
kloudless Documentation

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README

1	Python library for the Kloudless API	1
1.1	Table of Contents	1
1.2	Requirements	1
1.3	Installation	1
1.4	Getting Started	2
1.5	Full Documentation	2
1.6	Making API Requests	2
1.7	Integrating OAuth Flow	3
2	Core Concepts	5
3	Logging Request Urls during Development	7
4	Verifying the Bearer token	9
5	Modifying Global Config	11
6	Modifying API Version for One Request	13
7	Getting Upstream Raw Object	15
8	Setting Default Headers for All Requests	17
9	Retrieving Events	19
10	Calling Upstream Service APIs	21
11	Making Application Level Requests	23
12	<code>kloudless.application</code> - OAuth methods	25
13	<code>kloudless.client</code> - Client	27
14	<code>kloudless.account</code> - Account	31
15	<code>kloudless.resources.base</code> - Resource	33
16	<code>kloudless.exceptions</code> - Exceptions	37

Python Module Index	39
Index	41

Python library for the Kloudless API

Python library for the [Kloudless API](#).

You need to sign up and create an application first before using this SDK.

1.1 Table of Contents

- *Requirements*
- *Installation*
- *Getting Started*
- *Full Documentation*
- *Making API Requests*
- *Integrating OAuth Flow*

1.2 Requirements

Python 2.7 or Python 3.5+

1.3 Installation

Install via pip:

```
pip install kloudless
```

Install from source:

```
git clone git://github.com/kloudless/kloudless-python
cd kloudless-python
python setup.py install
```

1.4 Getting Started

Most Kloudless API endpoints require connecting to an upstream service account first. Start by [navigating to API Explorer](#) and **connecting an account**.

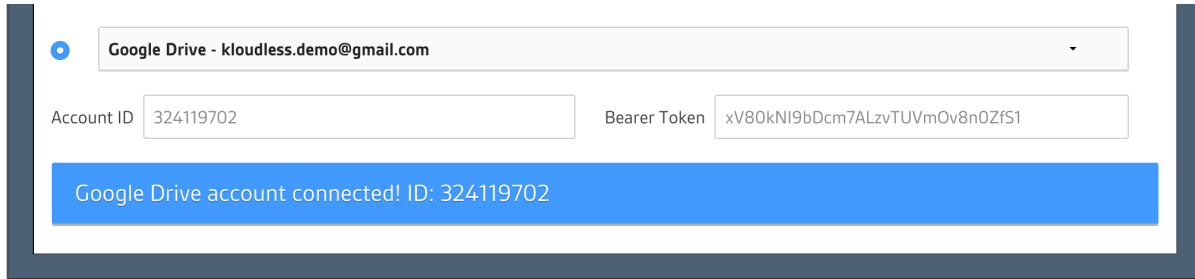


Fig. 1: Get the Bearer Token

After the account has been connected, copy the Bearer Token from the text box and use it to initialize an Account object:

```
from kloudless import Account
account = Account(token="YOUR_BEARER_TOKEN")
```

1.5 Full Documentation

Full documentation is hosted at [Read the docs](#). A quick-start is included below.

1.6 Making API Requests

You can now make an API request with the account instance you've created.

1.6.1 If Connecting to a Storage Service

```
# retrieve folder contents
root_folder_contents = account.get('storage/folders/root/contents')
for resource in root_folder_contents.get_paging_iterator():
    print(resource.data)

# download the first file in root_folder
for resource in root_folder_contents:
    if resource.data['type'] == 'file':
        filename = resource.data['name']
        response = resource.get('contents')
```

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```

        with open(filename, 'wb') as f:
            f.write(response.content)
        break

# upload a file to root_folder
file_name = 'FILE_NAME_TO_UPLOAD'
headers = {
    'X-Kloudless-Metadata': json.dumps(
        {'parent_id': 'root', 'name': file_name}
    )
}
with open(file_name, 'rb') as f:
    file_resource = account.post('storage/files', data=f, headers=headers)

```

1.6.2 If Connecting to a Calendar Service

