

Parameters **policy_ids** (*list*) – List of policy IDs to restrict the search to.

Returns This instance.

Return type *DeviceSearchQuery*

Raises ApiError – If invalid (non-int) values are passed in the list.

set_status(*statuses*)
Restricts the devices that this query is performed on to the specified status values.

Parameters **statuses** (*list*) – List of statuses to restrict search to. Valid values in this list are "PENDING", "REGISTERED", "UNINSTALLED", "DEREGISTERED", "ACTIVE", "INACTIVE", "ERROR", "ALL", "BYPASS_ON", "BYPASS", "QUARANTINE", "SENSOR_OUTOFDATE", "DELETED", and "LIVE".

Returns This instance.

Return type *DeviceSearchQuery*

Raises ApiError – If invalid status values are passed in the list.

set_target_priorities(*target_priorities*)
Restricts the devices that this query is performed on to the specified target priority values.

Parameters **target_priorities** (*list*) – List of priorities to restrict search to. Valid values in this list are "LOW", "MEDIUM", "HIGH", and "MISSION_CRITICAL".

Returns This instance.

Return type *DeviceSearchQuery*

Raises ApiError – If invalid priority values are passed in the list.

sort_by(*key*, *direction='ASC'*)
Sets the sorting behavior on a query's results.

Example

```
>>> cb.select(Device).sort_by("status")
```

Parameters

- **key** (*str*) – The key in the schema to sort by.
- **direction** (*str*) – The sort order, either "ASC" or "DESC".

Returns This instance.

Return type *DeviceSearchQuery*

Raises ApiError – If an invalid direction value is passed.

uninstall_sensor()
Uninstall the specified sensor devices.

Returns The JSON output from the request.

Return type str

update_policy(*policy_id*)
Set the current policy for the specified devices.

Parameters **policy_id** (*int*) – ID of the policy to set for the devices.

Returns The JSON output from the request.

Return type str

update_sensor_version(*sensor_version*)
Update the sensor version for the specified devices.

Parameters **sensor_version** (*dict*) – New version properties for the sensor.

Returns The JSON output from the request.

Return type str

4.6.5 cbc_sdk.platform.events module

Model and Query Classes for Events

class Event(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=True*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Event object in the Carbon Black server.

Initialize the Event object.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **model_unique_id** (*str*) – The unique ID for this particular instance of the model object.
- **initial_data** (*dict*) – The data to use when initializing the model object.
- **force_init** (*bool*) – True to force object initialization.
- **full_doc** (*bool*) – True to mark the object as fully initialized.

default_sort = 'last_update desc'

primary_key = 'process_guid'

urlobject = '/api/investigate/v2/orgs/{}/events/{}/_search'

validation_url = '/api/investigate/v1/orgs/{}/events/search_validation'

class EventFacet(*cb*, *model_unique_id*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a EventFacet object in the Carbon Black server.

Initialize an EventFacet object with initial_data.

class Ranges(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Ranges object in the Carbon Black server.

Initialize a ProcessFacet Ranges object with initial_data.

facets
Returns the reified *EventFacet.Terms._facets* for this result.

fields
Returns the ranges fields for this result.

class Terms(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Terms object in the Carbon Black server.

Initialize a ProcessFacet Terms object with initial_data.

facets
Returns the terms' facets for this result.

fields
Returns the terms facets' fields for this result.

primary_key = 'process_guid'

ranges_
Returns the reified *EventFacet.Ranges* for this result.

terms_
Returns the reified *EventFacet.Terms* for this result.

urlobject = '/api/investigate/v2/orgs/{}/events/{}/_facet'

class EventFacetQuery(*cls*, *cb*, *query=None*)
Bases: *cbc_sdk.base.FacetQuery*

Represents the logic for an Event Facet query.

Initialize the FacetQuery object.

class EventQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.Query*

Represents the logic for an Event query.

Initialize the Query object.

Parameters

- **doc_class** (*class*) – The class of the model this query returns.
- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.

4.6.6 cbc_sdk.platform.grants module

Model and Query Classes for Administrative Grants and Profiles

class Grant(*cb*, *model_unique_id*, *initial_data=None*)
Bases: *cbc_sdk.base.MutableBaseModel*

Represents a Grant object in the Carbon Black server.

Variables

- ***principal*** – URN of principal
- ***expires*** – Date and time the grant expires
- ***revoked*** – True if this grant has been/is being revoked
- ***roles*** – URNs of roles assigned to grant (obsolete)
- ***profiles*** – Profiles assigned to this grant
- ***org_ref*** – URN of org that this grant references
- ***principal_name*** – Name of principal
- ***created_by*** – URN of user that created this grant
- ***updated_by*** – URN of user that last updated this grant
- ***create_time*** – Date and time the grant was created
- ***update_time*** – Date and time the grant was last updated
- ***can_manage*** – True if can manage (TBD)

Initialize the Grant object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – URN of the principal associated with this grant.
- **initial_data** (*dict*) – Initial data used to populate the grant.

class GrantBuilder(*cb*, *principal*)

Bases: object

Auxiliary object used to construct a new grant.

Creates the empty GrantBuilder object.

Parameters

- **cb** (CBCloudAPI) – The reference to the API object that accesses the server.
- **principal** (*str*) – The URN for the principal.

add_role(*role*)

Adds a role to be associated with the new grant.

Parameters **role** (*str*) – URN of the role to be added.
Returns This object.
Return type *GrantBuilder*

build()

Builds the new Grant object from the entered data.

Returns The new Grant object.
Return type *Grant*

create_profile(*template=None*)

Returns either a new Profile, or a ProfileBuilder to begin the process of adding profile to the new grant.

Parameters **template** (*dict*) – Optional template to use for creating the profile object.
Returns

If a template was specified, return the new Profile object. ProfileBuilder: If template was None, returns a ProfileBuilder object. Call methods on it to set
up the new profile, and then call build() to create the new profile.

Return type *Profile*

set_org(*org*)
Sets the organization reference to be associated with the new grant.
Parameters **org** (*str*) – Organization key or URN of the organization.
Returns This object.
Return type *GrantBuilder*

set_principal_name(*name*)
Sets the principal name to be associated with the new object.
Parameters **name** (*str*) – Principal name to be used.
Returns This object.
Return type *GrantBuilder*

set_roles(*roles*)
Sets the roles to be associated with the new grant.
Parameters **roles** (*list*) – List of role URNs.
Returns This object.
Return type *GrantBuilder*

class Profile(*cb*, *grant*, *model_unique_id*, *initial_data=None*)
Bases: *cbc_sdk.base.MutableBaseModel*

Represents a Profile object in the Carbon Black server.

Variables

- ***profile_uuid*** – UUID identifying this profile
- ***orgs*** – Organization references for this profile
- ***org_groups*** – Organization groups added to this grant (TBD)
- ***roles*** – URNs of roles assigned to profile
- ***conditions*** – Access conditions to be imposed on this profile
- ***can_manage*** – True if can manage (TBD)

Initialize the Profile object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **grant** (Grant) – Reference to the Grant containing this Profile.
- **model_unique_id** (*str*) – UUID of this profile.
- **initial_data** (*dict*) – Initial data used to populate the profile.

allowed_orgs
Returns the list of organization URNs allowed by this profile.

can_manage = None

conditions = {}

matches_template(*template*)
Returns whether or not the profile matches the given template.
Parameters **template** (*dict*) – The profile template to match against.
Returns True if this profile matches the template, False if not.
Return type bool

org_groups = []

orgs = {}

primary_key = 'profile_uuid'

profile_uuid = None

roles = []

set_disabled(*flag*)
Sets the "disabled" flag on a profile.
Parameters **flag** (*bool*) – True to disable the profile, False to enable it.

set_expiration(*expiration*)
Sets the expiration time on a profile.
Parameters **expiration** (*str*) – Expiration time to set on the profile (ISO 8601 format).

urlobject = '/access/v2/orgs/{0}/grants/{1}/profiles'

urlobject_single = '/access/v2/orgs/{0}/grants/{1}/profiles/{2}'

class ProfileBuilder(*grant*)
Bases: object

Auxiliary object used to construct a new profile on a grant.

Create the empty ProfileBuilder object.

Parameters **grant** (*Grant/GrantBuilder*) – The grant or GrantBuilder the new profile will be attached to.

add_org(*org*)
Adds the specified organization to the list of organizations for which the new profile is allowed.
Parameters **org** (*str*) – Organization key or URN of the organization to be added.
Returns This object.
Return type *ProfileBuilder*

add_role(*role*)
Adds a role identifier to the list of roles associated with the new profile.
Parameters **role** (*str*) – URN of the role to add.
Returns This object.
Return type *ProfileBuilder*

build()
Builds the new Profile object from the entered data.
Returns The new Profile object.
Return type *Profile*

set_conditions(*conditions_structure*)
Sets the access conditions associated with the new profile.
Parameters **conditions_structure** (*dict*) – The conditions associated with the new profile, with 'cidr', 'expiration', and 'disabled' members.
Returns This object.
Return type *ProfileBuilder*

set_disabled(*flag*)
Sets whether or not the new profile is disabled.
Parameters **flag** (*bool*) – True if this profile is disabled, False if noe.
Returns This object.
Return type *ProfileBuilder*

set_expiration(*expiration*)
Sets the expiration time on the new profile.
Parameters **expiration** (*str*) – The expiration time, specified as ISO 8601.
Returns This object.

Return type *ProfileBuilder*

set_orgs(*orgs_list*)
Set the list of organizations to which the new profile is allowed access.
Parameters **orgs_list** (*list*) – List of organization keys or URNs.
Returns This object.
Return type *ProfileBuilder*

set_roles(*roles_list*)
Sets the list of roles associated with the new profile.
Parameters **roles_list** (*list*) – A list of role URNs.
Returns This object.
Return type *ProfileBuilder*

can_manage = None

classmethod create(*cb*, *template=None*, ***kwargs*)
Returns either a new Grant, or a GrantBuilder to begin the process of creating a new grant.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **template** (*dict*) – Optional template to use for creating the grant object.
- **kwargs** (*dict*) – Additional arguments to be used to specify the principal, if template is None. The arguments to be used are 'org_key' and 'userid' for the two parts of the ID.

Returns

The new grant object, if the template is specified. GrantBuilder: If template was None, returns a GrantBuilder object. Call methods on it to set

up the new grant, and then call build() to create the new grant.

Return type *Grant*

Raises ApiError – If the principal is inadequately specified (whether for the Grant or GrantBuilder).

create_profile(*template=None*)
Returns either a new Profile, or a ProfileBuilder to begin the process of adding a new profile to this grant.

Parameters **template** (*dict*) – Optional template to use for creating the profile object.

Returns

If a template was specified, return the new Profile object. ProfileBuilder: If template was None, returns a ProfileBuilder object. Call methods on it to set

up the new profile, and then call build() to create the new profile.

Return type *Profile*

create_time = None

created_by = None

expires = None

classmethod get_permitted_role_urns(*cb*)
Returns a list of the URNs of all permitted roles that we can assign to a user.

Parameters **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.

Returns A list of string role URNs that we are permitted to manage (assign to users).

Return type list

org_ref = None

primary_key = 'principal'

principal = None

principal_name = None

profiles = []

profiles_
Return the profiles associated with this grant.

Returns The profiles associated with this grant, each represented as a Profile object.

Return type list

revoked = None

roles = []

update_time = None

updated_by = None

urlobject = '/access/v2/orgs/{0}/grants'

urlobject_single = '/access/v2/orgs/{0}/grants/{1}'

class GrantQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.AsyncQueryMixin*

Query for retrieving grants in bulk.

Initialize the Query object.

Parameters

- **doc_class** (*class*) – The class of the model this query returns.
- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.

add_principal(*principal_urn*, *org_urn*)
Add a new principal to the query.

Parameters

- **principal_urn** (*str*) – URN of the principal to search for grants on.
- **org_urn** (*str*) – URN of the organization to which the principal belongs.

Returns This object.

Return type *GrantQuery*

log = <Logger cbc_sdk.platform.grants (WARNING)>
Grant and Profile Models

normalize_org(*org*)
Internal function to normalize an org reference to a URN.

4.6.7 cbc_sdk.platform.processes module

Model and Query Classes for Processes

class AsyncProcessQuery(*doc_class*, *cb*)

Bases: *cbc_sdk.base.Query*

Represents the query logic for an asychronous Process query.

This class specializes *Query* to handle the particulars of process querying.

Initialize the AsyncProcessQuery object.

Parameters

- **doc_class** (*class*) – The class of the model this query returns.
- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.

set_rows(*rows*)

Sets the 'rows' query parameter to the 'results' API call, determining how many rows to request per batch.

This will not limit the total results to rows instead the batch size will use rows and all of the num_available will be fetched.

Parameters **rows** (*int*) – How many rows to request.

timeout(*msecs*)

Sets the timeout on a process query.

Parameters **msecs** (*int*) – Timeout duration, in milliseconds.

Returns

The Query object with new milliseconds parameter.

Return type *Query* (*AsyncProcessQuery*)

Example:

```
>>> cb.select(Process).where(process_name="foo.exe").timeout(5000)
```

class Process(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=False*)

Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Process object in the Carbon Black server.

Initialize the Process object.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **model_unique_id** (*str*) – The unique ID (GUID) for this process.
- **initial_data** (*dict*) – The data to use when initializing the model object.
- **force_init** (*bool*) – True to force object initialization.
- **full_doc** (*bool*) – True to mark the object as fully initialized.

class Summary(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=True*)

Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Summary object in the Carbon Black server.

Initialize the Summary object.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **model_unique_id** (*str*) – The unique ID for this particular instance of the model object.
- **initial_data** (*dict*) – The data to use when initializing the model object.
- **force_init** (*bool*) – True to force object initialization.
- **full_doc** (*bool*) – True to mark the object as fully initialized.

```
SHOW_ATTR = {'children':  {'fields':  ['process_name', 'process_guid', 'process_has
```

```
default_sort = 'last_update desc'
```

```
primary_key = 'process_guid'
```

```
result_url = '/api/investigate/v2/orgs/{}/processes/summary_jobs/{}/results'
```

```
summary_format = 'summary'
```

```
urlobject = '/api/investigate/v2/orgs/{}/processes/summary_jobs'
```

class Tree(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=True*)

Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Tree object in the Carbon Black server.

Initialize the Tree object.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **model_unique_id** (*str*) – The unique ID for this particular instance of the model object.
- **initial_data** (*dict*) – The data to use when initializing the model object.
- **force_init** (*bool*) – True to force object initialization.
- **full_doc** (*bool*) – True to mark the object as fully initialized.

```
SHOW_ATTR = {'children':  ['process_name', 'process_guid', 'process_hash', 'process
```

```
default_sort = 'last_update desc'
```

```
primary_key = 'process_guid'
```

```
result_url = '/api/investigate/v2/orgs/{}/processes/summary_jobs/{}/results'
```

```
summary_format = 'tree'
```

```
urlobject = '/api/investigate/v2/orgs/{}/processes/summary_jobs'
```

approve_process_sha256(*description=''*)

Approves the application by adding the process_sha256 to the WHITE_LIST

Parameters **description** – The justification for why the application was added to the WHITE_LIST

Returns

ReputationOverride object created in the Carbon Black Cloud

Return type *ReputationOverride* (cbc_sdk.platform.ReputationOverride)

ban_process_sha256(*description=''*)
Bans the application by adding the process_sha256 to the BLACK_LIST

Parameters **description** – The justification for why the application was added to the BLACK_LIST

Returns

ReputationOverride object created in the Carbon Black Cloud

Return type *ReputationOverride* (cbc_sdk.platform.ReputationOverride)

children
Returns a list of child processes for this process.

Returns

List of Processes, one for each child of the parent Process.

Return type children ([*Process*])

default_sort = 'last_update desc'

events(***kwargs*)
Returns a query for events associated with this process's process GUID.

Parameters **kwargs** – Arguments to filter the event query with.

Returns

Query object with the appropriate search parameters for events

Return type query (cbc_sdk.enterprise_edr.Query)

Example:

```
>>> [print(event) for event in process.events()]
>>> [print(event) for event in process.events(event_type="modload")]
```

facets()
Returns a FacetQuery for a Process.

This represents the search for a summary of result groupings (facets). The returned AsyncFacetQuery object must have facet fields or ranges specified before it can be submitted, using the *add_facet_field()* or *add_range()* methods.

get_details(*timeout=0*, *async_mode=False*)
Requests detailed results.

Parameters

- **timeout** (*int*) – Event details request timeout in milliseconds.
- **async_mode** (*bool*) – True to request details in an asynchronous manner.

Note:

- When using asynchronous mode, this method returns a python future. You can call result() on the future object to wait for completion and get the results.

---

parents
Returns a parent process associated with this process.

Returns Parent Process if one exists, None if the process has no recorded parent.

Return type parent (*Process*)

primary_key = 'process_guid'

process_md5
Returns a string representation of the MD5 hash for this process.

Returns MD5 hash of the process.

Return type hash (str)

process_pids
Returns a list of PIDs associated with this process.

Returns List of integer PIDs. None if there are no associated PIDs.

Return type pids ([int])

process_sha256
Returns a string representation of the SHA256 hash for this process.

Returns SHA256 hash of the process.

Return type hash (str)

siblings
Returns a list of sibling processes for this process.

Returns

List of Processes, one for each sibling of the parent Process.

Return type siblings ([*Process*])

summary
Returns organization-specific information about this process.

tree
Returns a Process Tree associated with this process.

Returns Tree with children (and possibly siblings).

Return type *Tree* (cbc_sdk.enterprise_edr.Tree)

Example:

```
>>> tree = process.tree
```

urlobject = ''

validation_url = '/api/investigate/v1/orgs/{}/processes/search_validation'

class ProcessFacet(*cb*, *model_unique_id*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a ProcessFacet object in the Carbon Black server.

Variables

- ***job_id*** – The Job ID assigned to this query
- ***terms*** – Contains the Process Facet search results
- ***ranges*** – Groupings for search result properties that are ISO 8601 timestamps or numbers
- ***contacted*** – The number of searchers contacted for this query
- ***completed*** – The number of searchers that have reported their results

Initialize a ResultFacet object with initial_data.

class Ranges(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Ranges object in the Carbon Black server.

Initialize a ProcessFacet Ranges object with initial_data.

facets
Returns the reified *ProcessFacet.Terms._facets* for this result.

fields
Returns the ranges fields for this result.

class Terms(*cb*, *initial_data*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a Terms object in the Carbon Black server.

Initialize a ProcessFacet Terms object with initial_data.

facets
Returns the terms' facets for this result.

fields
Returns the terms facets' fields for this result.

completed = None

contacted = None

job_id = None

num_found = None

primary_key = 'job_id'

ranges = []

ranges_
Returns the reified *ProcessFacet.Ranges* for this result.

result_url = '/api/investigate/v2/orgs/{}/processes/facet_jobs/{}/results'

submit_url = '/api/investigate/v2/orgs/{}/processes/facet_jobs'

terms = {}

terms_
Returns the reified *ProcessFacet.Terms* for this result.

class SummaryQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.AsyncQueryMixin*, *cbc_sdk.base.QueryBuilderSupportMixin*

Represents the logic for a Process Summary or Process Tree query.

Initialize the SummaryQuery object.

Parameters

- **doc_class** (*class*) – The class of the model this query returns.
- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.

results
Save query results to self._results with self._search() method.

set_time_range(*start=None*, *end=None*, *window=None*)
Sets the 'time_range' query body parameter, determining a time window based on 'device_timestamp'.

Parameters

- **start** (*str in ISO 8601 timestamp*) – When to start the result search.
- **end** (*str in ISO 8601 timestamp*) – When to end the result search.
- **window** (*str*) – Time window to execute the result search, ending on the current time. Should be in the form "-2w", where y=year, w=week, d=day, h=hour, m=minute, s=second.

Note:

- *window* will take precendent over *start* and *end* if provided.

Examples

query = api.select(Event).set_time_range(start="2020-10-20T20:34:07Z") second_query = api.select(Event).set_time_range(start="2020-10-20T20:34:07Z", end="2020-10-30T20:34:07Z") third_query = api.select(Event).set_time_range(window='-3d')

timeout(*msecs*)
Sets the timeout on a process query.

Parameters **msecs** (*int*) – Timeout duration, in milliseconds.

Returns

The Query object with new milliseconds parameter.

Return type *Query* (*AsyncProcessQuery*)

Example:

```
>>> cb.select(Process).where(process_name="foo.exe").timeout(5000)
```

4.6.8 cbc_sdk.platform.reputation module

Model and Query Classes for Reputation

class ReputationOverride(*cb*, *model_unique_id*, *initial_data=None*)
Bases: *cbc_sdk.platform.base.PlatformModel*

Represents a ReputationOverride object in the Carbon Black server.

Variables

- ***id*** – An identifier for a reputation override
- ***created_by*** – Creator of the override
- ***create_time*** – Time the override was created
- ***description*** – Justification for override
- ***override_list*** – The override list to add a new reputation (BLACK_LIST only valid for SHA256)
- ***override_type*** – Process property match when applying override

- ***sha256_hash*** – A hexadecimal string of length 64 characters representing the SHA-256 hash of the application
- ***filename*** – An application name for the hash
- ***signed_by*** – Name of the signer for the application
- ***certificate_authority*** – Certificate authority that authorizes the validity of the certificate
- ***path*** – The absolute path to file or directory where tool exists on disk
- ***include_child_processes*** – Include tool's child processes on approved list

Initialize the ReputationOverride object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – ID of the alert represented.
- **initial_data** (*dict*) – Initial data used to populate the alert.

classmethod bulk_delete(*cb*, *overrides*)

Deletes reputation overrides in bulk by id.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **overrides** (*List*) – List if reputation override ids

Example

["e9410b754ea011ebbfd0db2585a41b07"

]

certificate_authority = None

classmethod create(*cb*, *initial_data*)

Returns all vendors and products that have been seen for the organization.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **initial_data** (*Object*) – The initial data for a ReputationOverride

Example

{ "description": "Banned as known malware", "override_list": "BLACK_LIST", "override_type": "SHA256", "sha256_hash": "dd191a5b23df92e13a8852291f9fb5ed594b76a28a5a464418442584afd1e048", "filename": "foo.exe"

}

Returns The created ReputationOverride object based on the specified properties

Return type *ReputationOverride*

create_time = None

created_by = None

delete()
Delete this object.

description = None

filename = None

id = None

include_child_processes = None

override_list = None

override_type = None

path = None

primary_key = 'id'

sha256_hash = None

signed_by = None

urlobject = '/appservices/v6/orgs/{0}/reputations/overrides'

urlobject_single = '/appservices/v6/orgs/{0}/reputations/overrides/{1}'

class ReputationOverrideQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.AsyncQueryMixin*

Represents a query that is used to locate ReputationOverride objects.

Initialize the ReputationOverrideQuery.

Parameters

- **doc_class** (*class*) – The model class that will be returned by this query.
- **cb** (BaseAPI) – Reference to API object used to communicate with the server.

VALID_DIRECTIONS = ['ASC', 'DESC', 'asc', 'desc']

set_override_list(*override_list*)
Sets the override_list criteria filter.

Parameters **override_list** (*str*) – Override List to filter on.

Returns The ReputationOverrideQuery with specified override_list.

set_override_type(*override_type*)
Sets the override_type criteria filter.

Parameters **override_type** (*str*) – Override List to filter on.

Returns The ReputationOverrideQuery with specified override_type.

sort_by(*key*, *direction='ASC'*)
Sets the sorting behavior on a query's results.

Example

```
>>> cb.select(ReputationOverride).sort_by("create_time")
```

Parameters

- **key** (*str*) – The key in the schema to sort by.
- **direction** (*str*) – The sort order, either "ASC" or "DESC".

Returns This instance.

Return type *ReputationOverrideQuery*

Raises ApiError – If an invalid direction value is passed.

4.6.9 cbc_sdk.platform.users module

Model and Query Classes for Users

class User(*cb*, *model_unique_id*, *initial_data=None*)

Bases: *cbc_sdk.base.MutableBaseModel*

Represents a User object in the Carbon Black server.

Variables

- ***org_key*** – Organization key for this user
- ***auth_method*** – Method to be used for the user to authenticate
- ***admin_login_version*** – Version number of the user information
- ***email*** – User's E-mail address
- ***login_name*** – Login name for the user
- ***login_id*** – Login ID (user ID) for this user
- ***phone*** – User's phone number
- ***first_name*** – User's first name
- ***last_name*** – User's last name
- ***org_id*** – ID of the organization the user is in
- ***org_admin_version*** – TBD
- ***role*** – Not used, always "DEPRECATED"
- ***contact_id*** – ID of the user's contact information
- ***contact_version*** – Version of the user's contact information

Initialize the User object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **model_unique_id** (*int*) – Login ID of this user.
- **initial_data** (*dict*) – Initial data used to populate the user.

class UserBuilder(*cb*)

Bases: object

Auxiliary object used to construct a new User.

Create the empty UserBuilder object.

Parameters **cb** (BaseAPI) – Reference to API object used to communicate with the server.

add_grant_profile(*orgs*, *roles*)
Adds a grant profile for the new user.

Parameters
- **orgs** (*list[str]*) – List of organizations to be allowed, specified as keys or URNs.
- **roles** (*list[str]*) – List of roles to be granted, specified as URNs.

Returns This object.
Return type *UserBuilder*

build()
Builds the new user.

Notes

The new user will not be "findable" by other API functions until it has been activated and its initial password has been set.

set_auth_method(*method*)
Sets the authentication method for the new user. The default is 'PASSWORD'.

Parameters **method** (*str*) – The authentication method for the new user.
Returns This object.
Return type *UserBuilder*

set_email(*email*)
Sets the E-mail address for the new user.

Parameters **email** (*str*) – The E-mail address for the new user.
Returns This object.
Return type *UserBuilder*

set_first_name(*first_name*)
Sets the first name for the new user.

Parameters **first_name** (*str*) – The first name for the new user.
Returns This object.
Return type *UserBuilder*

set_last_name(*last_name*)
Sets the last name for the new user.

Parameters **last_name** (*str*) – The last name for the new user.
Returns This object.
Return type *UserBuilder*

set_phone(*phone*)
Sets the phone number for the new user.

Parameters **phone** (*str*) – The phone number for the new user.
Returns This object.
Return type *UserBuilder*

set_role(*role*)
Sets the role URN for the new user.

Parameters **role** (*str*) – The URN of the role to set for the user.
Returns This object.
Return type *UserBuilder*

add_profiles(*profile_templates*)
Add the specified profiles to the user's grant.

Parameters **profile_templates** (*list[dict]*) – List of profile templates to be added to the user.

admin_login_version = None

auth_method = None

classmethod bulk_add_profiles(*users*, *profile_templates*)
Add the specified profiles to the specified users' grants.

Parameters

- **users** (*list[User]*) – List of User objects specifying users to be modified.
- **profile_templates** (*list[dict]*) – List of profile templates to be added to the users.

classmethod bulk_create(*cb*, *user_templates*, *profile_templates*)
Creates a series of new users.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **user_templates** (*list[dict]*) – List of templates for users to be created.
- **profile_templates** (*list[dict]*) – List of profile templates to be applied to each user.

classmethod bulk_delete(*users*)
Deletes all the listed users.

Parameters **users** (*list[User]*) – List of User objects specifying users to be deleted.

classmethod bulk_disable_all_access(*users*)
Disables all access profiles held by the listed users.

Parameters **users** (*list[User]*) – List of User objects specifying users to be disabled.

classmethod bulk_disable_profiles(*users*, *profile_templates*)
Disable the specified profiles in the specified users' grants.

Parameters

- **users** (*list[User]*) – List of User objects specifying users to be modified.
- **profile_templates** (*list[dict]*) – List of profile templates to be disabled.

change_role(*role_urn*, *org=None*)
Add the specified role to the user (either to the grant or the profiles).

Parameters

- **role_urn** (*str*) – URN of the role to be added.
- **org** (*str*) – If specified, only profiles that match this organization will have the role added. Organization may be specified as either an org key or a URN.

Raises ApiError – If the user is a "legacy" user that has no grant.

contact_id = None

contact_version = None

classmethod create(*cb*, *template=None*)
Creates a new user.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.

- **template** (*dict*) – Optional template data for creating the new user.

Returns

If template is None, returns an instance of this object. Call methods on the object to set the values associated with the new user, and then call build() to create it.

Return type *UserBuilder*

disable_all_access()
Disables all access profiles held by ths user.

Raises ApiError – If the user is a "legacy" user that has no grant.

disable_profiles(*profile_templates*)
Disable the specified profiles in the user's grant.

Parameters **profile_templates** (*list[dict]*) – List of profile templates to be disabled.

Raises ApiError – If the user is a "legacy" user that has no grant.

email = None

first_name = None

grant()
Locates the access grant for this user.

Returns Access grant for this user, or None if the user has none.

Return type *Grant*

last_name = None

login_id = None

login_name = None

org_admin_version = None

org_id = None

org_key = None

org_urn
Returns the URN for this user's organization (used in accessing Grants).

Returns URN for this user's organization.

Return type str

phone = None

primary_key = 'login_id'

reset_google_authenticator_registration()
Forces Google Authenticator registration to be reset for this user.

role = None

set_profile_expiration(*profile_templates*, *expiration_date*)
Set the expiration time for the specified profiles in the user's grant.

Parameters

- **profile_templates** (*list[dict]*) – List of profile templates to be reset.
- **expiration_date** (*str*) – New expiration date, in ISO 8601 format.

Raises `ApiError` – If the user is a "legacy" user that has no grant.

urlobject = '/appservices/v6/orgs/{0}/users'

urlobject_single = '/appservices/v6/orgs/{0}/users/{1}'

urn
Returns the URN for this user (used in accessing Grants).

Returns URN for this user.

Return type str

class UserQuery(*doc_class*, *cb*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.AsyncQueryMixin*

Query for retrieving users in bulk.

Initialize the Query object.

Parameters

- **doc_class** (*class*) – The class of the model this query returns.
- **cb** (`CBCloudAPI`) – A reference to the CBCloudAPI object.

email_addresses(*addrs*)
Limit the query to users with the specified E-mail addresses. Call multiple times to add multiple addresses.

Parameters **addrs** (*list[str]*) – List of addresses to be added to the query.

Returns This object.

Return type *UserQuery*

user_ids(*userids*)
Limit the query to users with the specified user IDs. Call multiple times to add multiple user IDs.

Parameters **userids** (*list[str]*) – List of user IDs to be added to the query.

Returns This object.

Return type *UserQuery*

normalize_profile_list(*profile_templates*)
Internal function to normalize a list of profile templates.

4.6.10 Module contents

4.7 Workload

4.7.1 Submodules

4.7.2 cbc_sdk.workload.sensor_lifecycle module

Sensor Lifecycle Management for Workloads

class SensorKit(*cb*, *initial_data=None*)
Bases: *cbc_sdk.base.UnrefreshableModel*

Represents a SensorKit object in the Carbon Black server.

Variables

- ***sensor_type*** – The type of information this sensor is for.
- ***sensor_url*** – The URL for downloading the sensor installation package.
- ***sensor_config_url*** – The URL for downloading the sensor configuration information.
- ***error_code*** – Code for any error that occurred while getting the sensor information.
- ***message*** – Message for any error that occurred while getting the sensor information.

Initialize the SensorKit object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **initial_data** (*dict*) – Initial data used to populate the sensor kit data.

COMPUTE_RESOURCE_MAP = {'CENTOS': 'RHEL', 'ORACLE': 'RHEL', 'SLES': 'SUSE'}

VALID_ARCHITECTURES = ['32', '64', 'OTHER']

VALID_DEVICE_TYPES = ['WINDOWS', 'LINUX', 'MAC']

VALID_TYPES = ['WINDOWS', 'MAC', 'RHEL', 'UBUNTU', 'SUSE', 'AMAZON_LINUX']

error_code = None

classmethod from_type(*cb*, *device_type*, *architecture*, *sensor_type*, *version*)

Helper method used to create a temporary SensorKit object from its four components.

This method CANNOT be used to create an object that will be persisted to the server.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **device_type** (*str*) – Device type to be used. Valid values are "WINDOWS", "LINUX", and "MAC".
- **architecture** (*str*) – Architecture to be used. Valid values are "32", "64", and "OTHER".
- **sensor_type** (*str*) – Sensor type to be used. Valid values are "WINDOWS", "MAC", "RHEL", "UBUNTU", "SUSE", and "AMAZON_LINUX".
- **version** (*str*) – Sensor version number to be used.

Returns A SensorType object with those specified values.

Return type SensorType

Raises ApiError – If an invalid value was used for one of the three limited values.

classmethod get_config_template(*cb*)

Retrieve the sample config.ini file with the properties populated from the server.

Parameters **cb** (BaseAPI) – Reference to API object used to communicate with the server.

Returns Text of the sample configuration file.

Return type str

message = None

sensor_config_url = None

sensor_type = {}

sensor_url = None

class SensorKitQuery(*doc_class*, *cb*)

Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.CriteriaBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.AsyncQueryMixin*

Query class used to read in SensorKit objects.

Initialize the SensorKitQuery.

Parameters

- **doc_class** (*class*) – The model class that will be returned by this query.
- **cb** (BaseAPI) – Reference to API object used to communicate with the server.

add_sensor_kit_type(*skit=None*, ***kwargs*)

Add a sensor kit type to the request.

Parameters

- **skit** (SensorKit) – The sensor kit type to be added to the request.
- ****kwargs** (*dict*) – If skit is None, the keyword arguments 'device_type', 'architecture', 'sensor_type', and 'version' are used to create the sensor kit type to be added.

Returns Reference to this object.

Return type *SensorKitQuery*

config_params(*params*)

Sets the configuration parameters for the sensor kit query request.

Parameters **params** (*str*) – The text of a config.ini file with a list of sensor properties to configure on installation.

Returns Reference to this object.

Return type *SensorKitQuery*

expires(*expiration_date_time*)

Sets the expiration date and time for the sensor kit query request.

Parameters **expiration_date_time** (*str*) – The time at which the sensor download link will expire, expressed as ISO 8601 UTC.

Returns Reference to this object.

Return type *SensorKitQuery*

4.7.3 cbc_sdk.workload.vm_workloads_search module

Model and Query Classes for VM Workloads Search API

class ComputeResource(*cb*, *model_unique_id*, *initial_data=None*)

Bases: *cbc_sdk.base.NewBaseModel*

Represents a ComputeResource object in the Carbon Black server.

Initialize the ComputeResource object.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **model_unique_id** (*str*) – ID of the alert represented.

- **initial_data** (*dict*) – Initial data used to populate the alert.

classmethod bulk_install(*cb*, *compute_resources*, *sensor_kit_types*, *config_file=None*)
Install a sensor on a list of compute resources.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **compute_resources** (*list*) – A list of ComputeResource objects used to specify compute resources to install sensors on.
- **sensor_kit_types** (*list*) – A list of SensorKit objects used to specify sensor types to choose from in installation.
- **config_file** (*str*) – The text of a config.ini file with a list of sensor properties to configure on installation.

Returns A dict with two members, 'type' and 'code', indicating the status of the installation.

Return type dict

classmethod bulk_install_by_id(*cb*, *compute_resources*, *sensor_kit_types*, *config_file=None*)
Install a sensor on a list of compute resources, specified by ID.

Parameters

- **cb** (BaseAPI) – Reference to API object used to communicate with the server.
- **compute_resources** (*list*) – A list of dicts, each of which contains the keys 'vcenter_uuid' and 'compute_resource_id', specifying the compute resources to install sensors on.
- **sensor_kit_types** (*list*) – A list of SensorKit objects used to specify sensor types to choose from in installation.
- **config_file** (*str*) – The text of a config.ini file with a list of sensor properties to configure on installation.

Returns A dict with two members, 'type' and 'code', indicating the status of the installation.

Return type dict

install_sensor(*sensor_version*, *config_file=None*)
Install a sensor on this compute resource.

Parameters

- **sensor_version** (*str*) – The version number of the sensor to be used.
- **config_file** (*str*) – The text of a config.ini file with a list of sensor properties to configure on installation.

Returns A dict with two members, 'type' and 'code', indicating the status of the installation.

Return type dict

Raises ApiError – If the compute node is not eligible or is of an invalid type.

primary_key = 'id'

urlobject = '/lcm/view/v1/orgs/{0}/compute_resources'

urlobject_single = '/lcm/view/v1/orgs/{0}/compute_resources/{1}'

class ComputeResourceQuery(*doc_class*, *cb*)

Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.CriteriaBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.AsyncQueryMixin*

Represents a query that is used to locate ComputeResource objects.