```

# retrieve primary calendar
calendar = account.get('cal/calendars/primary')
print('Primary Calendar: {}'.format(calendar.data['name']))

# iterate through events in first page with page_size equals 5
events = calendar.get('events?page_size=5')
for e in events:
    data = e.data
    print('{}: {}~{}'.format(data['name'], data['start'], data['end']))

# iterate thorough events in second page
next_page_events = events.get_next_page()
for e in next_page_events:
    data = e.data
    print('{}: {}~{}'.format(data['name'], data['start'], data['end']))

# create a new event on primary calendar
event = events.post(json={
    'start': '2019-01-01T12:30:00Z',
    'end': '2019-01-01T13:30:00Z',
    'name': 'Event test'
})

```

1.7 Integrating OAuth Flow

You can use the [Authenticator JS](#) library to authenticate end-users via a pop-up and store the token server-side. Be sure to verify the token once it is transferred to your server. See `kloudless.application.verify_token`.

An alternate approach is to use the OAuth Authorization Code grant flow to redirect the end-user to Kloudless to connect their account to your app.

1.7.1 OAuth Integration Demo server

`examples/demo_server.py` provides the server-side logic of the 3-legged OAuth flow using helper methods from the Kloudless Python SDK. See `examples/README.md` for instructions on running the demo server.

1.7.2 Python Django Sample code

Insert the following code into Django views under `views/` directory and calling it via `urls.py`.

```
from django.http import HttpResponseRedirect, HttpResponse
from django.conf import settings

from kloudless import get_authorization_url, get_token_from_code


def start_authorization_flow(request):
    """
    Redirect the user to start authorization flow.
    """
    url, state = get_authorization_url(app_id=settings.KLOUDLESS_APP_ID,
                                       redirect_uri=settings.KLOUDLESS_REDIRECT_URL,
                                       scope='storage')

    request.session['authorization_state'] = state
    return HttpResponseRedirect(url)


def callback(request):
    """
    The endpoint for settings.KLOUDLESS_REDIRECT_URL.
    """
    params = request.GET.dict()
    token = get_token_from_code(app_id=settings.KLOUDLESS_APP_ID,
                               api_key=settings.KLOUDLESS_API_KEY,
                               orig_state=request.session['authorization_state'],
                               orig_redirect_uri=settings.KLOUDLESS_REDIRECT_URL,
                               **params)

    # store the token
    request.user.kloudless_token = token
    request.user.save()
    return HttpResponse('Account connects successfully.')
```


CHAPTER 2

Core Concepts

- You can make http requests with most classes in this library, like *Client*, *Account*, *Resource*, *ResourceList*, etc.
- Response data will be wrapped into the *kloudless.resources.base.Response* and its subclass like *kloudless.resources.base.ResponseJson*, *Resource* and *ResourceList*.

Logging Request Urls during Development

You may find it useful to enable logging for every http request by setting the log level to `DEBUG`. It will print the exact http url being requested.

```
from kloudless.util import logger  
  
logger.setLevel('DEBUG')
```

Verifying the Bearer token

If the bearer token was transferred to the server from [Authenticator JS library](#) or the client-side implicit grant flow, it's highly recommended that you verify the token.

```
from kloudless import verify_token
from kloudless import exceptions

app_id = "YOUR_APP_ID"
token = "BEARER_TOKEN_TO_VERIFY"
try:
    token_info = verify_token(app_id, token)
except exceptions.TokenVerificationFailed:
    print("Token:{} does not belong to App:{}".format(token, app_id))
except exceptions.APIException as e:
    # if other API request errors happened
    print(e.message)
else:
    print(token_info)
```

Modifying Global Config

- *base_url*: default to *https://api.kloudless.com*
- *api_version*: default to *1*

```
from kloudless import configuration
from kloudless import Account

account = Account(token="YOUR_BEARER_TOKEN")
print(account.url) # 'https://api.kloudless.com/v1/accounts/me'

# Configuration changes would affect the Account and Client create afterward
configuration['base_url'] = 'http://localhost:8002'
configuration['api_version'] = '2'

account = Account(token="YOUR_BEARER_TOKEN")
print(account.url) # 'http://localhost:8002/v2/accounts/me'
```

Modifying API Version for One Request

You don't have to modify the global config if you only want to change the api version for particular endpoints. The `api_version` parameter is available for all http methods.

For more options available for http methods, see `kloudless.client.Session.request()`.

```
from kloudless import Account

account = Account(token="YOUR_BEARER_TOKEN")

# Request to 'https://api.kloudless.com/v1/accounts/me'
response = account.get()

# Request to 'https://api.kloudless.com/v2/accounts/me'
response = account.get(api_version=2)
```

Getting Upstream Raw Object

If you want to access the `raw` object from the upstream service, please set the `get_raw_data` parameter to `True`. This is available for all http methods.

For more options available for http methods, see `kloudless.client.Session.request()`.

```
from kloudless import Account

account = Account(token="BEARER_TOKEN_FOR_CALENDAR_SERVICE")

calendar = account.get('cal/calendars/primary', get_raw_data=True)
print(calendar.data['raw'])
```

Setting Default Headers for All Requests

Setting default headers for all requests is useful whenever you want to always include raw data or make use of [user-impersonation](#).

```
from kloudless import Account

account = Account(token='BEARER_TOKEN_FOR_CALENDAR_SERVICE')
account.headers['X-Kloudless-Raw-Data'] = 'true'

# the request afterward would include raw data by default
calendars = account.get('cal/calendars')
```


CHAPTER 9

Retrieving Events

Once you enable [activity monitoring](#) for your application, you'll be able to query for activity using our Events API. See [Events Documentation](#) for more information.

```
from kloudless import Account

account = Account(token="YOUR_BEARER_TOKEN")

# You can skip this step by using the cursor you stored.
cursor = account.get('events/latest').data['cursor']

# Iterating all events through pages with page_size equals 50
events = account.get('events', params={'cursor': cursor, 'page_size': 50})
for event in events.get_paging_iterator():
    print(event.data)

# You can store the latest cursor for next time usage
latest_cursor = events.latest_cursor
```


CHAPTER 10

Calling Upstream Service APIs

You can make requests to the upstream service API (a.k.a. pass-through requests) by using *kloudless.account.Account.raw()*.

```
from kloudless import Account

account = Account(token="'BEARER_TOKEN_FOR_GDRIVE_SERVICE'")

# Using raw method to forward request to Google Drive API
response = account.raw('GET', '/drive/v2/about')
```

Making Application Level Requests

In rare cases, you may want to make requests in the application level. You can make use of *kloudless.client.Client* for requests.

```
from kloudless import Client

# See https://developers.kloudless.com/docs/latest/meta#introduction-to-the-meta-api
# Use meta bearer token to initialize Client
meta_client = Client(token='YOUR_META_BEARER_TOKEN')