Initialize the ComputeResource.

Parameters

- **doc_class** (*class*) – The model class that will be returned by this query.
- **cb** (BaseAPI) – Reference to API object used to communicate with the server.

VALID_DIRECTIONS = ('ASC', 'DESC')

VALID_ELIGIBILITY = ('ELIGIBLE', 'NOT_ELIGIBLE', 'UNSUPPORTED')

VALID_INSTALLATION_STATUS = ('SUCCESS', 'ERROR', 'PENDING', 'NOT_INSTALLED')

VALID_OS_ARCHITECTURE = ('32', '64')

VALID_OS_TYPE = ('WINDOWS', 'RHEL', 'UBUNTU', 'SUSE', 'SLES', 'CENTOS', 'OTHER', 'AMAZ

set_appliance_uuid(*appliance_uuid*)

Restricts the search that this query is performed on to the specified appliance uuid.

Parameters **appliance_uuid** (*list*) – List of string appliance uuids.

Returns This instance.

Return type *ComputeResourceQuery*

set_cluster_name(*cluster_name*)

Restricts the search that this query is performed on to the specified cluster name.

Parameters **cluster_name** (*list*) – List of string cluster names.

Returns This instance.

Return type *ComputeResourceQuery*

set_eligibility(*eligibility*)

Restricts the search that this query is performed on to the specified eligibility.

Parameters **eligibility** (*list*) – List of string eligibilities.

Returns This instance.

Return type *ComputeResourceQuery*

set_installation_status(*installation_status*)

Restricts the search that this query is performed on to the specified installation status.

Parameters **installation_status** (*list*) – List of string installation status.

Returns This instance.

Return type *ComputeResourceQuery*

set_ip_address(*ip_address*)

Restricts the search that this query is performed on to the specified ip address.

Parameters **ip_address** (*list*) – List of string ip addresses.

Returns This instance.

Return type *ComputeResourceQuery*

set_name(*name*)
Restricts the search that this query is performed on to the specified name.

Parameters **name** (*list*) – List of string names.

Returns This instance.

Return type *ComputeResourceQuery*

set_os_architecture(*os_architecture*)
Restricts the search that this query is performed on to the specified os architecture.

Parameters **os_architecture** (*list*) – List of string os architecture.

Returns This instance.

Return type *ComputeResourceQuery*

set_os_type(*os_type*)
Restricts the search that this query is performed on to the specified os type.

Parameters **os_type** (*list*) – List of string os type.

Returns This instance.

Return type *ComputeResourceQuery*

set_uuid(*uuid*)
Restricts the search that this query is performed on to the specified uuid.

Parameters **uuid** (*list*) – List of string uuid.

Returns This instance.

Return type *ComputeResourceQuery*

sort_by(*key*, *direction='ASC'*)
Sets the sorting behavior on a query's results.

Example

```
>>> cb.select(ComputeResource).sort_by("name")
```

Parameters

- **key** (*str*) – The key in the schema to sort by.
- **direction** (*str*) – The sort order.

Returns This instance.

Return type *ComputeResourceQuery*

log = <Logger cbc_sdk.workload.vm_workloads_search (WARNING)>
type: Workloads Search model

4.7.4 cbc_sdk.workload.vulnerability_assessment module

4.7.5 Module contents

4.8 CBC SDK

4.8.1 Subpackages

cbc_sdk.cache package

Submodules

cbc_sdk.cache.lru module

LRU cache based on stucchio's py-lru-cache module

original copy at https://github.com/stucchio/Python-LRU-cache licensed under MIT

class LRUCacheDict(*max_size=1024*, *expiration=900*, *thread_clear=False*, *concurrent=True*)

Bases: `object`

A dictionary-like object, supporting LRU caching semantics.

```
>>> d = LRUCacheDict(max_size=3, expiration=3)
>>> d['foo'] = 'bar'
>>> d['foo']
'bar'
>>> import time
>>> time.sleep(4) # 4 seconds > 3 second cache expiry of d
>>> d['foo']
Traceback (most recent call last):
    ...
KeyError: 'foo'
>>> d['a'] = 'A'
>>> d['b'] = 'B'
>>> d['c'] = 'C'
>>> d['d'] = 'D'
>>> d['a'] # Should return value error, since we exceeded the max cache size
Traceback (most recent call last):
    ...
KeyError: 'a'
```

By default, this cache will only expire items whenever you poke it - all methods on this class will result in a cleanup. If the thread_clear option is specified, a background thread will clean it up every thread_clear_min_check seconds.

If this class must be used in a multithreaded environment, the option concurrent should be set to true. Note that the cache will always be concurrent if a background cleanup thread is used.

Initialize the LRUCacheDict object.

Parameters

- **max_size** (*int*) – Maximum number of elements in the cache.
- **expiration** (*int*) – Number of seconds an item can be in the cache before it expires.

- **thread_clear** (*bool*) – True if we want to use a background thread to keep the cache clear.
- **concurrent** (*bool*) – True to make access to the cache thread-safe.

class EmptyCacheThread(*cache*, *peek_duration=60*)

Bases: threading.Thread

Background thread that expires elements out of the cache.

Initialize the EmptyCacheThread.

Parameters

- **cache** (LRUCacheDict) – The cache to be monitored.
- **peek_duration** (*int*) – The delay between "sweeps" of the cache.

daemon = True

run()

Execute the background cleanup.

cleanup(**args*, ***kwargs*)

clear(**args*, ***kwargs*)

has_key(**args*, ***kwargs*)

size(**args*, ***kwargs*)

class LRUCachedFunction(*function*, *cache=None*)

Bases: object

A memoized function, backed by an LRU cache.

```
>>> def f(x):
...     print "Calling f(" + str(x) + ")"
...     return x
>>> f = LRUCachedFunction(f, LRUCacheDict(max_size=3, expiration=3) )
>>> f(3)
Calling f(3)
3
>>> f(3)
3
>>> import time
>>> time.sleep(4) #Cache should now be empty, since expiration time is 3.
>>> f(3)
Calling f(3)
3
>>> f(4)
Calling f(4)
4
>>> f(5)
Calling f(5)
5
>>> f(3) #Still in cache, so no print statement. At this point, 4 is the least␣
↪recently used.
3
>>> f(6)
Calling f(6)
6
>>> f(4) #No longer in cache - 4 is the least recently used, and there are at␣
↪least 3 others
```

(continues on next page)

(continued from previous page)

```
items in cache [3,4,5,6].
Calling f(4)
4
```

Initialize the LRUCachedFunction object.

Parameters

- **function** (*func*) – The function to be used to create new items in the cache.
- **cache** (LRUCacheDict) – The internal cache structure.

lru_cache_function(*max_size=1024*, *expiration=900*)

Least recently used cache function

```
>>> @lru_cache_function(3, 1)
... def f(x):
...     print "Calling f(" + str(x) + ")"
...     return x
>>> f(3)
Calling f(3)
3
>>> f(3)
3
```

Module contents

4.8.2 Submodules

4.8.3 cbc_sdk.base module

Models and Queries for the Base Carbon Black Cloud SDK

class ArrayFieldDescriptor(*field_name*, *coerce_to=None*, *default_value=None*)

Bases: *cbc_sdk.base.FieldDescriptor*

Field descriptor for fields of 'array' type.

Initialize the FieldDescriptor object.

Parameters

- **field_name** (*str*) – The name of the field.
- **coerce_to** (*class*) – The type to which the value should be coerced, or None.
- **default_value** (*Any*) – The default value of the field.

class AsyncQueryMixin

Bases: object

A mix-in which provides support for asynchronous queries.

execute_async()

Executes the current query in an asynchronous fashion.

Returns A future representing the query and its results.

Return type Future

class BaseQuery(*query=None*)
Bases: object

The base query for finding objects via the API.

Initializes the BaseQuery object.

Parameters **query** (*solrq.Q*) – The parent query of this one.

class BinaryFieldDescriptor(*field_name*, *coerce_to=None*, *default_value=None*)
Bases: *cbc_sdk.base.FieldDescriptor*

Field descriptor for fields of 'byte' type.

Initialize the FieldDescriptor object.

Parameters

- **field_name** (*str*) – The name of the field.
- **coerce_to** (*class*) – The type to which the value should be coerced, or None.
- **default_value** (*Any*) – The default value of the field.

class CbMetaModel
Bases: type

Meta-model for NewBaseModel and its subclasses.

Creates a new instance of a class, setting up the field descriptors based on the metafile.

Parameters

- **name** (*str*) – The name of the class.
- **bases** (*list*) – Base classes of the class to be created.
- **clsdict** (*dict*) – Elements defined in the new class.

model_base_directory = '/home/docs/checkouts/readthedocs.org/user_builds/carbon-black-

model_classes = [<class 'cbc_sdk.base.NewBaseModel'>, <class 'cbc_sdk.base.Unrefreshab

class CreatableModelMixin
Bases: object

Mixin for all objects which are creatable.

class CriteriaBuilderSupportMixin
Bases: object

A mixin that supplies wrapper methods to access the _crtieria.

add_criteria(*key*, *newlist*)
Add to the criteria on this query with a custom criteria key.

Will overwrite any existing criteria for the specified key.

Parameters

- **key** (*str*) – The key for the criteria item to be set.
- **newlist** (*str or list[str]*) – Value or list of values to be set for the criteria item.

Returns The query object with specified custom criteria.

Example

query = api.select(Event).add_criteria("event_type", ["filemod", "scriptload"]) query = api.select(Event).add_criteria("event_type", "filemod")

update_criteria(*key*, *newlist*)
Update the criteria on this query with a custom criteria key.

Parameters

- **key** (*str*) – The key for the criteria item to be set.
- **newlist** (*list*) – List of values to be set for the criteria item.

Returns The query object with specified custom criteria.

Example

query = api.select(Alert).update_criteria("my.criteria.key", ["criteria_value"])

Note: Use this method if there is no implemented method for your desired criteria.

class EpochDateTimeFieldDescriptor(*field_name*, *multiplier=1.0*)
Bases: *cbc_sdk.base.FieldDescriptor*

Field descriptor for fields of 'epoch-ms-date-time' type.

Initialize the EpochDateTimeFieldDescriptor object.

Parameters

- **field_name** (*str*) – The name of the field.
- **multiplier** (*float*) – Unused.

class FacetQuery(*cls*, *cb*, *query=None*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.AsyncQueryMixin*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.CriteriaBuilderSupportMixin*

Query class for asynchronous Facet API calls.

These API calls return one result, and are not paginated or iterable.

Initialize the FacetQuery object.

add_exclusions(*key*, *newlist*)
Add to the excluions on this query with a custom exclusion key.

Parameters

- **key** (*str*) – The key for the exclusion item to be set.
- **newlist** (*str or list[str]*) – Value or list of values to be set for the exclusion item.

Returns The ResultQuery with specified custom exclusion.

Example

query = api.select(Event).add_exclusions("netconn_domain", ["www.google.com"]) query = api.select(Event).add_exclusions("netconn_domain", "www.google.com")

add_facet_field(*field*)
Sets the facet fields to be received by this query.

Parameters **field** (*str or [str]*) – Field(s) to be received.

Returns The Query object that will receive the specified field(s).

Return type *Query* (AsyncQuery)

Example: >>> cb.select(ProcessFacet).add_facet_field([“process_name”, “process_username”])

add_range(*range*)
Sets the facet ranges to be received by this query.

Parameters **range** (*dict or [dict]*) – Range(s) to be received.

Returns The Query object that will receive the specified range(s).

Return type *Query* (AsyncQuery)

Note: The range parameter must be in this dictionary format:

{ “bucket_size”: “<object>”, “start”: “<object>”, “end”: “<object>”, “field”: “<string>”

}, where “bucket_size”, “start”, and “end” can be numbers or ISO 8601 timestamps.

Examples: >>> cb.select(ProcessFacet).add_range({“bucket_size”: 5, “start”: 0, “end”: 10, “field”: “netconn_count”}) >>> cb.select(ProcessFacet).add_range({“bucket_size”: “+1DAY”, “start”: “2020-11-01T00:00:00Z”,

“end”: “2020-11-12T00:00:00Z”, “field”: “backend_timestamp”})

limit(*limit*)
Sets the maximum number of facets per category (i.e. any Process Search Fields in self._fields).

The default limit for Process Facet searches in the Carbon Black Cloud backend is 100.

Parameters **limit** (*int*) – Maximum number of facets per category.

Returns The Query object with new limit parameter.

Return type *Query* (AsyncQuery)

Example: >>> cb.select(ProcessFacet).where(process_name=”foo.exe”).limit(50)

results
Save query results to self._results with self._search() method.

set_rows(*rows*)
Sets the number of facet results to return with the query.

Parameters **rows** (*int*) – Number of rows to return.

Returns The Query object with the new rows parameter.

Return type *Query* (AsyncQuery)

Example: >>> cb.select(ProcessFacet).set_rows(50)

set_time_range(*start=None*, *end=None*, *window=None*)
Sets the ‘time_range’ query body parameter, determining a time window based on ‘device_timestamp’.

Parameters

- **start** (*str in ISO 8601 timestamp*) – When to start the result search.
- **end** (*str in ISO 8601 timestamp*) – When to end the result search.

- **window** (*str*) – Time window to execute the result search, ending on the current time. Should be in the form "-2w", where y=year, w=week, d=day, h=hour, m=minute, s=second.

Note:

- *window* will take precendent over *start* and *end* if provided.

Examples

query = api.select(Event).set_time_range(start="2020-10-20T20:34:07Z") second_query = api.select(Event).set_time_range(start="2020-10-20T20:34:07Z", end="2020-10-30T20:34:07Z") third_query = api.select(Event).set_time_range(window='-3d')

timeout (*msecs*)

Sets the timeout on an AsyncQuery. By default, there is no timeout.

Parameters **msecs** (*int*) – Timeout duration, in milliseconds.

Returns

The Query object with new milliseconds parameter.

Return type *Query* (AsyncQuery)

Example:

```
>>> cb.select(ProcessFacet).where(process_name="foo.exe").timeout(5000)
```

class FieldDescriptor (*field_name*, *coerce_to=None*, *default_value=None*)

Bases: `object`

Object that describes a field within a model instance.

Initialize the FieldDescriptor object.

Parameters

- **field_name** (*str*) – The name of the field.
- **coerce_to** (*class*) – The type to which the value should be coerced, or None.
- **default_value** (*Any*) – The default value of the field.

class ForeignKeyFieldDescriptor (*field_name*, *join_model*, *join_field=None*)

Bases: *cbc_sdk.base.FieldDescriptor*

Field descriptor for fields that are foreign keys.

Initialize the ForeignKeyFieldDescriptor object.

Parameters

- **field_name** (*str*) – The name of the field.
- **join_model** (*class*) – The class for which this field value is a foreign key.
- **join_field** (*str*) – The name fo the field in the joined class for which this field value is a foreign key.

class IsoDateTimeFieldDescriptor(*field_name*)
Bases: *cbc_sdk.base.FieldDescriptor*

Field descriptor for fields of 'iso-date-time' type.

Initialize the IsoDateTimeFieldDescriptor object.

Parameters **field_name** (*str*) – The name of the field.

class IterableQueryMixin
Bases: object

A mix-in to provide iterability to a query.

all()
Returns all the items of a query as a list.

Returns List of query items

Return type list

first()
Returns the first item that would be returned as the result of a query.

Returns First query item

Return type obj

one()
Returns the only item that would be returned by a query.

Returns Sole query return item

Return type obj

Raises

- MoreThanOneResultError – If the query returns more than one item
- ObjectNotFoundError – If the query returns zero items

class MutableBaseModel(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=False*)
Bases: *cbc_sdk.base.NewBaseModel*

Represents a MutableBaseModel object in the Carbon Black server.

Initialize the NewBaseModel object.

Parameters

- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.
- **model_unique_id** (*Any*) – The unique ID for this particular instance of the model object.
- **initial_data** (*dict*) – The data to use when initializing the model object.
- **force_init** (*bool*) – True to force object initialization.
- **full_doc** (*bool*) – True to mark the object as fully initialized.

delete()
Delete this object.

is_dirty()
Returns whether or not any fields of this object have been changed.

Returns True if any fields of this object have been changed, False if not.

Return type bool

refresh()
Reload this object from the server.

reset()
Undo any changes made to this object's fields.

save()
Save any changes made to this object's fields.

Returns This object.

Return type *MutableBaseModel*

touch()
Force this object to be considered as changed.

validate()
Validates this object.

Returns True if the object is validated.

Return type bool

Raises `InvalidObjectError` – If the object has missing fields.

class NewBaseModel(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=False*)
Bases: `object`

Represents a NewBaseModel object in the Carbon Black server.

Initialize the NewBaseModel object.

Parameters

- **cb** (`CBCloudAPI`) – A reference to the CBCloudAPI object.
- **model_unique_id** (*Any*) – The unique ID for this particular instance of the model object.
- **initial_data** (*dict*) – The data to use when initializing the model object.
- **force_init** (*bool*) – True to force object initialization.
- **full_doc** (*bool*) – True to mark the object as fully initialized.

get(*attrname*, *default_val=None*)
Return an attribute of this object.

Parameters

- **attrname** (*str*) – Name of the attribute to be returned.
- **default_val** (*Any*) – Default value to be used if the attribute is not set.

Returns The returned attribute value, which may be defaulted.

Return type Any

classmethod new_object(*cb*, *item*, ***kwargs*)
Create a new object of a model class.

Parameters

- **cb** (`CBCloudAPI`) – Reference to the CBCloudAPI object.
- **item** (*dict*) – Item data to use to create the object.

- ****kwargs** (*dict*) – Additional keyword arguments.

Returns The new object instance.

Return type object

original_document
Returns the original meta-information about the object.

Returns The original meta-information about the object.

Return type object

primary_key = 'id'

refresh()
Reload this object from the server.

class ObjectFieldDescriptor(*field_name*, *coerce_to=None*, *default_value=None*)
Bases: *cbc_sdk.base.FieldDescriptor*

Field descriptor for fields of 'object' type.

Initialize the FieldDescriptor object.

Parameters

- **field_name** (*str*) – The name of the field.
- **coerce_to** (*class*) – The type to which the value should be coerced, or None.
- **default_value** (*Any*) – The default value of the field.

class PaginatedQuery(*cls*, *cb*, *query=None*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.IterableQueryMixin*

A query that returns objects in a paginated fashion.

Initialize the PaginatedQuery object.

Parameters

- **cls** (*class*) – The class of objects being returned by this query.
- **cb** (CBCloudAPI) – Reference to the CBCloudAPI object.
- **query** (BaseQuery) – The query that we are paginating.

batch_size(*new_batch_size*)
Set the batch size of the paginated query.

Parameters **new_batch_size** (*int*) – The new batch size.

Returns A new query with the updated batch size.

Return type *PaginatedQuery*

class Query(*doc_class*, *cb*)
Bases: *cbc_sdk.base.PaginatedQuery*, *cbc_sdk.base.QueryBuilderSupportMixin*, *cbc_sdk.base.IterableQueryMixin*, *cbc_sdk.base.AsyncQueryMixin*, *cbc_sdk.base.CriteriaBuilderSupportMixin*

Represents a prepared query to the Cb Enterprise EDR backend.

This object is returned as part of a *CbEnterpriseEDRAPI.select* operation on models requested from the Cb Enterprise EDR backend. You should not have to create this class yourself.

The query is not executed on the server until it's accessed, either as an iterator (where it will generate values on demand as they're requested) or as a list (where it will retrieve the entire result set and save to a list). You can also call the Python built-in `len()` on this object to retrieve the total number of items matching the query.

Examples:

```
>>> from cbc_sdk import CBCloudAPI
>>> from cbc_sdk.enterprise_edr import Report
>>> cb = CBCloudAPI()
>>> query = cb.select(Report)
>>> query = query.where(report_id="ABCDEFG1234")
>>> # alternatively:
>>> query = query.where("report_id:ABCDEFG1234")
```

Notes

- The slicing operator only supports start and end parameters, but not step. `[1:-1]` is legal, but `[1:2:-1]` is not.
- You can chain where clauses together to create AND queries; only objects that match all `where` clauses will be returned.

Initialize the Query object.

Parameters

- **doc_class** (*class*) – The class of the model this query returns.
- **cb** (CBCloudAPI) – A reference to the CBCloudAPI object.

add_exclusions(*key*, *newlist*)
Add to the excluions on this query with a custom exclusion key.

Parameters

- **key** (*str*) – The key for the exclusion item to be set.
- **newlist** (*str or list[str]*) – Value or list of values to be set for the exclusion item.

Returns The ResultQuery with specified custom exclusion.

Example

query = api.select(Event).add_exclusions("netconn_domain", ["www.google.com"]) query = api.select(Event).add_exclusions("netconn_domain", "www.google.com")

set_fields(*fields*)
Sets the fields to be returned with the response.

Parameters **fields** (*str or list[str]*) – Field or list of fields to be returned.

set_rows(*rows*)
Sets the 'rows' query body parameter, determining how many rows of results to request.

Parameters **rows** (*int*) – How many rows to request.

set_start(*start*)
Sets the 'start' query body parameter, determining where to begin retrieving results from.

Parameters **start** (*int*) – Where to start results from.

set_time_range(*start=None*, *end=None*, *window=None*)
Sets the 'time_range' query body parameter, determining a time window based on 'device_timestamp'.

Parameters

- **start** (*str in ISO 8601 timestamp*) – When to start the result search.
- **end** (*str in ISO 8601 timestamp*) – When to end the result search.
- **window** (*str*) – Time window to execute the result search, ending on the current time. Should be in the form "-2w", where y=year, w=week, d=day, h=hour, m=minute, s=second.

Note:

- *window* will take precendent over *start* and *end* if provided.

Examples

query = api.select(Event).set_time_range(start="2020-10-20T20:34:07Z") second_query = api.select(Event).set_time_range(start="2020-10-20T20:34:07Z", end="2020-10-30T20:34:07Z") third_query = api.select(Event).set_time_range(window='-3d')

sort_by(*key*, *direction='ASC'*)
Sets the sorting behavior on a query's results.

Parameters

- **key** (*str*) – The key in the schema to sort by.
- **direction** (*str*) – The sort order, either "ASC" or "DESC".

Returns The query with sorting parameters.

Return type *Query*

Example:

```
>>> cb.select(Process).where(process_name="cmd.exe").sort_by("device_timestamp
↪")
```

class QueryBuilder(***kwargs*)
Bases: object

Provides a flexible interface for building prepared queries for the CB Cloud backend.

This object can be instantiated directly, or can be managed implicitly through the CBCloudAPI.select API.

Examples: >>> from cbc_sdk.base import QueryBuilder >>> # build a query with chaining >>> query = QueryBuilder().where(process_name="malicious.exe").and_(device_name="suspect") >>> # start with an initial query, and chain another condition to it >>> query = QueryBuilder(device_os="WINDOWS").or_(process_username="root")

Initialize the QueryBuilder object.

Parameters ****kwargs** (*dict*) – If present, these are used to construct a Solrq Query.

and_(*q*, ***kwargs*)
Adds a conjunctive filter to a QueryBuilder.

Parameters

- **q** (*object*) – Either a string or solrq.Q object representing the query to be added.
- ****kwargs** (*dict*) – Arguments with which to construct a solrq.Q object.

Returns This object.

Return type *QueryBuilder*

Raises ApiError – If the q parameter is of an invalid type.

not_(*q*, ***kwargs*)
Adds a negative filter to a QueryBuilder.

Parameters

- **q** (*object*) – Either a string or solrq.Q object representing the query to be added.
- ****kwargs** (*dict*) – Arguments with which to construct a solrq.Q object.

Returns This object.

Return type *QueryBuilder*

Raises ApiError – If the q parameter is of an invalid type.

or_(*q*, ***kwargs*)
Adds a disjunctive filter to a QueryBuilder.

Parameters

- **q** (*object*) – Either a string or solrq.Q object representing the query to be added.
- ****kwargs** (*dict*) – Arguments with which to construct a solrq.Q object.

Returns This object.

Return type *QueryBuilder*

Raises ApiError – If the q parameter is of an invalid type.

where(*q*, ***kwargs*)
Adds a conjunctive filter to a QueryBuilder.

Parameters

- **q** (*object*) – Either a string or solrq.Q object representing the query to be added.
- ****kwargs** (*dict*) – Arguments with which to construct a solrq.Q object.

Returns This object.

Return type *QueryBuilder*

Raises ApiError – If the q parameter is of an invalid type.

class QueryBuilderSupportMixin
Bases: object

A mixin that supplies wrapper methods to access the _query_builder.

and_(*q=None*, ***kwargs*)
Add a conjunctive filter to this query.

Parameters

- **q** (*Any*) – Query string or *solrq.Q* object
- ****kwargs** (*dict*) – Arguments to construct a *solrq.Q* with

Returns This Query object.

Return type *Query*

not_(*q=None*, ***kwargs*)
Adds a negated filter to this query.

Parameters

- **q** (*solrq.Q*) – Query object.
- ****kwargs** (*dict*) – Arguments to construct a *solrq.Q* with.

Returns This Query object.

Return type *Query*

or_(*q=None*, ***kwargs*)
Add a disjunctive filter to this query.

Parameters

- **q** (*solrq.Q*) – Query object.
- ****kwargs** (*dict*) – Arguments to construct a *solrq.Q* with.

Returns This Query object.

Return type *Query*

where(*q=None*, ***kwargs*)
Add a filter to this query.

Parameters

- **q** (*Any*) – Query string, *QueryBuilder*, or *solrq.Q* object
- ****kwargs** (*dict*) – Arguments to construct a *solrq.Q* with

Returns This Query object.

Return type *Query*

class SimpleQuery(*cls*, *cb*, *urlobject=None*, *returns_fulldoc=True*)
Bases: *cbc_sdk.base.BaseQuery*, *cbc_sdk.base.IterableQueryMixin*

A simple query object.

Initialize the SimpleQuery object.

Parameters

- **cls** (*class*) – Class of the object to be returned by the query.
- **cb** (*CBCloudAPI*) – Reference to the CBCloudAPI object.
- **urlobject** (*str*) – URL to be used in making the query.
- **returns_fulldoc** (*bool*) – Whether the result of the Query yields objects that have been fully initialized.

and_(*new_query*)
Add an additional "where" clause to this query.

Parameters **new_query** (*object*) – The additional "where" clause, as a string or solrq.Q object.

Returns A new query with the extra "where" clause specified.

Return type *SimpleQuery*

results
Collect and return the results of this query.

Returns The results of this query.

Return type list

sort(*new_sort*)
Set the sorting for this query.

Parameters **new_sort** (*object*) – The new sort criteria for this query.

Returns A new query with the sort parameter specified.

Return type *SimpleQuery*

where(*new_query*)
Add a "where" clause to this query.

Parameters **new_query** (*object*) – The "where" clause, as a string or solrq.Q object.

Returns A new query with the "where" clause specified.

Return type *SimpleQuery*

class UnrefreshableModel(*cb*, *model_unique_id=None*, *initial_data=None*, *force_init=False*, *full_doc=False*)
Bases: *cbc_sdk.base.NewBaseModel*

Represents a UnrefreshableModel object in the Carbon Black server.

Initialize the NewBaseModel object.

Parameters

- **cb** (*CBCloudAPI*) – A reference to the CBCloudAPI object.
- **model_unique_id** (*Any*) – The unique ID for this particular instance of the model object.
- **initial_data** (*dict*) – The data to use when initializing the model object.
- **force_init** (*bool*) – True to force object initialization.
- **full_doc** (*bool*) – True to mark the object as fully initialized.

refresh()
Reload this object from the server.

log = <Logger cbc_sdk.base (WARNING)>
Base Models

4.8.4 cbc_sdk.connection module

Manages the CBC SDK connection to the server.

class BaseAPI(**args*, ***kwargs*)
Bases: object

The base API object used by all CBC SDK objects to communicate with the server.

Initialize the base API information.

Parameters

- ***args** – Unused.

- ****kwargs** – Additional arguments.

api_json_request(*method*, *uri*, ***kwargs*)
Submit a request to the server.

Parameters

- **method** (*str*) – HTTP method to use.
- **uri** (*str*) – URI to submit the request to.
- ****kwargs** (*dict*) – Additional arguments.

Returns Result of the operation.

Return type object

Raises ServerError – If there's an error output from the server.

create(*cls*, *data=None*)
Create a new object.

Parameters

- **cls** (*class*) – The Model class (only some models can be created, for example, Feed, Notification, ...)
- **data** (*object*) – The data used to initialize the new object

Returns An empty instance of the model class.

Return type Model

Raises ApiError – If the Model cannot be created.

delete_object(*uri*)
Send a DELETE request to the specified URI.

Parameters **uri** (*str*) – The URI to send the DELETE request to.

Returns The return data from the DELETE request.

Return type object

get_object(*uri*, *query_parameters=None*, *default=None*)
Submit a GET request to the server and parse the result as JSON before returning.

Parameters

- **uri** (*str*) – The URI to send the GET request to.
- **query_parameters** (*object*) – Parameters for the query.
- **default** (*object*) – What gets returned in the event of an empty response.

Returns Result of the GET request.

Return type object

get_raw_data(*uri*, *query_parameters=None*, *default=None*, ***kwargs*)
Submit a GET request to the server and return the result without parsing it.

Parameters

- **uri** (*str*) – The URI to send the GET request to.
- **query_parameters** (*object*) – Parameters for the query.
- **default** (*object*) – What gets returned in the event of an empty response.

- ****kwargs** –

Returns Result of the GET request.

Return type object

post_multipart(*uri*, *param_table*, ***kwargs*)
Send a POST request to the specified URI, with parameters sent as multipart form data.

Parameters

- **uri** (*str*) – The URI to send the POST request to.
- **param_table** (*dict*) – A dict of known parameters to the underlying method, each element of which is a parameter name mapped to a dict, which contains elements 'filename' and 'type' representing the pseudo-filename to be used for the data and the MIME type of the data.
- ****kwargs** (*dict*) – Arguments to pass to the API. Except for "headers," these will all be added as parameters to the form data sent.

Returns The return data from the POST request.

Return type object

post_object(*uri*, *body*, ***kwargs*)
Send a POST request to the specified URI.

Parameters

- **uri** (*str*) – The URI to send the POST request to.
- **body** (*object*) – The data to be sent in the body of the POST request.
- ****kwargs** –

Returns The return data from the POST request.

Return type object

put_object(*uri*, *body*, ***kwargs*)
Send a PUT request to the specified URI.

Parameters

- **uri** (*str*) – The URI to send the PUT request to.
- **body** (*object*) – The data to be sent in the body of the PUT request.
- ****kwargs** –

Returns The return data from the PUT request.

Return type object

raise_unless_json(*ret*, *expected*)
Raise a ServerError unless we got back an HTTP 200 response with JSON containing all the expected values.

Parameters

- **ret** (*object*) – Return value to be checked.
- **expected** (*dict*) – Expected keys and values that need to be found in the JSON response.

Raises ServerError – If the HTTP response is anything but 200, or if the expected values are not found.

select(*cls*, *unique_id=None*, **args*, ***kwargs*)
Prepare a query against the Carbon Black data store.

Parameters

- **cls** (*class*) – The Model class (for example, Computer, Process, Binary, FileInstance) to query
- **unique_id** (*optional*) – The unique id of the object to retrieve, to retrieve a single object by ID
- ***args** –
- ****kwargs** –

Returns An instance of the Model class if a unique_id is provided, otherwise a Query object

Return type object

url
Return the connection URL.

Returns The connection URL.

Return type str

class CBCSDKSessionAdapter(*verify_hostname=True*, *force_tls_1_2=False*, *max_retries=0*, ***pool_kwargs*)
Bases: `requests.adapters.HTTPAdapter`

Adapter object used to handle TLS connections to the CB server.

Initialize the CBCSDKSessionManager.

Parameters

- **verify_hostname** (*boolean*) – True if we want to verify the hostname.
- **force_tls_1_2** (*boolean*) – True to force the use of TLS 1.2.
- **max_retries** (*int*) – Maximum number of retries.
- ****pool_kwargs** – Additional arguments.

Raises `ApiError` – If the library versions are too old to force the use of TLS 1.2.

init_poolmanager(*connections*, *maxsize*, *block=False*, ***pool_kwargs*)
Initialize the connection pool manager.

Parameters

- **connections** (*int*) – Initial number of connections to be used.
- **maxsize** (*int*) – Maximum size of the connection pool.
- **block** (*object*) – Blocking policy.
- ****pool_kwargs** – Additional arguments for the connection pool.

Returns None

class Connection(*credentials*, *integration_name=None*, *timeout=None*, *max_retries=None*, *proxy_session=None*, ***pool_kwargs*)
Bases: `object`

Object that encapsulates the HTTP connection to the CB server.

Initialize the Connection object.

Parameters

- **credentials** (*object*) – The credentials to use for the connection.
- **integration_name** (*str*) – The integration name being used.
- **timeout** (*int*) – The timeout value to use for HTTP requests on this connection.
- **max_retries** (*int*) – The maximum number of times to retry a request.
- **proxy_session** (*requests.Session*) –
- ****pool_kwargs** – Additional arguments to be used to initialize connection pooling.

Raises

- ApiError – If there's an internal error initializing the connection.
- ConnectionError – If there's a problem with the credentials.

delete(*url*, ***kwargs*)
Submit a DELETE request on this connection.

Parameters

- **url** (*str*) – The URL to submit the request to.
- ****kwargs** – Additional arguments for the request.

Returns Result of the HTTP request.

Return type object

get(*url*, ***kwargs*)
Submit a GET request on this connection.

Parameters

- **url** (*str*) – The URL to submit the request to.
- ****kwargs** – Additional arguments for the request.

Returns Result of the HTTP request.

Return type object

http_request(*method*, *url*, ***kwargs*)
Submit a HTTP request to the server.

Parameters

- **method** (*str*) – The method name to use for the HTTP request.
- **url** (*str*) – The URL to submit the request to.
- ****kwargs** – Additional arguments for the request.

Returns Result of the HTTP request.

Return type object

Raises

- ApiError – An unknown problem was detected.
- ClientError – The server returned an error code in the 4xx range, indicating a problem with the request.
- ConnectionError – A problem was seen with the HTTP connection.

- `ObjectNotFoundError` – The specified object was not found on the server.
- `QuerySyntaxError` – The query passed in had invalid syntax.
- `ServerError` – The server returned an error code in the 5xx range, indicating a problem on the server side.
- `TimeoutError` – The HTTP request timed out.
- `UnauthorizedError` – The stored credentials do not permit access to the specified request.

post (*url*, ***kwargs*)
Submit a POST request on this connection.

Parameters

- **url** (*str*) – The URL to submit the request to.
- ****kwargs** – Additional arguments for the request.

Returns Result of the HTTP request.

Return type object

put (*url*, ***kwargs*)
Submit a PUT request on this connection.

Parameters

- **url** (*str*) – The URL to submit the request to.
- ****kwargs** – Additional arguments for the request.

Returns Result of the HTTP request.

Return type object

check_python_tls_compatibility ()
Verify which level of TLS/SSL that this version of the code is compatible with.

Returns The maximum level of TLS/SSL that this version is compatible with.

Return type str

try_json (*resp*)
Return a parsed JSON representation of the input.

Parameters **resp** (*Response*) – Input to be parsed.

Returns The parsed JSON result, or an empty dict if the value is not valid JSON.

Return type object

4.8.5 cbc_sdk.credentials module

Credentials management for the CBC SDK.

class CredentialProvider
Bases: `object`

The interface implemented by a credential provider.

get_credentials (*section=None*)
Return a Credentials object containing the configured credentials.

Parameters **section** (*str*) – The credential section to retrieve.

Returns The credentials retrieved from that source.

Return type *Credentials*

Raises `CredentialError` – If there is any error retrieving the credentials.

class CredentialValue

Bases: `enum.Enum`

All possible credential values.

IGNORE_SYSTEM_PROXY = 9

INTEGRATION = 10

ORG_KEY = 3

PROXY = 8

SSL_CERT_FILE = 6

SSL_FORCE_TLS_1_2 = 7

SSL_VERIFY = 4

SSL_VERIFY_HOSTNAME = 5

TOKEN = 2

URL = 1

requires_boolean_value()

Return whether or not this credential requires a boolean value.

Returns True if the credential requires a Boolean value, False if not.

Return type bool

class Credentials(*values=None*)

Bases: `object`

The object that contains credentials retrieved from the credential provider.

Initialize the Credentials object.

Parameters **values** (*dict*) – Dictionary containing values to be set in the credentials.

Raises `CredentialError` – If the value is not correct for any credential of boolean type.

get_value(*key*)

Get the value of a credential.

Parameters **key** (*CredentialValues*) – The credential to be retrieved.

Returns The credential's value, or a default value if the value was not explicitly set.

Return type object

4.8.6 cbc_sdk.errors module

Exceptions that are thrown by CBC SDK operations.

exception ApiError(*message=None*, *original_exception=None*)

Bases: `Exception`

Base class for all CBC SDK errors; also raised for generic internal errors.

Initialize the ApiError.

Parameters

- **message** (*str*) – The actual error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception ClientError(*error_code*, *message*, *result=None*, *original_exception=None*)
Bases: *cbc_sdk.errors.ApiError*

A ClientError is raised when an HTTP 4xx error code is returned from the Carbon Black server.

Initialize the ClientError.

Parameters

- **error_code** (*int*) – The error code that was received from the server.
- **message** (*str*) – The actual error message.
- **result** (*object*) – The result of the operation from the server.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception ConnectionError(*message=None*, *original_exception=None*)
Bases: *cbc_sdk.errors.ApiError*

There was an error in the connection to the server.

Initialize the ApiError.

Parameters

- **message** (*str*) – The actual error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception CredentialError(*message=None*, *original_exception=None*)
Bases: *cbc_sdk.errors.ApiError*

The credentials had an unspecified error.

Initialize the ApiError.

Parameters

- **message** (*str*) – The actual error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception InvalidHashError
Bases: Exception

An invalid hash value was used.

exception InvalidObjectError(*message=None*, *original_exception=None*)
Bases: *cbc_sdk.errors.ApiError*

An invalid object was received by the server.

Initialize the ApiError.

Parameters

- **message** (*str*) – The actual error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception MoreThanOneResultError(*message=None*, *original_exception=None*, *results=None*)
Bases: *cbc_sdk.errors.ApiError*

Only one object was requested, but multiple matches were found in the Carbon Black datastore.

Initialize the MoreThanOneResultError.

Parameters

- **message** (*str*) – The actual error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.
- **results** (*list*) – List of results returned

exception NonQueryableModel(*message=None*, *original_exception=None*)
Bases: *cbc_sdk.errors.ApiError*

A model that attempted to be queried which is not queryable

Initialize the ApiError.

Parameters

- **message** (*str*) – The actual error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception ObjectNotFoundError(*uri*, *message=None*, *original_exception=None*)
Bases: *cbc_sdk.errors.ApiError*

The requested object could not be found in the Carbon Black datastore.

Initialize the ObjectNotFoundError.

Parameters

- **uri** (*str*) – The URI of the action that failed.
- **message** (*str*) – The error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception QuerySyntaxError(*uri*, *message=None*, *original_exception=None*)
Bases: *cbc_sdk.errors.ApiError*

The request contains a query with malformed syntax.

Initialize the QuerySyntaxError.

Parameters

- **uri** (*str*) – The URI of the action that failed.
- **message** (*str*) – The error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception ServerError(*error_code*, *message*, *result=None*, *original_exception=None*)
Bases: *cbc_sdk.errors.ApiError*

A ServerError is raised when an HTTP 5xx error code is returned from the Carbon Black server.

Initialize the ServerError.

Parameters

- **error_code** (*int*) – The error code that was received from the server.
- **message** (*str*) – The actual error message.

- **result** (*object*) – The result of the operation from the server.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception TimeoutError(*uri=None*, *error_code=None*, *message=None*, *original_exception=None*)
Bases: *cbc_sdk.errors.ApiError*

A requested operation timed out.

Initialize the TimeoutError.

Parameters

- **uri** (*str*) – The URI of the action that timed out.
- **error_code** (*int*) – The error code that was received from the server.
- **message** (*str*) – The error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception UnauthorizedError(*uri*, *message=None*, *action='read'*, *original_exception=None*)
Bases: *cbc_sdk.errors.ApiError*

The action that was attempted was not authorized.

Initialize the UnauthorizedError.

Parameters

- **uri** (*str*) – The URI of the action that was not authorized.
- **message** (*str*) – The error message.
- **action** (*str*) – The action that was being performed that was not authorized.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

4.8.7 cbc_sdk.helpers module

Helper functions which are not strictly part of the SDK API, but which are used by many of the examples.

build_cli_parser(*description='Cb Example Script'*)
Build a basic CLI parser containing the arguments needed to create a CBCloudAPI. Additional arguments may be added.

Parameters **description** (*str*) – Description of the script, for use in help messages.

Returns The new argument parser.

Return type ArgumentParser

disable_insecure_warnings()
Disable warnings about insecure URLs.

eprint(**args*, ***kwargs*)
Print to standard error output.

Parameters

- ***args** (*list*) – Arguments to the print function.
- ****kwargs** (*dict*) – Keyword arguments to the print function.

get_cb_cloud_object(*args*)
Based on parsed command line arguments, create and return a CBCloudAPI object.

Parameters **args** (*Namespace*) – Arguments parsed from the command line.

Returns The CBCloudAPI object.

Return type *CBCloudAPI*

get_object_by_name_or_id(*cb*, *cls*, *name_field='name'*, *id=None*, *name=None*)
Locate an object in the API by either ID or name.

Parameters

- **cb** (CBCloudAPI) – Reference to the CBCloudAPI.
- **cls** (*class*) – Class of object to be found.
- **name_field** (*str*) – Name field to search on.
- **id** (*int*) – ID of object to search for. May be None to do name searching.
- **name** (*str*) – Object name to search on.
- **force_init** (*bool*) – True to force a new object found by ID to be initialized.

Returns List of objects that match the search criteria.

Return type list

read_iocs(*cb*, *file=<_io.TextIOWrapper name='<stdin>' mode='r' encoding='UTF-8'>*)
Read indicators of compromise from standard input.

Parameters

- **cb** (CBCloudAPI) – Reference to the CBCloudAPI.
- **file** – Not used.

Returns New report ID to be used. dict: The indicators of compromise that were read in.

Return type str

4.8.8 cbc_sdk.live_response_api module

The Live Response API and associated objects.

class CbLRManagerBase(*cb*, *timeout=30*, *keepalive_sessions=False*, *thread_pool_count=5*)
Bases: object

Live Response manager object.

Initialize the CbLRManagerBase object.

Parameters

- **cb** (BaseAPI) – The CBC SDK object reference.
- **timeout** (*int*) – Timeout to use for requests, in seconds.
- **keepalive_sessions** (*bool*) – If True, "ping" sessions occasionally to ensure they stay alive.
- **thread_pool_count** (*int*) – number of workers for async commands (optional)

cblr_base = ''

cblr_session_cls = NotImplemented

close_session(*device_id*, *session_id*)
Close the specified Live Response session.

Parameters

- **device_id** (*int*) – ID of the device.
- **session_id** (*int*) – ID of the session.

request_session(*device_id*, *async_mode=False*)
Initiate a new Live Response session.

Parameters **device_id** (*int*) – The device ID to use.

Returns The new Live Response session.

Return type *CbLRSessionBase*

stop_keepalive_thread()
Stops the keepalive thread.

submit_job(*job*, *device*)
Submit a new job to be executed as a Live Response.

Parameters

- **job** (*object*) – The job to be scheduled.
- **device** (*int*) – ID of the device to use for job execution.

Returns A reference to the running job.

Return type Future

class CbLRSessionBase(*cblr_manager*, *session_id*, *device_id*, *session_data=None*, *thread_pool_count=5*)
Bases: object

A Live Response session that interacts with a remote machine.

Initialize the CbLRSessionBase.

Parameters

- **cblr_manager** (CbLRManagerBase) – The Live Response manager governing this session.
- **session_id** (*str*) – The ID of this session.
- **device_id** (*int*) – The ID of the device (remote machine) we're connected to.
- **session_data** (*dict*) – Additional session data.
- **thread_pool_count** (*int*) – number of workers for async commands (optional)

MAX_RETRY_COUNT = 5

cancel_command(*command_id*)
Cancel command if it is in status PENDING.

Parameters **command_id** (*int*) – command_id

close()
Close the Live Response session.

command_status(*command_id*)
Check the status of async command

Parameters **command_id** (*int*) – command_id

Returns status of the command

create_directory(*dir_name*, *async_mode=False*)
Create a directory on the remote machine.

Parameters

- **dir_name** (*str*) – The new directory name.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async

create_process(*command_string*, *wait_for_output=True*, *remote_output_file_name=None*, *working_directory=None*, *wait_timeout=30*, *wait_for_completion=True*, *async_mode=False*)
Create a new process on the remote machine with the specified command string.

Example: >>> with c.select(Device, 1).lr_session() as lr_session: ... print(lr_session.create_process(r'cmd.exe /c "ping.exe 192.168.1.1"')) Pinging 192.168.1.1 with 32 bytes of data: Reply from 192.168.1.1: bytes=32 time<1ms TTL=64

Parameters

- **command_string** (*str*) – Command string used for the create process operation.
- **wait_for_output** (*bool*) – True to block on output from the new process (execute in foreground). This will also set wait_for_completion (below).
- **remote_output_file_name** (*str*) – The remote output file name used for process output.
- **working_directory** (*str*) – The working directory of the create process operation.
- **wait_timeout** (*int*) – Timeout used for this command.
- **wait_for_completion** (*bool*) – True to wait until the process is completed before returning.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async str: The output of the process.

create_registry_key(*regkey*, *async_mode=False*)
Create a new registry key on the remote machine.

Parameters

- **regkey** (*str*) – The registry key to create.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async

delete_file(*filename*, *async_mode=False*)
Delete the specified file name on the remote machine.

Parameters

- **filename** (*str*) – Name of the file to be deleted.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async

delete_registry_key(*regkey*, *async_mode=False*)
Delete a registry key on the remote machine.

Parameters

- **regkey** (*str*) – The registry key to delete.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async

delete_registry_value(*regkey*, *async_mode=False*)
Delete a registry value on the remote machine.

Parameters

- **regkey** (*str*) – The registry value to delete.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async

get_file(*file_name*, *timeout=None*, *delay=None*, *async_mode=False*)
Retrieve contents of the specified file on the remote machine.

Parameters

- **file_name** (*str*) – Name of the file to be retrieved.
- **timeout** (*int*) – Timeout for the operation.
- **delay** (*float*) – Delay in seconds to wait before command complete.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async str: Contents of the specified file.

get_raw_file(*file_name*, *timeout=None*, *delay=None*, *async_mode=False*)
Retrieve contents of the specified file on the remote machine.

Parameters

- **file_name** (*str*) – Name of the file to be retrieved.
- **timeout** (*int*) – Timeout for the operation.
- **delay** (*float*) – Delay in seconds to wait before command complete.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async or object: Contains the data of the file.

get_registry_value(*regkey*, *async_mode=False*)
Return the associated value of the specified registry key on the remote machine.

Example: >>> with c.select(Device, 1).lr_session() as lr_session: >>> pprint.pprint(lr_session.get_registry_value('HKLM\SYSTEM\CurrentControlSet\services\ACPI\Start')) {u'value_data': 0, u'value_name': u'Start', u'value_type': u'REG_DWORD'}

Parameters

- **regkey** (*str*) – The registry key to retrieve.

- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async or dict: A dictionary with keys of: value_data, value_name, value_type.

kill_process(*pid*, *async_mode=False*)
Terminate a process on the remote machine.

Parameters

- **pid** (*int*) – Process ID to be terminated.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async bool: True if success, False if failure.

list_directory(*dir_name*, *async_mode=False*)
List the contents of a directory on the remote machine.

Example: >>> with c.select(Device, 1).lr_session() as lr_session: ... pprint.pprint(lr_session.list_directory('C:\temp\')) [{u'attributes': [u'DIRECTORY'],

u'create_time': 1471897244, u'filename': u'.', u'last_access_time': 1476390670, u'last_write_time': 1476390670, u'size': 0},

{u'attributes': [u'DIRECTORY'], u'create_time': 1471897244, u'filename': u'..', u'last_access_time': 1476390670, u'last_write_time': 1476390670, u'size': 0},

{u'attributes': [u'ARCHIVE'], u'create_time': 1476390668, u'filename': u'test.txt', u'last_access_time': 1476390668, u'last_write_time': 1476390668, u'size': 0}]

Parameters

- **dir_name** (*str*) – Directory to list. This parameter should end with the path separator.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async or list: A list of dicts, each one describing a directory entry.

list_processes(*async_mode=False*)
List currently running processes on the remote machine.

Example: >>> with c.select(Device, 1).lr_session() as lr_session: ... print(lr_session.list_processes()[0]) {u'command_line': u'',

u'create_time': 1476260500, u'parent': 0, u'parent_guid': u'00000001-0000-0000-0000-000000000000', u'path': u'', u'pid': 4, u'proc_guid': u'00000001-0000-0004-01d2-2461a85e4546', u'sid': u's-1-5-18', u'username': u'NT AUTHORITY\SYSTEM'}

Parameters **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async or list: A list of dicts describing the processes.

list_registry_keys_and_values(*regkey*, *async_mode=False*)
Enumerate subkeys and values of the specified registry key on the remote machine.

Example: >>> with c.select(Device, 1).lr_session() as lr_session: >>> pprint.pprint(lr_session.list_registry_keys_and_values('HKLM\SYSTEM\CurrentControlSet\services\ACPI')) {'sub_keys': [u'Parameters', u'Enum'],

'values': [{u'value_data': 0,

u'value_name': u'Start', u'value_type': u'REG_DWORD'},

{u'value_data': 1, u'value_name': u'Type', u'value_type': u'REG_DWORD'},

{u'value_data': 3, u'value_name': u'ErrorControl', u'value_type': u'REG_DWORD'},

{u'value_data': u'system32\drivers\ACPI.sys', u'value_name': u'ImagePath', u'value_type': u'REG_EXPAND_SZ'},

{u'value_data': u'Microsoft ACPI Driver', u'value_name': u'DisplayName', u'value_type': u'REG_SZ'},

{u'value_data': u'Boot Bus Extender', u'value_name': u'Group', u'value_type': u'REG_SZ'},

{u'value_data': u'acpi.inf_x86_neutral_ddd3c514822f1b21', u'value_name': u'DriverPackageId', u'value_type': u'REG_SZ'},

{u'value_data': 1, u'value_name': u'Tag', u'value_type': u'REG_DWORD'}]}

Parameters

- **regkey** (*str*) – The registry key to enumerate.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns

command_id, future if ran async or dict: A dictionary with two keys, 'sub_keys' (a list of subkey names) and 'values' (a list of dicts

containing value data, name, and type).

list_registry_values(*regkey*, *async_mode=False*)

Enumerate all registry values from the specified registry key on the remote machine.

Parameters

- **regkey** (*str*) – The registry key to enumerate.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async or list: List of values for the registry key.

memdump(*local_filename*, *remote_filename=None*, *compress=False*, *async_mode=False*)

Perform a memory dump operation on the remote machine.

Parameters

- **local_filename** (*str*) – Name of the file the memory dump will be transferred to on the local machine.
- **remote_filename** (*str*) – Name of the file the memory dump will be stored in on the remote machine.
- **compress** (*bool*) – True to compress the file on the remote system.

- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async

put_file(*infp*, *remote_filename*, *async_mode=False*)
Create a new file on the remote machine with the specified data.

Example: >>> with c.select(Device, 1).lr_session() as lr_session: ... lr_session.put_file(open("test.txt", "rb"), r"c:test.txt")

Parameters

- **infp** (*object*) – Python file-like containing data to upload to the remote endpoint.
- **remote_filename** (*str*) – File name to create on the remote endpoint.
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async

set_registry_value(*regkey*, *value*, *overwrite=True*, *value_type=None*, *async_mode=False*)
Set a registry value on the specified registry key on the remote machine.

Example: >>> with c.select(Device, 1).lr_session() as lr_session: ... lr_session.set_registry_value('HKLM\SYSTEM\CurrentControlSet\services\ACPI\testvalue', 1)

Parameters

- **regkey** (*str*) – The registry key to set.
- **value** (*object*) – The value data.
- **overwrite** (*bool*) – If True, any existing value will be overwritten.
- **value_type** (*str*) – The type of value. Examples: REG_DWORD, REG_MULTI_SZ, REG_SZ
- **async_mode** (*bool*) – Flag showing whether the command should be executed asynchronously

Returns command_id, future if ran async

start_memdump(*remote_filename=None*, *compress=True*)
Start a memory dump operation on the remote machine.

Parameters

- **remote_filename** (*str*) – Name of the file the memory dump will be stored in on the remote machine.
- **compress** (*bool*) – True to compress the file on the remote system.

Returns Controlling object for the memory dump operation.

Return type *LiveResponseMemdump*

walk(*top*, *topdown=True*, *onerror=None*, *followlinks=False*)
Perform a full directory walk with recursion into subdirectories on the remote machine.

Note: walk does not support async_mode due to its behaviour, it can only be invoked synchronously Example: >>> with c.select(Device, 1).lr_session() as lr_session: ... for entry in lr_session.walk(directory_name): ... print(entry) ('C:\temp', [u'dir1', u'dir2'], [u'file1.txt'])

Parameters

- **top** (*str*) – Directory to recurse on.
- **topdown** (*bool*) – If True, start output from top level directory.
- **onerror** (*func*) – Callback if an error occurs. This function is called with one argument (the exception that occurred).
- **followlinks** (*bool*) – True to follow symbolic links.

Returns List of tuples containing directory name, subdirectory names, file names.

Return type list

class CompletionNotification(*device_id*)
Bases: object

The notification that an operation is complete.

Initialize the CompletionNotification.

Parameters **device_id** (*int*) – The device ID this notification is for.

class GetFileJob(*file_name*)
Bases: object

Object that retrieves a file via Live Response.

Initialize the GetFileJob.

Parameters **file_name** (*str*) – The name of the file to be fetched.

run(*session*)
Execute the file transfer.

Parameters **session** (CbLRSessionBase) – The Live Response session being used.

Returns The contents of the file being retrieved.

Return type str

class JobWorker(*cb*, *device_id*, *result_queue*)
Bases: threading.Thread

Thread object that executes individual Live Response jobs.

Initialize the JobWorker.

Parameters

- **cb** (BaseAPI) – The CBC SDK object reference.
- **device_id** (*int*) – The ID of the device being used.
- **result_queue** (*Queue*) – The queue where results are placed.

run()
Execute the job worker.

run_job(*work_item*)
Execute an individual WorkItem.

Parameters **work_item** (WorkItem) – The work item to execute.

exception LiveResponseError(*details*)
Bases: Exception

Exception raised for errors with Live Response.

Initialize the LiveResponseError.

Parameters **details** (*object*) – Details of the specific error.

class LiveResponseJobScheduler(*cb*, *max_workers=10*)
Bases: threading.Thread

Thread that schedules Live Response jobs.

Initialize the LiveResponseJobScheduler.

Parameters

- **cb** (BaseAPI) – The CBC SDK object reference.
- **max_workers** (*int*) – Maximum number of JobWorker threads to use.

daemon = True

run()
Execute the job scheduler.

submit_job(*work_item*)
Submit a new job to be processed.

Parameters **work_item** (WorkItem) – New job to be processed.

class LiveResponseMemdump(*lr_session*, *memdump_id*, *remote_filename*)
Bases: object

Object managing a memory dump on a remote machine.

Initialize the LiveResponseMemdump.

Parameters

- **lr_session** (*Session*) – The Live Response session to the machine doing the memory dump.
- **memdump_id** (*str*) – The ID of the memory dump being performed.
- **remote_filename** (*str*) – The file name the memory dump will be stored in on the remote machine.

delete()
Delete the memory dump file.

get(*local_filename*)
Retrieve the remote memory dump to a local file.

Parameters **local_filename** (*str*) – Filename locally that will receive the memory dump.

wait()
Wait for the remote memory dump to complete.

class LiveResponseSession(*cblr_manager*, *session_id*, *device_id*, *session_data=None*)
Bases: *cbc_sdk.live_response_api.CbLRSessionBase*

Public face of the Live Response session object.

Initializes the LiveResponseSession.

Parameters

- **cblr_manager** (LiveResponseSessionManager) – Reference to the session manager.
- **session_id** (*str*) – The ID of this session.
- **device_id** (*int*) – The ID of the device (remote machine) we're connected to.

- **session_data** (*dict*) – Additional session data.

class LiveResponseSessionManager(*cb*, *timeout=30*, *keepalive_sessions=False*)
Bases: *cbc_sdk.live_response_api.CbLRManagerBase*

Session manager for Live Response sessions.

Initialize the LiveResponseSessionManager - only needed to format cblr_base

cblr_base = '/appservices/v6/orgs/{}/liveresponse'

cblr_session_cls
alias of *LiveResponseSession*

session_status(*session_id*)
Check the status of a lr session

Parameters **session_id** (*str*) – The id of the session.

Returns Status of the session

Return type str

submit_job(*job*, *device*)
Submit a job for execution by the job scheduler.

Parameters

- **job** (*func*) – The job function to be executed.
- **device** (*object*) – The device ID or Device object the job will be executed on.

Returns A Future that will allow waiting until the job is complete.

Return type Future

class WorkItem(*fn*, *device_id*)
Bases: object

Work item for scheduling.

Initialize the WorkItem.

Parameters

- **fn** (*func*) – The function to be called to do the actual work.
- **device_id** (*object*) – The device ID or Device object the work item is directed for.

class WorkerStatus(*device_id*, *status='READY'*, *exception=None*)
Bases: object

Holds the status of an individual worker.

Initialize the WorkerStatus.

Parameters

- **device_id** (*int*) – The device ID this status is for.
- **status** (*str*) – The current status value.
- **exception** (*Exception*) – Any exception that happened.

jobrunner(*callable*, *cb*, *device_id*)
Wrap a callable object with a live response session.

Parameters

- **callable** (*object*) – The object to be wrapped.
- **cb** (BaseAPI) – The CBC SDK object reference.
- **device_id** (*int*) – The device ID to use to get the session.

Returns The wrapped object.

Return type object

poll_status(*cb*, *url*, *desired_status='COMPLETE'*, *timeout=None*, *delay=None*)
Poll the status of a Live Response query.

Parameters

- **cb** (BaseAPI) – The CBC SDK object reference.
- **url** (*str*) – The URL to poll.
- **desired_status** (*str*) – The status we're looking for.
- **timeout** (*int*) – The timeout value in seconds.
- **delay** (*float*) – The delay between attempts in seconds.

Returns The result of the Live Response query that has the desired status.

Return type object

Raises *LiveResponseError* – If an error response was encountered.

4.8.9 cbc_sdk.rest_api module

Definition of the CBCloudAPI object, the core object for interacting with the Carbon Black Cloud SDK.

class CBCloudAPI(**args*, ***kwargs*)
Bases: *cbc_sdk.connection.BaseAPI*

The main entry point into the CBCloudAPI.

Usage:

```
>>> from cbc_sdk import CBCloudAPI
>>> cb = CBCloudAPI(profile="production")
```

Initialize the CBCloudAPI object.

Parameters

- ***args** (*list*) – List of arguments to pass to the API object.
- ****kwargs** (*dict*) – Keyword arguments to pass to the API object.

Keyword Arguments **profile** (*str*) – Use the credentials in the named profile when connecting to the Carbon Black server. Uses the profile named 'default' when not specified.

alert_search_suggestions(*query*)
Returns suggestions for keys and field values that can be used in a search.

Parameters **query** (*str*) – A search query to use.

Returns A list of search suggestions expressed as dict objects.

Return type list

audit_remediation(*sql*)
Run an audit-remediation query.

Parameters **sql** (*str*) – The SQL for the query.

Returns The query object.

Return type *Query*

audit_remediation_history(*query=None*)
Run an audit-remediation history query.

Parameters **query** (*str*) – The SQL for the query.

Returns The query object.

Return type *Query*

bulk_threat_dismiss(*threat_ids*, *remediation=None*, *comment=None*)
Dismiss the alerts associated with multiple threat IDs. The alerts will be left in a DISMISSED state.

Parameters

- **threat_ids** (*list*) – List of string threat IDs.
- **remediation** (*str*) – The remediation state to set for all alerts.
- **comment** (*str*) – The comment to set for all alerts.

Returns The request ID of the pending request, which may be used to select a WorkflowStatus object.

Return type str

bulk_threat_update(*threat_ids*, *remediation=None*, *comment=None*)
Update the alert status of alerts associated with multiple threat IDs. The alerts will be left in an OPEN state

Parameters

- **threat_ids** (*list*) – List of string threat IDs.
- **remediation** (*str*) – The remediation state to set for all alerts.
- **comment** (*str*) – The comment to set for all alerts.

Returns The request ID of the pending request, which may be used to select a WorkflowStatus object.

Return type str

convert_feed_query(*query*)
Converts a legacy CB Response query to a ThreatHunter query.

Parameters **query** (*str*) – The query to convert.

Returns The converted query.

Return type str

create(*cls*, *data=None*)
Creates a new model.

Parameters

- **cls** (*class*) – The model being created.
- **data** (*dict*) – The data to pre-populate the model with.

Returns An instance of *cls*.

Return type object

Examples: >>> feed = cb.create(Feed, feed_data)

custom_severities
Returns a list of active ReportSeverity instances.

device_background_scan(*device_ids*, *scan*)
Set the background scan option for the specified devices.

Parameters

- **device_ids** (*list*) – List of IDs of devices to be set.
- **scan** (*bool*) – True to turn background scan on, False to turn it off.

Returns The parsed JSON output from the request.

Return type dict

Raises ServerError – If the API method returns an HTTP error code.

device_bypass(*device_ids*, *enable*)
Set the bypass option for the specified devices.

Parameters

- **device_ids** (*list*) – List of IDs of devices to be set.
- **enable** (*bool*) – True to enable bypass, False to disable it.

Returns The parsed JSON output from the request.

Return type dict

Raises ServerError – If the API method returns an HTTP error code.

device_delete_sensor(*device_ids*)
Delete the specified sensor devices.

Parameters **device_ids** (*list*) – List of IDs of devices to be deleted.

Returns The parsed JSON output from the request.

Return type dict

Raises ServerError – If the API method returns an HTTP error code.

device_quarantine(*device_ids*, *enable*)
Set the quarantine option for the specified devices.

Parameters

- **device_ids** (*list*) – List of IDs of devices to be set.
- **enable** (*bool*) – True to enable quarantine, False to disable it.

Returns The parsed JSON output from the request.

Return type dict

Raises ServerError – If the API method returns an HTTP error code.

device_uninstall_sensor(*device_ids*)
Uninstall the specified sensor devices.

Parameters **device_ids** (*list*) – List of IDs of devices to be uninstalled.

Returns The parsed JSON output from the request.

Return type dict

Raises `ServerError` – If the API method returns an HTTP error code.

device_update_policy(*device_ids*, *policy_id*)
Set the current policy for the specified devices.

Parameters

- **device_ids** (*list*) – List of IDs of devices to be changed.
- **policy_id** (*int*) – ID of the policy to set for the devices.

Returns The parsed JSON output from the request.

Return type dict

Raises `ServerError` – If the API method returns an HTTP error code.

device_update_sensor_version(*device_ids*, *sensor_version*)
Update the sensor version for the specified devices.

Parameters

- **device_ids** (*list*) – List of IDs of devices to be changed.
- **sensor_version** (*dict*) – New version properties for the sensor.

Returns The parsed JSON output from the request.

Return type dict

Raises `ServerError` – If the API method returns an HTTP error code.

fetch_process_queries()
Retrieves a list of query IDs, active or complete, known by the ThreatHunter server.

get_auditlogs()
Retrieve queued audit logs from the Carbon Black Cloud Endpoint Standard server.

Note that this can only be used with a 'API' key generated in the CBC console.

Returns list of dictionary objects representing the audit logs, or an empty list if none available.

get_notifications()
Retrieve queued notifications (alerts) from the Cb Endpoint Standard server.

Note that this can only be used with a 'SIEM' key generated in the Cb Endpoint Standard console.

Returns List of dictionary objects representing the notifications, or an empty list if none available.

Return type list

live_response
Create and return the Live Response session manager.

Returns The session manager object.

Return type *LiveResponseSessionManager*

notification_listener(*interval=60*)
Generator to continually poll the Cb Endpoint Standard server for notifications (alerts).

Note that this can only be used with a 'SIEM' key generated in the Cb Endpoint Standard console.

org_urn
Returns the URN based on the configured org_key.

Returns The URN based on the configured org_key.

Return type str

process_limits()
Returns a dictionary containing API limiting information.

Examples: >>> cb.process_limits() {u'status_code': 200, u'time_bounds': {u'upper': 1545335070095, u'lower': 1542779216139}}

validate_process_query(*query*)
Validates the given IOC query.

Parameters **query** (*str*) – The query to validate.

Returns True if the query is valid, False if not.

Return type bool

Examples: >>> cb.validate_process_query("process_name:chrome.exe") # True

4.8.10 cbc_sdk.utils module

Utility functions for use within the CBC SDK.

convert_from_cb(*s*)
Parse a date and time value into a datetime object.

Parameters **s** (*str*) – The date and time string to parse. If this is None, we use the UNIX epoch timestamp.

Returns The parsed date and time.

Return type datetime

convert_query_params(*qd*)
Expand a dictionary of query parameters by turning "list" values into multiple pairings of key with value.

Parameters **qd** (*dict*) – A mapping of parameter names to values.

Returns A list of query parameters, each one a tuple containing name and value, after the expansion is applied.

Return type list

convert_to_cb(*dt*)
Convert a date and time to a string in the Carbon Black format.

Parameters **dt** (*datetime*) – The date and time to be converted.

Returns The date and time as a string.

Return type str

4.8.11 cbc_sdk.winerror module

Error related constants for win32

Generated by h2py from winerror.h

class CommDlgError

Bases: *cbc_sdk.winerror.ErrorBaseClass*

Collects all the common dialog error codes.

CCERR_CHOOSECOLORCODES = 20480

CDERR_DIALOGFAILURE = 65535

CDERR_FINDRESFAILURE = 6

CDERR_GENERALCODES = 0

CDERR_INITIALIZATION = 2

CDERR_LOADRESFAILURE = 7

CDERR_LOADSTRFAILURE = 5

CDERR_LOCKRESFAILURE = 8

CDERR_MEMALLOCFAILURE = 9

CDERR_MEMLOCKFAILURE = 10

CDERR_NOHINSTANCE = 4

CDERR_NOHOOK = 11

CDERR_NOTEMPLATE = 3

CDERR_REGISTERMSGFAIL = 12

CDERR_STRUCTSIZE = 1

CFERR_CHOOSEFONTCODES = 8192

CFERR_MAXLESSTHANMIN = 8194

CFERR_NOFONTS = 8193

FNERR_BUFFERTOOSMALL = 12291

FNERR_FILENAMECODES = 12288

FNERR_INVALIDFILENAME = 12290

FNERR_SUBCLASSFAILURE = 12289

FRERR_BUFFERLENGTHZERO = 16385

FRERR_FINDREPLACECODES = 16384

PDERR_CREATEICFAILURE = 4106

PDERR_DEFAULTDIFFERENT = 4108

PDERR_DNDMMISMATCH = 4105

PDERR_GETDEVMODEFAIL = 4101

PDERR_INITFAILURE = 4102

PDERR_LOADDRVFAILURE = 4100

PDERR_NODEFAULTPRN = 4104

PDERR_NODEVICES = 4103

PDERR_PARSEFAILURE = 4098

PDERR_PRINTERCODES = 4096

PDERR_PRINTERNOTFOUND = 4107

PDERR_RETDEFFAILURE = 4099

PDERR_SETUPFAILURE = 4097

class DirectoryStorageError

Bases: *cbc_sdk.winerror.ErrorBaseClass*

Collects all the directory storage error codes.