# Get info of your applications
applications = meta_client.get('meta/applications')
print(applications.data)

# Use API key to initialize Client
client = Client(api_key='YOUR_API_KEY')

# Get all accounts connect to your application
accounts = client.get('accounts')
print(accounts.data)
```

kloudless.application - OAuth methods

`kloudless.application.verify_token(app_id, token)`

Verify whether the token belongs to Application with `app_id`.

Refer to [Verify the token](#) for more information.

Parameters

- **app_id** (*str*) – Application ID
- **token** (*str*) – Account's Bearer token

Returns (dict) Token information

Raise `kloudless.exceptions.TokenVerificationFailed`

`kloudless.application.get_authorization_url(app_id, redirect_uri, scope='all', state="", extra_data="", **params)`

Get the url to start the first leg of OAuth flow.

Refer to [Authentication Docs](#) for more information.

Parameters

- **app_id** (*str*) – Application ID
- **redirect_uri** (*str*) – Redirect URI to your application server
- **scope** (*str*) – A space-delimited string of scopes that indicate which services a user can connect, and which permissions to request
- **state** (*str*) – An arbitrary string which would be redirected back via `redirect_uri` as query parameter. Random url-safe Base64 string would be generated by default
- **extra_data** (*str*) – A URL-encoded JSON object containing data used to pre-fill default values for fields in the Kloudless authentication forms. For example, the domain of a WebDAV server
- **params** – Additional query parameters

Returns *tuple(url, state)*: Redirect the user to `url` to start authorization. Saved `state` in user's session for future validation

Return type *tuple(str, str)*

`kloudless.application.get_token_from_code`(*app_id, api_key, orig_state, orig_redirect_uri, **params*)

Retrieve bearer token from authorization code.

Parameters

- **app_id**(*str*) – Application ID
- **api_key**(*str*) – API Key
- **orig_state**(*str*) – `state` from `kloudless.application.get_authorization_url()` call
- **orig_redirect_uri**(*str*) – `redirect_uri` used while calling `kloudless.application.get_authorization_url()`
- **params** – The included query parameters while Kloudless redirects user to Redirect URI of your application server

Returns (*str*) Bearer token

Raise `kloudless.exceptions.OauthFlowFailed`

CHAPTER 13

kloudless.client - Client

class kloudless.client.Session

Bases: requests.sessions.Session

The Session class helps build Kloudless specific headers.

__init__()

Initialize self. See help(type(self)) for accurate signature.

request(method, url, api_version=None, get_raw_data=None, raw_headers=None, impersonate_user_id=None, **kwargs)

Override requests.Session.request() with additional parameters.

See [API-wide options](#) for more information about *get_raw_data*, *raw_headers* and *impersonate_user_id* parameters.

Parameters

- **method**(str) – Http method
- **url**(str) – Request url
- **api_version**(int) – API version
- **get_raw_data**(bool) – Set to True if the raw object from upstream service is present. This is equal to the X-Kloudless-Raw-Data request header.
- **raw_headers**(dict) – Headers forwarded to upstream service. This is equal to the X-Kloudless-Raw-Headers request header
- **impersonate_user_id**(str) – User id to access or modify data for individual user accounts. This is equal to the X-Kloudless-As-User request header.
- **kwargs** – kwargs passed to requests.Session.request()

Returns requests.Response

Raises [kloudless.exceptions.APIException](#) or its subclasses

class kloudless.client.Client (api_key=None, token=None)

Bases: [kloudless.client.Session](#)

Base Client class to send all http requests in this library.

Instance attributes

Variables `url` (*str*) – Base url that will be used as a prefix for all http method calls

`__init__` (*api_key=None, token=None*)

Either `api_key` or `token` is needed for instantiation.

Parameters

- **api_key** – API key
- **token** – Bearer token

request (*method, path="", get_raw_response=False, **kwargs*)

Override `kloudless.client.Session.request()`.