ERROR_DS_ADD_REPLICA_INHIBITED = 8302

ERROR_DS_ADMIN_LIMIT_EXCEEDED = 8228

ERROR_DS_AFFECTS_MULTIPLE_DSAS = 8249

ERROR_DS_AG_CANT_HAVE_UNIVERSAL_MEMBER = 8578

ERROR_DS_ALIASED_OBJ_MISSING = 8334

ERROR_DS_ALIAS_DEREF_PROBLEM = 8244

ERROR_DS_ALIAS_POINTS_TO_ALIAS = 8336

ERROR_DS_ALIAS_PROBLEM = 8241

ERROR_DS_ATTRIBUTE_OR_VALUE_EXISTS = 8205

ERROR_DS_ATTRIBUTE_OWNED_BY_SAM = 8346

ERROR_DS_ATTRIBUTE_TYPE_UNDEFINED = 8204

ERROR_DS_ATT_ALREADY_EXISTS = 8318

ERROR_DS_ATT_IS_NOT_ON_OBJ = 8310

ERROR_DS_ATT_NOT_DEF_FOR_CLASS = 8317

ERROR_DS_ATT_NOT_DEF_IN_SCHEMA = 8303

ERROR_DS_ATT_SCHEMA_REQ_ID = 8399

ERROR_DS_ATT_SCHEMA_REQ_SYNTAX = 8416

ERROR_DS_ATT_VAL_ALREADY_EXISTS = 8323

ERROR_DS_AUTHORIZATION_FAILED = 8599

ERROR_DS_AUTH_METHOD_NOT_SUPPORTED = 8231

ERROR_DS_AUTH_UNKNOWN = 8234

ERROR_DS_AUX_CLS_TEST_FAIL = 8389

ERROR_DS_BACKLINK_WITHOUT_LINK = 8482

ERROR_DS_BAD_ATT_SCHEMA_SYNTAX = 8400

ERROR_DS_BAD_HIERARCHY_FILE = 8425

ERROR_DS_BAD_INSTANCE_TYPE = 8313

ERROR_DS_BAD_NAME_SYNTAX = 8335

ERROR_DS_BAD_RDN_ATT_ID_SYNTAX = 8392

ERROR_DS_BUILD_HIERARCHY_TABLE_FAILED = 8426

```
ERROR_DS_BUSY = 8206
ERROR_DS_CANT_ACCESS_REMOTE_PART_OF_AD = 8585
ERROR_DS_CANT_ADD_ATT_VALUES = 8320
ERROR_DS_CANT_ADD_SYSTEM_ONLY = 8358
ERROR_DS_CANT_ADD_TO_GC = 8550
ERROR_DS_CANT_CACHE_ATT = 8401
ERROR_DS_CANT_CACHE_CLASS = 8402
ERROR_DS_CANT_CREATE_IN_NONDOMAIN_NC = 8553
ERROR_DS_CANT_CREATE_UNDER_SCHEMA = 8510
ERROR_DS_CANT_DELETE = 8398
ERROR_DS_CANT_DELETE_DSA_OBJ = 8340
ERROR_DS_CANT_DEL_MASTER_CROSSREF = 8375
ERROR_DS_CANT_DEMOTE_WITH_WRITEABLE_NC = 8604
ERROR_DS_CANT_DEREF_ALIAS = 8337
ERROR_DS_CANT_DERIVE_SPN_FOR_DELETED_DOMAIN = 8603
ERROR_DS_CANT_DERIVE_SPN_WITHOUT_SERVER_REF = 8589
ERROR_DS_CANT_FIND_DC_FOR_SRC_DOMAIN = 8537
ERROR_DS_CANT_FIND_DSA_OBJ = 8419
ERROR_DS_CANT_FIND_EXPECTED_NC = 8420
ERROR_DS_CANT_FIND_NC_IN_CACHE = 8421
ERROR_DS_CANT_MIX_MASTER_AND_REPS = 8331
ERROR_DS_CANT_MOD_OBJ_CLASS = 8215
ERROR_DS_CANT_MOD_PRIMARYGROUPID = 8506
ERROR_DS_CANT_MOD_SYSTEM_ONLY = 8369
ERROR_DS_CANT_MOVE_ACCOUNT_GROUP = 8498
ERROR_DS_CANT_MOVE_APP_BASIC_GROUP = 8608
ERROR_DS_CANT_MOVE_APP_QUERY_GROUP = 8609
ERROR_DS_CANT_MOVE_DELETED_OBJECT = 8489
ERROR_DS_CANT_MOVE_RESOURCE_GROUP = 8499
ERROR_DS_CANT_ON_NON_LEAF = 8213
ERROR_DS_CANT_ON_RDN = 8214
ERROR_DS_CANT_REMOVE_ATT_CACHE = 8403
ERROR_DS_CANT_REMOVE_CLASS_CACHE = 8404
ERROR_DS_CANT_REM_MISSING_ATT = 8324
ERROR_DS_CANT_REM_MISSING_ATT_VAL = 8325
ERROR_DS_CANT_REPLACE_HIDDEN_REC = 8424
```

```
ERROR_DS_CANT_RETRIEVE_ATTS = 8481
ERROR_DS_CANT_RETRIEVE_CHILD = 8422
ERROR_DS_CANT_RETRIEVE_DN = 8405
ERROR_DS_CANT_RETRIEVE_INSTANCE = 8407
ERROR_DS_CANT_RETRIEVE_SD = 8526
ERROR_DS_CANT_START = 8531
ERROR_DS_CANT_TREE_DELETE_CRITICAL_OBJ = 8560
ERROR_DS_CANT_WITH_ACCT_GROUP_MEMBERSHPS = 8493
ERROR_DS_CHILDREN_EXIST = 8332
ERROR_DS_CLASS_MUST_BE_CONCRETE = 8359
ERROR_DS_CLASS_NOT_DSA = 8343
ERROR_DS_CLIENT_LOOP = 8259
ERROR_DS_CODE_INCONSISTENCY = 8408
ERROR_DS_COMPARE_FALSE = 8229
ERROR_DS_COMPARE_TRUE = 8230
ERROR_DS_CONFIDENTIALITY_REQUIRED = 8237
ERROR_DS_CONFIG_PARAM_MISSING = 8427
ERROR_DS_CONSTRAINT_VIOLATION = 8239
ERROR_DS_CONSTRUCTED_ATT_MOD = 8475
ERROR_DS_CONTROL_NOT_FOUND = 8258
ERROR_DS_COULDNT_CONTACT_FSMO = 8367
ERROR_DS_COULDNT_IDENTIFY_OBJECTS_FOR_TREE_DELETE = 8503
ERROR_DS_COULDNT_LOCK_TREE_FOR_DELETE = 8502
ERROR_DS_COULDNT_UPDATE_SPNS = 8525
ERROR_DS_COUNTING_AB_INDICES_FAILED = 8428
ERROR_DS_CROSS_DOMAIN_CLEANUP_REQD = 8491
ERROR_DS_CROSS_DOM_MOVE_ERROR = 8216
ERROR_DS_CROSS_NC_DN_RENAME = 8368
ERROR_DS_CROSS_REF_BUSY = 8602
ERROR_DS_CROSS_REF_EXISTS = 8374
ERROR_DS_CR_IMPOSSIBLE_TO_VALIDATE = 8495
ERROR_DS_CR_IMPOSSIBLE_TO_VALIDATE_V2 = 8586
ERROR_DS_DATABASE_ERROR = 8409
ERROR_DS_DECODING_ERROR = 8253
ERROR_DS_DESTINATION_AUDITING_NOT_ENABLED = 8536
ERROR_DS_DESTINATION_DOMAIN_NOT_IN_FOREST = 8535
```

```
ERROR_DS_DIFFERENT_REPL_EPOCHS = 8593
ERROR_DS_DISALLOWED_IN_SYSTEM_CONTAINER = 8615
ERROR_DS_DNS_LOOKUP_FAILURE = 8524
ERROR_DS_DOMAIN_RENAME_IN_PROGRESS = 8612
ERROR_DS_DOMAIN_VERSION_TOO_HIGH = 8564
ERROR_DS_DOMAIN_VERSION_TOO_LOW = 8566
ERROR_DS_DRA_ABANDON_SYNC = 8462
ERROR_DS_DRA_ACCESS_DENIED = 8453
ERROR_DS_DRA_BAD_DN = 8439
ERROR_DS_DRA_BAD_INSTANCE_TYPE = 8445
ERROR_DS_DRA_BAD_NC = 8440
ERROR_DS_DRA_BUSY = 8438
ERROR_DS_DRA_CONNECTION_FAILED = 8444
ERROR_DS_DRA_DB_ERROR = 8451
ERROR_DS_DRA_DN_EXISTS = 8441
ERROR_DS_DRA_EARLIER_SCHEMA_CONFLICT = 8544
ERROR_DS_DRA_EXTN_CONNECTION_FAILED = 8466
ERROR_DS_DRA_GENERIC = 8436
ERROR_DS_DRA_INCOMPATIBLE_PARTIAL_SET = 8464
ERROR_DS_DRA_INCONSISTENT_DIT = 8443
ERROR_DS_DRA_INTERNAL_ERROR = 8442
ERROR_DS_DRA_INVALID_PARAMETER = 8437
ERROR_DS_DRA_MAIL_PROBLEM = 8447
ERROR_DS_DRA_MISSING_PARENT = 8460
ERROR_DS_DRA_NAME_COLLISION = 8458
ERROR_DS_DRA_NOT_SUPPORTED = 8454
ERROR_DS_DRA_NO_REPLICA = 8452
ERROR_DS_DRA_OBJ_IS_REP_SOURCE = 8450
ERROR_DS_DRA_OBJ_NC_MISMATCH = 8545
ERROR_DS_DRA_OUT_OF_MEM = 8446
ERROR_DS_DRA_OUT_SCHEDULE_WINDOW = 8617
ERROR_DS_DRA_PREEMPTED = 8461
ERROR_DS_DRA_REF_ALREADY_EXISTS = 8448
ERROR_DS_DRA_REF_NOT_FOUND = 8449
ERROR_DS_DRA_REPL_PENDING = 8477
ERROR_DS_DRA_RPC_CANCELLED = 8455
```

```
ERROR_DS_DRA_SCHEMA_CONFLICT = 8543
ERROR_DS_DRA_SCHEMA_INFO_SHIP = 8542
ERROR_DS_DRA_SCHEMA_MISMATCH = 8418
ERROR_DS_DRA_SHUTDOWN = 8463
ERROR_DS_DRA_SINK_DISABLED = 8457
ERROR_DS_DRA_SOURCE_DISABLED = 8456
ERROR_DS_DRA_SOURCE_IS_PARTIAL_REPLICA = 8465
ERROR_DS_DRA_SOURCE_REINSTALLED = 8459
ERROR_DS_DRS_EXTENSIONS_CHANGED = 8594
ERROR_DS_DSA_MUST_BE_INT_MASTER = 8342
ERROR_DS_DST_DOMAIN_NOT_NATIVE = 8496
ERROR_DS_DST_NC_MISMATCH = 8486
ERROR_DS_DS_REQUIRED = 8478
ERROR_DS_DUPLICATE_ID_FOUND = 8605
ERROR_DS_DUP_LDAP_DISPLAY_NAME = 8382
ERROR_DS_DUP_LINK_ID = 8468
ERROR_DS_DUP_MAPI_ID = 8380
ERROR_DS_DUP_MSDS_INTID = 8597
ERROR_DS_DUP_OID = 8379
ERROR_DS_DUP_RDN = 8378
ERROR_DS_DUP_SCHEMA_ID_GUID = 8381
ERROR_DS_ENCODING_ERROR = 8252
ERROR_DS_EPOCH_MISMATCH = 8483
ERROR_DS_EXISTING_AD_CHILD_NC = 8613
ERROR_DS_EXISTS_IN_AUX_CLS = 8393
ERROR_DS_EXISTS_IN_MAY_HAVE = 8386
ERROR_DS_EXISTS_IN_MUST_HAVE = 8385
ERROR_DS_EXISTS_IN_POSS_SUP = 8395
ERROR_DS_EXISTS_IN_RDNATTID = 8598
ERROR_DS_EXISTS_IN_SUB_CLS = 8394
ERROR_DS_FILTER_UNKNOWN = 8254
ERROR_DS_FILTER_USES_CONTRUCTED_ATTRS = 8555
ERROR_DS_FOREST_VERSION_TOO_HIGH = 8563
ERROR_DS_FOREST_VERSION_TOO_LOW = 8565
ERROR_DS_GCVERIFY_ERROR = 8417
ERROR_DS_GC_NOT_AVAILABLE = 8217
```

```
ERROR_DS_GC_REQUIRED = 8547
ERROR_DS_GENERIC_ERROR = 8341
ERROR_DS_GLOBAL_CANT_HAVE_CROSSDOMAIN_MEMBER = 8519
ERROR_DS_GLOBAL_CANT_HAVE_LOCAL_MEMBER = 8516
ERROR_DS_GLOBAL_CANT_HAVE_UNIVERSAL_MEMBER = 8517
ERROR_DS_GOVERNSID_MISSING = 8410
ERROR_DS_GROUP_CONVERSION_ERROR = 8607
ERROR_DS_HAVE_PRIMARY_MEMBERS = 8521
ERROR_DS_HIERARCHY_TABLE_MALLOC_FAILED = 8429
ERROR_DS_ILLEGAL_BASE_SCHEMA_MOD = 8507
ERROR_DS_ILLEGAL_MOD_OPERATION = 8311
ERROR_DS_ILLEGAL_SUPERIOR = 8345
ERROR_DS_ILLEGAL_XDOM_MOVE_OPERATION = 8492
ERROR_DS_INAPPROPRIATE_AUTH = 8233
ERROR_DS_INAPPROPRIATE_MATCHING = 8238
ERROR_DS_INCOMPATIBLE_CONTROLS_USED = 8574
ERROR_DS_INCOMPATIBLE_VERSION = 8567
ERROR_DS_INCORRECT_ROLE_OWNER = 8210
ERROR_DS_INIT_FAILURE = 8532
ERROR_DS_INIT_FAILURE_CONSOLE = 8561
ERROR_DS_INSTALL_NO_SCH_VERSION_IN_INIFILE = 8512
ERROR_DS_INSTALL_NO_SRC_SCH_VERSION = 8511
ERROR_DS_INSTALL_SCHEMA_MISMATCH = 8467
ERROR_DS_INSUFFICIENT_ATTR_TO_CREATE_OBJECT = 8606
ERROR_DS_INSUFF_ACCESS_RIGHTS = 8344
ERROR_DS_INTERNAL_FAILURE = 8430
ERROR_DS_INVALID_ATTRIBUTE_SYNTAX = 8203
ERROR_DS_INVALID_DMD = 8360
ERROR_DS_INVALID_DN_SYNTAX = 8242
ERROR_DS_INVALID_GROUP_TYPE = 8513
ERROR_DS_INVALID_LDAP_DISPLAY_NAME = 8479
ERROR_DS_INVALID_NAME_FOR_SPN = 8554
ERROR_DS_INVALID_ROLE_OWNER = 8366
ERROR_DS_INVALID_SCRIPT = 8600
ERROR_DS_INVALID_SEARCH_FLAG = 8500
ERROR_DS_IS_LEAF = 8243
```

```
ERROR_DS_KEY_NOT_UNIQUE = 8527
ERROR_DS_LDAP_SEND_QUEUE_FULL = 8616
ERROR_DS_LINK_ID_NOT_AVAILABLE = 8577
ERROR_DS_LOCAL_CANT_HAVE_CROSSDOMAIN_LOCAL_MEMBER = 8520
ERROR_DS_LOCAL_ERROR = 8251
ERROR_DS_LOCAL_MEMBER_OF_LOCAL_ONLY = 8548
ERROR_DS_LOOP_DETECT = 8246
ERROR_DS_LOW_DSA_VERSION = 8568
ERROR_DS_MACHINE_ACCOUNT_CREATED_PRENT4 = 8572
ERROR_DS_MACHINE_ACCOUNT_QUOTA_EXCEEDED = 8557
ERROR_DS_MASTERDSA_REQUIRED = 8314
ERROR_DS_MAX_OBJ_SIZE_EXCEEDED = 8304
ERROR_DS_MEMBERSHIP_EVALUATED_LOCALLY = 8201
ERROR_DS_MISSING_EXPECTED_ATT = 8411
ERROR_DS_MISSING_FSMO_SETTINGS = 8434
ERROR_DS_MISSING_INFRASTRUCTURE_CONTAINER = 8497
ERROR_DS_MISSING_REQUIRED_ATT = 8316
ERROR_DS_MISSING_SUPREF = 8406
ERROR_DS_MODIFYDN_DISALLOWED_BY_FLAG = 8581
ERROR_DS_MODIFYDN_DISALLOWED_BY_INSTANCE_TYPE = 8579
ERROR_DS_MODIFYDN_WRONG_GRANDPARENT = 8582
ERROR_DS_MUST_BE_RUN_ON_DST_DC = 8558
ERROR_DS_NAME_ERROR_DOMAIN_ONLY = 8473
ERROR_DS_NAME_ERROR_NOT_FOUND = 8470
ERROR_DS_NAME_ERROR_NOT_UNIQUE = 8471
ERROR_DS_NAME_ERROR_NO_MAPPING = 8472
ERROR_DS_NAME_ERROR_NO_SYNTACTICAL_MAPPING = 8474
ERROR_DS_NAME_ERROR_RESOLVING = 8469
ERROR_DS_NAME_ERROR_TRUST_REFERRAL = 8583
ERROR_DS_NAME_NOT_UNIQUE = 8571
ERROR_DS_NAME_REFERENCE_INVALID = 8373
ERROR_DS_NAME_TOO_LONG = 8348
ERROR_DS_NAME_TOO_MANY_PARTS = 8347
ERROR_DS_NAME_TYPE_UNKNOWN = 8351
ERROR_DS_NAME_UNPARSEABLE = 8350
ERROR_DS_NAME_VALUE_TOO_LONG = 8349
```

```
ERROR_DS_NAMING_MASTER_GC = 8523
ERROR_DS_NAMING_VIOLATION = 8247
ERROR_DS_NCNAME_MISSING_CR_REF = 8412
ERROR_DS_NCNAME_MUST_BE_NC = 8357
ERROR_DS_NC_MUST_HAVE_NC_PARENT = 8494
ERROR_DS_NC_STILL_HAS_DSAS = 8546
ERROR_DS_NONEXISTENT_MAY_HAVE = 8387
ERROR_DS_NONEXISTENT_MUST_HAVE = 8388
ERROR_DS_NONEXISTENT_POSS_SUP = 8390
ERROR_DS_NONSAFE_SCHEMA_CHANGE = 8508
ERROR_DS_NON_BASE_SEARCH = 8480
ERROR_DS_NOTIFY_FILTER_TOO_COMPLEX = 8377
ERROR_DS_NOT_AN_OBJECT = 8352
ERROR_DS_NOT_AUTHORITIVE_FOR_DST_NC = 8487
ERROR_DS_NOT_CLOSEST = 8588
ERROR_DS_NOT_INSTALLED = 8200
ERROR_DS_NOT_ON_BACKLINK = 8362
ERROR_DS_NOT_SUPPORTED = 8256
ERROR_DS_NOT_SUPPORTED_SORT_ORDER = 8570
ERROR_DS_NO_ATTRIBUTE_OR_VALUE = 8202
ERROR_DS_NO_BEHAVIOR_VERSION_IN_MIXEDDOMAIN = 8569
ERROR_DS_NO_CHAINED_EVAL = 8328
ERROR_DS_NO_CHAINING = 8327
ERROR_DS_NO_CHECKPOINT_WITH_PDC = 8551
ERROR_DS_NO_CROSSREF_FOR_NC = 8363
ERROR_DS_NO_DELETED_NAME = 8355
ERROR_DS_NO_FPO_IN_UNIVERSAL_GROUPS = 8549
ERROR_DS_NO_MORE_RIDS = 8209
ERROR_DS_NO_MSDS_INTID = 8596
ERROR_DS_NO_NEST_GLOBALGROUP_IN_MIXEDDOMAIN = 8514
ERROR_DS_NO_NEST_LOCALGROUP_IN_MIXEDDOMAIN = 8515
ERROR_DS_NO_OBJECT_MOVE_IN_SCHEMA_NC = 8580
ERROR_DS_NO_PARENT_OBJECT = 8329
ERROR_DS_NO_PKT_PRIVACY_ON_CONNECTION = 8533
ERROR_DS_NO_RDN_DEFINED_IN_SCHEMA = 8306
ERROR_DS_NO_REF_DOMAIN = 8575
```

```
ERROR_DS_NO_REQUESTED_ATTS_FOUND = 8308
ERROR_DS_NO_RESULTS_RETURNED = 8257
ERROR_DS_NO_RIDS_ALLOCATED = 8208
ERROR_DS_NO_SUCH_OBJECT = 8240
ERROR_DS_NO_TREE_DELETE_ABOVE_NC = 8501
ERROR_DS_NTDSCRIPT_PROCESS_ERROR = 8592
ERROR_DS_NTDSCRIPT_SYNTAX_ERROR = 8591
ERROR_DS_OBJECT_BEING_REMOVED = 8339
ERROR_DS_OBJECT_CLASS_REQUIRED = 8315
ERROR_DS_OBJECT_RESULTS_TOO_LARGE = 8248
ERROR_DS_OBJ_CLASS_NOT_DEFINED = 8371
ERROR_DS_OBJ_CLASS_NOT_SUBCLASS = 8372
ERROR_DS_OBJ_CLASS_VIOLATION = 8212
ERROR_DS_OBJ_GUID_EXISTS = 8361
ERROR_DS_OBJ_NOT_FOUND = 8333
ERROR_DS_OBJ_STRING_NAME_EXISTS = 8305
ERROR_DS_OBJ_TOO_LARGE = 8312
ERROR_DS_OFFSET_RANGE_ERROR = 8262
ERROR_DS_OPERATIONS_ERROR = 8224
ERROR_DS_OUT_OF_SCOPE = 8338
ERROR_DS_OUT_OF_VERSION_STORE = 8573
ERROR_DS_PARAM_ERROR = 8255
ERROR_DS_PARENT_IS_AN_ALIAS = 8330
ERROR_DS_PDC_OPERATION_IN_PROGRESS = 8490
ERROR_DS_PROTOCOL_ERROR = 8225
ERROR_DS_RANGE_CONSTRAINT = 8322
ERROR_DS_RDN_DOESNT_MATCH_SCHEMA = 8307
ERROR_DS_RECALCSCHEMA_FAILED = 8396
ERROR_DS_REFERRAL = 8235
ERROR_DS_REFERRAL_LIMIT_EXCEEDED = 8260
ERROR_DS_REFUSING_FSMO_ROLES = 8433
ERROR_DS_REMOTE_CROSSREF_OP_FAILED = 8601
ERROR_DS_REPLICATOR_ONLY = 8370
ERROR_DS_REPLICA_SET_CHANGE_NOT_ALLOWED_ON_DISABLED_CR = 8595
ERROR_DS_REPL_LIFETIME_EXCEEDED = 8614
ERROR_DS_RESERVED_LINK_ID = 8576
```

```
ERROR_DS_RIDMGR_INIT_ERROR = 8211
ERROR_DS_ROLE_NOT_VERIFIED = 8610
ERROR_DS_ROOT_CANT_BE_SUBREF = 8326
ERROR_DS_ROOT_MUST_BE_NC = 8301
ERROR_DS_ROOT_REQUIRES_CLASS_TOP = 8432
ERROR_DS_SAM_INIT_FAILURE = 8504
ERROR_DS_SAM_INIT_FAILURE_CONSOLE = 8562
ERROR_DS_SAM_NEED_BOOTKEY_FLOPPY = 8530
ERROR_DS_SAM_NEED_BOOTKEY_PASSWORD = 8529
ERROR_DS_SCHEMA_ALLOC_FAILED = 8415
ERROR_DS_SCHEMA_NOT_LOADED = 8414
ERROR_DS_SCHEMA_UPDATE_DISALLOWED = 8509
ERROR_DS_SECURITY_CHECKING_ERROR = 8413
ERROR_DS_SECURITY_ILLEGAL_MODIFY = 8423
ERROR_DS_SEC_DESC_INVALID = 8354
ERROR_DS_SEC_DESC_TOO_SHORT = 8353
ERROR_DS_SEMANTIC_ATT_TEST = 8383
ERROR_DS_SENSITIVE_GROUP_VIOLATION = 8505
ERROR_DS_SERVER_DOWN = 8250
ERROR_DS_SHUTTING_DOWN = 8364
ERROR_DS_SINGLE_USER_MODE_FAILED = 8590
ERROR_DS_SINGLE_VALUE_CONSTRAINT = 8321
ERROR_DS_SIZELIMIT_EXCEEDED = 8227
ERROR_DS_SORT_CONTROL_MISSING = 8261
ERROR_DS_SOURCE_AUDITING_NOT_ENABLED = 8552
ERROR_DS_SOURCE_DOMAIN_IN_FOREST = 8534
ERROR_DS_SRC_AND_DST_NC_IDENTICAL = 8485
ERROR_DS_SRC_AND_DST_OBJECT_CLASS_MISMATCH = 8540
ERROR_DS_SRC_DC_MUST_BE_SP4_OR_GREATER = 8559
ERROR_DS_SRC_GUID_MISMATCH = 8488
ERROR_DS_SRC_NAME_MISMATCH = 8484
ERROR_DS_SRC_OBJ_NOT_GROUP_OR_USER = 8538
ERROR_DS_SRC_SID_EXISTS_IN_FOREST = 8539
ERROR_DS_STRING_SD_CONVERSION_FAILED = 8522
ERROR_DS_STRONG_AUTH_REQUIRED = 8232
ERROR_DS_SUBREF_MUST_HAVE_PARENT = 8356
```

ERROR_DS_SUBTREE_NOTIFY_NOT_NC_HEAD = 8376

ERROR_DS_SUB_CLS_TEST_FAIL = 8391

ERROR_DS_SYNTAX_MISMATCH = 8384

ERROR_DS_THREAD_LIMIT_EXCEEDED = 8587

ERROR_DS_TIMELIMIT_EXCEEDED = 8226

ERROR_DS_TREE_DELETE_NOT_FINISHED = 8397

ERROR_DS_UNABLE_TO_SURRENDER_ROLES = 8435

ERROR_DS_UNAVAILABLE = 8207

ERROR_DS_UNAVAILABLE_CRIT_EXTENSION = 8236

ERROR_DS_UNICODEPWD_NOT_IN_QUOTES = 8556

ERROR_DS_UNIVERSAL_CANT_HAVE_LOCAL_MEMBER = 8518

ERROR_DS_UNKNOWN_ERROR = 8431

ERROR_DS_UNKNOWN_OPERATION = 8365

ERROR_DS_UNWILLING_TO_PERFORM = 8245

ERROR_DS_USER_BUFFER_TO_SMALL = 8309

ERROR_DS_WKO_CONTAINER_CANNOT_BE_SPECIAL = 8611

ERROR_DS_WRONG_LINKED_ATT_SYNTAX = 8528

ERROR_DS_WRONG_OM_OBJ_CLASS = 8476

ERROR_NOT_SUPPORTED_ON_STANDARD_SERVER = 8584

ERROR_NO_PROMOTION_ACTIVE = 8222

ERROR_POLICY_OBJECT_NOT_FOUND = 8219

ERROR_POLICY_ONLY_IN_DS = 8220

ERROR_PROMOTION_ACTIVE = 8221

ERROR_SAM_INIT_FAILURE = 8541

ERROR_SHARED_POLICY = 8218

class ErrorBaseClass

Bases: `object`

Base class for repositories of error codes.

classmethod lookup_error(*error_code*)

Look up an error code by value.

Parameters **error_code** (*int*) – The error code to be looked up.

Returns The error code name.

Return type str

class ErrorMetaClass

Bases: `type`

Metaclass which establishes an easy means of looking up error codes in a collection.

Creates a new instance of a class, setting up the dict to make it easy to look up error codes.

Parameters

- **name** (*str*) – The name of the class.
- **bases** (*list*) – Base classes of the class to be created.
- **clsdict** (*dict*) – Elements defined in the new class.

FAILED(*Status*)

Return True iff a HRESULT/SCODE status represents failure.

class Facility

Bases: *cbc_sdk.winerror.ErrorBaseClass*

Collects all known facility codes.

FACILITY_AAF = 18

FACILITY_ACS = 20

FACILITY_BACKGROUNDCOPY = 32

FACILITY_CERT = 11

FACILITY_CMI = 54

FACILITY_COMPLUS = 17

FACILITY_CONFIGURATION = 33

FACILITY_CONTROL = 10

FACILITY_DIRECTORYSERVICE = 37

FACILITY_DISPATCH = 2

FACILITY_DPLAY = 21

FACILITY_FVE = 49

FACILITY_FWP = 50

FACILITY_GRAPHICS = 38

FACILITY_HTTP = 25

FACILITY_INTERNET = 12

FACILITY_ITF = 4

FACILITY_MEDIASERVER = 13

FACILITY_METADIRECTORY = 35

FACILITY_MSMQ = 14

FACILITY_NDIS = 52

FACILITY_NULL = 0

FACILITY_PLA = 48

FACILITY_RPC = 1

FACILITY_SCARD = 16

FACILITY_SECURITY = 9

FACILITY_SETUPAPI = 15

FACILITY_SHELL = 39

FACILITY_SSPI = 9

FACILITY_STATE_MANAGEMENT = 34

FACILITY_STORAGE = 3

FACILITY_SXS = 23

FACILITY_TPM_SERVICES = 40

FACILITY_TPM_SOFTWARE = 41

FACILITY_UMI = 22

FACILITY_URT = 19

FACILITY_USERMODE_COMMONLOG = 26

FACILITY_USERMODE_FILTER_MANAGER = 31

FACILITY_USERMODE_HYPERVISOR = 53

FACILITY_WIN32 = 7

FACILITY_WINDOWS = 8

FACILITY_WINDOWSUPDATE = 36

FACILITY_WINDOWS_CE = 24

FACILITY_WINDOWS_DEFENDER = 80

FACILITY_WINRM = 51

GetScode(*hr*)
Turn a HRESULT into a SCODE.

HRESULT_CODE(*hr*)
Return the error code field of a HRESULT.

HRESULT_FACILITY(*hr*)
Return the facility field of a HRESULT.

HRESULT_FROM_NT(*x*)
Turn an NT error code into a HRESULT.

HRESULT_FROM_WIN32(*scode*)
Return the HRESULT corresponding to a Win32 error code.

HRESULT_SEVERITY(*hr*)
Return the severity field of a HRESULT.

class RawErrorCode
Bases: *cbc_sdk.winerror.ErrorBaseClass*

Collects all known error codes defined as raw SCODEs (from COM, OLE, etc.)