Note that the actual request url will have `self.url` as a prefix.

Parameters

- **method** (*str*) – Http method
- **path** (*str*) – Request path
- **get_raw_response** (*str*) – Set to True if the raw `requests.Response` instance is in the returned value
- **kwargs** – kwargs passed to `kloudless.client.Session.request()`

Returns

- `requests.Response` if `get_raw_response` is True
- `kloudless.resources.base.Response` or its subclass otherwise

get (*path="", **kwargs*)

Http GET request.

Note that the actual request url will have `self.url` as a prefix.

Parameters

- **path** (*str*) – Request path
- **kwargs** – See `kloudless.client.Client.request()` for more options.

Returns `kloudless.resources.base.Response` or its subclass

post (*path="", data=None, json=None, **kwargs*)

Http POST request.

Note that the actual request url will have `self.url` as a prefix.

Parameters

- **path** (*str*) – Request path
- **data** – passed to `request.Request.post()`
- **json** – passed to `request.Request.post()`

- **kwargs** – See `kloudless.client.Client.request()` for more options.

Returns `kloudless.resources.base.Response` or its subclass

put (*path*="", *data*=None, ****kwargs**)

Http PUT request.

Note that the actual request url will have `self.url` as a prefix.

Parameters

- **path** (*str*) – Request path
- **data** – passed to `request.Request.put()`
- **kwargs** – See `kloudless.client.Client.request()` for more options.

Returns `kloudless.resources.base.Response` or its subclass

patch (*path*="", *data*=None, ****kwargs**)

Http PATCH request.

Note that the actual request url will have `self.url` as a prefix.

Parameters

- **path** (*str*) – Request path
- **data** – passed to `request.Request.patch()`
- **kwargs** – See `kloudless.client.Client.request()` for more options.

Returns `kloudless.resources.base.Response` or its subclass

delete (*path*="", ****kwargs**)

Http DELETE request.

Note that the actual request url will have `self.url` as a prefix.

Parameters

- **path** (*str*) – Request path
- **kwargs** – See `kloudless.client.Client.request()` for more options.

Returns `kloudless.resources.base.Response` or its subclass

kloudless.account - Account

class kloudless.account.**Account** (*token=None, api_key=None, account_id=None*)

Bases: *kloudless.client.Client*

Account class that represents one Kloudless account.

Instance attributes

Variables *url* (*str*) – Base url which would be used as prefix for all http method calls

__init__ (*token=None, api_key=None, account_id=None*)

Either *token* or *api_key* is needed for instantiation. *account_id* is needed if *api_key* is specified.

Parameters

- **token** – Bearer token
- **api_key** – API key
- **account_id** – Account ID

raw (*raw_method, raw_uri, **kwargs*)

Method for [Pass-Through API](#)

Parameters

- **raw_method** (*str*) – The value stand for X-Kloudless-Raw-Method header
- **raw_uri** – The value stand for X-Kloudless-Raw-URI header
- **kwargs** – kwargs passed to *kloudless.client.Client.post()*

Returns *requests.Response*

kloudless.account.get_verified_account (*app_id, token*)

Verify the *token* belongs to an Application with *app_id* and return an *kloudless.account.Account* instance.

Parameters

- **app_id** (*str*) – Application ID

- **token** (*str*) – Account’s Bearer token

Returns *kloudless.account.Account*

Raise *kloudless.exceptions.TokenVerificationFailed*

kloudless.resources.base - Resource

class kloudless.resources.base.**Response** (*client, url, response=None*)

Bases: object

Base Response class for this library.

Instance attributes

Variables

- **url** (*str*) – Base url which would be used as prefix for all http method calls
- **query_params** (*dict*) – Query parameter from request
- **client** – *kloudless.client.Client* or *kloudless.account.Account*
- **response** – *requests.Response* if available

get (*path=*”, ***kwargs*)

Performs http GET request through `self.client.get`.

Note that the actually request url would have `self.url` as prefix.

Returns *kloudless.resources.base.Response* or its subclass

post (*path=*”, *data=None, json=None, **kwargs*)

Performs http POST request through `self.client.post`.

Note that the actually request url would have `self.url` as prefix.

Returns *kloudless.resources.base.Response* or its subclass

put (*path=*”, *data=None, **kwargs*)

Performs http PUT request through `self.client.put`.

Note that the actually request url would have `self.url` as prefix.

Returns `kloudless.resources.base.Response` or its subclass

patch (*path*="", *data*=None, ***kwargs*)

Performs http PATCH request through `self.client.patch`.

Note that the actually request url would have `self.url` as prefix.

Returns `kloudless.resources.base.Response` or its subclass

delete (*path*="", ***kwargs*)

Performs http DELETE request through `self.client.delete`.

Note that the actually request url would have `self.url` as prefix.

Returns `kloudless.resources.base.Response` or its subclass

refresh ()

Performs GET request through `self.client.get` to `self.url`, then refresh `self`. The original query parameters and headers would be reused if original request is http GET request.

class `kloudless.resources.base.ResponseJson` (*data*, ***kwargs*)

Bases: `kloudless.resources.base.Response`

Base Response class for JSON response.

Instance attributes

Variables `data` (*dict*) – JSON data

refresh ()

Perform GET request through `self.client.get` to `self.url`, then refresh `self`. The original query parameters and headers would be reused if original request is http GET request.

class `kloudless.resources.base.Resource` (***kwargs*)

Bases: `kloudless.resources.base.ResponseJson`

Represents a resource object from API response. A resource object contains an identifier and endpoint (`//resource_type/{identifier}`) for retrieving its metadata.

Example resources include: Files and folders in the Storage API, calendar events in the Calendar API, and events in Events API.

class `kloudless.resources.base.ResourceList` (***kwargs*)

Bases: `kloudless.resources.base.ResponseJson`

Represents a list of resources from API response. `ResourceList` itself is also an iterable thorough `self` objects.

Instance attributes

Variables `objects` – list of `kloudless.resource.base.Resource` instance

get_next_page ()

Get the resources of the next page, if any.

Returns `kloudless.resources.base.ResourceList`

Raise `kloudless.exceptions.NoNextPage`

get_paging_iterator (*max_resources=None*)

Generator to iterate thorough all resources under `self.objects` and all resources in the following page, if any.

If retrieving events, `self.latest_cursor` is available after iterating thorough all events without `max_resources` specified.

Parameters `max_resources` – the maximum quantity of resources that would be contained in the returned generator

Returns generator that yield `kloudless.resources.base.Resource` instance

CHAPTER 16

kloudless.exceptions - Exceptions

exception `kloudless.exceptions.KloudlessException` (*message*=")

Bases: `Exception`

Base exception class inherited by all exceptions of the library.

Instance attributes

Variables `message` (*str*) – Error message

`default_message`

exception `kloudless.exceptions.InvalidParameter` (*message*=")

Bases: `kloudless.exceptions.KloudlessException`

The parameters are invalid in a function call or class instantiation.

`default_message` = 'The parameter is not valid.'

exception `kloudless.exceptions.TokenVerificationFailed` (*message*=")

Bases: `kloudless.exceptions.KloudlessException`

`default_message` = 'The token does not belong to your application.'

exception `kloudless.exceptions.OauthFlowFailed` (*message*=")

Bases: `kloudless.exceptions.KloudlessException`

`default_message` = 'Oauth authorization flow failed.'

exception `kloudless.exceptions.NoNextPage` (*cursor*=None, **args*, ***kwargs*)

Bases: `kloudless.exceptions.KloudlessException`

`default_message` = "There's no next page."

exception `kloudless.exceptions.APIException` (*response*, *message*=")

Bases: `kloudless.exceptions.KloudlessException`

Base Exception class for API requests.

Instance attributes

Variables

- **response** – `requests.Response` instance if available
- **status** (*int*) – `response.status_code`
- **error_data** (*dict*) – `response.json()`