CACHE_E_FIRST = -2147221136

CACHE_E_LAST = -2147221121

CACHE_E_NOCACHE_UPDATED = -2147221136

CACHE_S_FIRST = 262512

CACHE_S_LAST = 262527

CAT_E_CATIDNOEXIST = -2147221152

```
CAT_E_FIRST = -2147221152
CAT_E_LAST = -2147221151
CAT_E_NODESCRIPTION = -2147221151
CERTDB_E_JET_ERROR = -2146873344
CERTSRV_E_BAD_REQUESTSTATUS = -2146877437
CERTSRV_E_BAD_REQUESTSUBJECT = -2146877439
CERTSRV_E_NO_REQUEST = -2146877438
CERTSRV_E_PROPERTY_EMPTY = -2146877436
CERT_E_CHAINING = -2146762486
CERT_E_CN_NO_MATCH = -2146762481
CERT_E_CRITICAL = -2146762491
CERT_E_EXPIRED = -2146762495
CERT_E_ISSUERCHAINING = -2146762489
CERT_E_MALFORMED = -2146762488
CERT_E_PATHLENCONST = -2146762492
CERT_E_PURPOSE = -2146762490
CERT_E_REVOCATION_FAILURE = -2146762482
CERT_E_REVOKED = -2146762484
CERT_E_ROLE = -2146762493
CERT_E_UNTRUSTEDROOT = -2146762487
CERT_E_UNTRUSTEDTESTROOT = -2146762483
CERT_E_VALIDITYPERIODNESTING = -2146762494
CERT_E_WRONG_USAGE = -2146762480
CLASSFACTORY_E_FIRST = -2147221232
CLASSFACTORY_E_LAST = -2147221217
CLASSFACTORY_S_FIRST = 262416
CLASSFACTORY_S_LAST = 262431
CLASS_E_CLASSNOTAVAILABLE = -2147221231
CLASS_E_NOAGGREGATION = -2147221232
CLASS_E_NOTLICENSED = -2147221230
CLIENTSITE_E_FIRST = -2147221104
CLIENTSITE_E_LAST = -2147221089
CLIENTSITE_S_FIRST = 262544
CLIENTSITE_S_LAST = 262559
CLIPBRD_E_BAD_DATA = -2147221037
CLIPBRD_E_CANT_CLOSE = -2147221036
```

```
CLIPBRD_E_CANT_EMPTY = -2147221039
CLIPBRD_E_CANT_OPEN = -2147221040
CLIPBRD_E_CANT_SET = -2147221038
CLIPBRD_E_FIRST = -2147221040
CLIPBRD_E_LAST = -2147221025
CLIPBRD_S_FIRST = 262608
CLIPBRD_S_LAST = 262623
CONVERT10_E_FIRST = -2147221056
CONVERT10_E_LAST = -2147221041
CONVERT10_E_OLESTREAM_BITMAP_TO_DIB = -2147221053
CONVERT10_E_OLESTREAM_FMT = -2147221054
CONVERT10_E_OLESTREAM_GET = -2147221056
CONVERT10_E_OLESTREAM_PUT = -2147221055
CONVERT10_E_STG_DIB_TO_BITMAP = -2147221050
CONVERT10_E_STG_FMT = -2147221052
CONVERT10_E_STG_NO_STD_STREAM = -2147221051
CONVERT10_S_FIRST = 262592
CONVERT10_S_LAST = 262607
CO_E_ACCESSCHECKFAILED = -2147220985
CO_E_ACESINWRONGORDER = -2147220969
CO_E_ACNOTINITIALIZED = -2147220965
CO_E_ALREADYINITIALIZED = -2147221007
CO_E_APPDIDNTREG = -2147220994
CO_E_APPNOTFOUND = -2147221003
CO_E_APPSINGLEUSE = -2147221002
CO_E_BAD_PATH = -2146959356
CO_E_BAD_SERVER_NAME = -2147467244
CO_E_CANTDETERMINECLASS = -2147221006
CO_E_CANT_REMOTE = -2147467245
CO_E_CLASSSTRING = -2147221005
CO_E_CLASS_CREATE_FAILED = -2146959359
CO_E_CLSREG_INCONSISTENT = -2147467233
CO_E_CONVERSIONFAILED = -2147220981
CO_E_CREATEPROCESS_FAILURE = -2147467240
CO_E_DECODEFAILED = -2147220966
CO_E_DLLNOTFOUND = -2147221000
```

```
CO_E_ERRORINAPP = -2147221001
CO_E_ERRORINDLL = -2147220999
CO_E_EXCEEDSYSACLLIMIT = -2147220970
CO_E_FAILEDTOCLOSEHANDLE = -2147220971
CO_E_FAILEDTOCREATEFILE = -2147220972
CO_E_FAILEDTOGENUUID = -2147220973
CO_E_FAILEDTOGETSECCTX = -2147220991
CO_E_FAILEDTOGETTOKENINFO = -2147220989
CO_E_FAILEDTOGETWINDIR = -2147220975
CO_E_FAILEDTOIMPERSONATE = -2147220992
CO_E_FAILEDTOOPENPROCESSTOKEN = -2147220967
CO_E_FAILEDTOOPENTHREADTOKEN = -2147220990
CO_E_FAILEDTOQUERYCLIENTBLANKET = -2147220987
CO_E_FAILEDTOSETDACL = -2147220986
CO_E_FIRST = -2147221008
CO_E_IIDREG_INCONSISTENT = -2147467232
CO_E_IIDSTRING = -2147221004
CO_E_INCOMPATIBLESTREAMVERSION = -2147220968
CO_E_INIT_CLASS_CACHE = -2147467255
CO_E_INIT_MEMORY_ALLOCATOR = -2147467256
CO_E_INIT_ONLY_SINGLE_THREADED = -2147467246
CO_E_INIT_RPC_CHANNEL = -2147467254
CO_E_INIT_SCM_EXEC_FAILURE = -2147467247
CO_E_INIT_SCM_FILE_MAPPING_EXISTS = -2147467249
CO_E_INIT_SCM_MAP_VIEW_OF_FILE = -2147467248
CO_E_INIT_SCM_MUTEX_EXISTS = -2147467250
CO_E_INIT_SHARED_ALLOCATOR = -2147467257
CO_E_INIT_TLS = -2147467258
CO_E_INIT_TLS_CHANNEL_CONTROL = -2147467252
CO_E_INIT_TLS_SET_CHANNEL_CONTROL = -2147467253
CO_E_INIT_UNACCEPTED_USER_ALLOCATOR = -2147467251
CO_E_INVALIDSID = -2147220982
CO_E_LAST = -2147220993
CO_E_LAUNCH_PERMSSION_DENIED = -2147467237
CO_E_LOOKUPACCNAMEFAILED = -2147220977
CO_E_LOOKUPACCSIDFAILED = -2147220979
```

```
CO_E_MSI_ERROR = -2147467229
CO_E_NETACCESSAPIFAILED = -2147220984
CO_E_NOMATCHINGNAMEFOUND = -2147220978
CO_E_NOMATCHINGSIDFOUND = -2147220980
CO_E_NOTINITIALIZED = -2147221008
CO_E_NOT_SUPPORTED = -2147467231
CO_E_OBJISREG = -2147220996
CO_E_OBJNOTCONNECTED = -2147220995
CO_E_OBJNOTREG = -2147220997
CO_E_OBJSRV_RPC_FAILURE = -2146959354
CO_E_OLE1DDE_DISABLED = -2147467242
CO_E_PATHTOOLONG = -2147220974
CO_E_RELEASED = -2147220993
CO_E_RELOAD_DLL = -2147467230
CO_E_REMOTE_COMMUNICATION_FAILURE = -2147467235
CO_E_RUNAS_CREATEPROCESS_FAILURE = -2147467239
CO_E_RUNAS_LOGON_FAILURE = -2147467238
CO_E_RUNAS_SYNTAX = -2147467241
CO_E_SCM_ERROR = -2146959358
CO_E_SCM_RPC_FAILURE = -2146959357
CO_E_SERVER_EXEC_FAILURE = -2146959355
CO_E_SERVER_START_TIMEOUT = -2147467234
CO_E_SERVER_STOPPING = -2146959352
CO_E_SETSERLHNDLFAILED = -2147220976
CO_E_START_SERVICE_FAILURE = -2147467236
CO_E_TRUSTEEDOESNTMATCHCLIENT = -2147220988
CO_E_WRONGOSFORAPP = -2147220998
CO_E_WRONGTRUSTEENAMESYNTAX = -2147220983
CO_E_WRONG_SERVER_IDENTITY = -2147467243
CO_S_FIRST = 262640
CO_S_LAST = 262655
CO_S_NOTALLINTERFACES = 524306
CRYPT_E_ALREADY_DECRYPTED = -2146889719
CRYPT_E_ATTRIBUTES_MISSING = -2146889713
CRYPT_E_AUTH_ATTR_MISSING = -2146889722
CRYPT_E_BAD_ENCODE = -2146885630
```

```
CRYPT_E_BAD_LEN = -2146885631
CRYPT_E_BAD_MSG = -2146885619
CRYPT_E_CONTROL_TYPE = -2146889716
CRYPT_E_DELETED_PREV = -2146885624
CRYPT_E_EXISTS = -2146885627
CRYPT_E_FILERESIZED = -2146885595
CRYPT_E_FILE_ERROR = -2146885629
CRYPT_E_HASH_VALUE = -2146889721
CRYPT_E_INVALID_IA5_STRING = -2146885598
CRYPT_E_INVALID_INDEX = -2146889720
CRYPT_E_INVALID_MSG_TYPE = -2146889724
CRYPT_E_INVALID_NUMERIC_STRING = -2146885600
CRYPT_E_INVALID_PRINTABLE_STRING = -2146885599
CRYPT_E_INVALID_X500_STRING = -2146885597
CRYPT_E_ISSUER_SERIALNUMBER = -2146889715
CRYPT_E_MSG_ERROR = -2146889727
CRYPT_E_NOT_CHAR_STRING = -2146885596
CRYPT_E_NOT_DECRYPTED = -2146889718
CRYPT_E_NOT_FOUND = -2146885628
CRYPT_E_NOT_IN_CTL = -2146885590
CRYPT_E_NOT_IN_REVOCATION_DATABASE = -2146885612
CRYPT_E_NO_DECRYPT_CERT = -2146885620
CRYPT_E_NO_KEY_PROPERTY = -2146885621
CRYPT_E_NO_MATCH = -2146885623
CRYPT_E_NO_PROVIDER = -2146885626
CRYPT_E_NO_REVOCATION_CHECK = -2146885614
CRYPT_E_NO_REVOCATION_DLL = -2146885615
CRYPT_E_NO_SIGNER = -2146885618
CRYPT_E_NO_TRUSTED_SIGNER = -2146885589
CRYPT_E_NO_VERIFY_USAGE_CHECK = -2146885592
CRYPT_E_NO_VERIFY_USAGE_DLL = -2146885593
CRYPT_E_OID_FORMAT = -2146889725
CRYPT_E_OSS_ERROR = -2146881536
CRYPT_E_PENDING_CLOSE = -2146885617
CRYPT_E_RECIPIENT_NOT_FOUND = -2146889717
CRYPT_E_REVOCATION_OFFLINE = -2146885613
```

```
CRYPT_E_REVOKED = -2146885616
CRYPT_E_SECURITY_SETTINGS = -2146885594
CRYPT_E_SELF_SIGNED = -2146885625
CRYPT_E_SIGNER_NOT_FOUND = -2146889714
CRYPT_E_STREAM_INSUFFICIENT_DATA = -2146889711
CRYPT_E_STREAM_MSG_NOT_READY = -2146889712
CRYPT_E_UNEXPECTED_ENCODING = -2146889723
CRYPT_E_UNEXPECTED_MSG_TYPE = -2146885622
CRYPT_E_UNKNOWN_ALGO = -2146889726
CRYPT_E_VERIFY_USAGE_OFFLINE = -2146885591
CS_E_CLASS_NOTFOUND = -2147221146
CS_E_FIRST = -2147221148
CS_E_INVALID_VERSION = -2147221145
CS_E_LAST = -2147221144
CS_E_NOT_DELETABLE = -2147221147
CS_E_NO_CLASSSTORE = -2147221144
CS_E_PACKAGE_NOTFOUND = -2147221148
DATA_E_FIRST = -2147221200
DATA_E_LAST = -2147221185
DATA_S_FIRST = 262448
DATA_S_LAST = 262463
DIGSIG_E_CRYPTO = -2146762744
DIGSIG_E_DECODE = -2146762746
DIGSIG_E_ENCODE = -2146762747
DIGSIG_E_EXTENSIBILITY = -2146762745
DISP_E_ARRAYISLOCKED = -2147352563
DISP_E_BADCALLEE = -2147352560
DISP_E_BADINDEX = -2147352565
DISP_E_BADPARAMCOUNT = -2147352562
DISP_E_BADVARTYPE = -2147352568
DISP_E_DIVBYZERO = -2147352558
DISP_E_EXCEPTION = -2147352567
DISP_E_MEMBERNOTFOUND = -2147352573
DISP_E_NONAMEDARGS = -2147352569
DISP_E_NOTACOLLECTION = -2147352559
DISP_E_OVERFLOW = -2147352566
```

```
DISP_E_PARAMNOTFOUND = -2147352572
DISP_E_PARAMNOTOPTIONAL = -2147352561
DISP_E_TYPEMISMATCH = -2147352571
DISP_E_UNKNOWNINTERFACE = -2147352575
DISP_E_UNKNOWNLCID = -2147352564
DISP_E_UNKNOWNNAME = -2147352570
DRAGDROP_E_ALREADYREGISTERED = -2147221247
DRAGDROP_E_FIRST = -2147221248
DRAGDROP_E_INVALIDHWND = -2147221246
DRAGDROP_E_LAST = -2147221233
DRAGDROP_E_NOTREGISTERED = -2147221248
DRAGDROP_S_FIRST = 262400
DRAGDROP_S_LAST = 262415
DV_E_CLIPFORMAT = -2147221398
DV_E_DVASPECT = -2147221397
DV_E_DVTARGETDEVICE = -2147221403
DV_E_DVTARGETDEVICE_SIZE = -2147221396
DV_E_FORMATETC = -2147221404
DV_E_LINDEX = -2147221400
DV_E_NOIVIEWOBJECT = -2147221395
DV_E_STATDATA = -2147221401
DV_E_STGMEDIUM = -2147221402
DV_E_TYMED = -2147221399
ENUM_E_FIRST = -2147221072
ENUM_E_LAST = -2147221057
ENUM_S_FIRST = 262576
ENUM_S_LAST = 262591
E_ABORT = -2147467260
E_ACCESSDENIED = -2147024891
E_FAIL = -2147467259
E_HANDLE = -2147024890
E_INVALIDARG = -2147024809
E_NOINTERFACE = -2147467262
E_NOTIMPL = -2147467263
E_OUTOFMEMORY = -2147024882
E_PENDING = -2147483638
```

```
E_POINTER = -2147467261
E_UNEXPECTED = -2147418113
INPLACE_E_FIRST = -2147221088
INPLACE_E_LAST = -2147221073
INPLACE_E_NOTOOLSPACE = -2147221087
INPLACE_E_NOTUNDOABLE = -2147221088
INPLACE_S_FIRST = 262560
INPLACE_S_LAST = 262575
MARSHAL_E_FIRST = -2147221216
MARSHAL_E_LAST = -2147221201
MARSHAL_S_FIRST = 262432
MARSHAL_S_LAST = 262447
MEM_E_INVALID_LINK = -2146959344
MEM_E_INVALID_ROOT = -2146959351
MEM_E_INVALID_SIZE = -2146959343
MK_E_CANTOPENFILE = -2147221014
MK_E_CONNECTMANUALLY = -2147221024
MK_E_ENUMERATION_FAILED = -2147221009
MK_E_EXCEEDEDDEADLINE = -2147221023
MK_E_FIRST = -2147221024
MK_E_INTERMEDIATEINTERFACENOTSUPPORTED = -2147221017
MK_E_INVALIDEXTENSION = -2147221018
MK_E_LAST = -2147221009
MK_E_MUSTBOTHERUSER = -2147221013
MK_E_NEEDGENERIC = -2147221022
MK_E_NOINVERSE = -2147221012
MK_E_NOOBJECT = -2147221019
MK_E_NOPREFIX = -2147221010
MK_E_NOSTORAGE = -2147221011
MK_E_NOTBINDABLE = -2147221016
MK_E_NOTBOUND = -2147221015
MK_E_NO_NORMALIZED = -2146959353
MK_E_SYNTAX = -2147221020
MK_E_UNAVAILABLE = -2147221021
MK_S_FIRST = 262624
MK_S_LAST = 262639
```

```
NTE_BAD_ALGID = -2146893816
NTE_BAD_DATA = -2146893819
NTE_BAD_FLAGS = -2146893815
NTE_BAD_HASH = -2146893822
NTE_BAD_HASH_STATE = -2146893812
NTE_BAD_KEY = -2146893821
NTE_BAD_KEYSET = -2146893802
NTE_BAD_KEYSET_PARAM = -2146893793
NTE_BAD_KEY_STATE = -2146893813
NTE_BAD_LEN = -2146893820
NTE_BAD_PROVIDER = -2146893805
NTE_BAD_PROV_TYPE = -2146893804
NTE_BAD_PUBLIC_KEY = -2146893803
NTE_BAD_SIGNATURE = -2146893818
NTE_BAD_TYPE = -2146893814
NTE_BAD_UID = -2146893823
NTE_BAD_VER = -2146893817
NTE_DOUBLE_ENCRYPT = -2146893806
NTE_EXISTS = -2146893809
NTE_FAIL = -2146893792
NTE_KEYSET_ENTRY_BAD = -2146893798
NTE_KEYSET_NOT_DEF = -2146893799
NTE_NOT_FOUND = -2146893807
NTE_NO_KEY = -2146893811
NTE_NO_MEMORY = -2146893810
NTE_OP_OK = 0
NTE_PERM = -2146893808
NTE_PROVIDER_DLL_FAIL = -2146893795
NTE_PROV_DLL_NOT_FOUND = -2146893794
NTE_PROV_TYPE_ENTRY_BAD = -2146893800
NTE_PROV_TYPE_NOT_DEF = -2146893801
NTE_PROV_TYPE_NO_MATCH = -2146893797
NTE_SIGNATURE_FILE_BAD = -2146893796
NTE_SYS_ERR = -2146893791
OLEOBJ_E_FIRST = -2147221120
OLEOBJ_E_INVALIDVERB = -2147221119
```

```
OLEOBJ_E_LAST = -2147221105
OLEOBJ_E_NOVERBS = -2147221120
OLEOBJ_S_FIRST = 262528
OLEOBJ_S_LAST = 262543
OLE_E_ADVF = -2147221503
OLE_E_ADVISENOTSUPPORTED = -2147221501
OLE_E_BLANK = -2147221497
OLE_E_CANTCONVERT = -2147221487
OLE_E_CANT_BINDTOSOURCE = -2147221494
OLE_E_CANT_GETMONIKER = -2147221495
OLE_E_CLASSDIFF = -2147221496
OLE_E_ENUM_NOMORE = -2147221502
OLE_E_FIRST = -2147221504
OLE_E_INVALIDHWND = -2147221489
OLE_E_INVALIDRECT = -2147221491
OLE_E_LAST = -2147221249
OLE_E_NOCACHE = -2147221498
OLE_E_NOCONNECTION = -2147221500
OLE_E_NOSTORAGE = -2147221486
OLE_E_NOTRUNNING = -2147221499
OLE_E_NOT_INPLACEACTIVE = -2147221488
OLE_E_OLEVERB = -2147221504
OLE_E_PROMPTSAVECANCELLED = -2147221492
OLE_E_STATIC = -2147221493
OLE_E_WRONGCOMPOBJ = -2147221490
OLE_S_FIRST = 262144
OLE_S_LAST = 262399
PERSIST_E_NOTSELFSIZING = -2146762741
PERSIST_E_SIZEDEFINITE = -2146762743
PERSIST_E_SIZEINDEFINITE = -2146762742
REGDB_E_CLASSNOTREG = -2147221164
REGDB_E_FIRST = -2147221168
REGDB_E_IIDNOTREG = -2147221163
REGDB_E_INVALIDVALUE = -2147221165
REGDB_E_KEYMISSING = -2147221166
REGDB_E_LAST = -2147221153
```

```
REGDB_E_READREGDB = -2147221168
REGDB_E_WRITEREGDB = -2147221167
REGDB_S_FIRST = 262480
REGDB_S_LAST = 262495
RPC_E_ACCESS_DENIED = -2147417829
RPC_E_ATTEMPTED_MULTITHREAD = -2147417854
RPC_E_CALL_CANCELED = -2147418110
RPC_E_CALL_COMPLETE = -2147417833
RPC_E_CALL_REJECTED = -2147418111
RPC_E_CANTCALLOUT_AGAIN = -2147418095
RPC_E_CANTCALLOUT_INASYNCCALL = -2147418108
RPC_E_CANTCALLOUT_INEXTERNALCALL = -2147418107
RPC_E_CANTCALLOUT_ININPUTSYNCCALL = -2147417843
RPC_E_CANTPOST_INSENDCALL = -2147418109
RPC_E_CANTTRANSMIT_CALL = -2147418102
RPC_E_CHANGED_MODE = -2147417850
RPC_E_CLIENT_CANTMARSHAL_DATA = -2147418101
RPC_E_CLIENT_CANTUNMARSHAL_DATA = -2147418100
RPC_E_CLIENT_DIED = -2147418104
RPC_E_CONNECTION_TERMINATED = -2147418106
RPC_E_DISCONNECTED = -2147417848
RPC_E_FAULT = -2147417852
RPC_E_INVALIDMETHOD = -2147417849
RPC_E_INVALID_CALLDATA = -2147417844
RPC_E_INVALID_DATA = -2147418097
RPC_E_INVALID_DATAPACKET = -2147418103
RPC_E_INVALID_EXTENSION = -2147417838
RPC_E_INVALID_HEADER = -2147417839
RPC_E_INVALID_IPID = -2147417837
RPC_E_INVALID_OBJECT = -2147417836
RPC_E_INVALID_OBJREF = -2147417827
RPC_E_INVALID_PARAMETER = -2147418096
RPC_E_NOT_REGISTERED = -2147417853
RPC_E_NO_CONTEXT = -2147417826
RPC_E_NO_GOOD_SECURITY_PACKAGES = -2147417830
RPC_E_NO_SYNC = -2147417824
```

```
RPC_E_OUT_OF_RESOURCES = -2147417855
RPC_E_REMOTE_DISABLED = -2147417828
RPC_E_RETRY = -2147417847
RPC_E_SERVERCALL_REJECTED = -2147417845
RPC_E_SERVERCALL_RETRYLATER = -2147417846
RPC_E_SERVERFAULT = -2147417851
RPC_E_SERVER_CANTMARSHAL_DATA = -2147418099
RPC_E_SERVER_CANTUNMARSHAL_DATA = -2147418098
RPC_E_SERVER_DIED = -2147418105
RPC_E_SERVER_DIED_DNE = -2147418094
RPC_E_SYS_CALL_FAILED = -2147417856
RPC_E_THREAD_NOT_INIT = -2147417841
RPC_E_TIMEOUT = -2147417825
RPC_E_TOO_LATE = -2147417831
RPC_E_UNEXPECTED = -2147352577
RPC_E_UNSECURE_CALL = -2147417832
RPC_E_VERSION_MISMATCH = -2147417840
RPC_E_WRONG_THREAD = -2147417842
RPC_S_CALLPENDING = -2147417835
RPC_S_WAITONTIMER = -2147417834
SPAPI_E_BAD_INTERFACE_INSTALLSECT = -2146500067
SPAPI_E_BAD_SECTION_NAME_LINE = -2146500607
SPAPI_E_BAD_SERVICE_INSTALLSECT = -2146500073
SPAPI_E_CANT_LOAD_CLASS_ICON = -2146500084
SPAPI_E_CLASS_MISMATCH = -2146500095
SPAPI_E_DEVICE_INTERFACE_ACTIVE = -2146500069
SPAPI_E_DEVICE_INTERFACE_REMOVED = -2146500068
SPAPI_E_DEVINFO_DATA_LOCKED = -2146500077
SPAPI_E_DEVINFO_LIST_LOCKED = -2146500078
SPAPI_E_DEVINFO_NOT_REGISTERED = -2146500088
SPAPI_E_DEVINST_ALREADY_EXISTS = -2146500089
SPAPI_E_DI_BAD_PATH = -2146500076
SPAPI_E_DI_DONT_INSTALL = -2146500053
SPAPI_E_DI_DO_DEFAULT = -2146500082
SPAPI_E_DI_NOFILECOPY = -2146500081
SPAPI_E_DI_POSTPROCESSING_REQUIRED = -2146500058
```

```
SPAPI_E_DUPLICATE_FOUND = -2146500094
SPAPI_E_ERROR_NOT_INSTALLED = -2146496512
SPAPI_E_EXPECTED_SECTION_NAME = -2146500608
SPAPI_E_FILEQUEUE_LOCKED = -2146500074
SPAPI_E_GENERAL_SYNTAX = -2146500605
SPAPI_E_INVALID_CLASS = -2146500090
SPAPI_E_INVALID_CLASS_INSTALLER = -2146500083
SPAPI_E_INVALID_COINSTALLER = -2146500057
SPAPI_E_INVALID_DEVINST_NAME = -2146500091
SPAPI_E_INVALID_FILTER_DRIVER = -2146500052
SPAPI_E_INVALID_HWPROFILE = -2146500080
SPAPI_E_INVALID_INF_LOGCONFIG = -2146500054
SPAPI_E_INVALID_MACHINENAME = -2146500064
SPAPI_E_INVALID_PROPPAGE_PROVIDER = -2146500060
SPAPI_E_INVALID_REFERENCE_STRING = -2146500065
SPAPI_E_INVALID_REG_PROPERTY = -2146500087
SPAPI_E_KEY_DOES_NOT_EXIST = -2146500092
SPAPI_E_LINE_NOT_FOUND = -2146500350
SPAPI_E_MACHINE_UNAVAILABLE = -2146500062
SPAPI_E_NO_ASSOCIATED_CLASS = -2146500096
SPAPI_E_NO_ASSOCIATED_SERVICE = -2146500071
SPAPI_E_NO_CLASSINSTALL_PARAMS = -2146500075
SPAPI_E_NO_CLASS_DRIVER_LIST = -2146500072
SPAPI_E_NO_COMPAT_DRIVERS = -2146500056
SPAPI_E_NO_CONFIGMGR_SERVICES = -2146500061
SPAPI_E_NO_DEFAULT_DEVICE_INTERFACE = -2146500070
SPAPI_E_NO_DEVICE_ICON = -2146500055
SPAPI_E_NO_DEVICE_SELECTED = -2146500079
SPAPI_E_NO_DRIVER_SELECTED = -2146500093
SPAPI_E_NO_INF = -2146500086
SPAPI_E_NO_SUCH_DEVICE_INTERFACE = -2146500059
SPAPI_E_NO_SUCH_DEVINST = -2146500085
SPAPI_E_NO_SUCH_INTERFACE_CLASS = -2146500066
SPAPI_E_REMOTE_COMM_FAILURE = -2146500063
SPAPI_E_SECTION_NAME_TOO_LONG = -2146500606
SPAPI_E_SECTION_NOT_FOUND = -2146500351
```

```
SPAPI_E_WRONG_INF_STYLE = -2146500352
STG_E_ABNORMALAPIEXIT = -2147286790
STG_E_ACCESSDENIED = -2147287035
STG_E_BADBASEADDRESS = -2147286768
STG_E_CANTSAVE = -2147286781
STG_E_DISKISWRITEPROTECTED = -2147287021
STG_E_DOCFILECORRUPT = -2147286775
STG_E_EXTANTMARSHALLINGS = -2147286776
STG_E_FILEALREADYEXISTS = -2147286960
STG_E_FILENOTFOUND = -2147287038
STG_E_INCOMPLETE = -2147286527
STG_E_INSUFFICIENTMEMORY = -2147287032
STG_E_INUSE = -2147286784
STG_E_INVALIDFLAG = -2147286785
STG_E_INVALIDFUNCTION = -2147287039
STG_E_INVALIDHANDLE = -2147287034
STG_E_INVALIDHEADER = -2147286789
STG_E_INVALIDNAME = -2147286788
STG_E_INVALIDPARAMETER = -2147286953
STG_E_INVALIDPOINTER = -2147287031
STG_E_LOCKVIOLATION = -2147287007
STG_E_MEDIUMFULL = -2147286928
STG_E_NOMOREFILES = -2147287022
STG_E_NOTCURRENT = -2147286783
STG_E_NOTFILEBASEDSTORAGE = -2147286777
STG_E_OLDDLL = -2147286779
STG_E_OLDFORMAT = -2147286780
STG_E_PATHNOTFOUND = -2147287037
STG_E_PROPSETMISMATCHED = -2147286800
STG_E_READFAULT = -2147287010
STG_E_REVERTED = -2147286782
STG_E_SEEKERROR = -2147287015
STG_E_SHAREREQUIRED = -2147286778
STG_E_SHAREVIOLATION = -2147287008
STG_E_TERMINATED = -2147286526
STG_E_TOOMANYOPENFILES = -2147287036
```

```
STG_E_UNIMPLEMENTEDFUNCTION = -2147286786
STG_E_UNKNOWN = -2147286787
STG_E_WRITEFAULT = -2147287011
STG_S_BLOCK = 197121
STG_S_CANNOTCONSOLIDATE = 197126
STG_S_CONSOLIDATIONFAILED = 197125
STG_S_CONVERTED = 197120
STG_S_MONITORING = 197123
STG_S_MULTIPLEOPENS = 197124
STG_S_RETRYNOW = 197122
TRUST_E_ACTION_UNKNOWN = -2146762750
TRUST_E_BAD_DIGEST = -2146869232
TRUST_E_BASIC_CONSTRAINTS = -2146869223
TRUST_E_CERT_SIGNATURE = -2146869244
TRUST_E_COUNTER_SIGNER = -2146869245
TRUST_E_FAIL = -2146762485
TRUST_E_FINANCIAL_CRITERIA = -2146869218
TRUST_E_NOSIGNATURE = -2146762496
TRUST_E_NO_SIGNER_CERT = -2146869246
TRUST_E_PROVIDER_UNKNOWN = -2146762751
TRUST_E_SUBJECT_FORM_UNKNOWN = -2146762749
TRUST_E_SUBJECT_NOT_TRUSTED = -2146762748
TRUST_E_SYSTEM_ERROR = -2146869247
TRUST_E_TIME_STAMP = -2146869243
TYPE_E_AMBIGUOUSNAME = -2147319764
TYPE_E_BADMODULEKIND = -2147317571
TYPE_E_BUFFERTOOSMALL = -2147319786
TYPE_E_CANTCREATETMPFILE = -2147316573
TYPE_E_CANTLOADLIBRARY = -2147312566
TYPE_E_CIRCULARTYPE = -2147312508
TYPE_E_DLLFUNCTIONNOTFOUND = -2147319761
TYPE_E_DUPLICATEID = -2147317562
TYPE_E_ELEMENTNOTFOUND = -2147319765
TYPE_E_FIELDNOTFOUND = -2147319785
TYPE_E_INCONSISTENTPROPFUNCS = -2147312509
TYPE_E_INVALIDID = -2147317553
```

TYPE_E_INVALIDSTATE = -2147319767

TYPE_E_INVDATAREAD = -2147319784

TYPE_E_IOERROR = -2147316574

TYPE_E_LIBNOTREGISTERED = -2147319779

TYPE_E_NAMECONFLICT = -2147319763

TYPE_E_OUTOFBOUNDS = -2147316575

TYPE_E_QUALIFIEDNAMEDISALLOWED = -2147319768

TYPE_E_REGISTRYACCESS = -2147319780

TYPE_E_SIZETOOBIG = -2147317563

TYPE_E_TYPEMISMATCH = -2147316576

TYPE_E_UNDEFINEDTYPE = -2147319769

TYPE_E_UNKNOWNLCID = -2147319762

TYPE_E_UNSUPFORMAT = -2147319783

TYPE_E_WRONGTYPEKIND = -2147319766

VIEW_E_DRAW = -2147221184

VIEW_E_FIRST = -2147221184

VIEW_E_LAST = -2147221169

VIEW_S_FIRST = 262464

VIEW_S_LAST = 262479

win16_E_ABORT = -2147483641

win16_E_ACCESSDENIED = -2147483639

win16_E_FAIL = -2147483640

win16_E_HANDLE = -2147483642

win16_E_INVALIDARG = -2147483645

win16_E_NOINTERFACE = -2147483644

win16_E_NOTIMPL = -2147483647

win16_E_OUTOFMEMORY = -2147483646

win16_E_POINTER = -2147483643

ResultFromScode(*sc*)
Turn a SCODE into a HRESULT.

SCODE_CODE(*sc*)
Return the error code field of a SCODE.

SCODE_FACILITY(*sc*)
Return the facility field of a SCODE.

SCODE_SEVERITY(*sc*)
Return the severity field of a SCODE.

SUCCEEDED(*Status*)
Return True iff a HRESULT/SCODE status represents success.

class Win32Error

Bases: *cbc_sdk.winerror.ErrorBaseClass*

Collects all the Win32 error codes.

DS_S_SUCCESS = 0

EPT_S_CANT_CREATE = 1899

EPT_S_CANT_PERFORM_OP = 1752

EPT_S_INVALID_ENTRY = 1751

EPT_S_NOT_REGISTERED = 1753

ERROR_ABANDONED_WAIT_0 = 735

ERROR_ABANDONED_WAIT_63 = 736

ERROR_ABANDON_HIBERFILE = 787

ERROR_ABIOS_ERROR = 538

ERROR_ACCESS_AUDIT_BY_POLICY = 785

ERROR_ACCESS_DENIED = 5

ERROR_ACCESS_DISABLED_NO_SAFER_UI_BY_POLICY = 786

ERROR_ACCOUNT_DISABLED = 1331

ERROR_ACCOUNT_EXPIRED = 1793

ERROR_ACCOUNT_LOCKED_OUT = 1909

ERROR_ACCOUNT_RESTRICTION = 1327

ERROR_ACPI_ERROR = 669

ERROR_ACTIVATION_COUNT_EXCEEDED = 7059

ERROR_ACTIVE_CONNECTIONS = 2402

ERROR_ADAP_HDW_ERR = 57

ERROR_ADDRESS_ALREADY_ASSOCIATED = 1227

ERROR_ADDRESS_NOT_ASSOCIATED = 1228

ERROR_ALERTED = 739

ERROR_ALIAS_EXISTS = 1379

ERROR_ALLOCATE_BUCKET = 602

ERROR_ALLOTTED_SPACE_EXCEEDED = 1344

ERROR_ALL_NODES_NOT_AVAILABLE = 5037

ERROR_ALL_USER_TRUST_QUOTA_EXCEEDED = 1933

ERROR_ALREADY_ASSIGNED = 85

ERROR_ALREADY_EXISTS = 183

ERROR_ALREADY_INITIALIZED = 1247

ERROR_ALREADY_REGISTERED = 1242

ERROR_ALREADY_RUNNING_LKG = 1074

```
ERROR_ALREADY_WAITING = 1904
ERROR_ALREADY_WIN32 = 719
ERROR_APP_INIT_FAILURE = 575
ERROR_APP_WRONG_OS = 1151
ERROR_ARBITRATION_UNHANDLED = 723
ERROR_ARENA_TRASHED = 7
ERROR_ARITHMETIC_OVERFLOW = 534
ERROR_ASSERTION_FAILURE = 668
ERROR_ATOMIC_LOCKS_NOT_SUPPORTED = 174
ERROR_AUDIT_FAILED = 606
ERROR_AUTHENTICATION_FIREWALL_FAILED = 1935
ERROR_AUTHIP_FAILURE = 1469
ERROR_AUTODATASEG_EXCEEDS_64k = 199
ERROR_BACKUP_CONTROLLER = 586
ERROR_BADDB = 1009
ERROR_BADKEY = 1010
ERROR_BADSTARTPOSITION = 778
ERROR_BAD_ACCESSOR_FLAGS = 773
ERROR_BAD_ARGUMENTS = 160
ERROR_BAD_CLUSTERS = 6849
ERROR_BAD_COMMAND = 22
ERROR_BAD_COMPRESSION_BUFFER = 605
ERROR_BAD_CONFIGURATION = 1610
ERROR_BAD_CURRENT_DIRECTORY = 703
ERROR_BAD_DATABASE_VERSION = 1613
ERROR_BAD_DESCRIPTOR_FORMAT = 1361
ERROR_BAD_DEVICE = 1200
ERROR_BAD_DEV_TYPE = 66
ERROR_BAD_DLL_ENTRYPOINT = 609
ERROR_BAD_DRIVER = 2001
ERROR_BAD_DRIVER_LEVEL = 119
ERROR_BAD_ENVIRONMENT = 10
ERROR_BAD_EXE_FORMAT = 193
ERROR_BAD_FILE_TYPE = 222
ERROR_BAD_FORMAT = 11
ERROR_BAD_FUNCTION_TABLE = 559
```

```
ERROR_BAD_IMPERSONATION_LEVEL = 1346
ERROR_BAD_INHERITANCE_ACL = 1340
ERROR_BAD_LENGTH = 24
ERROR_BAD_LOGON_SESSION_STATE = 1365
ERROR_BAD_MCFG_TABLE = 791
ERROR_BAD_NETPATH = 53
ERROR_BAD_NET_NAME = 67
ERROR_BAD_NET_RESP = 58
ERROR_BAD_PATHNAME = 161
ERROR_BAD_PIPE = 230
ERROR_BAD_PROFILE = 1206
ERROR_BAD_PROVIDER = 1204
ERROR_BAD_QUERY_SYNTAX = 1615
ERROR_BAD_RECOVERY_POLICY = 6012
ERROR_BAD_REM_ADAP = 60
ERROR_BAD_SERVICE_ENTRYPOINT = 610
ERROR_BAD_STACK = 543
ERROR_BAD_THREADID_ADDR = 159
ERROR_BAD_TOKEN_TYPE = 1349
ERROR_BAD_UNIT = 20
ERROR_BAD_USERNAME = 2202
ERROR_BAD_VALIDATION_CLASS = 1348
ERROR_BEGINNING_OF_MEDIA = 1102
ERROR_BIOS_FAILED_TO_CONNECT_INTERRUPT = 585
ERROR_BOOT_ALREADY_ACCEPTED = 1076
ERROR_BROKEN_PIPE = 109
ERROR_BUFFER_ALL_ZEROS = 754
ERROR_BUFFER_OVERFLOW = 111
ERROR_BUSY = 170
ERROR_BUSY_DRIVE = 142
ERROR_BUS_RESET = 1111
ERROR_CACHE_PAGE_LOCKED = 752
ERROR_CALLBACK_POP_STACK = 768
ERROR_CALL_NOT_IMPLEMENTED = 120
ERROR_CANCELLED = 1223
ERROR_CANCEL_VIOLATION = 173
```

```
ERROR_CANNOT_ABORT_TRANSACTIONS = 6848
ERROR_CANNOT_ACCEPT_TRANSACTED_WORK = 6847
ERROR_CANNOT_COPY = 266
ERROR_CANNOT_DETECT_DRIVER_FAILURE = 1080
ERROR_CANNOT_DETECT_PROCESS_ABORT = 1081
ERROR_CANNOT_EXECUTE_FILE_IN_TRANSACTION = 6838
ERROR_CANNOT_FIND_WND_CLASS = 1407
ERROR_CANNOT_IMPERSONATE = 1368
ERROR_CANNOT_LOAD_REGISTRY_FILE = 589
ERROR_CANNOT_MAKE = 82
ERROR_CANNOT_OPEN_PROFILE = 1205
ERROR_CANTFETCHBACKWARDS = 770
ERROR_CANTOPEN = 1011
ERROR_CANTREAD = 1012
ERROR_CANTSCROLLBACKWARDS = 771
ERROR_CANTWRITE = 1013
ERROR_CANT_ACCESS_DOMAIN_INFO = 1351
ERROR_CANT_ACCESS_FILE = 1920
ERROR_CANT_BREAK_TRANSACTIONAL_DEPENDENCY = 6824
ERROR_CANT_CREATE_MORE_STREAM_MINIVERSIONS = 6812
ERROR_CANT_CROSS_RM_BOUNDARY = 6825
ERROR_CANT_DELETE_LAST_ITEM = 4335
ERROR_CANT_DISABLE_MANDATORY = 1310
ERROR_CANT_ENABLE_DENY_ONLY = 629
ERROR_CANT_EVICT_ACTIVE_NODE = 5009
ERROR_CANT_OPEN_ANONYMOUS = 1347
ERROR_CANT_OPEN_MINIVERSION_WITH_MODIFY_INTENT = 6811
ERROR_CANT_RECOVER_WITH_HANDLE_OPEN = 6818
ERROR_CANT_RESOLVE_FILENAME = 1921
ERROR_CANT_TERMINATE_SELF = 555
ERROR_CANT_WAIT = 554
ERROR_CAN_NOT_COMPLETE = 1003
ERROR_CAN_NOT_DEL_LOCAL_WINS = 4001
ERROR_CARDBUS_NOT_SUPPORTED = 724
ERROR_CHECKING_FILE_SYSTEM = 712
ERROR_CHECKOUT_REQUIRED = 221
```

```
ERROR_CHILD_MUST_BE_VOLATILE = 1021
ERROR_CHILD_NOT_COMPLETE = 129
ERROR_CHILD_WINDOW_MENU = 1436
ERROR_CIRCULAR_DEPENDENCY = 1059
ERROR_CLASS_ALREADY_EXISTS = 1410
ERROR_CLASS_DOES_NOT_EXIST = 1411
ERROR_CLASS_HAS_WINDOWS = 1412
ERROR_CLEANER_CARTRIDGE_INSTALLED = 4340
ERROR_CLEANER_CARTRIDGE_SPENT = 4333
ERROR_CLEANER_SLOT_NOT_SET = 4332
ERROR_CLEANER_SLOT_SET = 4331
ERROR_CLIENT_SERVER_PARAMETERS_INVALID = 597
ERROR_CLIPBOARD_NOT_OPEN = 1418
ERROR_CLIPPING_NOT_SUPPORTED = 2005
ERROR_CLUSCFG_ALREADY_COMMITTED = 5901
ERROR_CLUSCFG_ROLLBACK_FAILED = 5902
ERROR_CLUSCFG_SYSTEM_DISK_DRIVE_LETTER_CONFLICT = 5903
ERROR_CLUSTERLOG_CHKPOINT_NOT_FOUND = 5032
ERROR_CLUSTERLOG_CORRUPT = 5029
ERROR_CLUSTERLOG_EXCEEDS_MAXSIZE = 5031
ERROR_CLUSTERLOG_NOT_ENOUGH_SPACE = 5033
ERROR_CLUSTERLOG_RECORD_EXCEEDS_MAXSIZE = 5030
ERROR_CLUSTER_CANT_CREATE_DUP_CLUSTER_NAME = 5900
ERROR_CLUSTER_CANT_DESERIALIZE_DATA = 5923
ERROR_CLUSTER_DATABASE_SEQMISMATCH = 5083
ERROR_CLUSTER_DATABASE_TRANSACTION_IN_PROGRESS = 5918
ERROR_CLUSTER_DATABASE_TRANSACTION_NOT_IN_PROGRESS = 5919
ERROR_CLUSTER_EVICT_WITHOUT_CLEANUP = 5896
ERROR_CLUSTER_GROUP_MOVING = 5908
ERROR_CLUSTER_GUM_NOT_LOCKER = 5085
ERROR_CLUSTER_INCOMPATIBLE_VERSIONS = 5075
ERROR_CLUSTER_INSTANCE_ID_MISMATCH = 5893
ERROR_CLUSTER_INTERNAL_INVALID_FUNCTION = 5912
ERROR_CLUSTER_INVALID_IPV6_NETWORK = 5926
ERROR_CLUSTER_INVALID_IPV6_TUNNEL_NETWORK = 5927
ERROR_CLUSTER_INVALID_NETWORK = 5054
```

```
ERROR_CLUSTER_INVALID_NETWORK_PROVIDER = 5049
ERROR_CLUSTER_INVALID_NODE = 5039
ERROR_CLUSTER_INVALID_REQUEST = 5048
ERROR_CLUSTER_INVALID_STRING_FORMAT = 5917
ERROR_CLUSTER_INVALID_STRING_TERMINATION = 5916
ERROR_CLUSTER_IPADDR_IN_USE = 5057
ERROR_CLUSTER_JOIN_ABORTED = 5074
ERROR_CLUSTER_JOIN_IN_PROGRESS = 5041
ERROR_CLUSTER_JOIN_NOT_IN_PROGRESS = 5053
ERROR_CLUSTER_LAST_INTERNAL_NETWORK = 5066
ERROR_CLUSTER_LOCAL_NODE_NOT_FOUND = 5043
ERROR_CLUSTER_MAXNUM_OF_RESOURCES_EXCEEDED = 5076
ERROR_CLUSTER_MEMBERSHIP_HALT = 5892
ERROR_CLUSTER_MEMBERSHIP_INVALID_STATE = 5890
ERROR_CLUSTER_MISMATCHED_COMPUTER_ACCT_NAME = 5905
ERROR_CLUSTER_NETINTERFACE_EXISTS = 5046
ERROR_CLUSTER_NETINTERFACE_NOT_FOUND = 5047
ERROR_CLUSTER_NETWORK_ALREADY_OFFLINE = 5064
ERROR_CLUSTER_NETWORK_ALREADY_ONLINE = 5063
ERROR_CLUSTER_NETWORK_EXISTS = 5044
ERROR_CLUSTER_NETWORK_HAS_DEPENDENTS = 5067
ERROR_CLUSTER_NETWORK_NOT_FOUND = 5045
ERROR_CLUSTER_NETWORK_NOT_FOUND_FOR_IP = 5894
ERROR_CLUSTER_NETWORK_NOT_INTERNAL = 5060
ERROR_CLUSTER_NODE_ALREADY_DOWN = 5062
ERROR_CLUSTER_NODE_ALREADY_HAS_DFS_ROOT = 5088
ERROR_CLUSTER_NODE_ALREADY_MEMBER = 5065
ERROR_CLUSTER_NODE_ALREADY_UP = 5061
ERROR_CLUSTER_NODE_DOWN = 5050
ERROR_CLUSTER_NODE_EXISTS = 5040
ERROR_CLUSTER_NODE_NOT_FOUND = 5042
ERROR_CLUSTER_NODE_NOT_MEMBER = 5052
ERROR_CLUSTER_NODE_NOT_PAUSED = 5058
ERROR_CLUSTER_NODE_NOT_READY = 5072
ERROR_CLUSTER_NODE_PAUSED = 5070
ERROR_CLUSTER_NODE_SHUTTING_DOWN = 5073
```

```
ERROR_CLUSTER_NODE_UNREACHABLE = 5051
ERROR_CLUSTER_NODE_UP = 5056
ERROR_CLUSTER_NOT_INSTALLED = 5932
ERROR_CLUSTER_NO_NET_ADAPTERS = 5906
ERROR_CLUSTER_NO_QUORUM = 5925
ERROR_CLUSTER_NO_RPC_PACKAGES_REGISTERED = 5081
ERROR_CLUSTER_NO_SECURITY_CONTEXT = 5059
ERROR_CLUSTER_NULL_DATA = 5920
ERROR_CLUSTER_OLD_VERSION = 5904
ERROR_CLUSTER_OWNER_NOT_IN_PREFLIST = 5082
ERROR_CLUSTER_PARAMETER_MISMATCH = 5897
ERROR_CLUSTER_PARAMETER_OUT_OF_BOUNDS = 5913
ERROR_CLUSTER_PARTIAL_READ = 5921
ERROR_CLUSTER_PARTIAL_SEND = 5914
ERROR_CLUSTER_PARTIAL_WRITE = 5922
ERROR_CLUSTER_POISONED = 5907
ERROR_CLUSTER_PROPERTY_DATA_TYPE_MISMATCH = 5895
ERROR_CLUSTER_QUORUMLOG_NOT_FOUND = 5891
ERROR_CLUSTER_REGISTRY_INVALID_FUNCTION = 5915
ERROR_CLUSTER_RESNAME_NOT_FOUND = 5080
ERROR_CLUSTER_RESOURCES_MUST_BE_ONLINE_ON_THE_SAME_NODE = 5933
ERROR_CLUSTER_RESOURCE_TYPE_BUSY = 5909
ERROR_CLUSTER_RESOURCE_TYPE_NOT_FOUND = 5078
ERROR_CLUSTER_RESTYPE_NOT_SUPPORTED = 5079
ERROR_CLUSTER_RHS_FAILED_INITIALIZATION = 5931
ERROR_CLUSTER_SHUTTING_DOWN = 5022
ERROR_CLUSTER_SYSTEM_CONFIG_CHANGED = 5077
ERROR_CLUSTER_WRONG_OS_VERSION = 5899
ERROR_COLORSPACE_MISMATCH = 2021
ERROR_COMMITMENT_LIMIT = 1455
ERROR_COMMITMENT_MINIMUM = 635
ERROR_COMPRESSION_DISABLED = 769
ERROR_COMPRESSION_NOT_ALLOWED_IN_TRANSACTION = 6850
ERROR_CONNECTED_OTHER_PASSWORD = 2108
ERROR_CONNECTED_OTHER_PASSWORD_DEFAULT = 2109
ERROR_CONNECTION_ABORTED = 1236
```

```
ERROR_CONNECTION_ACTIVE = 1230
ERROR_CONNECTION_COUNT_LIMIT = 1238
ERROR_CONNECTION_INVALID = 1229
ERROR_CONNECTION_REFUSED = 1225
ERROR_CONNECTION_UNAVAIL = 1201
ERROR_CONTEXT_EXPIRED = 1931
ERROR_CONTINUE = 1246
ERROR_CONTROLLING_IEPORT = 4329
ERROR_CONTROL_C_EXIT = 572
ERROR_CONTROL_ID_NOT_FOUND = 1421
ERROR_CONVERT_TO_LARGE = 600
ERROR_CORE_DRIVER_PACKAGE_NOT_FOUND = 3016
ERROR_CORE_RESOURCE = 5026
ERROR_CORRUPT_SYSTEM_FILE = 634
ERROR_COULD_NOT_INTERPRET = 552
ERROR_COULD_NOT_RESIZE_LOG = 6629
ERROR_COUNTER_TIMEOUT = 1121
ERROR_CRASH_DUMP = 753
ERROR_CRC = 23
ERROR_CREATE_FAILED = 1631
ERROR_CRM_PROTOCOL_ALREADY_EXISTS = 6710
ERROR_CRM_PROTOCOL_NOT_FOUND = 6712
ERROR_CS_ENCRYPTION_EXISTING_ENCRYPTED_FILE = 6019
ERROR_CS_ENCRYPTION_FILE_NOT_CSE = 6021
ERROR_CS_ENCRYPTION_INVALID_SERVER_RESPONSE = 6017
ERROR_CS_ENCRYPTION_NEW_ENCRYPTED_FILE = 6020
ERROR_CS_ENCRYPTION_UNSUPPORTED_SERVER = 6018
ERROR_CTX_ACCOUNT_RESTRICTION = 7064
ERROR_CTX_BAD_VIDEO_MODE = 7025
ERROR_CTX_CANNOT_MAKE_EVENTLOG_ENTRY = 7005
ERROR_CTX_CDM_CONNECT = 7066
ERROR_CTX_CDM_DISCONNECT = 7067
ERROR_CTX_CLIENT_LICENSE_IN_USE = 7052
ERROR_CTX_CLIENT_LICENSE_NOT_SET = 7053
ERROR_CTX_CLIENT_QUERY_TIMEOUT = 7040
ERROR_CTX_CLOSE_PENDING = 7007
```

```
ERROR_CTX_CONSOLE_CONNECT = 7042
ERROR_CTX_CONSOLE_DISCONNECT = 7041
ERROR_CTX_ENCRYPTION_LEVEL_REQUIRED = 7061
ERROR_CTX_GRAPHICS_INVALID = 7035
ERROR_CTX_INVALID_MODEMNAME = 7010
ERROR_CTX_INVALID_PD = 7002
ERROR_CTX_INVALID_WD = 7049
ERROR_CTX_LICENSE_CLIENT_INVALID = 7055
ERROR_CTX_LICENSE_EXPIRED = 7056
ERROR_CTX_LICENSE_NOT_AVAILABLE = 7054
ERROR_CTX_LOGON_DISABLED = 7037
ERROR_CTX_MODEM_INF_NOT_FOUND = 7009
ERROR_CTX_MODEM_RESPONSE_BUSY = 7015
ERROR_CTX_MODEM_RESPONSE_ERROR = 7011
ERROR_CTX_MODEM_RESPONSE_NO_CARRIER = 7013
ERROR_CTX_MODEM_RESPONSE_NO_DIALTONE = 7014
ERROR_CTX_MODEM_RESPONSE_TIMEOUT = 7012
ERROR_CTX_MODEM_RESPONSE_VOICE = 7016
ERROR_CTX_NOT_CONSOLE = 7038
ERROR_CTX_NO_FORCE_LOGOFF = 7063
ERROR_CTX_NO_OUTBUF = 7008
ERROR_CTX_PD_NOT_FOUND = 7003
ERROR_CTX_SECURITY_LAYER_ERROR = 7068
ERROR_CTX_SERVICE_NAME_COLLISION = 7006
ERROR_CTX_SESSION_IN_USE = 7062
ERROR_CTX_SHADOW_DENIED = 7044
ERROR_CTX_SHADOW_DISABLED = 7051
ERROR_CTX_SHADOW_ENDED_BY_MODE_CHANGE = 7058
ERROR_CTX_SHADOW_INVALID = 7050
ERROR_CTX_SHADOW_NOT_RUNNING = 7057
ERROR_CTX_TD_ERROR = 7017
ERROR_CTX_WD_NOT_FOUND = 7004
ERROR_CTX_WINSTATIONS_DISABLED = 7060
ERROR_CTX_WINSTATION_ACCESS_DENIED = 7045
ERROR_CTX_WINSTATION_ALREADY_EXISTS = 7023
ERROR_CTX_WINSTATION_BUSY = 7024
```

```
ERROR_CTX_WINSTATION_NAME_INVALID = 7001
ERROR_CTX_WINSTATION_NOT_FOUND = 7022
ERROR_CURRENT_DIRECTORY = 16
ERROR_CURRENT_TRANSACTION_NOT_VALID = 6714
ERROR_DATABASE_BACKUP_CORRUPT = 5087
ERROR_DATABASE_DOES_NOT_EXIST = 1065
ERROR_DATABASE_FAILURE = 4313
ERROR_DATABASE_FULL = 4314
ERROR_DATATYPE_MISMATCH = 1629
ERROR_DATA_LOST_REPAIR = 6843
ERROR_DATA_NOT_ACCEPTED = 592
ERROR_DBG_COMMAND_EXCEPTION = 697
ERROR_DBG_CONTINUE = 767
ERROR_DBG_CONTROL_BREAK = 696
ERROR_DBG_CONTROL_C = 693
ERROR_DBG_EXCEPTION_HANDLED = 766
ERROR_DBG_EXCEPTION_NOT_HANDLED = 688
ERROR_DBG_PRINTEXCEPTION_C = 694
ERROR_DBG_REPLY_LATER = 689
ERROR_DBG_RIPEXCEPTION = 695
ERROR_DBG_TERMINATE_PROCESS = 692
ERROR_DBG_TERMINATE_THREAD = 691
ERROR_DBG_UNABLE_TO_PROVIDE_HANDLE = 690
ERROR_DC_NOT_FOUND = 1425
ERROR_DDE_FAIL = 1156
ERROR_DEBUG_ATTACH_FAILED = 590
ERROR_DECRYPTION_FAILED = 6001
ERROR_DELETE_PENDING = 303
ERROR_DELETING_ICM_XFORM = 2309
ERROR_DEPENDENCY_ALREADY_EXISTS = 5003
ERROR_DEPENDENCY_NOT_ALLOWED = 5069
ERROR_DEPENDENCY_NOT_FOUND = 5002
ERROR_DEPENDENCY_TREE_TOO_COMPLEX = 5929
ERROR_DEPENDENT_RESOURCE_EXISTS = 5001
ERROR_DEPENDENT_RESOURCE_PROPERTY_CONFLICT = 5924
ERROR_DEPENDENT_SERVICES_RUNNING = 1051
```

```
ERROR_DESTINATION_ELEMENT_FULL = 1161
ERROR_DESTROY_OBJECT_OF_OTHER_THREAD = 1435
ERROR_DEVICE_ALREADY_ATTACHED = 548
ERROR_DEVICE_ALREADY_REMEMBERED = 1202
ERROR_DEVICE_DOOR_OPEN = 1166
ERROR_DEVICE_ENUMERATION_ERROR = 648
ERROR_DEVICE_IN_USE = 2404
ERROR_DEVICE_NOT_AVAILABLE = 4319
ERROR_DEVICE_NOT_CONNECTED = 1167
ERROR_DEVICE_NOT_PARTITIONED = 1107
ERROR_DEVICE_REINITIALIZATION_NEEDED = 1164
ERROR_DEVICE_REMOVED = 1617
ERROR_DEVICE_REQUIRES_CLEANING = 1165
ERROR_DEV_NOT_EXIST = 55
ERROR_DHCP_ADDRESS_CONFLICT = 4100
ERROR_DIFFERENT_SERVICE_ACCOUNT = 1079
ERROR_DIRECTORY = 267
ERROR_DIRECTORY_NOT_RM = 6803
ERROR_DIRECT_ACCESS_HANDLE = 130
ERROR_DIR_EFS_DISALLOWED = 6010
ERROR_DIR_NOT_EMPTY = 145
ERROR_DIR_NOT_ROOT = 144
ERROR_DISCARDED = 157
ERROR_DISK_CHANGE = 107
ERROR_DISK_CORRUPT = 1393
ERROR_DISK_FULL = 112
ERROR_DISK_OPERATION_FAILED = 1127
ERROR_DISK_RECALIBRATE_FAILED = 1126
ERROR_DISK_REPAIR_DISABLED = 780
ERROR_DISK_RESET_FAILED = 1128
ERROR_DISK_TOO_FRAGMENTED = 302
ERROR_DLL_INIT_FAILED = 1114
ERROR_DLL_INIT_FAILED_LOGOFF = 624
ERROR_DLL_MIGHT_BE_INCOMPATIBLE = 687
ERROR_DLL_MIGHT_BE_INSECURE = 686
ERROR_DLL_NOT_FOUND = 1157
```

```
ERROR_DOMAIN_CONTROLLER_EXISTS = 1250
ERROR_DOMAIN_CONTROLLER_NOT_FOUND = 1908
ERROR_DOMAIN_CTRLR_CONFIG_ERROR = 581
ERROR_DOMAIN_EXISTS = 1356
ERROR_DOMAIN_LIMIT_EXCEEDED = 1357
ERROR_DOMAIN_TRUST_INCONSISTENT = 1810
ERROR_DRIVERS_LEAKING_LOCKED_PAGES = 729
ERROR_DRIVER_CANCEL_TIMEOUT = 594
ERROR_DRIVER_DATABASE_ERROR = 652
ERROR_DRIVER_FAILED_PRIOR_UNLOAD = 654
ERROR_DRIVER_FAILED_SLEEP = 633
ERROR_DRIVE_LOCKED = 108
ERROR_DRIVE_MEDIA_MISMATCH = 4303
ERROR_DS_ADD_REPLICA_INHIBITED = 8302
ERROR_DS_ADMIN_LIMIT_EXCEEDED = 8228
ERROR_DS_AFFECTS_MULTIPLE_DSAS = 8249
ERROR_DS_AG_CANT_HAVE_UNIVERSAL_MEMBER = 8578
ERROR_DS_ALIASED_OBJ_MISSING = 8334
ERROR_DS_ALIAS_DEREF_PROBLEM = 8244
ERROR_DS_ALIAS_POINTS_TO_ALIAS = 8336
ERROR_DS_ALIAS_PROBLEM = 8241
ERROR_DS_ATTRIBUTE_OR_VALUE_EXISTS = 8205
ERROR_DS_ATTRIBUTE_OWNED_BY_SAM = 8346
ERROR_DS_ATTRIBUTE_TYPE_UNDEFINED = 8204
ERROR_DS_ATT_ALREADY_EXISTS = 8318
ERROR_DS_ATT_IS_NOT_ON_OBJ = 8310
ERROR_DS_ATT_NOT_DEF_FOR_CLASS = 8317
ERROR_DS_ATT_NOT_DEF_IN_SCHEMA = 8303
ERROR_DS_ATT_SCHEMA_REQ_ID = 8399
ERROR_DS_ATT_SCHEMA_REQ_SYNTAX = 8416
ERROR_DS_ATT_VAL_ALREADY_EXISTS = 8323
ERROR_DS_AUDIT_FAILURE = 8625
ERROR_DS_AUTHORIZATION_FAILED = 8599
ERROR_DS_AUTH_METHOD_NOT_SUPPORTED = 8231
ERROR_DS_AUTH_UNKNOWN = 8234
ERROR_DS_AUX_CLS_TEST_FAIL = 8389
```

```
ERROR_DS_BACKLINK_WITHOUT_LINK = 8482
ERROR_DS_BAD_ATT_SCHEMA_SYNTAX = 8400
ERROR_DS_BAD_HIERARCHY_FILE = 8425
ERROR_DS_BAD_INSTANCE_TYPE = 8313
ERROR_DS_BAD_NAME_SYNTAX = 8335
ERROR_DS_BAD_RDN_ATT_ID_SYNTAX = 8392
ERROR_DS_BUILD_HIERARCHY_TABLE_FAILED = 8426
ERROR_DS_BUSY = 8206
ERROR_DS_CANT_ACCESS_REMOTE_PART_OF_AD = 8585
ERROR_DS_CANT_ADD_ATT_VALUES = 8320
ERROR_DS_CANT_ADD_SYSTEM_ONLY = 8358
ERROR_DS_CANT_ADD_TO_GC = 8550
ERROR_DS_CANT_CACHE_ATT = 8401
ERROR_DS_CANT_CACHE_CLASS = 8402
ERROR_DS_CANT_CREATE_IN_NONDOMAIN_NC = 8553
ERROR_DS_CANT_CREATE_UNDER_SCHEMA = 8510
ERROR_DS_CANT_DELETE = 8398
ERROR_DS_CANT_DELETE_DSA_OBJ = 8340
ERROR_DS_CANT_DEL_MASTER_CROSSREF = 8375
ERROR_DS_CANT_DEMOTE_WITH_WRITEABLE_NC = 8604
ERROR_DS_CANT_DEREF_ALIAS = 8337
ERROR_DS_CANT_DERIVE_SPN_FOR_DELETED_DOMAIN = 8603
ERROR_DS_CANT_DERIVE_SPN_WITHOUT_SERVER_REF = 8589
ERROR_DS_CANT_FIND_DC_FOR_SRC_DOMAIN = 8537
ERROR_DS_CANT_FIND_DSA_OBJ = 8419
ERROR_DS_CANT_FIND_EXPECTED_NC = 8420
ERROR_DS_CANT_FIND_NC_IN_CACHE = 8421
ERROR_DS_CANT_MIX_MASTER_AND_REPS = 8331
ERROR_DS_CANT_MOD_OBJ_CLASS = 8215
ERROR_DS_CANT_MOD_PRIMARYGROUPID = 8506
ERROR_DS_CANT_MOD_SYSTEM_ONLY = 8369
ERROR_DS_CANT_MOVE_ACCOUNT_GROUP = 8498
ERROR_DS_CANT_MOVE_APP_BASIC_GROUP = 8608
ERROR_DS_CANT_MOVE_APP_QUERY_GROUP = 8609
ERROR_DS_CANT_MOVE_DELETED_OBJECT = 8489
ERROR_DS_CANT_MOVE_RESOURCE_GROUP = 8499
```

```
ERROR_DS_CANT_ON_NON_LEAF = 8213
ERROR_DS_CANT_ON_RDN = 8214
ERROR_DS_CANT_REMOVE_ATT_CACHE = 8403
ERROR_DS_CANT_REMOVE_CLASS_CACHE = 8404
ERROR_DS_CANT_REM_MISSING_ATT = 8324
ERROR_DS_CANT_REM_MISSING_ATT_VAL = 8325
ERROR_DS_CANT_REPLACE_HIDDEN_REC = 8424
ERROR_DS_CANT_RETRIEVE_ATTS = 8481
ERROR_DS_CANT_RETRIEVE_CHILD = 8422
ERROR_DS_CANT_RETRIEVE_DN = 8405
ERROR_DS_CANT_RETRIEVE_INSTANCE = 8407
ERROR_DS_CANT_RETRIEVE_SD = 8526
ERROR_DS_CANT_START = 8531
ERROR_DS_CANT_TREE_DELETE_CRITICAL_OBJ = 8560
ERROR_DS_CANT_WITH_ACCT_GROUP_MEMBERSHPS = 8493
ERROR_DS_CHILDREN_EXIST = 8332
ERROR_DS_CLASS_MUST_BE_CONCRETE = 8359
ERROR_DS_CLASS_NOT_DSA = 8343
ERROR_DS_CLIENT_LOOP = 8259
ERROR_DS_CODE_INCONSISTENCY = 8408
ERROR_DS_COMPARE_FALSE = 8229
ERROR_DS_COMPARE_TRUE = 8230
ERROR_DS_CONFIDENTIALITY_REQUIRED = 8237
ERROR_DS_CONFIG_PARAM_MISSING = 8427
ERROR_DS_CONSTRAINT_VIOLATION = 8239
ERROR_DS_CONSTRUCTED_ATT_MOD = 8475
ERROR_DS_CONTROL_NOT_FOUND = 8258
ERROR_DS_COULDNT_CONTACT_FSMO = 8367
ERROR_DS_COULDNT_IDENTIFY_OBJECTS_FOR_TREE_DELETE = 8503
ERROR_DS_COULDNT_LOCK_TREE_FOR_DELETE = 8502
ERROR_DS_COULDNT_UPDATE_SPNS = 8525
ERROR_DS_COUNTING_AB_INDICES_FAILED = 8428
ERROR_DS_CROSS_DOMAIN_CLEANUP_REQD = 8491
ERROR_DS_CROSS_DOM_MOVE_ERROR = 8216
ERROR_DS_CROSS_NC_DN_RENAME = 8368
ERROR_DS_CROSS_REF_BUSY = 8602
```

```
ERROR_DS_CROSS_REF_EXISTS = 8374
ERROR_DS_CR_IMPOSSIBLE_TO_VALIDATE = 8495
ERROR_DS_CR_IMPOSSIBLE_TO_VALIDATE_V2 = 8586
ERROR_DS_DATABASE_ERROR = 8409
ERROR_DS_DECODING_ERROR = 8253
ERROR_DS_DESTINATION_AUDITING_NOT_ENABLED = 8536
ERROR_DS_DESTINATION_DOMAIN_NOT_IN_FOREST = 8535
ERROR_DS_DIFFERENT_REPL_EPOCHS = 8593
ERROR_DS_DISALLOWED_IN_SYSTEM_CONTAINER = 8615
ERROR_DS_DNS_LOOKUP_FAILURE = 8524
ERROR_DS_DOMAIN_RENAME_IN_PROGRESS = 8612
ERROR_DS_DOMAIN_VERSION_TOO_HIGH = 8564
ERROR_DS_DOMAIN_VERSION_TOO_LOW = 8566
ERROR_DS_DRA_ABANDON_SYNC = 8462
ERROR_DS_DRA_ACCESS_DENIED = 8453
ERROR_DS_DRA_BAD_DN = 8439
ERROR_DS_DRA_BAD_INSTANCE_TYPE = 8445
ERROR_DS_DRA_BAD_NC = 8440
ERROR_DS_DRA_BUSY = 8438
ERROR_DS_DRA_CONNECTION_FAILED = 8444
ERROR_DS_DRA_DB_ERROR = 8451
ERROR_DS_DRA_DN_EXISTS = 8441
ERROR_DS_DRA_EARLIER_SCHEMA_CONFLICT = 8544
ERROR_DS_DRA_EXTN_CONNECTION_FAILED = 8466
ERROR_DS_DRA_GENERIC = 8436
ERROR_DS_DRA_INCOMPATIBLE_PARTIAL_SET = 8464
ERROR_DS_DRA_INCONSISTENT_DIT = 8443
ERROR_DS_DRA_INTERNAL_ERROR = 8442
ERROR_DS_DRA_INVALID_PARAMETER = 8437
ERROR_DS_DRA_MAIL_PROBLEM = 8447
ERROR_DS_DRA_MISSING_PARENT = 8460
ERROR_DS_DRA_NAME_COLLISION = 8458
ERROR_DS_DRA_NOT_SUPPORTED = 8454
ERROR_DS_DRA_NO_REPLICA = 8452
ERROR_DS_DRA_OBJ_IS_REP_SOURCE = 8450
ERROR_DS_DRA_OBJ_NC_MISMATCH = 8545
```

```
ERROR_DS_DRA_OUT_OF_MEM = 8446
ERROR_DS_DRA_OUT_SCHEDULE_WINDOW = 8617
ERROR_DS_DRA_PREEMPTED = 8461
ERROR_DS_DRA_REF_ALREADY_EXISTS = 8448
ERROR_DS_DRA_REF_NOT_FOUND = 8449
ERROR_DS_DRA_REPL_PENDING = 8477
ERROR_DS_DRA_RPC_CANCELLED = 8455
ERROR_DS_DRA_SCHEMA_CONFLICT = 8543
ERROR_DS_DRA_SCHEMA_INFO_SHIP = 8542
ERROR_DS_DRA_SCHEMA_MISMATCH = 8418
ERROR_DS_DRA_SHUTDOWN = 8463
ERROR_DS_DRA_SINK_DISABLED = 8457
ERROR_DS_DRA_SOURCE_DISABLED = 8456
ERROR_DS_DRA_SOURCE_IS_PARTIAL_REPLICA = 8465
ERROR_DS_DRA_SOURCE_REINSTALLED = 8459
ERROR_DS_DRS_EXTENSIONS_CHANGED = 8594
ERROR_DS_DSA_MUST_BE_INT_MASTER = 8342
ERROR_DS_DST_DOMAIN_NOT_NATIVE = 8496
ERROR_DS_DST_NC_MISMATCH = 8486
ERROR_DS_DS_REQUIRED = 8478
ERROR_DS_DUPLICATE_ID_FOUND = 8605
ERROR_DS_DUP_LDAP_DISPLAY_NAME = 8382
ERROR_DS_DUP_LINK_ID = 8468
ERROR_DS_DUP_MAPI_ID = 8380
ERROR_DS_DUP_MSDS_INTID = 8597
ERROR_DS_DUP_OID = 8379
ERROR_DS_DUP_RDN = 8378
ERROR_DS_DUP_SCHEMA_ID_GUID = 8381
ERROR_DS_ENCODING_ERROR = 8252
ERROR_DS_EPOCH_MISMATCH = 8483
ERROR_DS_EXISTING_AD_CHILD_NC = 8613
ERROR_DS_EXISTS_IN_AUX_CLS = 8393
ERROR_DS_EXISTS_IN_MAY_HAVE = 8386
ERROR_DS_EXISTS_IN_MUST_HAVE = 8385
ERROR_DS_EXISTS_IN_POSS_SUP = 8395
ERROR_DS_EXISTS_IN_RDNATTID = 8598
```

```
ERROR_DS_EXISTS_IN_SUB_CLS = 8394
ERROR_DS_FILTER_UNKNOWN = 8254
ERROR_DS_FILTER_USES_CONTRUCTED_ATTRS = 8555
ERROR_DS_FOREST_VERSION_TOO_HIGH = 8563
ERROR_DS_FOREST_VERSION_TOO_LOW = 8565
ERROR_DS_GCVERIFY_ERROR = 8417
ERROR_DS_GC_NOT_AVAILABLE = 8217
ERROR_DS_GC_REQUIRED = 8547
ERROR_DS_GENERIC_ERROR = 8341
ERROR_DS_GLOBAL_CANT_HAVE_CROSSDOMAIN_MEMBER = 8519
ERROR_DS_GLOBAL_CANT_HAVE_LOCAL_MEMBER = 8516
ERROR_DS_GLOBAL_CANT_HAVE_UNIVERSAL_MEMBER = 8517
ERROR_DS_GOVERNSID_MISSING = 8410
ERROR_DS_GROUP_CONVERSION_ERROR = 8607
ERROR_DS_HAVE_PRIMARY_MEMBERS = 8521
ERROR_DS_HIERARCHY_TABLE_MALLOC_FAILED = 8429
ERROR_DS_HIERARCHY_TABLE_TOO_DEEP = 8628
ERROR_DS_ILLEGAL_BASE_SCHEMA_MOD = 8507
ERROR_DS_ILLEGAL_MOD_OPERATION = 8311
ERROR_DS_ILLEGAL_SUPERIOR = 8345
ERROR_DS_ILLEGAL_XDOM_MOVE_OPERATION = 8492
ERROR_DS_INAPPROPRIATE_AUTH = 8233
ERROR_DS_INAPPROPRIATE_MATCHING = 8238
ERROR_DS_INCOMPATIBLE_CONTROLS_USED = 8574
ERROR_DS_INCOMPATIBLE_VERSION = 8567
ERROR_DS_INCORRECT_ROLE_OWNER = 8210
ERROR_DS_INIT_FAILURE = 8532
ERROR_DS_INIT_FAILURE_CONSOLE = 8561
ERROR_DS_INSTALL_NO_SCH_VERSION_IN_INIFILE = 8512
ERROR_DS_INSTALL_NO_SRC_SCH_VERSION = 8511
ERROR_DS_INSTALL_SCHEMA_MISMATCH = 8467
ERROR_DS_INSUFFICIENT_ATTR_TO_CREATE_OBJECT = 8606
ERROR_DS_INSUFF_ACCESS_RIGHTS = 8344
ERROR_DS_INTERNAL_FAILURE = 8430
ERROR_DS_INVALID_ATTRIBUTE_SYNTAX = 8203
ERROR_DS_INVALID_DMD = 8360
```

```
ERROR_DS_INVALID_DN_SYNTAX = 8242
ERROR_DS_INVALID_GROUP_TYPE = 8513
ERROR_DS_INVALID_LDAP_DISPLAY_NAME = 8479
ERROR_DS_INVALID_NAME_FOR_SPN = 8554
ERROR_DS_INVALID_ROLE_OWNER = 8366
ERROR_DS_INVALID_SCRIPT = 8600
ERROR_DS_INVALID_SEARCH_FLAG = 8500
ERROR_DS_INVALID_SEARCH_FLAG_SUBTREE = 8626
ERROR_DS_INVALID_SEARCH_FLAG_TUPLE = 8627
ERROR_DS_IS_LEAF = 8243
ERROR_DS_KEY_NOT_UNIQUE = 8527
ERROR_DS_LDAP_SEND_QUEUE_FULL = 8616
ERROR_DS_LINK_ID_NOT_AVAILABLE = 8577
ERROR_DS_LOCAL_CANT_HAVE_CROSSDOMAIN_LOCAL_MEMBER = 8520
ERROR_DS_LOCAL_ERROR = 8251
ERROR_DS_LOCAL_MEMBER_OF_LOCAL_ONLY = 8548
ERROR_DS_LOOP_DETECT = 8246
ERROR_DS_LOW_DSA_VERSION = 8568
ERROR_DS_MACHINE_ACCOUNT_CREATED_PRENT4 = 8572
ERROR_DS_MACHINE_ACCOUNT_QUOTA_EXCEEDED = 8557
ERROR_DS_MASTERDSA_REQUIRED = 8314
ERROR_DS_MAX_OBJ_SIZE_EXCEEDED = 8304
ERROR_DS_MEMBERSHIP_EVALUATED_LOCALLY = 8201
ERROR_DS_MISSING_EXPECTED_ATT = 8411
ERROR_DS_MISSING_FSMO_SETTINGS = 8434
ERROR_DS_MISSING_INFRASTRUCTURE_CONTAINER = 8497
ERROR_DS_MISSING_REQUIRED_ATT = 8316
ERROR_DS_MISSING_SUPREF = 8406
ERROR_DS_MODIFYDN_DISALLOWED_BY_FLAG = 8581
ERROR_DS_MODIFYDN_DISALLOWED_BY_INSTANCE_TYPE = 8579
ERROR_DS_MODIFYDN_WRONG_GRANDPARENT = 8582
ERROR_DS_MUST_BE_RUN_ON_DST_DC = 8558
ERROR_DS_NAME_ERROR_DOMAIN_ONLY = 8473
ERROR_DS_NAME_ERROR_NOT_FOUND = 8470
ERROR_DS_NAME_ERROR_NOT_UNIQUE = 8471
ERROR_DS_NAME_ERROR_NO_MAPPING = 8472
```

```
ERROR_DS_NAME_ERROR_NO_SYNTACTICAL_MAPPING = 8474
ERROR_DS_NAME_ERROR_RESOLVING = 8469
ERROR_DS_NAME_ERROR_TRUST_REFERRAL = 8583
ERROR_DS_NAME_NOT_UNIQUE = 8571
ERROR_DS_NAME_REFERENCE_INVALID = 8373
ERROR_DS_NAME_TOO_LONG = 8348
ERROR_DS_NAME_TOO_MANY_PARTS = 8347
ERROR_DS_NAME_TYPE_UNKNOWN = 8351
ERROR_DS_NAME_UNPARSEABLE = 8350
ERROR_DS_NAME_VALUE_TOO_LONG = 8349
ERROR_DS_NAMING_MASTER_GC = 8523
ERROR_DS_NAMING_VIOLATION = 8247
ERROR_DS_NCNAME_MISSING_CR_REF = 8412
ERROR_DS_NCNAME_MUST_BE_NC = 8357
ERROR_DS_NC_MUST_HAVE_NC_PARENT = 8494
ERROR_DS_NC_STILL_HAS_DSAS = 8546
ERROR_DS_NONEXISTENT_MAY_HAVE = 8387
ERROR_DS_NONEXISTENT_MUST_HAVE = 8388
ERROR_DS_NONEXISTENT_POSS_SUP = 8390
ERROR_DS_NONSAFE_SCHEMA_CHANGE = 8508
ERROR_DS_NON_ASQ_SEARCH = 8624
ERROR_DS_NON_BASE_SEARCH = 8480
ERROR_DS_NOTIFY_FILTER_TOO_COMPLEX = 8377
ERROR_DS_NOT_AN_OBJECT = 8352
ERROR_DS_NOT_AUTHORITIVE_FOR_DST_NC = 8487
ERROR_DS_NOT_CLOSEST = 8588
ERROR_DS_NOT_INSTALLED = 8200
ERROR_DS_NOT_ON_BACKLINK = 8362
ERROR_DS_NOT_SUPPORTED = 8256
ERROR_DS_NOT_SUPPORTED_SORT_ORDER = 8570
ERROR_DS_NO_ATTRIBUTE_OR_VALUE = 8202
ERROR_DS_NO_BEHAVIOR_VERSION_IN_MIXEDDOMAIN = 8569
ERROR_DS_NO_CHAINED_EVAL = 8328
ERROR_DS_NO_CHAINING = 8327
ERROR_DS_NO_CHECKPOINT_WITH_PDC = 8551
ERROR_DS_NO_CROSSREF_FOR_NC = 8363
```

```
ERROR_DS_NO_DELETED_NAME = 8355
ERROR_DS_NO_FPO_IN_UNIVERSAL_GROUPS = 8549
ERROR_DS_NO_MORE_RIDS = 8209
ERROR_DS_NO_MSDS_INTID = 8596
ERROR_DS_NO_NEST_GLOBALGROUP_IN_MIXEDDOMAIN = 8514
ERROR_DS_NO_NEST_LOCALGROUP_IN_MIXEDDOMAIN = 8515
ERROR_DS_NO_NTDSA_OBJECT = 8623
ERROR_DS_NO_OBJECT_MOVE_IN_SCHEMA_NC = 8580
ERROR_DS_NO_PARENT_OBJECT = 8329
ERROR_DS_NO_PKT_PRIVACY_ON_CONNECTION = 8533
ERROR_DS_NO_RDN_DEFINED_IN_SCHEMA = 8306
ERROR_DS_NO_REF_DOMAIN = 8575
ERROR_DS_NO_REQUESTED_ATTS_FOUND = 8308
ERROR_DS_NO_RESULTS_RETURNED = 8257
ERROR_DS_NO_RIDS_ALLOCATED = 8208
ERROR_DS_NO_SERVER_OBJECT = 8622
ERROR_DS_NO_SUCH_OBJECT = 8240
ERROR_DS_NO_TREE_DELETE_ABOVE_NC = 8501
ERROR_DS_NTDSCRIPT_PROCESS_ERROR = 8592
ERROR_DS_NTDSCRIPT_SYNTAX_ERROR = 8591
ERROR_DS_OBJECT_BEING_REMOVED = 8339
ERROR_DS_OBJECT_CLASS_REQUIRED = 8315
ERROR_DS_OBJECT_RESULTS_TOO_LARGE = 8248
ERROR_DS_OBJ_CLASS_NOT_DEFINED = 8371
ERROR_DS_OBJ_CLASS_NOT_SUBCLASS = 8372
ERROR_DS_OBJ_CLASS_VIOLATION = 8212
ERROR_DS_OBJ_GUID_EXISTS = 8361
ERROR_DS_OBJ_NOT_FOUND = 8333
ERROR_DS_OBJ_STRING_NAME_EXISTS = 8305
ERROR_DS_OBJ_TOO_LARGE = 8312
ERROR_DS_OFFSET_RANGE_ERROR = 8262
ERROR_DS_OPERATIONS_ERROR = 8224
ERROR_DS_OUT_OF_SCOPE = 8338
ERROR_DS_OUT_OF_VERSION_STORE = 8573
ERROR_DS_PARAM_ERROR = 8255
ERROR_DS_PARENT_IS_AN_ALIAS = 8330
```

```
ERROR_DS_PDC_OPERATION_IN_PROGRESS = 8490
ERROR_DS_POLICY_NOT_KNOWN = 8618
ERROR_DS_PROTOCOL_ERROR = 8225
ERROR_DS_RANGE_CONSTRAINT = 8322
ERROR_DS_RDN_DOESNT_MATCH_SCHEMA = 8307
ERROR_DS_RECALCSCHEMA_FAILED = 8396
ERROR_DS_REFERRAL = 8235
ERROR_DS_REFERRAL_LIMIT_EXCEEDED = 8260
ERROR_DS_REFUSING_FSMO_ROLES = 8433
ERROR_DS_REMOTE_CROSSREF_OP_FAILED = 8601
ERROR_DS_REPLICATOR_ONLY = 8370
ERROR_DS_REPLICA_SET_CHANGE_NOT_ALLOWED_ON_DISABLED_CR = 8595
ERROR_DS_REPL_LIFETIME_EXCEEDED = 8614
ERROR_DS_RESERVED_LINK_ID = 8576
ERROR_DS_RIDMGR_INIT_ERROR = 8211
ERROR_DS_ROLE_NOT_VERIFIED = 8610
ERROR_DS_ROOT_CANT_BE_SUBREF = 8326
ERROR_DS_ROOT_MUST_BE_NC = 8301
ERROR_DS_ROOT_REQUIRES_CLASS_TOP = 8432
ERROR_DS_SAM_INIT_FAILURE = 8504
ERROR_DS_SAM_INIT_FAILURE_CONSOLE = 8562
ERROR_DS_SAM_NEED_BOOTKEY_FLOPPY = 8530
ERROR_DS_SAM_NEED_BOOTKEY_PASSWORD = 8529
ERROR_DS_SCHEMA_ALLOC_FAILED = 8415
ERROR_DS_SCHEMA_NOT_LOADED = 8414
ERROR_DS_SCHEMA_UPDATE_DISALLOWED = 8509
ERROR_DS_SECURITY_CHECKING_ERROR = 8413
ERROR_DS_SECURITY_ILLEGAL_MODIFY = 8423
ERROR_DS_SEC_DESC_INVALID = 8354
ERROR_DS_SEC_DESC_TOO_SHORT = 8353
ERROR_DS_SEMANTIC_ATT_TEST = 8383
ERROR_DS_SENSITIVE_GROUP_VIOLATION = 8505
ERROR_DS_SERVER_DOWN = 8250
ERROR_DS_SHUTTING_DOWN = 8364
ERROR_DS_SINGLE_USER_MODE_FAILED = 8590
ERROR_DS_SINGLE_VALUE_CONSTRAINT = 8321
```

```
ERROR_DS_SIZELIMIT_EXCEEDED = 8227
ERROR_DS_SORT_CONTROL_MISSING = 8261
ERROR_DS_SOURCE_AUDITING_NOT_ENABLED = 8552
ERROR_DS_SOURCE_DOMAIN_IN_FOREST = 8534
ERROR_DS_SRC_AND_DST_NC_IDENTICAL = 8485
ERROR_DS_SRC_AND_DST_OBJECT_CLASS_MISMATCH = 8540
ERROR_DS_SRC_DC_MUST_BE_SP4_OR_GREATER = 8559
ERROR_DS_SRC_GUID_MISMATCH = 8488
ERROR_DS_SRC_NAME_MISMATCH = 8484
ERROR_DS_SRC_OBJ_NOT_GROUP_OR_USER = 8538
ERROR_DS_SRC_SID_EXISTS_IN_FOREST = 8539
ERROR_DS_STRING_SD_CONVERSION_FAILED = 8522
ERROR_DS_STRONG_AUTH_REQUIRED = 8232
ERROR_DS_SUBREF_MUST_HAVE_PARENT = 8356
ERROR_DS_SUBTREE_NOTIFY_NOT_NC_HEAD = 8376
ERROR_DS_SUB_CLS_TEST_FAIL = 8391
ERROR_DS_SYNTAX_MISMATCH = 8384
ERROR_DS_THREAD_LIMIT_EXCEEDED = 8587
ERROR_DS_TIMELIMIT_EXCEEDED = 8226
ERROR_DS_TREE_DELETE_NOT_FINISHED = 8397
ERROR_DS_UNABLE_TO_SURRENDER_ROLES = 8435
ERROR_DS_UNAVAILABLE = 8207
ERROR_DS_UNAVAILABLE_CRIT_EXTENSION = 8236
ERROR_DS_UNICODEPWD_NOT_IN_QUOTES = 8556
ERROR_DS_UNIVERSAL_CANT_HAVE_LOCAL_MEMBER = 8518
ERROR_DS_UNKNOWN_ERROR = 8431
ERROR_DS_UNKNOWN_OPERATION = 8365
ERROR_DS_UNWILLING_TO_PERFORM = 8245
ERROR_DS_USER_BUFFER_TO_SMALL = 8309
ERROR_DS_VERSION_CHECK_FAILURE = 643
ERROR_DS_WKO_CONTAINER_CANNOT_BE_SPECIAL = 8611
ERROR_DS_WRONG_LINKED_ATT_SYNTAX = 8528
ERROR_DS_WRONG_OM_OBJ_CLASS = 8476
ERROR_DUPLICATE_SERVICE_NAME = 1078
ERROR_DUPLICATE_TAG = 2304
ERROR_DUP_DOMAINNAME = 1221
```

```
ERROR_DUP_NAME = 52
ERROR_DYNLINK_FROM_INVALID_RING = 196
ERROR_EAS_DIDNT_FIT = 275
ERROR_EAS_NOT_SUPPORTED = 282
ERROR_EA_ACCESS_DENIED = 994
ERROR_EA_FILE_CORRUPT = 276
ERROR_EA_LIST_INCONSISTENT = 255
ERROR_EA_TABLE_FULL = 277
ERROR_EFS_ALG_BLOB_TOO_BIG = 6013
ERROR_EFS_DISABLED = 6015
ERROR_EFS_NOT_ALLOWED_IN_TRANSACTION = 6831
ERROR_EFS_SERVER_NOT_TRUSTED = 6011
ERROR_EFS_VERSION_NOT_SUPPORT = 6016
ERROR_ELEVATION_REQUIRED = 740
ERROR_EMPTY = 4306
ERROR_ENCRYPTION_FAILED = 6000
ERROR_END_OF_MEDIA = 1100
ERROR_ENLISTMENT_NOT_FOUND = 6717
ERROR_ENLISTMENT_NOT_SUPERIOR = 6820
ERROR_ENVVAR_NOT_FOUND = 203
ERROR_EOM_OVERFLOW = 1129
ERROR_ERRORS_ENCOUNTERED = 774
ERROR_EVALUATION_EXPIRATION = 622
ERROR_EVENTLOG_CANT_START = 1501
ERROR_EVENTLOG_FILE_CHANGED = 1503
ERROR_EVENTLOG_FILE_CORRUPT = 1500
ERROR_EVENT_DONE = 710
ERROR_EVENT_PENDING = 711
ERROR_EXCEPTION_IN_RESOURCE_CALL = 5930
ERROR_EXCEPTION_IN_SERVICE = 1064
ERROR_EXCL_SEM_ALREADY_OWNED = 101
ERROR_EXE_CANNOT_MODIFY_SIGNED_BINARY = 217
ERROR_EXE_CANNOT_MODIFY_STRONG_SIGNED_BINARY = 218
ERROR_EXE_MACHINE_TYPE_MISMATCH = 216
ERROR_EXE_MARKED_INVALID = 192
ERROR_EXTENDED_ERROR = 1208
```

```
ERROR_EXTRANEOUS_INFORMATION = 677
ERROR_FAILED_DRIVER_ENTRY = 647
ERROR_FAILED_SERVICE_CONTROLLER_CONNECT = 1063
ERROR_FAIL_I24 = 83
ERROR_FAIL_NOACTION_REBOOT = 350
ERROR_FAIL_REBOOT_INITIATED = 3018
ERROR_FAIL_REBOOT_REQUIRED = 3017
ERROR_FAIL_RESTART = 352
ERROR_FAIL_SHUTDOWN = 351
ERROR_FATAL_APP_EXIT = 713
ERROR_FILEMARK_DETECTED = 1101
ERROR_FILENAME_EXCED_RANGE = 206
ERROR_FILE_CHECKED_OUT = 220
ERROR_FILE_CORRUPT = 1392
ERROR_FILE_ENCRYPTED = 6002
ERROR_FILE_EXISTS = 80
ERROR_FILE_IDENTITY_NOT_PERSISTENT = 6823
ERROR_FILE_INVALID = 1006
ERROR_FILE_NOT_ENCRYPTED = 6007
ERROR_FILE_NOT_FOUND = 2
ERROR_FILE_OFFLINE = 4350
ERROR_FILE_READ_ONLY = 6009
ERROR_FILE_SYSTEM_LIMITATION = 665
ERROR_FILE_TOO_LARGE = 223
ERROR_FIRMWARE_UPDATED = 728
ERROR_FLOATED_SECTION = 6846
ERROR_FLOAT_MULTIPLE_FAULTS = 630
ERROR_FLOAT_MULTIPLE_TRAPS = 631
ERROR_FLOPPY_BAD_REGISTERS = 1125
ERROR_FLOPPY_ID_MARK_NOT_FOUND = 1122
ERROR_FLOPPY_UNKNOWN_ERROR = 1124
ERROR_FLOPPY_VOLUME = 584
ERROR_FLOPPY_WRONG_CYLINDER = 1123
ERROR_FORMS_AUTH_REQUIRED = 224
ERROR_FOUND_OUT_OF_SCOPE = 601
ERROR_FSFILTER_OP_COMPLETED_SUCCESSFULLY = 762
```

```
ERROR_FS_DRIVER_REQUIRED = 588
ERROR_FT_READ_RECOVERY_FROM_BACKUP = 704
ERROR_FT_WRITE_RECOVERY = 705
ERROR_FULLSCREEN_MODE = 1007
ERROR_FULL_BACKUP = 4004
ERROR_FUNCTION_FAILED = 1627
ERROR_FUNCTION_NOT_CALLED = 1626
ERROR_GENERIC_NOT_MAPPED = 1360
ERROR_GEN_FAILURE = 31
ERROR_GLOBAL_ONLY_HOOK = 1429
ERROR_GRACEFUL_DISCONNECT = 1226
ERROR_GROUP_EXISTS = 1318
ERROR_GROUP_NOT_AVAILABLE = 5012
ERROR_GROUP_NOT_FOUND = 5013
ERROR_GROUP_NOT_ONLINE = 5014
ERROR_GUID_SUBSTITUTION_MADE = 680
ERROR_HANDLES_CLOSED = 676
ERROR_HANDLE_DISK_FULL = 39
ERROR_HANDLE_EOF = 38
ERROR_HANDLE_NO_LONGER_VALID = 6815
ERROR_HIBERNATED = 726
ERROR_HIBERNATION_FAILURE = 656
ERROR_HOOK_NEEDS_HMOD = 1428
ERROR_HOOK_NOT_INSTALLED = 1431
ERROR_HOOK_TYPE_NOT_ALLOWED = 1458
ERROR_HOST_NODE_NOT_AVAILABLE = 5005
ERROR_HOST_NODE_NOT_GROUP_OWNER = 5016
ERROR_HOST_NODE_NOT_RESOURCE_OWNER = 5015
ERROR_HOST_UNREACHABLE = 1232
ERROR_HOTKEY_ALREADY_REGISTERED = 1409
ERROR_HOTKEY_NOT_REGISTERED = 1419
ERROR_HWNDS_HAVE_DIFF_PARENT = 1441
ERROR_ICM_NOT_ENABLED = 2308
ERROR_IEPORT_FULL = 4341