```
default_message = 'Request failed.'
```

```
exception kloudless.exceptions.AuthorizationException(response, message="")
```

Bases: *kloudless.exceptions.APIException*

Exception class for 401 status code.

```
default_message = 'Authorization failed. Please double check that the API Key or Token'
```

```
exception kloudless.exceptions.ForbiddenException(response, message="")
```

Bases: *kloudless.exceptions.APIException*

Exception class for 403 status code.

```
default_message = 'Request forbidden. The action is not allowed.'
```

```
exception kloudless.exceptions.NotFoundException(response, message="")
```

Bases: *kloudless.exceptions.APIException*

Exception class for 404 status code.

```
default_message = 'Not found. Please make sure the url is correct.'
```

```
exception kloudless.exceptions.RateLimitException(*args, **kwargs)
```

Bases: *kloudless.exceptions.APIException*

Exception class for 429 status code.

Instance attributes

Variables **retry_after** (*float*) – Delay seconds until next available requests

```
default_message = 'Rate limiting encountered. Please try again later.'
```

```
exception kloudless.exceptions.ServerException(response, message="")
```

Bases: *kloudless.exceptions.APIException*

Exception class for 5xx status code.

```
default_message = 'An unknown error occurred! Please contact support@kloudless.com with'
```

k

- `kloudless.account`, [31](#)
- `kloudless.application`, [25](#)
- `kloudless.client`, [27](#)
- `kloudless.exceptions`, [37](#)
- `kloudless.resources.base`, [33](#)

Symbols

`__init__()` (*kloudless.account.Account* method), 31
`__init__()` (*kloudless.client.Client* method), 28
`__init__()` (*kloudless.client.Session* method), 27

A

Account (class in *kloudless.account*), 31
APIException, 37
AuthorizationException, 38

C

Client (class in *kloudless.client*), 27

D

`default_message` (*kloudless.exceptions.APIException* attribute), 38
`default_message` (*kloudless.exceptions.AuthorizationException* attribute), 38
`default_message` (*kloudless.exceptions.ForbiddenException* attribute), 38
`default_message` (*kloudless.exceptions.InvalidParameter* attribute), 37
`default_message` (*kloudless.exceptions.KloudlessException* attribute), 37
`default_message` (*kloudless.exceptions.NoNextPage* attribute), 37
`default_message` (*kloudless.exceptions.NotFoundException* attribute), 38
`default_message` (*kloudless.exceptions.OauthFlowFailed* attribute), 37
`default_message` (*kloudless.exceptions.RateLimitException* attribute), 38

`default_message` (*kloudless.exceptions.ServerException* attribute), 38

`default_message` (*kloudless.exceptions.TokenVerificationFailed* attribute), 37

`delete()` (*kloudless.client.Client* method), 29

`delete()` (*kloudless.resources.base.Response* method), 34

F

ForbiddenException, 38

G

`get()` (*kloudless.client.Client* method), 28

`get()` (*kloudless.resources.base.Response* method), 33

`get_authorization_url()` (in module *kloudless.application*), 25

`get_next_page()` (*kloudless.resources.base.ResourceList* method), 34

`get_paging_iterator()` (*kloudless.resources.base.ResourceList* method), 34

`get_token_from_code()` (in module *kloudless.application*), 26

`get_verified_account()` (in module *kloudless.account*), 31

I

InvalidParameter, 37

K

kloudless.account (module), 31

kloudless.application (module), 25

kloudless.client (module), 27

kloudless.exceptions (module), 37

kloudless.resources.base (module), 33

KloudlessException, 37

N

NoNextPage, [37](#)

NotFoundException, [38](#)

O

OauthFlowFailed, [37](#)

P

patch() (*kloudless.client.Client method*), [29](#)

patch() (*kloudless.resources.base.Response method*),
[34](#)

post() (*kloudless.client.Client method*), [28](#)

post() (*kloudless.resources.base.Response method*), [33](#)

put() (*kloudless.client.Client method*), [29](#)

put() (*kloudless.resources.base.Response method*), [33](#)

R

RateLimitException, [38](#)

raw() (*kloudless.account.Account method*), [31](#)

refresh() (*kloudless.resources.base.Response method*), [34](#)

refresh() (*kloudless.resources.base.ResponseJson method*), [34](#)

request() (*kloudless.client.Client method*), [28](#)

request() (*kloudless.client.Session method*), [27](#)

Resource (*class in kloudless.resources.base*), [34](#)

ResourceList (*class in kloudless.resources.base*), [34](#)

Response (*class in kloudless.resources.base*), [33](#)

ResponseJson (*class in kloudless.resources.base*), [34](#)

S

ServerException, [38](#)

Session (*class in kloudless.client*), [27](#)

T

TokenVerificationFailed, [37](#)

V

verify_token() (*in module kloudless.application*),
[25](#)