ERROR_ILLEGAL_CHARACTER = 582
ERROR_ILLEGAL_DLL_RELOCATION = 623
```

```
ERROR_ILLEGAL_ELEMENT_ADDRESS = 1162
ERROR_ILLEGAL_FLOAT_CONTEXT = 579
ERROR_ILL_FORMED_PASSWORD = 1324
ERROR_IMAGE_MACHINE_TYPE_MISMATCH = 706
ERROR_IMAGE_MACHINE_TYPE_MISMATCH_EXE = 720
ERROR_IMAGE_NOT_AT_BASE = 700
ERROR_IMPLICIT_TRANSACTION_NOT_SUPPORTED = 6725
ERROR_INCORRECT_ADDRESS = 1241
ERROR_INCORRECT_SIZE = 1462
ERROR_INC_BACKUP = 4003
ERROR_INDEX_ABSENT = 1611
ERROR_INDIGENOUS_TYPE = 4338
ERROR_INDOUBT_TRANSACTIONS_EXIST = 6827
ERROR_INFLOOP_IN_RELOC_CHAIN = 202
ERROR_INSTALL_ALREADY_RUNNING = 1618
ERROR_INSTALL_FAILURE = 1603
ERROR_INSTALL_LANGUAGE_UNSUPPORTED = 1623
ERROR_INSTALL_LOG_FAILURE = 1622
ERROR_INSTALL_NOTUSED = 1634
ERROR_INSTALL_PACKAGE_INVALID = 1620
ERROR_INSTALL_PACKAGE_OPEN_FAILED = 1619
ERROR_INSTALL_PACKAGE_REJECTED = 1625
ERROR_INSTALL_PLATFORM_UNSUPPORTED = 1633
ERROR_INSTALL_REMOTE_DISALLOWED = 1640
ERROR_INSTALL_REMOTE_PROHIBITED = 1645
ERROR_INSTALL_SERVICE = 1601
ERROR_INSTALL_SERVICE_SAFEBOOT = 1652
ERROR_INSTALL_SOURCE_ABSENT = 1612
ERROR_INSTALL_SUSPEND = 1604
ERROR_INSTALL_TEMP_UNWRITABLE = 1632
ERROR_INSTALL_TRANSFORM_FAILURE = 1624
ERROR_INSTALL_TRANSFORM_REJECTED = 1644
ERROR_INSTALL_UI_FAILURE = 1621
ERROR_INSTALL_USEREXIT = 1602
ERROR_INSTRUCTION_MISALIGNMENT = 549
ERROR_INSUFFICIENT_BUFFER = 122
```

```
ERROR_INSUFFICIENT_LOGON_INFO = 608
ERROR_INSUFFICIENT_POWER = 639
ERROR_INSUFFICIENT_RESOURCE_FOR_SPECIFIED_SHARED_SECTION_SIZE = 781
ERROR_INTERNAL_DB_CORRUPTION = 1358
ERROR_INTERNAL_DB_ERROR = 1383
ERROR_INTERNAL_ERROR = 1359
ERROR_INTERRUPT_STILL_CONNECTED = 764
ERROR_INTERRUPT_VECTOR_ALREADY_CONNECTED = 763
ERROR_INVALID_ACCEL_HANDLE = 1403
ERROR_INVALID_ACCESS = 12
ERROR_INVALID_ACCOUNT_NAME = 1315
ERROR_INVALID_ACL = 1336
ERROR_INVALID_ADDRESS = 487
ERROR_INVALID_AT_INTERRUPT_TIME = 104
ERROR_INVALID_BLOCK = 9
ERROR_INVALID_BLOCK_LENGTH = 1106
ERROR_INVALID_CATEGORY = 117
ERROR_INVALID_CLEANER = 4310
ERROR_INVALID_CLUSTER_IPV6_ADDRESS = 5911
ERROR_INVALID_CMM = 2300
ERROR_INVALID_COLORINDEX = 2022
ERROR_INVALID_COLORSPACE = 2307
ERROR_INVALID_COMBOBOX_MESSAGE = 1422
ERROR_INVALID_COMMAND_LINE = 1639
ERROR_INVALID_COMPUTERNAME = 1210
ERROR_INVALID_CURSOR_HANDLE = 1402
ERROR_INVALID_DATA = 13
ERROR_INVALID_DATATYPE = 1804
ERROR_INVALID_DEVICE_OBJECT_PARAMETER = 650
ERROR_INVALID_DLL = 1154
ERROR_INVALID_DOMAINNAME = 1212
ERROR_INVALID_DOMAIN_ROLE = 1354
ERROR_INVALID_DOMAIN_STATE = 1353
ERROR_INVALID_DRIVE = 15
ERROR_INVALID_DRIVE_OBJECT = 4321
ERROR_INVALID_DWP_HANDLE = 1405
```

```
ERROR_INVALID_EA_HANDLE = 278
ERROR_INVALID_EA_NAME = 254
ERROR_INVALID_EDIT_HEIGHT = 1424
ERROR_INVALID_ENVIRONMENT = 1805
ERROR_INVALID_EVENTNAME = 1211
ERROR_INVALID_EVENT_COUNT = 151
ERROR_INVALID_EXE_SIGNATURE = 191
ERROR_INVALID_FIELD = 1616
ERROR_INVALID_FILTER_PROC = 1427
ERROR_INVALID_FLAGS = 1004
ERROR_INVALID_FLAG_NUMBER = 186
ERROR_INVALID_FORM_NAME = 1902
ERROR_INVALID_FORM_SIZE = 1903
ERROR_INVALID_FUNCTION = 1
ERROR_INVALID_GROUPNAME = 1209
ERROR_INVALID_GROUP_ATTRIBUTES = 1345
ERROR_INVALID_GW_COMMAND = 1443
ERROR_INVALID_HANDLE = 6
ERROR_INVALID_HANDLE_STATE = 1609
ERROR_INVALID_HOOK_FILTER = 1426
ERROR_INVALID_HOOK_HANDLE = 1404
ERROR_INVALID_HW_PROFILE = 619
ERROR_INVALID_ICON_HANDLE = 1414
ERROR_INVALID_ID_AUTHORITY = 1343
ERROR_INVALID_IMAGE_HASH = 577
ERROR_INVALID_INDEX = 1413
ERROR_INVALID_KEYBOARD_HANDLE = 1457
ERROR_INVALID_LB_MESSAGE = 1432
ERROR_INVALID_LDT_DESCRIPTOR = 564
ERROR_INVALID_LDT_OFFSET = 563
ERROR_INVALID_LDT_SIZE = 561
ERROR_INVALID_LEVEL = 124
ERROR_INVALID_LIBRARY = 4301
ERROR_INVALID_LIST_FORMAT = 153
ERROR_INVALID_LOGON_HOURS = 1328
ERROR_INVALID_LOGON_TYPE = 1367
```

```
ERROR_INVALID_MEDIA = 4300
ERROR_INVALID_MEDIA_POOL = 4302
ERROR_INVALID_MEMBER = 1388
ERROR_INVALID_MENU_HANDLE = 1401
ERROR_INVALID_MESSAGE = 1002
ERROR_INVALID_MESSAGEDEST = 1218
ERROR_INVALID_MESSAGENAME = 1217
ERROR_INVALID_MINALLOCSIZE = 195
ERROR_INVALID_MODULETYPE = 190
ERROR_INVALID_MONITOR_HANDLE = 1461
ERROR_INVALID_MSGBOX_STYLE = 1438
ERROR_INVALID_NAME = 123
ERROR_INVALID_NETNAME = 1214
ERROR_INVALID_OPERATION = 4317
ERROR_INVALID_OPERATION_ON_QUORUM = 5068
ERROR_INVALID_OPLOCK_PROTOCOL = 301
ERROR_INVALID_ORDINAL = 182
ERROR_INVALID_OWNER = 1307
ERROR_INVALID_PARAMETER = 87
ERROR_INVALID_PASSWORD = 86
ERROR_INVALID_PASSWORDNAME = 1216
ERROR_INVALID_PATCH_XML = 1650
ERROR_INVALID_PIXEL_FORMAT = 2000
ERROR_INVALID_PLUGPLAY_DEVICE_PATH = 620
ERROR_INVALID_PORT_ATTRIBUTES = 545
ERROR_INVALID_PRIMARY_GROUP = 1308
ERROR_INVALID_PRINTER_COMMAND = 1803
ERROR_INVALID_PRINTER_NAME = 1801
ERROR_INVALID_PRINTER_STATE = 1906
ERROR_INVALID_PRINT_MONITOR = 3007
ERROR_INVALID_PRIORITY = 1800
ERROR_INVALID_PROFILE = 2301
ERROR_INVALID_QUOTA_LOWER = 547
ERROR_INVALID_REPARSE_DATA = 4392
ERROR_INVALID_SCROLLBAR_RANGE = 1448
ERROR_INVALID_SECURITY_DESCR = 1338
```

```
ERROR_INVALID_SEGDPL = 198
ERROR_INVALID_SEGMENT_NUMBER = 180
ERROR_INVALID_SEPARATOR_FILE = 1799
ERROR_INVALID_SERVER_STATE = 1352
ERROR_INVALID_SERVICENAME = 1213
ERROR_INVALID_SERVICE_ACCOUNT = 1057
ERROR_INVALID_SERVICE_CONTROL = 1052
ERROR_INVALID_SERVICE_LOCK = 1071
ERROR_INVALID_SHARENAME = 1215
ERROR_INVALID_SHOWWIN_COMMAND = 1449
ERROR_INVALID_SID = 1337
ERROR_INVALID_SIGNAL_NUMBER = 209
ERROR_INVALID_SPI_VALUE = 1439
ERROR_INVALID_STACKSEG = 189
ERROR_INVALID_STARTING_CODESEG = 188
ERROR_INVALID_STATE = 5023
ERROR_INVALID_SUB_AUTHORITY = 1335
ERROR_INVALID_TABLE = 1628
ERROR_INVALID_TARGET_HANDLE = 114
ERROR_INVALID_THREAD_ID = 1444
ERROR_INVALID_TIME = 1901
ERROR_INVALID_TRANSACTION = 6700
ERROR_INVALID_TRANSFORM = 2310
ERROR_INVALID_UNWIND_TARGET = 544
ERROR_INVALID_USER_BUFFER = 1784
ERROR_INVALID_VARIANT = 604
ERROR_INVALID_VERIFY_SWITCH = 118
ERROR_INVALID_WINDOW_HANDLE = 1400
ERROR_INVALID_WINDOW_STYLE = 2002
ERROR_INVALID_WORKSTATION = 1329
ERROR_IOPL_NOT_ENABLED = 197
ERROR_IO_DEVICE = 1117
ERROR_IO_INCOMPLETE = 996
ERROR_IO_PENDING = 997
ERROR_IO_PRIVILEGE_FAILED = 571
ERROR_IO_REISSUE_AS_CACHED = 3950
```

```
ERROR_IP_ADDRESS_CONFLICT1 = 611
ERROR_IP_ADDRESS_CONFLICT2 = 612
ERROR_IRQ_BUSY = 1119
ERROR_IS_JOINED = 134
ERROR_IS_JOIN_PATH = 147
ERROR_IS_JOIN_TARGET = 133
ERROR_IS_SUBSTED = 135
ERROR_IS_SUBST_PATH = 146
ERROR_IS_SUBST_TARGET = 149
ERROR_ITERATED_DATA_EXCEEDS_64k = 194
ERROR_JOIN_TO_JOIN = 138
ERROR_JOIN_TO_SUBST = 140
ERROR_JOURNAL_HOOK_SET = 1430
ERROR_KERNEL_APC = 738
ERROR_KEY_DELETED = 1018
ERROR_KEY_HAS_CHILDREN = 1020
ERROR_KM_DRIVER_BLOCKED = 1930
ERROR_LABEL_TOO_LONG = 154
ERROR_LAST_ADMIN = 1322
ERROR_LB_WITHOUT_TABSTOPS = 1434
ERROR_LIBRARY_FULL = 4322
ERROR_LIBRARY_OFFLINE = 4305
ERROR_LICENSE_QUOTA_EXCEEDED = 1395
ERROR_LISTBOX_ID_NOT_FOUND = 1416
ERROR_LM_CROSS_ENCRYPTION_REQUIRED = 1390
ERROR_LOCAL_USER_SESSION_KEY = 1303
ERROR_LOCKED = 212
ERROR_LOCK_FAILED = 167
ERROR_LOCK_VIOLATION = 33
ERROR_LOGIN_TIME_RESTRICTION = 1239
ERROR_LOGIN_WKSTA_RESTRICTION = 1240
ERROR_LOGON_FAILURE = 1326
ERROR_LOGON_NOT_GRANTED = 1380
ERROR_LOGON_SERVER_CONFLICT = 568
ERROR_LOGON_SESSION_COLLISION = 1366
ERROR_LOGON_SESSION_EXISTS = 1363
```

```
ERROR_LOGON_TYPE_NOT_GRANTED = 1385
ERROR_LOG_APPENDED_FLUSH_FAILED = 6647
ERROR_LOG_ARCHIVE_IN_PROGRESS = 6633
ERROR_LOG_ARCHIVE_NOT_IN_PROGRESS = 6632
ERROR_LOG_BLOCKS_EXHAUSTED = 6605
ERROR_LOG_BLOCK_INCOMPLETE = 6603
ERROR_LOG_BLOCK_INVALID = 6609
ERROR_LOG_BLOCK_VERSION = 6608
ERROR_LOG_CANT_DELETE = 6616
ERROR_LOG_CLIENT_ALREADY_REGISTERED = 6636
ERROR_LOG_CLIENT_NOT_REGISTERED = 6637
ERROR_LOG_CONTAINER_LIMIT_EXCEEDED = 6617
ERROR_LOG_CONTAINER_OPEN_FAILED = 6641
ERROR_LOG_CONTAINER_READ_FAILED = 6639
ERROR_LOG_CONTAINER_STATE_INVALID = 6642
ERROR_LOG_CONTAINER_WRITE_FAILED = 6640
ERROR_LOG_CORRUPTION_DETECTED = 6817
ERROR_LOG_DEDICATED = 6631
ERROR_LOG_EPHEMERAL = 6634
ERROR_LOG_FILE_FULL = 1502
ERROR_LOG_FULL = 6628
ERROR_LOG_FULL_HANDLER_IN_PROGRESS = 6638
ERROR_LOG_GROWTH_FAILED = 6833
ERROR_LOG_HARD_ERROR = 718
ERROR_LOG_INCONSISTENT_SECURITY = 6646
ERROR_LOG_INVALID_RANGE = 6604
ERROR_LOG_METADATA_CORRUPT = 6612
ERROR_LOG_METADATA_FLUSH_FAILED = 6645
ERROR_LOG_METADATA_INCONSISTENT = 6614
ERROR_LOG_METADATA_INVALID = 6613
ERROR_LOG_MULTIPLEXED = 6630
ERROR_LOG_NOT_ENOUGH_CONTAINERS = 6635
ERROR_LOG_NO_RESTART = 6611
ERROR_LOG_PINNED = 6644
ERROR_LOG_PINNED_ARCHIVE_TAIL = 6623
ERROR_LOG_PINNED_RESERVATION = 6648
```

```
ERROR_LOG_POLICY_ALREADY_INSTALLED = 6619
ERROR_LOG_POLICY_CONFLICT = 6622
ERROR_LOG_POLICY_INVALID = 6621
ERROR_LOG_POLICY_NOT_INSTALLED = 6620
ERROR_LOG_READ_CONTEXT_INVALID = 6606
ERROR_LOG_READ_MODE_INVALID = 6610
ERROR_LOG_RECORDS_RESERVED_INVALID = 6625
ERROR_LOG_RECORD_NONEXISTENT = 6624
ERROR_LOG_RESERVATION_INVALID = 6615
ERROR_LOG_RESIZE_INVALID_SIZE = 6806
ERROR_LOG_RESTART_INVALID = 6607
ERROR_LOG_SECTOR_INVALID = 6600
ERROR_LOG_SECTOR_PARITY_INVALID = 6601
ERROR_LOG_SECTOR_REMAPPED = 6602
ERROR_LOG_SPACE_RESERVED_INVALID = 6626
ERROR_LOG_START_OF_LOG = 6618
ERROR_LOG_STATE_INVALID = 6643
ERROR_LOG_TAIL_INVALID = 6627
ERROR_LONGJUMP = 682
ERROR_LOST_WRITEBEHIND_DATA = 596
ERROR_LOST_WRITEBEHIND_DATA_LOCAL_DISK_ERROR = 790
ERROR_LOST_WRITEBEHIND_DATA_NETWORK_DISCONNECTED = 788
ERROR_LOST_WRITEBEHIND_DATA_NETWORK_SERVER_ERROR = 789
ERROR_LUIDS_EXHAUSTED = 1334
ERROR_MAGAZINE_NOT_PRESENT = 1163
ERROR_MAPPED_ALIGNMENT = 1132
ERROR_MARSHALL_OVERFLOW = 603
ERROR_MAX_SESSIONS_REACHED = 353
ERROR_MAX_THRDS_REACHED = 164
ERROR_MCA_EXCEPTION = 784
ERROR_MCA_OCCURED = 651
ERROR_MEDIA_CHANGED = 1110
ERROR_MEDIA_CHECK = 679
ERROR_MEDIA_INCOMPATIBLE = 4315
ERROR_MEDIA_NOT_AVAILABLE = 4318
ERROR_MEDIA_OFFLINE = 4304
```

```
ERROR_MEDIA_UNAVAILABLE = 4308
ERROR_MEDIUM_NOT_ACCESSIBLE = 4323
ERROR_MEMBERS_PRIMARY_GROUP = 1374
ERROR_MEMBER_IN_ALIAS = 1378
ERROR_MEMBER_IN_GROUP = 1320
ERROR_MEMBER_NOT_IN_ALIAS = 1377
ERROR_MEMBER_NOT_IN_GROUP = 1321
ERROR_MEMORY_HARDWARE = 779
ERROR_MENU_ITEM_NOT_FOUND = 1456
ERROR_MESSAGE_EXCEEDS_MAX_SIZE = 4336
ERROR_MESSAGE_SYNC_ONLY = 1159
ERROR_METAFILE_NOT_SUPPORTED = 2003
ERROR_META_EXPANSION_TOO_LONG = 208
ERROR_MINIVERSION_INACCESSIBLE_FROM_SPECIFIED_TRANSACTION = 6810
ERROR_MISSING_SYSTEMFILE = 573
ERROR_MOD_NOT_FOUND = 126
ERROR_MORE_DATA = 234
ERROR_MORE_WRITES = 1120
ERROR_MOUNT_POINT_NOT_RESOLVED = 649
ERROR_MP_PROCESSOR_MISMATCH = 725
ERROR_MR_MID_NOT_FOUND = 317
ERROR_MULTIPLE_FAULT_VIOLATION = 640
ERROR_MUTANT_LIMIT_EXCEEDED = 587
ERROR_NEGATIVE_SEEK = 131
ERROR_NESTING_NOT_ALLOWED = 215
ERROR_NETLOGON_NOT_STARTED = 1792
ERROR_NETNAME_DELETED = 64
ERROR_NETWORK_ACCESS_DENIED = 65
ERROR_NETWORK_BUSY = 54
ERROR_NETWORK_NOT_AVAILABLE = 5035
ERROR_NETWORK_UNREACHABLE = 1231
ERROR_NET_OPEN_FAILED = 570
ERROR_NET_WRITE_FAULT = 88
ERROR_NOACCESS = 998
ERROR_NODE_CANNOT_BE_CLUSTERED = 5898
ERROR_NODE_CANT_HOST_RESOURCE = 5071
```

```
ERROR_NODE_NOT_AVAILABLE = 5036
ERROR_NOINTERFACE = 632
ERROR_NOLOGON_INTERDOMAIN_TRUST_ACCOUNT = 1807
ERROR_NOLOGON_SERVER_TRUST_ACCOUNT = 1809
ERROR_NOLOGON_WORKSTATION_TRUST_ACCOUNT = 1808
ERROR_NONE_MAPPED = 1332
ERROR_NONPAGED_SYSTEM_RESOURCES = 1451
ERROR_NON_MDICHILD_WINDOW = 1445
ERROR_NOTHING_TO_TERMINATE = 758
ERROR_NOTIFY_CLEANUP = 745
ERROR_NOTIFY_ENUM_DIR = 1022
ERROR_NOT_ALL_ASSIGNED = 1300
ERROR_NOT_AUTHENTICATED = 1244
ERROR_NOT_A_REPARSE_POINT = 4390
ERROR_NOT_CAPABLE = 775
ERROR_NOT_CHILD_WINDOW = 1442
ERROR_NOT_CONNECTED = 2250
ERROR_NOT_CONTAINER = 1207
ERROR_NOT_DOS_DISK = 26
ERROR_NOT_EMPTY = 4307
ERROR_NOT_ENOUGH_MEMORY = 8
ERROR_NOT_ENOUGH_QUOTA = 1816
ERROR_NOT_ENOUGH_SERVER_MEMORY = 1130
ERROR_NOT_EXPORT_FORMAT = 6008
ERROR_NOT_FOUND = 1168
ERROR_NOT_JOINED = 136
ERROR_NOT_LOCKED = 158
ERROR_NOT_LOGGED_ON = 1245
ERROR_NOT_LOGON_PROCESS = 1362
ERROR_NOT_OWNER = 288
ERROR_NOT_QUORUM_CAPABLE = 5021
ERROR_NOT_QUORUM_CLASS = 5025
ERROR_NOT_READY = 21
ERROR_NOT_REGISTRY_FILE = 1017
ERROR_NOT_SAFEBOOT_SERVICE = 1084
ERROR_NOT_SAFE_MODE_DRIVER = 646
```

```
ERROR_NOT_SAME_DEVICE = 17
ERROR_NOT_SNAPSHOT_VOLUME = 6841
ERROR_NOT_SUBSTED = 137
ERROR_NOT_SUPPORTED = 50
ERROR_NOT_SUPPORTED_ON_STANDARD_SERVER = 8584
ERROR_NOT_TINY_STREAM = 598
ERROR_NO_ASSOCIATION = 1155
ERROR_NO_BROWSER_SERVERS_FOUND = 6118
ERROR_NO_CALLBACK_ACTIVE = 614
ERROR_NO_DATA = 232
ERROR_NO_DATA_DETECTED = 1104
ERROR_NO_EFS = 6004
ERROR_NO_EVENT_PAIR = 580
ERROR_NO_GUID_TRANSLATION = 560
ERROR_NO_IMPERSONATION_TOKEN = 1309
ERROR_NO_INHERITANCE = 1391
ERROR_NO_LINK_TRACKING_IN_TRANSACTION = 6852
ERROR_NO_LOGON_SERVERS = 1311
ERROR_NO_LOG_SPACE = 1019
ERROR_NO_MATCH = 1169
ERROR_NO_MEDIA_IN_DRIVE = 1112
ERROR_NO_MORE_DEVICES = 1248
ERROR_NO_MORE_FILES = 18
ERROR_NO_MORE_ITEMS = 259
ERROR_NO_MORE_MATCHES = 626
ERROR_NO_MORE_SEARCH_HANDLES = 113
ERROR_NO_MORE_USER_HANDLES = 1158
ERROR_NO_NETWORK = 1222
ERROR_NO_NET_OR_BAD_PATH = 1203
ERROR_NO_PAGEFILE = 578
ERROR_NO_PROC_SLOTS = 89
ERROR_NO_PROMOTION_ACTIVE = 8222
ERROR_NO_QUOTAS_FOR_ACCOUNT = 1302
ERROR_NO_RECOVERY_POLICY = 6003
ERROR_NO_RECOVERY_PROGRAM = 1082
ERROR_NO_SAVEPOINT_WITH_OPEN_FILES = 6842
```

```
ERROR_NO_SCROLLBARS = 1447
ERROR_NO_SECRETS = 8620
ERROR_NO_SECURITY_ON_OBJECT = 1350
ERROR_NO_SHUTDOWN_IN_PROGRESS = 1116
ERROR_NO_SIGNAL_SENT = 205
ERROR_NO_SITENAME = 1919
ERROR_NO_SITE_SETTINGS_OBJECT = 8619
ERROR_NO_SPOOL_SPACE = 62
ERROR_NO_SUCH_ALIAS = 1376
ERROR_NO_SUCH_DOMAIN = 1355
ERROR_NO_SUCH_GROUP = 1319
ERROR_NO_SUCH_LOGON_SESSION = 1312
ERROR_NO_SUCH_MEMBER = 1387
ERROR_NO_SUCH_PACKAGE = 1364
ERROR_NO_SUCH_PRIVILEGE = 1313
ERROR_NO_SUCH_SITE = 1249
ERROR_NO_SUCH_USER = 1317
ERROR_NO_SUPPORTING_DRIVES = 4339
ERROR_NO_SYSTEM_MENU = 1437
ERROR_NO_SYSTEM_RESOURCES = 1450
ERROR_NO_TOKEN = 1008
ERROR_NO_TRACKING_SERVICE = 1172
ERROR_NO_TRUST_LSA_SECRET = 1786
ERROR_NO_TRUST_SAM_ACCOUNT = 1787
ERROR_NO_TXF_METADATA = 6816
ERROR_NO_UNICODE_TRANSLATION = 1113
ERROR_NO_USER_KEYS = 6006
ERROR_NO_USER_SESSION_KEY = 1394
ERROR_NO_VOLUME_ID = 1173
ERROR_NO_VOLUME_LABEL = 125
ERROR_NO_WILDCARD_CHARACTERS = 1417
ERROR_NO_WRITABLE_DC_FOUND = 8621
ERROR_NO_YIELD_PERFORMED = 721
ERROR_NTLM_BLOCKED = 1937
ERROR_NT_CROSS_ENCRYPTION_REQUIRED = 1386
ERROR_NULL_LM_PASSWORD = 1304
```

```
ERROR_OBJECT_ALREADY_EXISTS = 5010
ERROR_OBJECT_IN_LIST = 5011
ERROR_OBJECT_NAME_EXISTS = 698
ERROR_OBJECT_NOT_FOUND = 4312
ERROR_OBJECT_NO_LONGER_EXISTS = 6807
ERROR_OLD_WIN_VERSION = 1150
ERROR_OPEN_FAILED = 110
ERROR_OPEN_FILES = 2401
ERROR_OPERATION_ABORTED = 995
ERROR_OPERATION_NOT_SUPPORTED_IN_TRANSACTION = 6853
ERROR_OPLOCK_BREAK_IN_PROGRESS = 742
ERROR_OPLOCK_NOT_GRANTED = 300
ERROR_OUTOFMEMORY = 14
ERROR_OUT_OF_PAPER = 28
ERROR_OUT_OF_STRUCTURES = 84
ERROR_PAGED_SYSTEM_RESOURCES = 1452
ERROR_PAGEFILE_CREATE_FAILED = 576
ERROR_PAGEFILE_QUOTA = 1454
ERROR_PAGEFILE_QUOTA_EXCEEDED = 567
ERROR_PAGE_FAULT_COPY_ON_WRITE = 749
ERROR_PAGE_FAULT_DEMAND_ZERO = 748
ERROR_PAGE_FAULT_GUARD_PAGE = 750
ERROR_PAGE_FAULT_PAGING_FILE = 751
ERROR_PAGE_FAULT_TRANSITION = 747
ERROR_PARTIAL_COPY = 299
ERROR_PARTITION_FAILURE = 1105
ERROR_PASSWORD_EXPIRED = 1330
ERROR_PASSWORD_MUST_CHANGE = 1907
ERROR_PASSWORD_RESTRICTION = 1325
ERROR_PATCH_MANAGED_ADVERTISED_PRODUCT = 1651
ERROR_PATCH_NO_SEQUENCE = 1648
ERROR_PATCH_PACKAGE_INVALID = 1636
ERROR_PATCH_PACKAGE_OPEN_FAILED = 1635
ERROR_PATCH_PACKAGE_REJECTED = 1643
ERROR_PATCH_PACKAGE_UNSUPPORTED = 1637
ERROR_PATCH_REMOVAL_DISALLOWED = 1649
```

```
ERROR_PATCH_REMOVAL_UNSUPPORTED = 1646
ERROR_PATCH_TARGET_NOT_FOUND = 1642
ERROR_PATH_BUSY = 148
ERROR_PATH_NOT_FOUND = 3
ERROR_PER_USER_TRUST_QUOTA_EXCEEDED = 1932
ERROR_PIPE_BUSY = 231
ERROR_PIPE_CONNECTED = 535
ERROR_PIPE_LISTENING = 536
ERROR_PIPE_LOCAL = 229
ERROR_PIPE_NOT_CONNECTED = 233
ERROR_PLUGPLAY_QUERY_VETOED = 683
ERROR_PNP_BAD_MPS_TABLE = 671
ERROR_PNP_INVALID_ID = 674
ERROR_PNP_IRQ_TRANSLATION_FAILED = 673
ERROR_PNP_REBOOT_REQUIRED = 638
ERROR_PNP_RESTART_ENUMERATION = 636
ERROR_PNP_TRANSLATION_FAILED = 672
ERROR_POINT_NOT_FOUND = 1171
ERROR_POLICY_OBJECT_NOT_FOUND = 8219
ERROR_POLICY_ONLY_IN_DS = 8220
ERROR_POPUP_ALREADY_ACTIVE = 1446
ERROR_PORT_MESSAGE_TOO_LONG = 546
ERROR_PORT_NOT_SET = 642
ERROR_PORT_UNREACHABLE = 1234
ERROR_POSSIBLE_DEADLOCK = 1131
ERROR_PREDEFINED_HANDLE = 714
ERROR_PRIMARY_TRANSPORT_CONNECT_FAILED = 746
ERROR_PRINTER_ALREADY_EXISTS = 1802
ERROR_PRINTER_DELETED = 1905
ERROR_PRINTER_DRIVER_ALREADY_INSTALLED = 1795
ERROR_PRINTER_DRIVER_BLOCKED = 3014
ERROR_PRINTER_DRIVER_DOWNLOAD_NEEDED = 3019
ERROR_PRINTER_DRIVER_IN_USE = 3001
ERROR_PRINTER_DRIVER_PACKAGE_IN_USE = 3015
ERROR_PRINTER_DRIVER_WARNED = 3013
ERROR_PRINTER_HAS_JOBS_QUEUED = 3009
```

```
ERROR_PRINTER_NOT_FOUND = 3012
ERROR_PRINTQ_FULL = 61
ERROR_PRINT_CANCELLED = 63
ERROR_PRINT_JOB_RESTART_REQUIRED = 3020
ERROR_PRINT_MONITOR_ALREADY_INSTALLED = 3006
ERROR_PRINT_MONITOR_IN_USE = 3008
ERROR_PRINT_PROCESSOR_ALREADY_INSTALLED = 3005
ERROR_PRIVATE_DIALOG_INDEX = 1415
ERROR_PRIVILEGE_NOT_HELD = 1314
ERROR_PROCESS_ABORTED = 1067
ERROR_PROCESS_IN_JOB = 760
ERROR_PROCESS_MODE_ALREADY_BACKGROUND = 402
ERROR_PROCESS_MODE_NOT_BACKGROUND = 403
ERROR_PROCESS_NOT_IN_JOB = 759
ERROR_PROC_NOT_FOUND = 127
ERROR_PRODUCT_UNINSTALLED = 1614
ERROR_PRODUCT_VERSION = 1638
ERROR_PROFILE_DOES_NOT_MATCH_DEVICE = 2023
ERROR_PROFILE_NOT_ASSOCIATED_WITH_DEVICE = 2305
ERROR_PROFILE_NOT_FOUND = 2306
ERROR_PROFILING_AT_LIMIT = 553
ERROR_PROFILING_NOT_STARTED = 550
ERROR_PROFILING_NOT_STOPPED = 551
ERROR_PROMOTION_ACTIVE = 8221
ERROR_PROTOCOL_UNREACHABLE = 1233
ERROR_PWD_HISTORY_CONFLICT = 617
ERROR_PWD_TOO_RECENT = 616
ERROR_PWD_TOO_SHORT = 615
ERROR_QUORUMLOG_OPEN_FAILED = 5028
ERROR_QUORUM_DISK_NOT_FOUND = 5086
ERROR_QUORUM_NOT_ALLOWED_IN_THIS_GROUP = 5928
ERROR_QUORUM_OWNER_ALIVE = 5034
ERROR_QUORUM_RESOURCE = 5020
ERROR_QUORUM_RESOURCE_ONLINE_FAILED = 5027
ERROR_QUOTA_LIST_INCONSISTENT = 621
ERROR_RANGE_LIST_CONFLICT = 627
```

```
ERROR_RANGE_NOT_FOUND = 644
ERROR_RDP_PROTOCOL_ERROR = 7065
ERROR_READ_FAULT = 30
ERROR_RECEIVE_EXPEDITED = 708
ERROR_RECEIVE_PARTIAL = 707
ERROR_RECEIVE_PARTIAL_EXPEDITED = 709
ERROR_RECOVERY_NOT_NEEDED = 6821
ERROR_REC_NON_EXISTENT = 4005
ERROR_REDIRECTOR_HAS_OPEN_HANDLES = 1794
ERROR_REDIR_PAUSED = 72
ERROR_REGISTRY_CORRUPT = 1015
ERROR_REGISTRY_HIVE_RECOVERED = 685
ERROR_REGISTRY_IO_FAILED = 1016
ERROR_REGISTRY_QUOTA_LIMIT = 613
ERROR_REGISTRY_RECOVERED = 1014
ERROR_RELOC_CHAIN_XEEDS_SEGLIM = 201
ERROR_REMOTE_FILE_VERSION_MISMATCH = 6814
ERROR_REMOTE_PRINT_CONNECTIONS_BLOCKED = 1936
ERROR_REMOTE_SESSION_LIMIT_EXCEEDED = 1220
ERROR_REMOTE_STORAGE_MEDIA_ERROR = 4352
ERROR_REMOTE_STORAGE_NOT_ACTIVE = 4351
ERROR_REM_NOT_LIST = 51
ERROR_REPARSE = 741
ERROR_REPARSE_ATTRIBUTE_CONFLICT = 4391
ERROR_REPARSE_OBJECT = 755
ERROR_REPARSE_TAG_INVALID = 4393
ERROR_REPARSE_TAG_MISMATCH = 4394
ERROR_REPLY_MESSAGE_MISMATCH = 595
ERROR_REQUEST_ABORTED = 1235
ERROR_REQUEST_OUT_OF_SEQUENCE = 776
ERROR_REQUEST_REFUSED = 4320
ERROR_REQUIRES_INTERACTIVE_WINDOWSTATION = 1459
ERROR_REQ_NOT_ACCEP = 71
ERROR_RESMON_CREATE_FAILED = 5017
ERROR_RESMON_INVALID_STATE = 5084
ERROR_RESMON_ONLINE_FAILED = 5018
```

```
ERROR_RESOURCEMANAGER_NOT_FOUND = 6716
ERROR_RESOURCEMANAGER_READ_ONLY = 6707
ERROR_RESOURCE_CALL_TIMED_OUT = 5910
ERROR_RESOURCE_DATA_NOT_FOUND = 1812
ERROR_RESOURCE_DISABLED = 4309
ERROR_RESOURCE_FAILED = 5038
ERROR_RESOURCE_LANG_NOT_FOUND = 1815
ERROR_RESOURCE_NAME_NOT_FOUND = 1814
ERROR_RESOURCE_NOT_AVAILABLE = 5006
ERROR_RESOURCE_NOT_FOUND = 5007
ERROR_RESOURCE_NOT_ONLINE = 5004
ERROR_RESOURCE_NOT_PRESENT = 4316
ERROR_RESOURCE_ONLINE = 5019
ERROR_RESOURCE_PROPERTIES_STORED = 5024
ERROR_RESOURCE_PROPERTY_UNCHANGEABLE = 5089
ERROR_RESOURCE_REQUIREMENTS_CHANGED = 756
ERROR_RESOURCE_TYPE_NOT_FOUND = 1813
ERROR_RESTART_APPLICATION = 1467
ERROR_RESUME_HIBERNATION = 727
ERROR_RETRY = 1237
ERROR_REVISION_MISMATCH = 1306
ERROR_RING2SEG_MUST_BE_MOVABLE = 200
ERROR_RING2_STACK_IN_USE = 207
ERROR_RMODE_APP = 1153
ERROR_RM_ALREADY_STARTED = 6822
ERROR_RM_DISCONNECTED = 6819
ERROR_RM_METADATA_CORRUPT = 6802
ERROR_RM_NOT_ACTIVE = 6801
ERROR_ROLLBACK_TIMER_EXPIRED = 6829
ERROR_ROWSNOTRELEASED = 772
ERROR_RPL_NOT_ALLOWED = 4006
ERROR_RXACT_COMMITTED = 744
ERROR_RXACT_COMMIT_FAILURE = 1370
ERROR_RXACT_COMMIT_NECESSARY = 678
ERROR_RXACT_INVALID_STATE = 1369
ERROR_RXACT_STATE_CREATED = 701
```

```
ERROR_SAME_DRIVE = 143
ERROR_SAM_INIT_FAILURE = 8541
ERROR_SCOPE_NOT_FOUND = 318
ERROR_SCREEN_ALREADY_LOCKED = 1440
ERROR_SECRET_TOO_LONG = 1382
ERROR_SECTOR_NOT_FOUND = 27
ERROR_SEEK = 25
ERROR_SEEK_ON_DEVICE = 132
ERROR_SEGMENT_NOTIFICATION = 702
ERROR_SEM_IS_SET = 102
ERROR_SEM_NOT_FOUND = 187
ERROR_SEM_OWNER_DIED = 105
ERROR_SEM_TIMEOUT = 121
ERROR_SEM_USER_LIMIT = 106
ERROR_SERIAL_NO_DEVICE = 1118
ERROR_SERVER_DISABLED = 1341
ERROR_SERVER_HAS_OPEN_HANDLES = 1811
ERROR_SERVER_NOT_DISABLED = 1342
ERROR_SERVER_SID_MISMATCH = 628
ERROR_SERVICE_ALREADY_RUNNING = 1056
ERROR_SERVICE_CANNOT_ACCEPT_CTRL = 1061
ERROR_SERVICE_DATABASE_LOCKED = 1055
ERROR_SERVICE_DEPENDENCY_DELETED = 1075
ERROR_SERVICE_DEPENDENCY_FAIL = 1068
ERROR_SERVICE_DISABLED = 1058
ERROR_SERVICE_DOES_NOT_EXIST = 1060
ERROR_SERVICE_EXISTS = 1073
ERROR_SERVICE_LOGON_FAILED = 1069
ERROR_SERVICE_MARKED_FOR_DELETE = 1072
ERROR_SERVICE_NEVER_STARTED = 1077
ERROR_SERVICE_NOTIFICATION = 716
ERROR_SERVICE_NOT_ACTIVE = 1062
ERROR_SERVICE_NOT_FOUND = 1243
ERROR_SERVICE_NOT_IN_EXE = 1083
ERROR_SERVICE_NO_THREAD = 1054
ERROR_SERVICE_REQUEST_TIMEOUT = 1053
```

```
ERROR_SERVICE_SPECIFIC_ERROR = 1066
ERROR_SERVICE_START_HANG = 1070
ERROR_SESSION_CREDENTIAL_CONFLICT = 1219
ERROR_SETCOUNT_ON_BAD_LB = 1433
ERROR_SETMARK_DETECTED = 1103
ERROR_SET_NOT_FOUND = 1170
ERROR_SET_POWER_STATE_FAILED = 1141
ERROR_SET_POWER_STATE_VETOED = 1140
ERROR_SHARED_POLICY = 8218
ERROR_SHARING_BUFFER_EXCEEDED = 36
ERROR_SHARING_PAUSED = 70
ERROR_SHARING_VIOLATION = 32
ERROR_SHUTDOWN_CLUSTER = 5008
ERROR_SHUTDOWN_IN_PROGRESS = 1115
ERROR_SIGNAL_PENDING = 162
ERROR_SIGNAL_REFUSED = 156
ERROR_SINGLE_INSTANCE_APP = 1152
ERROR_SOME_NOT_MAPPED = 1301
ERROR_SOURCE_ELEMENT_EMPTY = 1160
ERROR_SPARSE_NOT_ALLOWED_IN_TRANSACTION = 6844
ERROR_SPECIAL_ACCOUNT = 1371
ERROR_SPECIAL_GROUP = 1372
ERROR_SPECIAL_USER = 1373
ERROR_SPL_NO_ADDJOB = 3004
ERROR_SPL_NO_STARTDOC = 3003
ERROR_SPOOL_FILE_NOT_FOUND = 3002
ERROR_STACK_OVERFLOW = 1001
ERROR_STACK_OVERFLOW_READ = 599
ERROR_STATIC_INIT = 4002
ERROR_STOPPED_ON_SYMLINK = 681
ERROR_STREAM_MINIVERSION_NOT_FOUND = 6808
ERROR_STREAM_MINIVERSION_NOT_VALID = 6809
ERROR_SUBST_TO_JOIN = 141
ERROR_SUBST_TO_SUBST = 139
ERROR_SUCCESS = 0
ERROR_SUCCESS_REBOOT_INITIATED = 1641
```

```
ERROR_SUCCESS_REBOOT_REQUIRED = 3010
ERROR_SUCCESS_RESTART_REQUIRED = 3011
ERROR_SWAPERROR = 999
ERROR_SYMLINK_CLASS_DISABLED = 1463
ERROR_SYMLINK_NOT_SUPPORTED = 1464
ERROR_SYNCHRONIZATION_REQUIRED = 569
ERROR_SYSTEM_HIVE_TOO_LARGE = 653
ERROR_SYSTEM_IMAGE_BAD_SIGNATURE = 637
ERROR_SYSTEM_POWERSTATE_COMPLEX_TRANSITION = 783
ERROR_SYSTEM_POWERSTATE_TRANSITION = 782
ERROR_SYSTEM_PROCESS_TERMINATED = 591
ERROR_SYSTEM_SHUTDOWN = 641
ERROR_SYSTEM_TRACE = 150
ERROR_TAG_NOT_FOUND = 2302
ERROR_TAG_NOT_PRESENT = 2303
ERROR_THREAD_1_INACTIVE = 210
ERROR_THREAD_MODE_ALREADY_BACKGROUND = 400
ERROR_THREAD_MODE_NOT_BACKGROUND = 401
ERROR_THREAD_NOT_IN_PROCESS = 566
ERROR_THREAD_WAS_SUSPENDED = 699
ERROR_TIMEOUT = 1460
ERROR_TIMER_NOT_CANCELED = 541
ERROR_TIMER_RESOLUTION_NOT_SET = 607
ERROR_TIMER_RESUME_IGNORED = 722
ERROR_TLW_WITH_WSCHILD = 1406
ERROR_TM_IDENTITY_MISMATCH = 6845
ERROR_TM_INITIALIZATION_FAILED = 6706
ERROR_TM_VOLATILE = 6828
ERROR_TOKEN_ALREADY_IN_USE = 1375
ERROR_TOO_MANY_CMDS = 56
ERROR_TOO_MANY_CONTEXT_IDS = 1384
ERROR_TOO_MANY_LINKS = 1142
ERROR_TOO_MANY_LUIDS_REQUESTED = 1333
ERROR_TOO_MANY_MODULES = 214
ERROR_TOO_MANY_MUXWAITERS = 152
ERROR_TOO_MANY_NAMES = 68
```

```
ERROR_TOO_MANY_OPEN_FILES = 4
ERROR_TOO_MANY_POSTS = 298
ERROR_TOO_MANY_SECRETS = 1381
ERROR_TOO_MANY_SEMAPHORES = 100
ERROR_TOO_MANY_SEM_REQUESTS = 103
ERROR_TOO_MANY_SESS = 69
ERROR_TOO_MANY_SIDS = 1389
ERROR_TOO_MANY_TCBS = 155
ERROR_TOO_MANY_THREADS = 565
ERROR_TRANSACTED_MAPPING_UNSUPPORTED_REMOTE = 6834
ERROR_TRANSACTIONAL_CONFLICT = 6800
ERROR_TRANSACTIONAL_OPEN_NOT_ALLOWED = 6832
ERROR_TRANSACTIONMANAGER_NOT_FOUND = 6718
ERROR_TRANSACTIONMANAGER_NOT_ONLINE = 6719
ERROR_TRANSACTIONMANAGER_RECOVERY_NAME_COLLISION = 6720
ERROR_TRANSACTIONS_NOT_FROZEN = 6839
ERROR_TRANSACTIONS_UNSUPPORTED_REMOTE = 6805
ERROR_TRANSACTION_ALREADY_ABORTED = 6704
ERROR_TRANSACTION_ALREADY_COMMITTED = 6705
ERROR_TRANSACTION_FREEZE_IN_PROGRESS = 6840
ERROR_TRANSACTION_INTEGRITY_VIOLATED = 6726
ERROR_TRANSACTION_INVALID_MARSHALL_BUFFER = 6713
ERROR_TRANSACTION_NOT_ACTIVE = 6701
ERROR_TRANSACTION_NOT_FOUND = 6715
ERROR_TRANSACTION_NOT_JOINED = 6708
ERROR_TRANSACTION_NOT_REQUESTED = 6703
ERROR_TRANSACTION_NOT_ROOT = 6721
ERROR_TRANSACTION_OBJECT_EXPIRED = 6722
ERROR_TRANSACTION_PROPAGATION_FAILED = 6711
ERROR_TRANSACTION_RECORD_TOO_LONG = 6724
ERROR_TRANSACTION_REQUEST_NOT_VALID = 6702
ERROR_TRANSACTION_REQUIRED_PROMOTION = 6837
ERROR_TRANSACTION_RESPONSE_NOT_ENLISTED = 6723
ERROR_TRANSACTION_SCOPE_CALLBACKS_NOT_SET = 6836
ERROR_TRANSACTION_SUPERIOR_EXISTS = 6709
ERROR_TRANSFORM_NOT_SUPPORTED = 2004
```

```
ERROR_TRANSLATION_COMPLETE = 757
ERROR_TRANSPORT_FULL = 4328
ERROR_TRUSTED_DOMAIN_FAILURE = 1788
ERROR_TRUSTED_RELATIONSHIP_FAILURE = 1789
ERROR_TRUST_FAILURE = 1790
ERROR_TS_INCOMPATIBLE_SESSIONS = 7069
ERROR_TXF_ATTRIBUTE_CORRUPT = 6830
ERROR_TXF_DIR_NOT_EMPTY = 6826
ERROR_TXF_METADATA_ALREADY_PRESENT = 6835
ERROR_UNABLE_TO_CLEAN = 4311
ERROR_UNABLE_TO_EJECT_MOUNTED_MEDIA = 4330
ERROR_UNABLE_TO_INVENTORY_DRIVE = 4325
ERROR_UNABLE_TO_INVENTORY_SLOT = 4326
ERROR_UNABLE_TO_INVENTORY_TRANSPORT = 4327
ERROR_UNABLE_TO_LOAD_MEDIUM = 4324
ERROR_UNABLE_TO_LOCK_MEDIA = 1108
ERROR_UNABLE_TO_UNLOAD_MEDIA = 1109
ERROR_UNDEFINED_CHARACTER = 583
ERROR_UNEXPECTED_MM_CREATE_ERR = 556
ERROR_UNEXPECTED_MM_EXTEND_ERR = 558
ERROR_UNEXPECTED_MM_MAP_ERROR = 557
ERROR_UNEXPECTED_OMID = 4334
ERROR_UNEXP_NET_ERR = 59
ERROR_UNHANDLED_EXCEPTION = 574
ERROR_UNKNOWN_COMPONENT = 1607
ERROR_UNKNOWN_FEATURE = 1606
ERROR_UNKNOWN_PATCH = 1647
ERROR_UNKNOWN_PORT = 1796
ERROR_UNKNOWN_PRINTER_DRIVER = 1797
ERROR_UNKNOWN_PRINTPROCESSOR = 1798
ERROR_UNKNOWN_PRINT_MONITOR = 3000
ERROR_UNKNOWN_PRODUCT = 1605
ERROR_UNKNOWN_PROPERTY = 1608
ERROR_UNKNOWN_REVISION = 1305
ERROR_UNRECOGNIZED_MEDIA = 1785
ERROR_UNRECOGNIZED_VOLUME = 1005
```

```
ERROR_UNSUPPORTED_COMPRESSION = 618
ERROR_UNSUPPORTED_TYPE = 1630
ERROR_UNWIND = 542
ERROR_UNWIND_CONSOLIDATE = 684
ERROR_USER_APC = 737
ERROR_USER_DELETE_TRUST_QUOTA_EXCEEDED = 1934
ERROR_USER_EXISTS = 1316
ERROR_USER_MAPPED_FILE = 1224
ERROR_USER_PROFILE_LOAD = 500
ERROR_VALIDATE_CONTINUE = 625
ERROR_VC_DISCONNECTED = 240
ERROR_VDM_HARD_ERROR = 593
ERROR_VERIFIER_STOP = 537
ERROR_VERSION_PARSE_ERROR = 777
ERROR_VIRUS_DELETED = 226
ERROR_VIRUS_INFECTED = 225
ERROR_VOLSNAP_HIBERNATE_READY = 761
ERROR_VOLSNAP_PREPARE_HIBERNATE = 655
ERROR_VOLUME_CONTAINS_SYS_FILES = 4337
ERROR_VOLUME_DIRTY = 6851
ERROR_VOLUME_MOUNTED = 743
ERROR_VOLUME_NOT_SIS_ENABLED = 4500
ERROR_VOLUME_NOT_SUPPORT_EFS = 6014
ERROR_WAIT_1 = 731
ERROR_WAIT_2 = 732
ERROR_WAIT_3 = 733
ERROR_WAIT_63 = 734
ERROR_WAIT_FOR_OPLOCK = 765
ERROR_WAIT_NO_CHILDREN = 128
ERROR_WAKE_SYSTEM = 730
ERROR_WAKE_SYSTEM_DEBUGGER = 675
ERROR_WAS_LOCKED = 717
ERROR_WAS_UNLOCKED = 715
ERROR_WINDOW_NOT_COMBOBOX = 1423
ERROR_WINDOW_NOT_DIALOG = 1420
ERROR_WINDOW_OF_OTHER_THREAD = 1408
```

```
ERROR_WINS_INTERNAL = 4000
ERROR_WMI_ALREADY_DISABLED = 4212
ERROR_WMI_ALREADY_ENABLED = 4206
ERROR_WMI_DP_FAILED = 4209
ERROR_WMI_DP_NOT_FOUND = 4204
ERROR_WMI_GUID_DISCONNECTED = 4207
ERROR_WMI_GUID_NOT_FOUND = 4200
ERROR_WMI_INSTANCE_NOT_FOUND = 4201
ERROR_WMI_INVALID_MOF = 4210
ERROR_WMI_INVALID_REGINFO = 4211
ERROR_WMI_ITEMID_NOT_FOUND = 4202
ERROR_WMI_READ_ONLY = 4213
ERROR_WMI_SERVER_UNAVAILABLE = 4208
ERROR_WMI_SET_FAILURE = 4214
ERROR_WMI_TRY_AGAIN = 4203
ERROR_WMI_UNRESOLVED_INSTANCE_REF = 4205
ERROR_WORKING_SET_QUOTA = 1453
ERROR_WOW_ASSERTION = 670
ERROR_WRITE_FAULT = 29
ERROR_WRITE_PROTECT = 19
ERROR_WRONG_COMPARTMENT = 1468
ERROR_WRONG_DISK = 34
ERROR_WRONG_EFS = 6005
ERROR_WRONG_PASSWORD = 1323
ERROR_WX86_ERROR = 540
ERROR_WX86_WARNING = 539
ERROR_XMLDSIG_ERROR = 1466
ERROR_XML_PARSE_ERROR = 1465
FRS_ERR_AUTHENTICATION = 8008
FRS_ERR_CHILD_TO_PARENT_COMM = 8011
FRS_ERR_INSUFFICIENT_PRIV = 8007
FRS_ERR_INTERNAL = 8005
FRS_ERR_INTERNAL_API = 8004
FRS_ERR_INVALID_API_SEQUENCE = 8001
FRS_ERR_INVALID_SERVICE_PARAMETER = 8017
FRS_ERR_PARENT_AUTHENTICATION = 8010
```

```
FRS_ERR_PARENT_INSUFFICIENT_PRIV = 8009
FRS_ERR_PARENT_TO_CHILD_COMM = 8012
FRS_ERR_SERVICE_COMM = 8006
FRS_ERR_STARTING_SERVICE = 8002
FRS_ERR_STOPPING_SERVICE = 8003
FRS_ERR_SYSVOL_DEMOTE = 8016
FRS_ERR_SYSVOL_IS_BUSY = 8015
FRS_ERR_SYSVOL_POPULATE = 8013
FRS_ERR_SYSVOL_POPULATE_TIMEOUT = 8014
OR_INVALID_OID = 1911
OR_INVALID_OXID = 1910
OR_INVALID_SET = 1912
RPC_S_ADDRESS_ERROR = 1768
RPC_S_ALREADY_LISTENING = 1713
RPC_S_ALREADY_REGISTERED = 1711
RPC_S_BINDING_HAS_NO_AUTH = 1746
RPC_S_BINDING_INCOMPLETE = 1819
RPC_S_CALL_CANCELLED = 1818
RPC_S_CALL_FAILED = 1726
RPC_S_CALL_FAILED_DNE = 1727
RPC_S_CALL_IN_PROGRESS = 1791
RPC_S_CANNOT_SUPPORT = 1764
RPC_S_CANT_CREATE_ENDPOINT = 1720
RPC_S_COMM_FAILURE = 1820
RPC_S_DUPLICATE_ENDPOINT = 1740
RPC_S_ENTRY_ALREADY_EXISTS = 1760
RPC_S_ENTRY_NOT_FOUND = 1761
RPC_S_ENTRY_TYPE_MISMATCH = 1922
RPC_S_FP_DIV_ZERO = 1769
RPC_S_FP_OVERFLOW = 1771
RPC_S_FP_UNDERFLOW = 1770
RPC_S_GROUP_MEMBER_NOT_FOUND = 1898
RPC_S_GRP_ELT_NOT_ADDED = 1928
RPC_S_GRP_ELT_NOT_REMOVED = 1929
RPC_S_INCOMPLETE_NAME = 1755
RPC_S_INTERFACE_NOT_EXPORTED = 1924
```

```
RPC_S_INTERFACE_NOT_FOUND = 1759
RPC_S_INTERNAL_ERROR = 1766
RPC_S_INVALID_ASYNC_CALL = 1915
RPC_S_INVALID_ASYNC_HANDLE = 1914
RPC_S_INVALID_AUTH_IDENTITY = 1749
RPC_S_INVALID_BINDING = 1702
RPC_S_INVALID_BOUND = 1734
RPC_S_INVALID_ENDPOINT_FORMAT = 1706
RPC_S_INVALID_NAF_ID = 1763
RPC_S_INVALID_NAME_SYNTAX = 1736
RPC_S_INVALID_NETWORK_OPTIONS = 1724
RPC_S_INVALID_NET_ADDR = 1707
RPC_S_INVALID_OBJECT = 1900
RPC_S_INVALID_RPC_PROTSEQ = 1704
RPC_S_INVALID_STRING_BINDING = 1700
RPC_S_INVALID_STRING_UUID = 1705
RPC_S_INVALID_TAG = 1733
RPC_S_INVALID_TIMEOUT = 1709
RPC_S_INVALID_VERS_OPTION = 1756
RPC_S_MAX_CALLS_TOO_SMALL = 1742
RPC_S_NAME_SERVICE_UNAVAILABLE = 1762
RPC_S_NOTHING_TO_EXPORT = 1754
RPC_S_NOT_ALL_OBJS_EXPORTED = 1923
RPC_S_NOT_ALL_OBJS_UNEXPORTED = 1758
RPC_S_NOT_CANCELLED = 1826
RPC_S_NOT_LISTENING = 1715
RPC_S_NOT_RPC_ERROR = 1823
RPC_S_NO_BINDINGS = 1718
RPC_S_NO_CALL_ACTIVE = 1725
RPC_S_NO_CONTEXT_AVAILABLE = 1765
RPC_S_NO_ENDPOINT_FOUND = 1708
RPC_S_NO_ENTRY_NAME = 1735
RPC_S_NO_INTERFACES = 1817
RPC_S_NO_MORE_BINDINGS = 1806
RPC_S_NO_MORE_MEMBERS = 1757
RPC_S_NO_PRINC_NAME = 1822
```

```
RPC_S_NO_PROTSEQS = 1719
RPC_S_NO_PROTSEQS_REGISTERED = 1714
RPC_S_OBJECT_NOT_FOUND = 1710
RPC_S_OUT_OF_RESOURCES = 1721
RPC_S_PRF_ELT_NOT_ADDED = 1926
RPC_S_PRF_ELT_NOT_REMOVED = 1927
RPC_S_PROCNUM_OUT_OF_RANGE = 1745
RPC_S_PROFILE_NOT_ADDED = 1925
RPC_S_PROTOCOL_ERROR = 1728
RPC_S_PROTSEQ_NOT_FOUND = 1744
RPC_S_PROTSEQ_NOT_SUPPORTED = 1703
RPC_S_PROXY_ACCESS_DENIED = 1729
RPC_S_SEC_PKG_ERROR = 1825
RPC_S_SEND_INCOMPLETE = 1913
RPC_S_SERVER_TOO_BUSY = 1723
RPC_S_SERVER_UNAVAILABLE = 1722
RPC_S_STRING_TOO_LONG = 1743
RPC_S_TYPE_ALREADY_REGISTERED = 1712
RPC_S_UNKNOWN_AUTHN_LEVEL = 1748
RPC_S_UNKNOWN_AUTHN_SERVICE = 1747
RPC_S_UNKNOWN_AUTHN_TYPE = 1741
RPC_S_UNKNOWN_AUTHZ_SERVICE = 1750
RPC_S_UNKNOWN_IF = 1717
RPC_S_UNKNOWN_MGR_TYPE = 1716
RPC_S_UNSUPPORTED_AUTHN_LEVEL = 1821
RPC_S_UNSUPPORTED_NAME_SYNTAX = 1737
RPC_S_UNSUPPORTED_TRANS_SYN = 1730
RPC_S_UNSUPPORTED_TYPE = 1732
RPC_S_UUID_LOCAL_ONLY = 1824
RPC_S_UUID_NO_ADDRESS = 1739
RPC_S_WRONG_KIND_OF_BINDING = 1701
RPC_S_ZERO_DIVIDE = 1767
RPC_X_BAD_STUB_DATA = 1783
RPC_X_BYTE_COUNT_TOO_SMALL = 1782
RPC_X_ENUM_VALUE_OUT_OF_RANGE = 1781
RPC_X_INVALID_ES_ACTION = 1827
```

RPC_X_INVALID_PIPE_OBJECT = 1830

RPC_X_NO_MORE_ENTRIES = 1772

RPC_X_NULL_REF_POINTER = 1780

RPC_X_PIPE_CLOSED = 1916

RPC_X_PIPE_DISCIPLINE_ERROR = 1917

RPC_X_PIPE_EMPTY = 1918

RPC_X_SS_CANNOT_GET_CALL_HANDLE = 1779

RPC_X_SS_CHAR_TRANS_OPEN_FAIL = 1773

RPC_X_SS_CHAR_TRANS_SHORT_FILE = 1774

RPC_X_SS_CONTEXT_DAMAGED = 1777

RPC_X_SS_HANDLES_MISMATCH = 1778

RPC_X_SS_IN_NULL_CONTEXT = 1775

RPC_X_WRONG_ES_VERSION = 1828

RPC_X_WRONG_PIPE_ORDER = 1831

RPC_X_WRONG_PIPE_VERSION = 1832

RPC_X_WRONG_STUB_VERSION = 1829

WAIT_TIMEOUT = 258

decode_hresult(*hresult*)
Look up a Win32 error code based on the error code in a HRESULT.

4.8.12 Module contents

4.9 Exceptions

If an error occurs, the API attempts to roll the error into an appropriate Exception class.

4.9.1 Exception Classes

exception ApiError(*message=None*, *original_exception=None*)
Base class for all CBC SDK errors; also raised for generic internal errors.

Initialize the ApiError.

Parameters

- **message** (*str*) – The actual error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception CredentialError(*message=None*, *original_exception=None*)
The credentials had an unspecified error.

Initialize the ApiError.

Parameters

- **message** (*str*) – The actual error message.

- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception ServerError(*error_code*, *message*, *result=None*, *original_exception=None*)
A ServerError is raised when an HTTP 5xx error code is returned from the Carbon Black server.

Initialize the ServerError.

Parameters

- **error_code** (*int*) – The error code that was received from the server.
- **message** (*str*) – The actual error message.
- **result** (*object*) – The result of the operation from the server.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception ObjectNotFoundError(*uri*, *message=None*, *original_exception=None*)
The requested object could not be found in the Carbon Black datastore.

Initialize the ObjectNotFoundError.

Parameters

- **uri** (*str*) – The URI of the action that failed.
- **message** (*str*) – The error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception MoreThanOneResultError(*message=None*, *original_exception=None*, *results=None*)
Only one object was requested, but multiple matches were found in the Carbon Black datastore.

Initialize the MoreThanOneResultError.

Parameters

- **message** (*str*) – The actual error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.
- **results** (*list*) – List of results returned

exception InvalidObjectError(*message=None*, *original_exception=None*)
An invalid object was received by the server.

Initialize the ApiError.

Parameters

- **message** (*str*) – The actual error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

exception TimeoutError(*uri=None*, *error_code=None*, *message=None*, *original_exception=None*)
A requested operation timed out.

Initialize the TimeoutError.

Parameters

- **uri** (*str*) – The URI of the action that timed out.
- **error_code** (*int*) – The error code that was received from the server.
- **message** (*str*) – The error message.
- **original_exception** (*Exception*) – The exception that caused this one to be raised.

CHAPTER 5

Indices and tables

- genindex
- modindex
- search

Python Module Index

C

Index

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W